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Sophos UTM Administration Guide

Product version: 9.707

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1 Installation

This section provides information on installing and setting up Sophos UTM on your network. The installation of Sophos UTM proceeds in two steps: first, installing the software; second, configuring basic system settings. The initial setup required for installing the software is performed through a console-based installation menu. The internal configuration can be performed from your management workstation through the web-based administrative interface of Sophos UTM called WebAdmin. Before you start the installation, check if your hardware meets the minimum system requirements.

Note - If you are employing a Sophos UTM hardware appliance, you can skip the following sections and directly jump to the **Basic Configuration** section, as all Sophos UTM hardware appliances ship with Sophos UTM Software preinstalled.

You can also set up Sophos UTM in public cloud environments such as Amazon Web Services (AWS). For more information on how to deploy Sophos UTM on AWS, please refer to [Sophos UTM on AWS Quick Start Guide](#).

The following topics are included in this chapter:

- [Recommended Reading](#)
- [System Requirements](#)
- [Installation Instructions](#)
- [Basic Configuration](#)
- [Backup Restoration](#)

1.1 Recommended Reading

Before you begin the installation, you are advised to read the following documents that help you set up Sophos UTM, all of which are enclosed within the package of your Sophos UTM hardware appliance unit and which are also available at the [Sophos UTM Resource Center](#):

- Quick Start Guides Hardware
- Operating Instructions

1.2 System Requirements

The minimum hardware requirements for installing and using Sophos UTM are as follows:

- **Processor:** Intel Atom Dual Core with 1.46 GHz (or compatible)
- **Memory:** 2 GB RAM
- **HDD:** 40 GB SATA hard disk drive or SSD
- **CD-ROM Drive:** Bootable IDE or SCSI CD-ROM drive

- **NIC:** Two or more PCIe 2.0 Ethernet network interface cards
- **NIC (optional):** One heart-beat capable PCI Ethernet network interface card. In a high-availability system, the primary and secondary system communicate with one another through so-called heart-beat requests. If you want to set up a high-availability system, both units need to be equipped with heart-beat capable network interface cards.
- **USB (optional):** One USB port for communications with a UPS device and one USB port for connecting a Sophos UTM Smart Installer(SUSI)
- **Switch (optional):** A network device that connects (and selects between) network segments. Note that this switch must have jumbo frame support enabled.

Sophos provides a list of hardware devices compatible with Sophos UTM Software. The **Hardware Compatibility List (HCL)** is available at the [Sophos Knowledge Base](#). To make the installation and operation of Sophos UTM Software less error-prone, you are advised to only use hardware that is listed in the HCL. The hardware and software requirements for the client PC used to access WebAdmin are as follows:

- **Processor:** Clock signal frequency 2 GHz or higher
- **Browser:** Sophos UTM requires the latest version of Firefox (recommended), latest version of Chrome, latest version of Safari, or last two versions of Microsoft Internet Explorer. JavaScript must be enabled. In addition, the browser must be configured not to use a proxy for the IP address of Sophos UTM's internal network card (eth0).

1.2.1 UPS Device Support

Uninterruptible Power Supply (UPS) devices maintain a continuous supply of electric power to connected equipment by supplying power from a separate source when utility power is not available. Sophos UTM supports UPS devices of the manufacturers MGE UPS Systems and APC. The communication between the UPS device and Sophos UTM is made via the USB interface.

As soon as the UPS device runs in battery operation, a notification is sent to the administrator. If the power failure persists for a longer period and the voltage of the UPS device approximates a critical value, another message will be sent to the administrator—Sophos UTM will be shut down automatically.

Note - Please read the operation manual of the UPS device to connect the devices to Sophos UTM. Sophos UTM will recognize the UPS device when booting via the USB interface. Only boot Sophos UTM when you have connected the USB interfaces to each other.

1.2.2 RAID Support

A RAID (Redundant Array of Independent Disks) is a data storage scheme using multiple hard drives to share or replicate data among the drives. To ensure that the RAID system is detected and properly displayed on the Dashboard, you need to use a RAID controller that is supported by Sophos UTM. Check the HCL to figure out which RAID controllers are

supported. The HCL is available at the [Sophos Knowledge Base](#). Use "HCL" as search term to locate the corresponding page.

1.3 Installation Instructions

What follows is a step-by-step guide of the installation process of Sophos UTM Software. Before you begin the installation, please make sure you have the following items available:

- The Sophos UTM CD-ROM
- The license key for Sophos UTM

The setup program will check the hardware of the system, and then install the software on your PC.

1.3.1 Key Functions During Installation

In order to navigate through the menus, use the following keys (please also note the additional key functions listed at the bottom of a screen):

- F1: Displays the context-sensitive help screen.
- Cursor keys: Use these keys to navigate through the text boxes (for example, the license agreement or when selecting a keyboard layout).
- Tab key: Move back and forth between text boxes, lists, and buttons.
- Enter key: The entered information is confirmed, and the installation proceeds to the next step.
- Space key: Select or unselect options marked with an asterisk.
- Alt-F2: Switch to the installation console.
- Alt-F4: Switch to the log.
- Alt-F1: Switch to the interactive bash shell.
- Alt-F1: Return to the main installation screen.

1.3.2 Special Options During Installation

Some screens offer additional options:

View Log: Opens the installation log.

Support: Opens the support dialog screen.

To USB Stick: Writes the installation log as zip file to a USB stick. Remember to insert a USB stick before confirming this option. The zip file can be used to solve installation problems, e.g. by the Sophos UTM Support Team.

Back: Returns to the previous screen.

Cancel: Opens a confirmation dialog window to abort the installation.

Help: Opens the context-sensitive help screen.

1.3.3 Installing Sophos UTM

1. Boot your PC from CD-ROM drive or mount the downloaded ISO on a virtual drive.

The installation start screen is displayed.

Note - You can always press F1 to access the help menu. Pressing F3 in the start screen opens a troubleshooting screen.

2. Press Enter.

The **Introduction** screen is displayed.

3. Select **Start Installation**.

The **Hardware Detection** screen is displayed.

The software will check the following hardware components:

- CPU
- Size and type of hard disk drive
- CD-ROM drive
- Network interface cards
- IDE or SCSI controllers

If your system does not meet the minimum requirements, the installation will report the error and abort.

As soon as the hardware detection is completed, the **Detected Hardware** screen is displayed for information purposes.

4. Press Enter.

The **Select Keyboard** screen is displayed.

5. Select your keyboard layout.

Use the Cursor keys to select your keyboard layout, e.g. **English (UK)**, and press Enter to continue.

The **Select Timezone** screen is displayed.

6. Select your area.

Use the Cursor keys to select your area, e.g. **Europe**, and press Enter to continue.

7. Select your time zone.

Use the Cursor keys to select your time zone, e.g. **London**, and press Enter to continue.

The **Date and Time** screen is displayed.

8. Set date and time.

If date and time are not correct, you can change them here. Use the Tab key and the Cursor keys to switch between text boxes. You can unselect the **Host clock is UTC** option by pressing the Space key. Invalid entries will be rejected. Confirm your settings with the Enter key.

The **Select Admin Interface** screen is displayed.

9. Select an internal network card.

In order to use the WebAdmin tool to configure the rest of Sophos UTM, select a network interface card to be the internal network card (eth0). Choose one of the available network cards from the list and confirm your selection with the Enter key.

Note - Interfaces having an active connection are marked with **[link]**.

The **Network Configuration** screen is displayed.

10. Configure the administrative network interface.

Define the IP address, network mask, and gateway of the internal interface which is going to be the administrative network interface. The default values are:

Address: 192.168.2.100

Netmask: 255.255.255.0

Gateway: none

You need to change the gateway value only if you wish to use the WebAdmin interface from a workstation outside the subnet defined by the netmask. Note that the gateway itself must be within the subnet.¹

Confirm your settings with the Enter key.

If your CPU supports 64 bit the **64 Bit Kernel Support** screen is displayed. Otherwise the installation continues with the **Enterprise Toolkit** screen.

11. Install the 64-bit kernel.

Select **Yes** to install the 64-bit kernel or **No** to install the 32-bit kernel.

The **Enterprise Toolkit** screen is displayed.

12. Accept installation of the Enterprise Toolkit.

¹For example, if you are using a network mask of 255.255.255.0, the subnet is defined by the first three octets of the address: in this case, 192.168.2. If your administration computer has the IP address 192.168.10.5, it is not on the same subnet, and thus requires a gateway. The gateway router must have an interface on the 192.168.2 subnet and must be able to contact the administration computer. In our example, assume the gateway has the IP address 192.168.2.1.

The Enterprise Toolkit comprises the Sophos UTM Software. You can decide to install Open Source software only. However, we advise to also install the Enterprise Toolkit to be able to use the full functionality of Sophos UTM.

Press Enter to install both software packages or select **No** to install the Open Source software only.

The **Installation: Partitioning** screen is displayed.

13. Confirm the warning message to start the installation.

Please read the warning carefully. After confirming, all existing data on the PC will be destroyed.

If you want to cancel the installation and reboot instead, select **No**.

Caution - The installation process will delete all data on the hard disk drive.

The software installation process can take up to a couple of minutes.

The **Installation Finished** screen is displayed.

14. Remove the CD-ROM, connect to the internal network, and reboot the system.

When the installation process is complete, remove the CD-ROM from the drive and connect the `eth0` network card to the internal network. Except for the internal network card (`eth0`), the sequence of network cards normally will be determined by PCI ID and by the kernel drivers. The sequence of network card names may also change if the hardware configuration is changed, especially if network cards are removed or added.

Then press Enter in the installation screen to reboot Sophos UTM. During the boot process, the IP addresses of the internal network cards are changed. The installation routine console (Alt+F1) may display the message "No IP on eth0" during this time.

After Sophos UTM has rebooted (a process which, depending on your hardware, can take several minutes), ping the IP address of the `eth0` interface to ensure it is reachable. If no connection is possible, please check if one of the following problems is present:

- The IP address of Sophos UTM is incorrect.
- The IP address of the administrative computer is incorrect.
- The default gateway on the client is incorrect.
- The network cable is connected to the wrong network card.
- All network cards are connected to the same hub.

1.4 Basic Configuration

The second step of the installation is performed through WebAdmin, the web based administrative interface of Sophos UTM. Prior to configuring basic system settings, you should have a plan how to integrate Sophos UTM into your network. You must decide which functions you want it to provide, for example, if you want to operate it in bridge mode or in

standard (routing) mode, or how you want it to control the data packets flowing between its interfaces. However, you can always reconfigure Sophos UTM at a later time. So if you have not yet planned how to integrate Sophos UTM into your network, you can begin with the basic configuration right away.

1. Start your browser and open WebAdmin.

Browse to the URL of Sophos UTM (i.e., the IP address of eth0). In order to stay consistent with our configuration example above, this would be

`https://192.168.2.100:4444` (note the HTTPS protocol and port number 4444).

Deviating from the configuration example, each Sophos UTM ships with the following default settings:

- **Interfaces:** Internal network interface (eth0)
- **IP address:** 192.168.0.1
- **Network mask:** 255.255.255.0
- **Default gateway:** none

To access WebAdmin of any Sophos UTM, enter the following URL instead:

`https://192.168.0.1:4444`

To provide authentication and encrypted communication, Sophos UTM comes with a self-signed security certificate. This certificate is offered to the web browser when an HTTPS-based connection to WebAdmin is established. If unable to check the certificate's validity, the browser will display a security warning. Once you have accepted the certificate, the initial login page is displayed.

Welcome to WebAdmin

Basic system setup

Hostname:

Company or Organization Name:

City:

Country:

admin account password:

Repeat password:


admin account email address:

These settings must be made before the system can be used. Please note that ALL fields must be filled in and the hostname must not contain special characters or spaces. After applying the settings, log into the system with username **admin** and the password you set below.

IMPORTANT—READ CAREFULLY BEFORE OPERATING THIS SOFTWARE

BY MARKING THE "ACCEPT"-CHECKBOX OR USING THIS SOFTWARE, YOU ACKNOWLEDGE THAT YOU HAVE READ THIS LICENSE AGREEMENT, THAT YOU UNDERSTAND IT, AND THAT YOU AGREE TO BE BOUND BY ITS TERMS. IF YOU DO NOT AGREE TO THE TERMS AND CONDITIONS OF THIS LICENSE AGREEMENT, USE THE ESC KEY AND PROMPTLY RETURN THE SOFTWARE TOGETHER WITH ALL ACCOMPANYING ITEMS TO YOUR SUPPLIER FOR A FULL REFUND OF YOUR PAYMENT.

Astaro License Agreement
 The installation and use of the Astaro Enterprise Toolkit as described in section I. is subject to the following terms and conditions which constitute a license agreement between Astaro GmbH & Co. KG, Germany ("Astaro") and the contracting individual or company ("User"). This agreement also applies to software updates, upgrades or any other additional components provided to the User by Astaro. All software components described in following section I. are hereafter collectively referred to as the Software.

 **Print EULA**

☐ I accept the license agreement

Figure 1 WebAdmin: Initial Login Page

2. Fill out the Basic System Setup form.

Enter accurate information of your company in the text boxes presented here. In addition, specify a password and valid email address for the administrator account.

If you run an Amazon Machine Image (AMI) of Sophos UTM, you will see an additional text field **AWS Instance ID**. Enter that ID to prove that you are the owner of that Amazon instance.

If you accept the license agreement, click the **Perform Basic System Setup** button to continue logging in. While performing the basic system setup, a number of certificates and certificate authorities are being created:

- **WebAdmin CA:** The CA with which the WebAdmin certificate was signed (see **Management > WebAdmin Settings > HTTPS Certificate**).
- **VPN Signing CA:** The CA with which digital certificates are signed that are used for VPN connections (see **Site-to-site VPN > Certificate Management > Certificate Authority**).

- **WebAdmin Certificate:** The digital certificate of WebAdmin (see **Site-to-site VPN > Certificate Management > [Certificates](#)**).
- **Local X.509 Certificate:** The digital certificate of Sophos UTM that is used for VPN connections (see **Site-to-Site VPN > Certificate Management > [Certificates](#)**).

The login page appears. (With some browsers it may, however, happen that you are presented another security warning because the certificate has changed according to your entered values.)

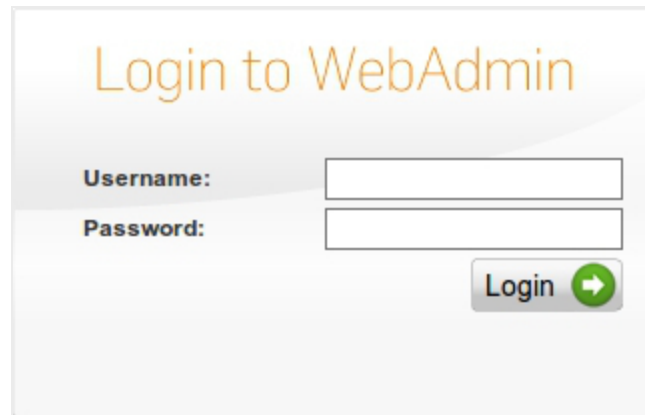
The image shows a web browser window displaying the 'Login to WebAdmin' page. The title 'Login to WebAdmin' is at the top in a large, orange, sans-serif font. Below the title, there are two input fields: 'Username:' and 'Password:'. To the right of the 'Password:' field is a green button with the word 'Login' in white and a white right-pointing arrow. The background of the login form is a light gray with a subtle gradient.

Figure 2 WebAdmin: Regular Login Page

3. Log in to WebAdmin.

Type `admin` in the **Username** field and enter the password you have specified on the previous screen.

A configuration wizard is presented to you which will guide you through the initial configuration process.

Continue: If you want to use the wizard, select this option and then click **Next**. Follow the steps to configure the basic settings of Sophos UTM.

Restore a backup: If you have a backup file, you can decide to restore this backup file instead. Select this option and then click **Next**. How to continue is described in section [Backup Restoration](#).

Alternatively, you can safely click **Cancel** (at any time during the wizard's steps) and thereby exit the wizard, for example if you want to configure Sophos UTM directly in WebAdmin. You can also click **Finish** at any time to save your settings done so far and exit the wizard.

4. Install your license.

Click the Folder icon to upload your purchased license (a text file). Click **Next** to install the license. In case you did not purchase a license, click **Next** to use the built-in 30-day trial license with all features enabled that is shipped with Sophos UTM.

Note - If the selected license does not contain a certain subscription, the respective page will be disabled during the further procedure.

5. Configure the internal network interface.

Check the presented settings for the internal network interface (**eth0**). The settings for this interface are based on the information you provided during the installation of the software. Additionally, you can set Sophos UTM to act as DHCP server on the internal interface by selecting the checkbox.

Note - If you change the IP address of the internal interface, you must connect to WebAdmin again using the new IP address after finishing the wizard.

6. Select the uplink type for the external interface.

Select the connection type of your uplink/Internet connection the external network card is going to use. The type of interface and its configuration depend on what kind of connection to the Internet you are going to use. Click **Next**.

In case Sophos UTM has no uplink or you do not want to configure it right now, select the **Setup Internet connection later** checkbox. If you configure an Internet uplink, IP masquerading will automatically be configured for connections from the internal network to the Internet.

If you select **Standard Ethernet interface with static IP address**, specifying a **Default gateway** is optional. If you leave the text box blank, your default gateway setting of the installation routine will persist. You can skip each of the following steps by clicking **Next**. You can make and change those skipped settings later in WebAdmin.

Note - If your license does not allow one of the following features, the concerning feature will not be displayed.

7. Make your basic firewall settings.

You can now select what types of services you want to allow on the Internet. Click **Next** to confirm your settings.

8. Make your advanced threat protection settings.

You can now make settings regarding intrusion prevention and command&control/botnet detection for several operation systems and databases. Click **Next** to confirm your settings.

9. Make your web protection settings.

You can now select whether the web traffic should be scanned for viruses and spyware. Additionally, you can select to block webpages that belong to certain categories. Click **Next** to confirm your settings.

10. Make your email protection settings.

You can now select the first checkbox to enable the POP3 proxy. You can also select the second checkbox to enable Sophos UTM as inbound SMTP relay: Enter the IP address of your internal mail server and add SMTP domains to route. Click **Next** to confirm your settings.

11. Make your wireless protection settings.

You can now select the checkbox to enable wireless protection. In the box, select or add the interfaces that are allowed to connect your wireless access points to your system. Click the Folder icon to add an interface or click the Plus icon to create a new interface. Enter the other wireless network parameters. Click **Next** to confirm your settings.

12. Make your advanced threat adaptive learning settings.

You can now select if you want to send anonymous data to the Sophos research team. This data is used to improve future versions and to improve and enlarge the network visibility and application control library.

13. Confirm your settings.

A summary of your settings is displayed. Click **Finish** to confirm them or **Back** to change them. However, you can also change them in WebAdmin later.

After clicking **Finish** your settings are saved and you are redirected to the Dashboard of WebAdmin, providing you with the most important system status information of the Sophos UTM unit.

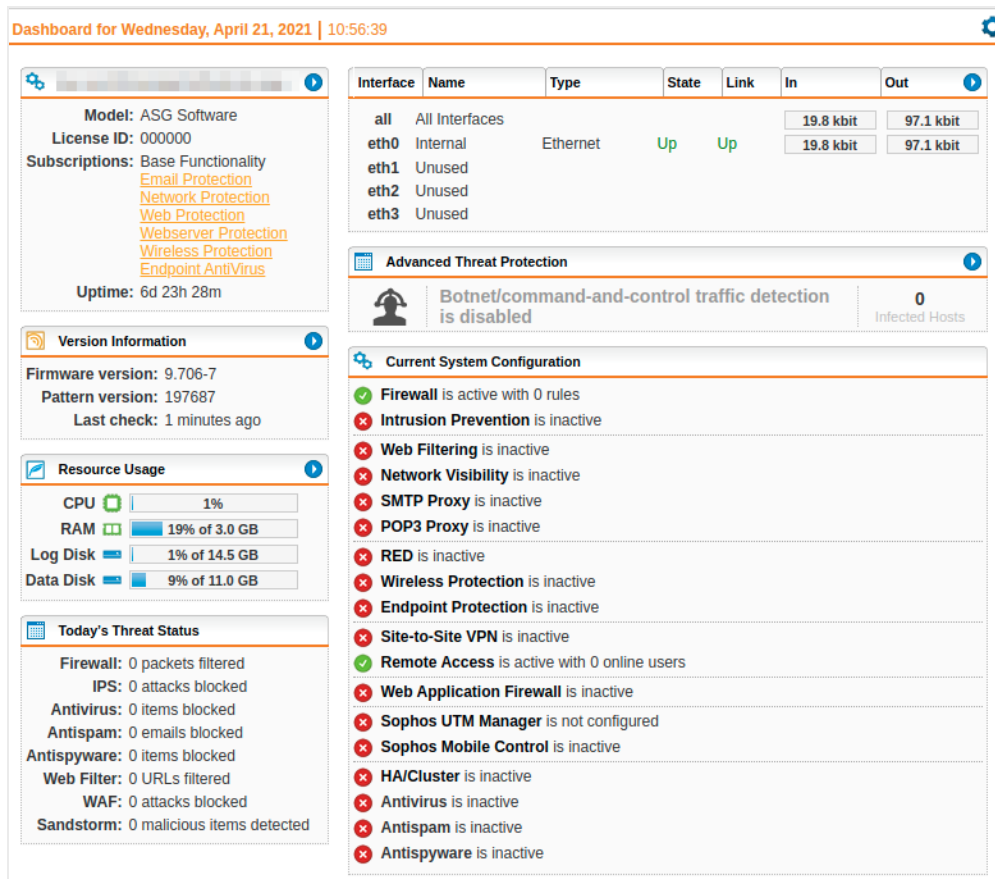


Figure 3 WebAdmin: Dashboard

If you encounter any problems while completing these steps, please contact the support department of your Sophos UTM supplier. For more information, visit the following websites:

- [Sophos UTM Support Forum](#)
- [Sophos Knowledge Base](#)

1.5 Backup Restoration

The WebAdmin configuration wizard (see section [Basic Configuration](#)) allows you to restore an existing backup file instead of going through the basic configuration process. Do the following:

1. Select **Restore existing backup file** in the configuration wizard.
 Select **Restore existing backup file** in the configuration wizard and click **Next**.
 You are directed to the upload page.
2. Upload the backup.
 Click the Folder icon, select the backup file you want to restore, and click **Start Upload**.

3. Restore the backup.

Click **Finish** to restore the backup.

Important Note - You will not be able to use the configuration wizard afterwards.

As soon as the backup has been restored successfully you will be redirected to the login page.

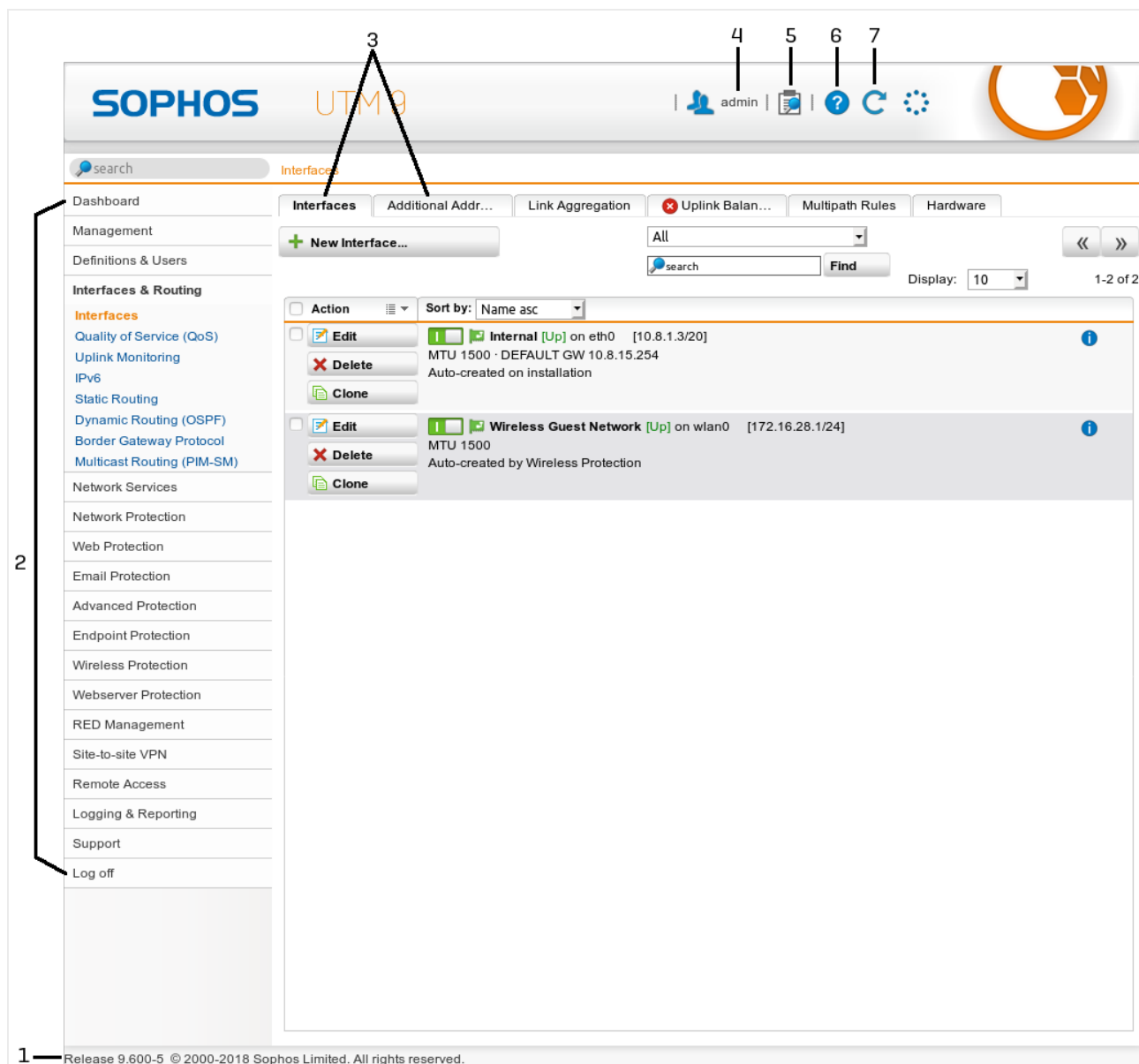
2 WebAdmin

WebAdmin is the web-based administrative interface that allows you to configure every aspect of Sophos UTM. WebAdmin consists of a menu and pages, many of which have multiple tabs. The menu on the left of the screen organizes the features of Sophos UTM in a logical manner. When you select a menu item, such as **Network Protection**, it expands to reveal a submenu and the associated page opens. Note that for some menu items no page is associated. Then, the page of the previously selected menu or submenu item keeps being displayed. You have to select one of the submenu items, which opens the associated page at its first tab.

On the first start of the WebAdmin the **Setup Wizard** appears unique. Follow the instructions to set up the most important settings.

The procedures in this documentation direct you to a page by specifying the menu item, submenu item, and the tab, for example: "On the **Interfaces & Routing > Interfaces > Hardware** tab, configure ..."

Note - Sophos UTM requires the latest version of Firefox (recommended), latest version of Chrome, latest version of Safari, or last two versions of Microsoft Internet Explorer. JavaScript must be enabled. In addition, the browser must be configured not to use a proxy for the IP address of Sophos UTM's internal network card (eth0).



| | |
|---|-------------|
| 1 | Version |
| 2 | Menu |
| 3 | Tabs |
| 4 | User |
| 5 | Live Log |
| 6 | Online Help |
| 7 | Reload |

Figure 4 WebAdmin: Overview

2.1 WebAdmin Menu

The WebAdmin menu provides access to all configuration options of Sophos UTM, that is, there is no need for using a command line interface to configure specific parameters.

- **Dashboard:** The Dashboard graphically displays a snapshot of the current operating status of the Sophos UTM unit.
- **Management:** Configure basic system and WebAdmin settings as well as all settings that concern the configuration of the Sophos UTM unit.
- **Definitions & Users:** Configure network, service, and time period definitions as well as user accounts, user groups, and external authentication services for use with the Sophos UTM unit.
- **Interfaces & Routing:** Configure system facilities such as network interfaces as well as routing options, among other things.
- **Network Services:** Configure network services such as DNS and DHCP, among other things.
- **Network Protection:** Configure basic network protection features such as firewall rules, voice over IP, or intrusion prevention settings.
- **Web Protection:** Configure the Web Filter and application control of Sophos UTM unit as well as the FTP proxy.
- **Email Protection:** Configure the SMTP and POP3 proxies of the Sophos UTM unit as well as email encryption.
- **Endpoint Protection:** Configure and manage the protection of endpoint devices in your network.
- **Wireless Protection:** Configure wireless access points for the gateway.
- **Webserver Protection:** Protect your web servers from attacks like cross-site scripting and SQL injection.
- **RED Management:** Configure your remote Ethernet device (RED) appliances.
- **Site-to-site VPN:** Configure site-to-site Virtual Private Networks.
- **Remote Access:** Configure remote access VPN connections to the Sophos UTM unit.
- **Logging & Reporting:** View log messages and statistics about the utilization of the Sophos UTM unit and configure settings for logging and reporting.
- **Support:** Access to the support tools available at the Sophos UTM unit.
- **Log Off:** Log out of the user interface.

Searching the Menu

Above the menu a search box is located. It lets you search the menu for keywords in order to easily find menus concerning a certain subject. The search function matches the name of menus but additionally allows for hidden indexed aliases and keywords.

As soon as you start typing into the search box, the menu automatically reduces to relevant menu entries only. You can leave the search box at any time and click the menu entry matching your prospect. The reduced menu stays intact, displaying the search results, until you click the reset button next to it.

Tip - You can set focus on the search box via the keyboard shortcut `CTRL+Y`.

2.2 Button Bar

The buttons in the upper right corner of WebAdmin provide access to the following features:

- **Username/IP:** Shows the currently logged-in users and their IP address from which WebAdmin is accessed.
- **Open Live Log:** Clicking this button opens the live log that is associated with the WebAdmin menu or tab you are currently on. To see a different live log without having to change the menu or tab, hover over the Live Log button. After some seconds a list of all available live logs opens where you can select a live log to display. Your selection is memorized as long as you stay on the same WebAdmin menu or tab.

Tip - You can also open live logs via the **Open Live Log** buttons provided on multiple WebAdmin pages.

- **Online Help:** Every menu, submenu, and tab has an online help screen that provides context-sensitive information and procedures related to the controls of the current WebAdmin page.

Note - The online help is version-based and updated by means of patterns. If you update to a new firmware version, your online help will also be updated, if available.

- **Reload:** To request the already displayed WebAdmin page again, always click the **Reload** button.

Note - Never use the reload button of the browser, because otherwise you will be logged out of WebAdmin.

2.3 Lists

Many pages in WebAdmin consist of lists. The buttons on the left of each list item enable you to edit, delete, or clone the item (for more information, see chapter [Buttons and Icons](#)). To add an item to the list, click the **New ...** button, where "..." is a placeholder for the object being created (e.g., interface). This opens a dialog box where you can define the properties of the new object.

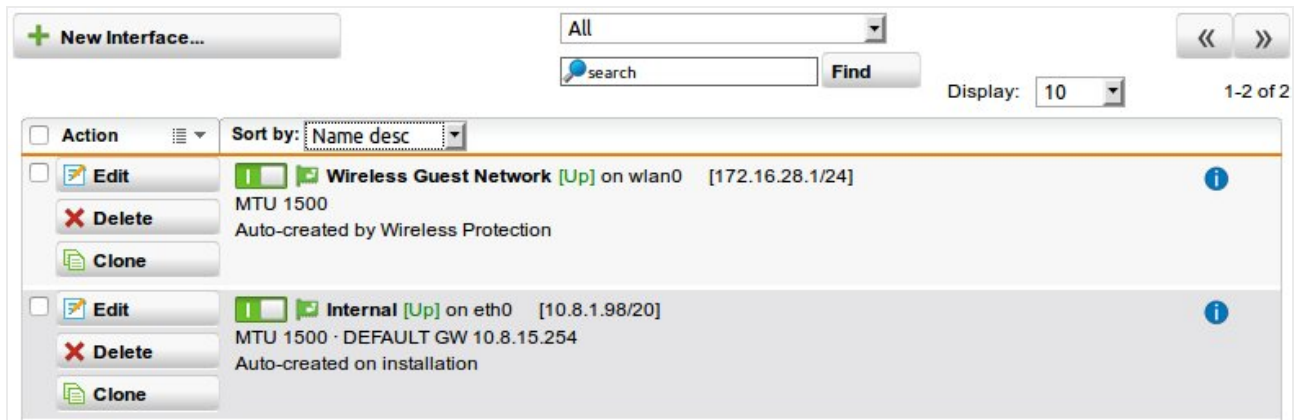


Figure 5 WebAdmin: Example of a List

With the first drop-down list on the top you can filter all items according to their type or group. The second field on the top lets you search for items specifically. Enter a search string and click **Find**.

Lists with more than ten items are split into several chunks, which can be browsed with Forward (>>) and Backward (<<) buttons. With the **Display** drop-down list, you can temporarily change the number of items per page. Additionally, you can change the default setting for all lists on the **Management > WebAdmin Settings > User Preferences** tab.

The header of a list provides some functionality. Selecting an item from the **Sort by** drop-down sorts the list for that item, e.g. selecting **Name asc** sorts the list ascending by object names. The **Action** field in the header contains some batch options you can carry out on previously selected list objects. To select objects, select their checkbox. Note that the selection stays valid across multiple pages, that is, while browsing between pages of a list already selected objects stay selected.

Tip - Clicking on the Info icon will show all configuration options in which the object is used.

2.4 Searching in Lists

A filter field helps you to quickly reduce the number of items displayed in a list. This makes it much easier to find the object(s) you were looking for.

Important Facts

- A search in a list typically scans several fields for the search expression. A search in **Users & Groups** for example considers the username, the real name, the comment, and the first email address. Generally speaking, the search considers all texts which you can see in the list, excluding details displayed via the Info icon.
- The list search is case-insensitive. That means it makes no difference whether you enter upper- or lower-case letters. The search result will contain matches both with upper-case and lower-case letters. Searching explicitly for upper-case or lower-case

letters is not possible.

- The list search is based on Perl regular expression syntax (although case-insensitive). Typical search expressions known from e.g. text editors like * and ? as simple wildcard characters or the AND and OR operators *do not* work in list search.

Examples

The following list is a small selection of useful search strings:

Simple string: Matches all words that contain the given string. For example, "inter" matches "Internet", "interface", and "printer".

Beginning of a word: Mark the search expression with a \b at the beginning. For example, \binter matches "Internet" and "interface" but not "printer".

End of a word: Mark the search expression with a \b at the end. For example, http\b matches "http" but not "https".

Beginning of an entry: Mark the search expression with a ^ at the beginning. For example, ^inter matches "Internet Uplink" but not "Uplink Interfaces".

IP addresses: Searching for IP addresses, you need to escape dots with a backslash. For example, 192\.168 matches "192.168". To search more generally for IP addresses use \d which matches any digit. \d+ matches multiple digits in a row. For example, \d+\.\d+\.\d+\.\d+ matches any IPv4 address.

Note - It makes sense to rather use an easy, fail-safe search expression which will lead to more matches than to rack your brains for a supposedly more perfect one which can easily lead to unexpected results and wrong conclusions.

You can find a detailed description of regular expressions and their usage in Sophos UTM in the [Sophos Knowledge Base](#).

2.5 Dialog Boxes

Dialog boxes are special windows which are used by WebAdmin to prompt you for entering specific information. The example shows a dialog box for creating a new group in the **Definitions & Users > Users & Groups** menu.

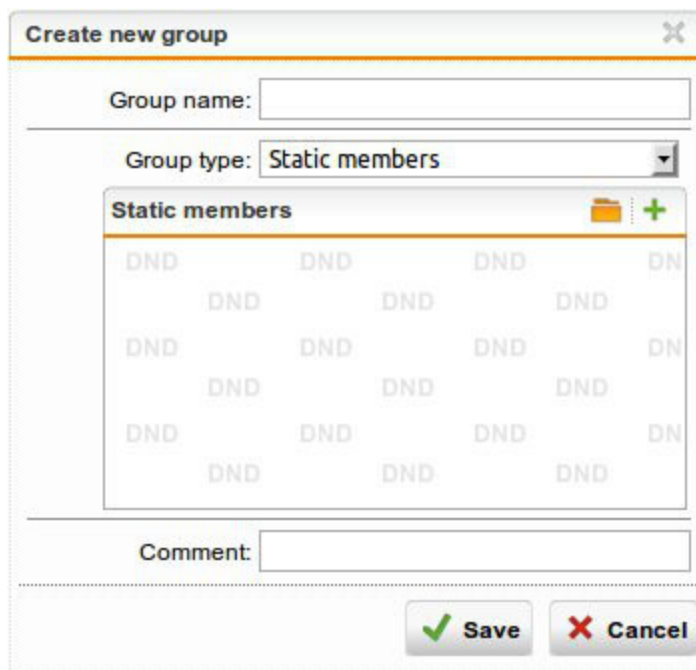




Figure 6 WebAdmin: Example of a Dialog Box


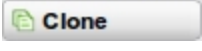














Each dialog box can consist of various widgets such as text boxes, checkboxes, and so on. In addition, many dialog boxes offer a drag-and-drop functionality, which is indicated by a special background reading **DND**. Whenever you encounter such a box, you can drag an object into the box. To open the object list from where to drag the objects, click the Folder icon that is located right next to the text box. Depending on the configuration option, this opens the list of available networks, interfaces, users/groups, or services. Clicking the green Plus icon opens a dialog window letting you create a new definition. Some widgets that are not necessary for a certain configuration are grayed out. In some cases, however, they can still be edited, but having no effect.

Note - You may have noticed the presence of both **Save** and **Apply** buttons in WebAdmin. The **Save** button is used in the context of creating or editing objects in WebAdmin such as static routes or network definitions. It is always accompanied by a **Cancel** button. The **Apply** button, on the other hand, serves to confirm your settings in the backend, thus promptly activating them.

2.6 Buttons and Icons

WebAdmin has some buttons and functional icons whose usage is described here.

| Buttons | Meaning |
|---|---|
|  View | Shows a dialog box with detailed information on the object. |
|  Edit | Opens a dialog box to edit properties of the object. |

| Buttons | Meaning |
|---|---|
|  | Deletes the object. If an object is still in use somewhere, there will be a warning. Not all objects can be deleted if they are in use. |
|  | Opens a dialog box for creating an object with identical settings/properties. Helps you to create similar objects without having to type all identical settings over and over again. |
| Functional Icons | Meaning |
|  | Info: Shows all configurations where the object is in use. |
|  | Details: Links to another WebAdmin page with more information about the topic. |
|  | Alert: Shows issues of an object which might lead to malfunction. |
|  | Toggle switch: Enables or disables a function. Green when enabled, gray when disabled, and amber when configuration is required before enabling. |
|  | Folder: Has two different functions: (1) Opens an object list (see section below) on the left side where you can choose appropriate objects from. (2) Opens a dialog window to upload a file. |
|  | Plus: Opens a dialog window to add a new object of the required type. |
|  | Action: Opens a drop-down menu with actions. The actions depend on the location of the icon: (1) Icon in list header: the actions, e.g., Enable , Disable , Delete , apply to the selected list objects. (2) Icon in text box: with the actions Import and Export you can import or export text, and with Empty you delete the entire content. There is also a filter field which helps you to drill down a list to relevant elements. Note that the filter is case-sensitive. |
|  | Empty: Removes an object from the current configuration when located in front of the object. Removes all objects from a box when located in the Actions menu. Objects are however never deleted. |
|  | Import: Opens a dialog window to import text with more than one item or line. Enhances adding multiple items without having to type them individually, e.g. a large blacklist to the URL blacklist. Copy the text from anywhere and enter it using CTRL+V . |
|  | Export: Opens a dialog window to export all existing items. You can select a delimiter to separate the items, which can either be new line, colon, or comma. To export the items as text, mark the whole text in the Exported Text field and press CTRL+C to copy it. You can then paste it into all common applications using CTRL+V , for example a text editor. |
|  | Sort: Using these two arrows, you can sort list elements by moving an element down or up, respectively. |
|  | Forward/Backward: Depending on the location you can navigate through the pages of a long list, or move back and forth along the history of changes and settings. |
|  | PDF: Saves the current view of data in a PDF file and then opens a dialog window to download the created file. |
|  | CSV: Saves the current view of data in a CSV (comma-separated values) file and then opens a dialog window to download the created file. |

2.7 Object Lists

An object list is a drag-and-drop list which is temporarily displayed on the left side of WebAdmin, covering the main menu.

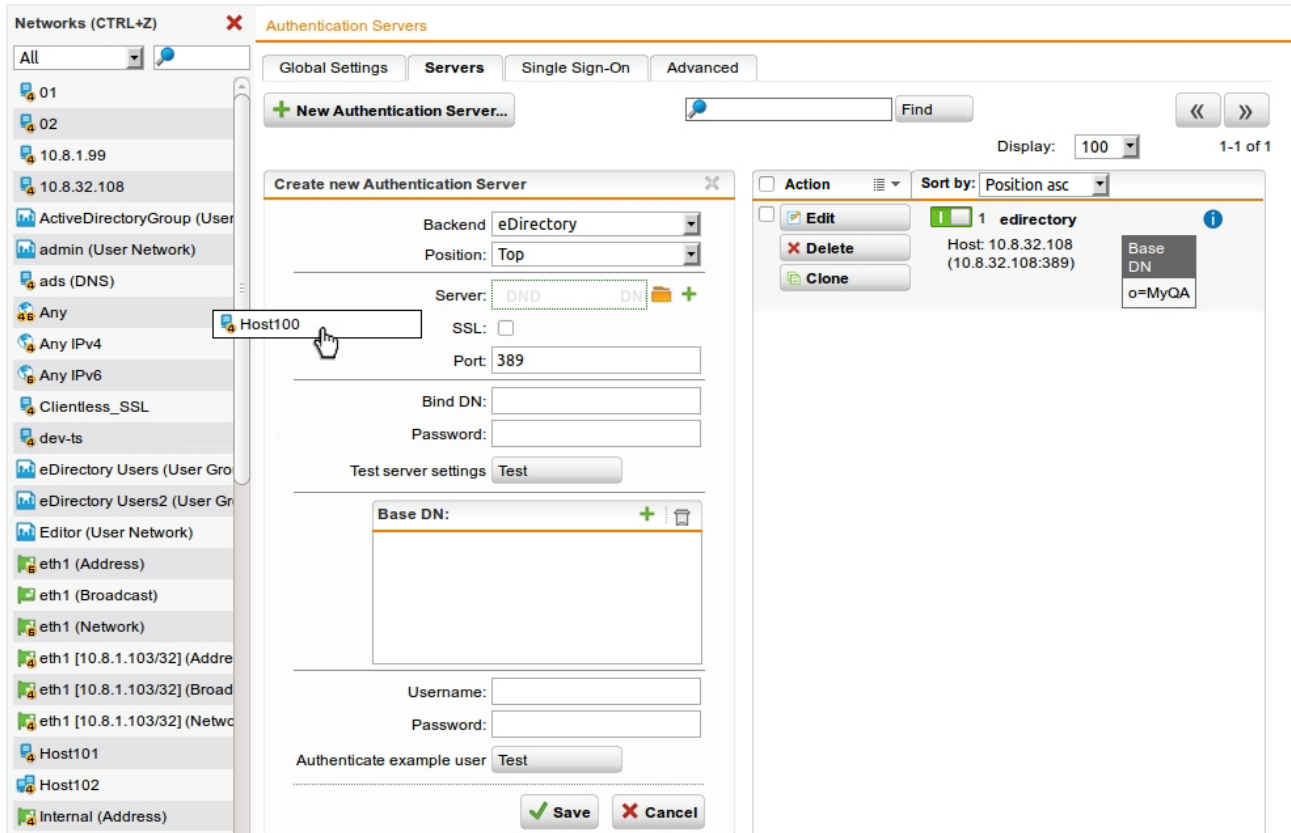


Figure 7 WebAdmin: Dragging an Object From the Object List **Networks**

An object list is opened automatically when you click the Folder icon (see section above), or you can open it manually via a keyboard shortcut (see **Management > WebAdmin Settings > User Preferences**).

The object list gives you quick access to WebAdmin objects like users/groups, interfaces, networks, and services to be able to select them for configuration purposes. Objects are selected simply by dragging and dropping them onto the current configuration.

According to the different existing object types, there are five different types of object lists. Clicking the Folder icon will always open the type required by the current configuration.

3 Dashboard

The Dashboard graphically displays a snapshot of the current operating status of Sophos UTM. With help of the Dashboard Settings icon on the top right you can, amongst others, configure which topic sections are displayed. Further information to the settings you find in **Dashboard > Dashboard Settings**.

The Dashboard displays by default when you log in to WebAdmin and shows the following information:

- **General Information:** Hostname, model, license ID, subscriptions, and uptime of the unit. The display color of a subscription switches to orange 30 days before its expiration date. During the last 7 days and after expiration, a subscription is displayed in red.
- **Version Information:** Information on the currently installed firmware and pattern versions as well as available updates.
- **Resource Usage:** Current system utilization, including the following components:
 - The CPU utilization in percent
 - The RAM utilization in percent. Please note that the total memory displayed is the part that is usable by the operating system. With 32-bit systems, in some cases that does not represent the actual size of the physical memory installed, as part of it is reserved for hardware.
 - The amount of hard disk space consumed by the log partition in percent
 - The amount of hard disk space consumed by the root partition in percent
 - The status of the UPS (uninterruptible power supply) module (if available)
- **Today's Threat Status:** A counter for the most relevant security threats detected since midnight:
 - The total of dropped and rejected data packets for which logging is enabled
 - The total of blocked intrusion attempts
 - The total of blocked viruses (all proxies)
 - The total of blocked spam messages (SMTP/POP3)
 - The total of blocked spyware (all proxies)
 - The total of blocked URLs (HTTP/S)
 - The total of blocked webserver attacks (WAF)
 - The total of blocked endpoint attacks and blocked devices
- **Interfaces:** Name and status of configured network interface cards. In addition, information on the average bit rate of the last 75 seconds for both incoming and outgoing traffic is shown. The values presented are obtained from bit rate averages based on samples that were taken at intervals of 15 seconds. Clicking a traffic value of an interface opens a Flow Monitor in a new window. The Flow Monitor displays the traffic of the

last ten minutes and refreshes automatically at short intervals. For more information, see chapter [Flow Monitor](#).

- **Advanced Threat Protection:** Status of Advanced Threat Protection. The display shows an alert if Advanced Threat Protection is enabled and it shows a counter of infected hosts. An alert will be automatically deleted after 72 hours. If you want to delete all alerts immediately, click the **Reset** button.
- **Current System Configuration:** Enabled/disabled representation of the most relevant security features. Clicking one of the entries opens the WebAdmin page with the respective settings:
 - **Firewall:** Information about the total of active firewall rules.
 - **Intrusion Prevention:** The intrusion prevention system (IPS) recognizes attacks by means of a signature-based IPS rule set.
 - **Web Filtering:** An application-level gateway for the HTTP/S protocol, featuring a rich set of web filtering techniques for the networks that are allowed to use its services.
 - **Network Visibility:** The layer 7 application control of Sophos allows to categorize and control network traffic.
 - **SMTP Proxy:** An application-level gateway for messages sent via the **Simple Mail Transfer Protocol** (SMTP).
 - **POP3 Proxy:** An application-level gateway for messages sent via the **Post Office Protocol 3** (POP3).
 - **RED:** Configuration of Remote Ethernet Device (RED) appliances for branch office security.
 - **Wireless Protection:** Configuration of wireless networks and access points.
 - **Endpoint Protection:** Management of endpoint devices in your network. Displays the number of connected endpoints and alerts.
 - **Site-to-Site VPN:** Configuration of site-to-site VPN scenarios.
 - **Remote Access:** Configuration of road warrior VPN scenarios.
 - **Web Application Firewall:** An application-level gateway to protect your web servers from attacks like cross-site scripting and SQL injection.
 - **HA/Cluster:** High availability (HA) failover and clustering, that is, the distribution of processing-intensive tasks such as content filtering, virus scanning, intrusion detection, or decryption equally among multiple cluster nodes.
 - **Sophos UTM Manager:** Management of your Sophos UTM appliance via the central management tool Sophos UTM Manager (SUM).
 - **Sophos Mobile Control:** Management of your mobile devices to control content, applications and emails.

- **Antivirus:** Protection of your network from web traffic that carries harmful and dangerous content such as viruses, worms, or other malware.
- **Antispam:** Detection of unsolicited spam emails and identification of spam transmissions from known or suspected spam purveyors.
- **Antispyware:** Protection from spyware infections by means of two different virus scanning engines with constantly updated signature databases and spyware filtering techniques that protects both inbound and outbound traffic.

3.1 Dashboard Settings

You can modify several settings concerning the Dashboard. Click the Dashboard Settings icon on the top right of the Dashboard to open the **Edit Dashboard Settings** dialog window.

Refresh Dashboard: By default, the Dashboard is updated at intervals of five seconds. You can configure the refresh rate from **Never** to **Every Minute**.

Left Column - Right Column: The Dashboard is divided into different topic sections providing information on the respective topic. With the two boxes **Left Column** and **Right Column** you can arrange those topic sections and add or remove them from display. Those settings will then be reflected by the Dashboard. Use the sort icons to sort the topic sections of a column. To add or remove a particular topic section from display, select or unselect its checkbox.

The topic sections displayed by default are described in the Dashboard chapter. These topic sections can also be displayed:

- **Web Protection: Top Apps:** Overview of the most used applications. In this section, hovering the cursor on an application displays one or two icons with additional functionality:
 - Click the **Block** icon to block the respective application from now on. This will create a rule on the [Application Control Rules](#) page. This option is unavailable for applications relevant to the flawless operation of Sophos UTM. WebAdmin traffic, for example, cannot be blocked as this might lead to shutting yourself out of WebAdmin. Unclassified traffic cannot be blocked, either.
 - Click the **Shape** icon to enable traffic shaping of the respective application. A dialog window opens where you are asked to define the rule settings. Click **Save** when you are done. This will create a rule both on the [Traffic Selectors](#) and on the [Bandwidth Pools](#) page. Traffic shaping is not available when viewing the **All Interfaces** Flow Monitor as shaping works interface-based.
 - Click the **Throttle** icon to enable traffic throttling of the respective application. A dialog window opens where you are asked to define the rule settings. Click **Save** when you are done. This will create a rule both on the [Traffic Selectors](#) and on the [Download Throttling](#) page. Download throttling is not available when viewing the **All Interfaces** Flow Monitor as throttling works interface-based.

- **Web Protection: Top Sites by Time:** Overview of the most visited domains according to time.
- **Web Protection: Top Sites by Traffic:** Overview of the most visited domains according to traffic.
- **Logging:** Status of the log partition of your Sophos UTM unit, including information about the disk space left and fillup rate.
- **News Feed:** News about Sophos and its products.
- **Chart: Concurrent Connections:** Daily statistics and histogram of the total of concurrent connections.
- **Chart: Log Partition Status:** Four-week statistics and histogram of the log partition usage.
- **Chart: CPU Usage:** Daily statistics and histogram of the current processor usage in percent.
- **Chart: Memory/Swap Usage:** Daily statistics and histogram of the memory and swap usage in percent.
- **Chart: Partition Usage:** Daily statistics and histogram of the usage of selected partitions in percent.

Enable autogrouping on Dashboard: Select this option to display the information on the Dashboard compactly. This option only affects the selected **Web Protection** items in the left column and the selected **Chart** items in the right column. If selected, the respective information elements will be displayed as overlaying tabs on the Dashboard. If unselected, the information elements are displayed side by side.

Click **Save** to save your settings.

3.2 Flow Monitor

The Flow Monitor of Sophos UTM is an application which gives quick access to information on network traffic currently passing the interfaces of Sophos UTM. It can be easily accessed via the Dashboard by clicking one of the interfaces at the top right. By clicking **All Interfaces** the Flow Monitor displays the traffic accumulated on all active interfaces. By clicking a single interface, the Flow Monitor displays the traffic of this interface only.

Note - The Flow Monitor opens in a new browser window. As pop-up blockers are likely to block this window it is advisable to deactivate pop-up blockers for WebAdmin.

The Flow Monitor provides two views, a chart and a table, which are described in the next sections. It refreshes every five seconds. You can click the **Pause** button to stop refreshing. After clicking **Continue** to start refreshing again, the Flow Monitor updates to the current traffic information.

Tabular View

The Flow Monitor table provides information on network traffic for the past five seconds:

#: Traffic is ranked based on its current bandwidth usage.

Application: Protocol or name of the network traffic if available. Unclassified traffic is a type of traffic unknown to the system. Clicking an application opens a window which provides information on the server, the port used, bandwidth usage per server connection, and total traffic.

Clients: Number of client connections using the application. Clicking a client opens a window which provides information on the client's IP address, bandwidth usage per client connection, and total traffic. Note that with unclassified traffic the number of clients in the table may be higher than the clients displayed in the additional information window. This is due to the fact that the term "unclassified" comprises more than one application. So, there might be only one client in the information window but three clients in the table, the latter actually being the connections of the single client to three different, unclassified applications.

Bandwidth Usage Now: The bandwidth usage during the last five seconds. Clicking a bandwidth opens a window which provides information on the download and upload rate of the application connection.

Total Traffic: The total of network traffic produced during the "lifetime" of a connection.

Example 1: A download started some time in the past and still going on: the whole traffic produced during the time from the beginning of the download will be displayed. Example 2: Several clients using facebook: as long as one client keeps the connection open, the traffic produced by all clients so far adds up to the total traffic displayed.

Clicking a total traffic opens a window which provides information on the overall download and upload rate of the application connection.

Actions: Depending on the application type, there are actions available (except for unclassified traffic).

- **Blocking:** Click the **Block** button to block the respective application from now on. This will create a rule on the [Application Control Rules](#) page. This option is unavailable for applications relevant to the flawless operation of Sophos UTM. WebAdmin traffic, for example, cannot be blocked as this might lead to shutting yourself out of WebAdmin. Unclassified traffic cannot be blocked, either.
- **Traffic shaping:** Click the **Shape** button to enable traffic shaping of the respective application. A dialog window opens where you are asked to define the rule settings. Click **Save** when you are done. This will create a rule both on the [Traffic Selectors](#) and on the [Bandwidth Pools](#) page. Traffic shaping is not available when viewing the **All Interfaces** Flow Monitor as shaping works interface-based.
- **Download throttling:** Click the **Throttle** button to enable download throttling for the respective application. A dialog window opens where you are asked to define the rule settings. Click **Save** when you are done. This will create a rule both on the [Traffic](#)

[Selectors](#) and on the [Download Throttling](#) page. Download throttling is not available when viewing the **All Interfaces** Flow Monitor as throttling works interface-based.

Chart View

The Flow Monitor chart displays the network traffic for the past ten minutes. The horizontal axis reflects time, the vertical axis reflects the amount of traffic while dynamically adapting the scale to the throughput.

At the bottom of the chart view a legend is located which refers to the type of traffic passing an interface. Each type of traffic has a different color so that it can be easily distinguished in the chart.

Note - The Flow Monitor displays much more differentiated information on traffic if Network Visibility is enabled (see chapter **Web Protection > Application Control > [Network Visibility](#)**).

When hovering the mouse cursor on a chart a big dot will appear, which gives detailed information of this part of the chart. The dot is clung to the line of the chart. As you move the mouse cursor the dot follows. In case a chart has several lines, the dot switches between them according to where you move the mouse cursor. Additionally, the dot changes its color depending on which line its information refer to, which is especially useful with lines running close to each other. The dot provides information on type and size of the traffic at the respective point of time.

4 Management

This chapter describes how to configure basic system settings as well as the settings of the web-based administrative interface of Sophos UTM among others. The **Overview** page shows statistics of the last WebAdmin sessions including possible changes. Click the **Show** button in the **Changelog** column to view the changes in detail.

Note - When reporting is turned off for **Authentication** under **Logging & Reporting > Reporting Settings > Settings**, section **Reporting Settings**, no WebAdmin session information will be displayed.

To end a WebAdmin session, click the **Log off** menu item. If you close the browser without clicking the **Log off** menu, the session times out after the time span defined on the **Management > WebAdmin Settings > Advanced** tab.

The following topics are included in this chapter:

- [System Settings](#)
- [WebAdmin Settings](#)
- [Licensing](#)
- [Up2Date](#)
- [Backup/Restore](#)
- [User Portal](#)
- [Notifications](#)
- [Customization](#)
- [SNMP](#)
- [Central Management](#)
- [High Availability](#)
- [Certificate Management](#)
- [Shutdown/Restart](#)

4.1 System Settings

The system settings menu allows you to configure basic settings of your Sophos UTM. You can set hostname, date and time settings as well as scan settings for antivirus engine or advanced threat protection options. Configuration or password resets and SSH shell access configurations can also be done.

4.1.1 Organizational

Enter these organizational information (if not yet done in the Installation Wizard):

- **Organization name:** Name of your organization.
- **City:** Location of your organization.
- **Country:** Country where your organization is located.
- **Administrator's email address:** Email address to reach the person or group technically responsible for the operation of your Sophos UTM.

Note that this data is also used in certificates for IPsec, email encryption and WebAdmin.

4.1.2 Hostname

Enter the hostname of your Sophos UTM as a **fully qualified domain name** (FQDN). The fully qualified domain name is an unambiguous domain name that specifies the node's absolute position in the DNS tree hierarchy, for example `utm.example.com`. A hostname may contain alphanumeric characters, dots, and hyphens. At the end of the hostname there must be a special designator such as `com`, `org`, or `de`. The hostname will be used in notification messages to identify Sophos UTM. It will also appear in status messages sent by the Web Filter. Note that the hostname does not need to be registered in the DNS zone for your domain.

4.1.3 Time and Date

On your Sophos UTM, date and time should always be set correctly. This is needed both for getting correct information from the logging and reporting systems and to assure interoperability with other computers on the Internet.

Usually, you do not need to set the time and date manually. By default, automatic synchronization with public Internet time servers is enabled (see section **Synchronize Time with Internet Server** below).

In the rare case that you need to disable synchronization with time servers, you can change the time and date manually. However, when doing so, pay attention to the following caveats:

- Never change the system time from standard time to daylight saving time or vice versa. This change is always automatically covered by your time zone settings even if automatic synchronization with time servers is disabled.
- Never change date or time manually while synchronization with time servers is enabled, because automatic synchronization would typically undo your change right away. In case you must set the date or time manually, remember to first remove all servers from the **NTP Servers** box in the **Synchronize Time with Internet Server** section below and click **Apply**.

- After manually changing the system time, wait until you see the green confirmation message, stating that the change was successful. Then reboot the system (**Management > Shutdown/Restart**). This is highly recommended as many services rely on the fact that time is changing continuously, not abruptly. Jumps in time therefore might lead to malfunction of various services. This advice holds universally true for all kind of computer systems.
- In rare cases, changing the system time might terminate your WebAdmin session. In case this happens, log in again, check whether the time is now correctly set and restart the system afterwards.

If you operate multiple interconnected Sophos UTM units that span several time zones, select the same time zone for all devices, for example UTC (Coordinated Universal Time)—this will make log messages much easier to compare.

Note that when you manually change the system time, you will encounter several side-effects, even when having properly restarted the system:

- **Turning the clock forward**
 - Time-based reports will contain no data for the skipped hour. In most graphs, this time span will appear as a straight line in the amount of the latest recorded value.
 - Accounting reports will contain values of 0 for all variables during this time.
- **Turning the clock backward**
 - There is already log data for the corresponding time span in time-based reports.
 - Most diagrams will display the values recorded during this period as compressed.
 - The elapsed time since the last pattern check (as displayed on the Dashboard) shows the value "never", even though the last check was in fact only a few minutes ago.
 - Automatically created certificates on Sophos UTM may become invalid because the beginning of their validity periods would be in the future.
 - Accounting reports will retain the values recorded from the future time. Once the time of the reset is reached again, the accounting data will be written again as normal.

Because of these drawbacks the system time should only be set once when setting up the system with only small adjustments being made thereafter. This especially holds true if accounting and reporting data needs to be processed further and accuracy of the data is important.

Set Date and Time

To configure the system time manually, select date and time from the respective drop-down lists. Click **Apply** to save your settings.

Set Time Zone

To change the system's time zone, select an area or a time zone from the drop-down list. Click **Apply** to save your settings.

Changing the time zone does not change the system time, but only how the time is represented in output, for example in logging and reporting data. Even if it does not disrupt services, we highly recommend to reboot afterwards to make sure that all services use the new time setting.

Synchronize Time with Internet Server

To synchronize the system time using a timeserver, select one or more NTP servers. Click **Apply** after you have finished the configuration.

NTP Servers: The **NTP Server Pool** is selected by default. This network definition is linked to the big virtual cluster of public timeservers of the **pool.ntp.org** project. In case your Internet service provider operates NTP servers for customers and you have access to these servers, it is recommended to remove the **NTP Server Pool** and use your provider's servers instead. When choosing your own or your provider's servers, using more than one server is useful to improve precision and reliability. The usage of three independent servers is almost always sufficient. Adding more than three servers rarely results in additional improvements, while increasing the total server load. Using both **NTP Server Pool** and your own or your provider's servers is not recommended because it will usually neither improve precision nor reliability.

Tip - If you want client computers to be able to connect to these NTP servers, add them to the allowed networks on the [Network Services > NTP](#) page.

Test Configured Servers: Click this button if you want to test whether a connection to the selected NTP server(s) can be established from your device and whether it returns usable time data. This will measure the time offset between your system and the servers. Offsets should generally be well below one second if your system is configured correctly and has been operating in a stable state for some time.

Right after enabling NTP or adding other servers, it is normal to see larger offsets. To avoid large time jumps, NTP will then slowly skew the system time, such that eventually, it will become correct without any jumping. In that situation, please be patient. In particular, in this case, do *not* restart the system. Rather, return to check about an hour later. If the offsets decrease, all is working as it should.

4.1.4 Shell Access

Secure Shell (SSH) is a command-line access mode primarily used to gain remote shell access to Sophos UTM. It is typically used for low-level maintenance or troubleshooting. To access this shell you need an SSH client, which usually comes with most Linux

distributions. For Windows you can download an SSH client for free, e.g. PuTTY (www.putty.org) or DameWare (www.dameware.com).

Shell User Passwords

Enter passwords for the default shell accounts `root` and `loginuser`. To change the password for one out of these two accounts only, just leave both input boxes for the other account blank.

Note - To enable SSH shell access, passwords must be set initially. In addition, you can only specify passwords that adhere to the password complexity settings as configured on the **Definitions & Users > Authentication Services > Advanced** tab. That is, if you have enabled complex passwords, shell user passwords must meet the same requirements.

Accessing Sophos UTM via SSH

To access Sophos UTM via SSH, connect via SSH port (TCP 22 by default) using your normal SSH utility program (e.g. PuTTY).

You can log in as

- `loginuser` by prompting `loginuser` and the associated password as set above at the SSH or
- `root` after you have logged in as `loginuser` by typing `su -` and entering the associated password as set above.

Note - Any modifications done by `root` will void your support. Even users not logged in as `root` have direct access to a lot of information on Sophos UTM and should be considered privileged users. Therefore, it is strongly recommended to grant SSH access only to administrators in WebAdmin. For any configuration change, use `instead`.

Allowed Networks

Use the **Allowed Networks** control to restrict access to this feature to certain networks only. Networks listed here will be able to connect to the SSH service.

Authentication

In this section you can define an authentication method for SSH access and the strictness of access. The following authentication methods are available:

- Password (default)
- Public key
- Password and public key

To use these options select the respective checkboxes. To use **Public Key Authentication** you need to upload the respective public key(s) into the field **Authorized Keys for loginuser** for all users allowed to authenticate via their public key(s).

Allow root login: You can allow SSH access for the root user. This option is disabled by default as it leads to a higher security risk. When this option is enabled, the root user is able to log in via their public key. Upload the public key(s) for the root user into the field **Authorized Keys for root**.

Note - For more information on generating SSH keys, see the [Sophos Knowledge Base](#) articles **Creating SSH key on a Linux based system**, [using PuTTY](#).

Click **Apply** to save your settings.

SSH Daemon Listen Port

This option lets you change the TCP port used for SSH. By default, this is the standard SSH port 22. To change the port, enter an appropriate value in the range from 1024 to 65535 in the **Port number** box and click **Apply**.

4.1.5 Scan Settings

Antivirus Engine Preferences

Select the antivirus engine which will be used in all single scan configurations throughout WebAdmin. In dual scan configurations, both antivirus engines will be used. Note that dual scan is not available with BasicGuard subscription. Click **Apply** to save your settings.

Advanced Threat Protection Options

Select the **Send suspicious content to SophosLabs for analysis** option to help improve protection. SophosLabs features a cloud-based sandbox where the behavior of suspected malware can be automatically observed and analyzed. This helps ensure speedy delivery of protection updates directly to your Sophos UTM. Disabling this functionality may increase defense response time.

All submissions are sent over a secure channel and are handled according to the [SophosLabs Information Security Policy](#).

Antispam Engine Preferences

A parent proxy is often required in those countries that require Internet access to be routed through a government-approved proxy server. If your security policy requires the use of a parent proxy, you can set it up here by selecting the host definition and port.

Use a parent proxy:

1. Select the checkbox to enable parent proxy use.
2. Select or add the host.
3. Enter the port of the proxy.

How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.

4. Click **Apply**.

Your settings will be saved.

Proxy requires authentication: If the parent proxy requires authentication, enter username and password here.

4.1.6 Reset Configuration or Passwords

The options on the **Reset Configuration or Passwords** tab let you delete the passwords of the shell users. In addition, you can execute a factory reset, and you can reset the system ID of Sophos UTM.

Reset System Passwords

Executing the **Reset System Passwords Now** function will reset the passwords of the following users:

- root (shell user)
- loginuser (shell user)
- admin (predefined administrator account)

In addition, to halt the system, select the **Shutdown system afterwards** option.

Security Note - The next person connecting to the WebAdmin will be presented an **Admin Password Setup** dialog window. Thus, after resetting the passwords, you should usually quickly log out, reload the page in your browser, and set a new admin password.

Besides, shell access will not be possible anymore until you set new shell passwords on the **Management > System Settings > Shell Access** tab.

Factory Reset

The **Run Factory Reset Now** function resets the device back to the factory default configuration. The following data will be deleted:

- System configuration
- Web Filter cache
- Logs and reporting data
- Databases

- Update packages
- Licenses
- Passwords
- High availability status

However, the version number of Sophos UTM Software will remain the same, that is, all firmware and pattern updates that have been installed will be retained.

Note - Sophos UTM will shut down once a factory reset has been initiated.

UTM ID Reset

With the **Reset UTM ID Now** function you reset the system ID of Sophos UTM to a new, random value. This is for example relevant when you use endpoint protection. Every Sophos UTM using endpoint protection identifies itself on Sophos LiveConnect with its unique system ID. When you for example clone a virtual Sophos UTM using endpoint protection and want the clone to use it too, you need to reset the system ID of the cloned Sophos UTM so that it can afterwards identify with the new system ID. During the reset, if turned on, endpoint protection will be turned off.

Note - Endpoints are connected to their Sophos UTM using the Sophos UTM system ID. If you reset the Sophos UTM system ID and there is no other Sophos UTM listening on the old Sophos UTM ID, their endpoints will need to be reinstalled.

Note - If a Sophos UTM is connected to Sophos UTM Manager, and you reset its Sophos UTM system ID, Sophos UTM will connect as a new device. If necessary, you can merge the two devices.

4.2 WebAdmin Settings

The tabs under **Management > WebAdmin Settings** allow you to configure basic WebAdmin settings such as access control, the TCP port, HTTPS certificates, user preferences, and the WebAdmin language, among other things.

4.2.1 General

On the **WebAdmin Settings > General** tab you can configure the WebAdmin language and basic access settings.

WebAdmin Language

Select the language of WebAdmin. The selected language will also be used for some WebAdmin output, e.g., email notifications or the executive report. Note that this setting is global and applies to all users. Click **Apply** to save your settings.

After changing the language, it might be necessary to empty your browser cache to make sure that all texts are displayed in the correct language.

WebAdmin Access Configuration

Here you can configure which users and/or networks should have access to WebAdmin.

Allowed Administrators: Sophos UTM can be administered by multiple administrators simultaneously. In the **Allowed Administrators** box you can specify which users or groups should have unlimited read and write access to the WebAdmin interface. By default, this is the group of **SuperAdmins**. How to add users is explained on the **Definitions & Users > Users & Groups > Users** page.

Allowed Networks: The **Allowed Networks** box lets you define the networks that should be able to connect to the WebAdmin interface. For the sake of a smooth installation of Sophos UTM, the default is **Any**. This means that the WebAdmin interface can be accessed from everywhere. Change this setting to your internal network(s) as soon as possible. The most secure solution, however, would be to limit the access to only one administrator PC through HTTPS. How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.

Log access traffic: If you want to log all WebAdmin access activities in the firewall log, select **Log access traffic** checkbox.

4.2.2 Access Control

On the **WebAdmin Settings > Access Control** tab you can create WebAdmin roles for specific users. This allows for a fine-grained definition of the rights WebAdmin users can have.

There are two user roles predefined:

Auditor: Users having this role can view logging and reporting data.

Readonly: Users having this role can view everything in WebAdmin without being able to edit, create, or delete anything.

To assign users or groups one of these roles, click the **Edit** button and add the respective users or groups to the **Members** box.

You can create further roles, according to your security policies. Proceed as follows:

1. On the **Access Control** tab, click **New Role**.

The **Add Role** dialog box opens.

2. Make the following settings:

Name: Enter a descriptive name for this definition.

Members: Add or select users or groups who are to have this role. How to add users is explained on the **Definitions & Users > Users & Groups > Users** page.

Grant read-only access (optional): Select this checkbox to grant read-only access to all areas of WebAdmin to the given members.

Rights: This box contains different rights levels for the different functions of WebAdmin: auditor and manager. A manager has several rights for the respective function(s), whereas an auditor has only viewing rights. A manager has not the right to create new users. User creation is only allowed by the SuperAdmin. You can choose one or more rights by selecting the respective checkbox in front of a right.

Example: You could give the user Jon Doe manager rights for Email Protection and additionally select the checkbox **Grant read-only access**. He would then be able to change settings in the Email Protection section and view all other areas of WebAdmin without being able to change anything there.

Comment (optional): Add a description or other information.

3. Click **Save**.

Your settings will be saved.

To either edit or delete a role, click the corresponding buttons. Note that the **Auditor** and **Readonly** roles cannot be deleted.

4.2.2.1 User Rights

Define multiple user rights for different areas of WebAdmin. In general an auditor has viewing rights and a manager additionally has writing rights. All user rights (except **Report Auditor**, **Mail Manager** and **Log File Auditor**) have permissions to view or edit, respectively:

- Definitions & Users > Network Definitions
- Definitions & Users > Service Definitions
- Definitions & Users > Time Period Definitions
- Logging & Reporting > View Log Files

Additionally, the following user rights are available:

| User Right | Permission to Read | Permission to Read/Write |
|------------------|---|---------------------------------|
| Log File Auditor | Management > Sophos Mobile Control Endpoint Protection > Web Control Logging & Reporting > View Log Files | |
| Mail Manager | Logging & Reporting > View Log Files Logging & Reporting > Email Protection | Email Protection > Mail Manager |

| User Right | Permission to Read | Permission to Read/Write |
|----------------------------|--|--|
| Mail Protection Manager | | Email Protection Logging & Reporting > Email Protection |
| Network Protection Auditor | Interfaces & Routing overview Network Protection Logging & Reporting > Network Usage Logging & Reporting > Network Protection | |
| Network Protection Manager | | Interfaces & Routing Overview Network Protection Logging & Reporting > Network Usage Logging & Reporting > Network Protection |
| Remote Access Auditor | Remote Access Logging & Reporting > Remote Access | |
| Remote Access Manager | | Remote Access Logging & Reporting > Remote Access |

| User Right | Permission to Read | Permission to Read/Write |
|------------------------------------|--|--|
| Report Auditor | Dashboard Interfaces & Routing overview Network Protection overview Web Protection overview Email Protection overview Advanced Protection overview Site-to-site VPN Remote Access overview Logging & Reporting: Hardware Network Usage Network Protection Web Protection Email Protection Wireless Protection Remote Access Webserver Protection Executive Report | |
| Web Application Protection Auditor | Webserver Protection Logging & Reporting > Webserver Protection | |
| Web Application Protection Manager | | Webserver Protection Logging & Reporting > Webserver Protection |
| Web Protection Auditor | Web Protection Logging & Reporting > Web Protection | |
| Web Protection Manager | | Web Protection Logging & Reporting > Web Protection |
| Wireless Protection Auditor | Wireless Protection Logging & Reporting > Wireless Protection | |

| User Right | Permission to Read | Permission to Read/Write |
|-----------------------------|--------------------|--|
| Wireless Protection Manager | | Wireless Protection Logging & Reporting > Wireless Protection |

It is possible to combine multiple user rights.

4.2.3 HTTPS Certificate

On the **Management > WebAdmin Settings > HTTPS Certificate** tab you can import the WebAdmin CA certificate into your browser, regenerate the WebAdmin certificate, or choose a signed certificate to use for WebAdmin and User Portal.

During the initial setup of the WebAdmin access you have automatically created a local CA certificate on Sophos UTM. The public key of this CA certificate can be installed into your browser to get rid of the security warnings when accessing the WebAdmin interface.

Import CA into Browser

To import the CA certificate, proceed as follows:

1. On the **HTTPS Certificate** tab, click **Import CA Certificate**.

The public key of the CA certificate will be exported.

You can either save it to disk or install it into your browser.

2. Install the certificate (optional).

The browser will open a dialog box letting you choose to install the certificate immediately.

Note - Due to different system times and time zones the certificate might not be valid directly after its creation. In this case, most browsers will report that the certificate has expired, which is not correct. However, the certificate will automatically become valid after a maximum of 24 hours and will stay valid for 27 years.

Import CA Certificate under iOS/Safari

To import the CA certificate under iOS with Safari browser, proceed as follows:

1. On the **HTTPS Certificate** tab, click **Import CA Certificate**.

The public key of the CA certificate will be exported and downloaded.

The file **WebAdmin.cer** is ready on your system and need to be installed manually. By default, you find the file **WebAdmin.cer** in your download folder.

2. Double click on **WebAdmin.cer**.

The Keychain Access will open a window letting you choose to trust the certificate.

3. Click **Always Trust**.

The CA certificate is listed in the key chain list.

Re-generate WebAdmin Certificate

The WebAdmin certificate refers to the hostname you have specified during the initial login. If the hostname has been changed in the meantime, the browser will display a security warning. To avoid this, you can create a certificate taking the new hostname into account. For that purpose, enter the hostname as desired and click **Apply**. Note that due to the certificate change, to be able to continue working in WebAdmin, you probably need to reload the page via your web browser, accept the new certificate, and log back into WebAdmin.

Choose WebAdmin/User Portal Certificate

If you do not want to import the CA certificate but instead use your own signed certificate or a Let's Encrypt certificate for WebAdmin/User Portal, you can select it here. However, for the certificate to be selectable from the drop-down list, you need to upload it first on the **Remote Access > Certificate Management > Certificates** tab in PKCS#12 format, containing the certificate, its CA and its private key. To use the uploaded certificate, select it from the **Certificates** drop-down list and click **Apply**.

4.2.4 RESTful API

On this page you can create and delete API tokens.

RESTful API allows users to write programs or scripts to configure one or more Sophos UTM units automatically. Before a program or script can use the RESTful API, Sophos UTM has to authenticate against it. There are two ways to authenticate against the RESTful API: Using the name of a Sophos UTM user with a password or an API token. API tokens are randomly generated strings that are associated with a Sophos UTM user, with the same access rights as the user. Authentication always uses HTTP basic authentication. If you use an API token instead of a Sophos UTM user, the HTTP basic authentication username is "token" and the API token is the password.

To create an API token, proceed as follows:

1. Enable RESTful API.

Click the toggle switch.

Note - When the Sophos UTM instance is running on Amazon Web Service (AWS), **RESTful API** is enabled by default.

2. Click the **New API Token** button.

The **Add API Token** dialog box opens.

3. Make the following settings:

API Token: Enter the API token or use the automatic generated API token.

Note - API token is an alternative authentication method like a password but without a username. It is recommended to use the automatic generated API token, generated by Sophos UTM, to ensure that the API token is unique and sufficiently complex.

User: Select a user for the API token.

4. Click **Save**.

The API token is added to the **API Token** list.

4.2.5 User Preferences

On the **Management > WebAdmin Settings > User Preferences** tab you can configure some user preferences such as global shortcuts and items per page for currently logged-in users.

WebAdmin Shortcuts Configuration

Here you can configure keyboard shortcuts to open and close the drag-and-drop object lists used in many configurations (for more information, see **WebAdmin > Object Lists**) or to set the cursor focus on the menu search box (see also **WebAdmin > WebAdmin Menu**). Use the drop-down list to select a different modifier key and the text box to enter a different character. You can also turn off the keyboard shortcut by selecting **Off** from the drop-down list.

If you want to return to the default settings, click the **Reset to Defaults** button. Click **Apply** to save your settings.

Table Pager Options

Here you can globally define the pagination of tables for WebAdmin, i.e. how many items are displayed per page. Click the drop-down list and select a value. Click **Apply** to save your settings.

WebAdmin Browser Title Customization

Here you can change the label which is displayed on the WebAdmin browser window or tab. You can enter plain text and/or use the following variables:

- %h: hostname
- %u: username
- %i: remote IP address

The default setting is `WebAdmin - User %u - Device %h` which translates for example into **WebAdmin - User admin - Device my_gateway.example.com**. Click **Apply** to save your settings.

4.2.6 Advanced

WebAdmin Idle Timeout

Log out after: In this field you can specify the period of time (in seconds) how long a WebAdmin session can remain idle before you are forced to log in again. By default, the idle timeout is set to 1,800 seconds. The range is from 60 to 86,400 seconds.

Log out on dashboard: By default, when you have opened the **Dashboard** page of WebAdmin, the auto logout function is enabled. You can, however, select this option to disable the auto logout function for Dashboard only.

WebAdmin TCP Port

By default, port 4444 is used as WebAdmin TCP port. In the **TCP Port** box you can enter either 443 or any value between 1024 and 65535. However, certain ports are reserved for other services. In particular, you can never use port 10443, and you cannot use the same port you are using for the User Portal or for SSL remote access. Note that you must add the port number to the IP address (separated by a colon) in the browser's address bar when accessing WebAdmin, for example `https://192.168.0.1:4444`

Terms of Use

Your company policies might demand that users accept terms of use when they want to access WebAdmin. Select the checkbox **Display "Terms of Use" after login** to enforce that users must accept the terms of use each time they log in to WebAdmin. Users will then be presented the terms of use after having logged in. If they do not accept them they will be logged out again.

You can change the terms of use text according to your needs. Click **Apply** to save your settings.

Sophos Adaptive Learning

You can help improving Sophos UTM by allowing it to transfer anonymous general information of your current configuration as well as information about detected viruses, or anonymous application fingerprints to Sophos. That kind of information cannot and will not be tracked back to you. No user-specific information is collected, i.e., no user or object names, no comments, or other personalized information. However, URLs for which a virus was found will be transmitted if web filter antivirus scanning is enabled.

The information is encrypted and transmitted to SophosLabs using SSL. Once delivered, the data is stored in an aggregated form and made available to the software architects of Sophos for making educated design decisions and thus improve future versions of Sophos UTM.

Send anonymous telemetry data: If enabled, Sophos UTM gathers the following information:

- Configuration and usage data: The system will send the following data to the servers of Sophos once a week.

- Hardware and license information (not the owner), for example:

```
processor Intel(R) Core(TM)2 Duo CPU E8200 @ 2.66GHz
memory 512MiB System Memory
eth0 network 82545EM Gigabit Ethernet Controller
id: UTM
version: 9.000000
type: virtual
license: standard
mode: standalone
active_ips: 2
system_id: 58174596-276f-39b8-854b-ffa1886e3c6c
```

The system ID identifies your Sophos UTM only in the way that information of your system is not accidentally collected twice, e.g. after a re-installation.

- Features in use (only whether they are turned on or off), for example:

```
main->backup->status: 1
main->ha->status: off
```

- Amount of configured objects, for example:

```
objects->interface->ethernet: 2
objects->http->profile: 5
```

- Enabled web filtering categories and exceptions

- CPU, memory and swap usage values in percent over the last seven days

- Virus data: The system writes the following data into a file that will be uploaded automatically to the servers of Sophos every 15 minutes.

- Information about viruses found by web protection, for example threat name, MIME type, URL of the request, or file size.

- Intrusion prevention data: The IPS log will be checked every minute for new alerts. If there is a new alert, the following data will be sent instantly to Sophos:

- Information about the alert, for example snort rule identifier and time stamp.
 - Hardware and license information (not the owner), for example CPU total and CPU usage, memory total and memory usage, SWAP total and SWAP usage, system ID, engine version and pattern version.

- Advanced Threat Protection data: The system generates and uploads advanced threat protection data every 30 minutes.
 - Gathered information: system ID, time stamp, Sophos threat name, source IP, destination host, detection component, detection detail, number of threats, rule identifier.

The data is sent every 24 hours.

Send anonymous application accuracy telemetry data: You can help to improve the recognition and classification abilities of network visibility and application control by participating in the Sophos UTM AppAccuracy Program. If enabled, the system will collect data in form of anonymous application fingerprints and will send that to the research team of Sophos. There the fingerprints will be used to identify unclassified applications and to improve and enlarge the network visibility and application control library.

4.3 Licensing

The availability of certain features on Sophos UTM is defined by licenses and subscriptions, i.e. the licenses and subscriptions you have purchased with your Sophos UTM enable you to use certain features and others not.

4.3.1 How to Obtain a License

Sophos UTM ships with a 30-day trial license with all features enabled. After expiration, you must install a valid license to further operate Sophos UTM. All licenses (including free home use licenses) are created in the [MyUTM Portal](#).

Once you have received the activation keys by email after purchasing a Sophos UTM license, you must use these keys in order to create your license or upgrade an existing license. To activate a license, you have to log in to the [MyUTM Portal](#) and visit the license management page. At the top of the page is a form where you can cut and paste the activation key from the email into this field. For more information, see the [MyUTM User Guide](#).

Figure 8 MyUTM Portal

Another form appears asking you to fill in information about the reseller you purchased the license from as well as your own details. The portal tries to pre-fill as much of this form as possible. Also, Sophos collects the Sophos UTM hardware serial number on this form if appropriate. After submitting this form, your license is created, and you are forwarded to the license detail page to download the license file.

To actually use the license, you must download the license file to your hard drive and then log in to your WebAdmin installation. In WebAdmin, navigate to the **Management > Licensing > Installation** tab and use the upload function to find the license text file on your hard drive. Upload the license file, and WebAdmin will process it to activate any subscriptions and other settings that the license outlines.

Note - The activation key you received by email cannot be imported into WebAdmin. This key is only used to activate the license. Only the license file can be imported to Sophos UTM.

4.3.2 Licensing Model

The modular licensing model of Sophos is very flexible. First, there is a base license, providing basic functions for free (see table below). Second, there are six additional subscriptions:

- Network Protection
- Web Protection
- Email Protection
- Endpoint Protection

- Wireless Protection
- Webserver Protection
- Sandstorm

Those can be purchased separately or in combination according to your needs. The FullGuard license contains all subscriptions. Each of the subscriptions enables certain features of the product. The table below gives you an overview which features are enabled with which subscription.

| Feature | Base License | Network | Web | Email | Endpoint | Wireless | Webserver | Sandstorm |
|--|--------------|---------|-----|-------|----------|----------|-----------|-----------|
| Management (Backup, Notifications, SNMP, SUM, ...) | ✓ | | | | | | | |
| Local Authentication (Users, Groups) | ✓ | | | | | | | |
| Basic Networking (Static Routing, DHCP, DNS, Auto QoS, NTP, ...) | ✓ | | | | | | | |
| Firewall/NAT (DNAT, SNAT, ...) | ✓ | | | | | | | |
| PPTP & L2TP Remote Access | ✓ | | | | | | | |
| Local Logging, standard executive reports | ✓ | | | | | | | |
| Intrusion Prevention (Patterns, DoS, Flood, Portscan ...) | | ✓ | | | | | | |
| IPsec & SSL Site-to-site VPN, IPsec & SSL Remote Access | | ✓ | | | | | | |

| Feature | Base License | Network | Web | Email | Endpoint | Wireless | Webserver | Sandstorm |
|---|--------------|---------|-----|-------|----------|----------|-----------|-----------|
| Advanced Net- working (Link Aggregation, link balancing, Policy Routing, OSPF, Multicast, custom QoS, Server Load Balancing, Generic Proxy ...) | | ✓ | (✓) | (✓) | | | | |
| User Portal | | ✓ | ✓ | ✓ | | | | |
| High Avail- ability | | ✓ | ✓ | ✓ | | | | |
| Remote Auth (AD, eDir, RADIUS, ...) | | ✓ | ✓ | ✓ | | | | |
| Remote Log- ging, advanced executive reports (archiv- ing, con- figuration) | | ✓ | ✓ | ✓ | | | | |
| Basic Web Fil- tering & FTP Proxy | | | ✓ | | | | | |
| Web & FTP mal- ware filtering | | | ✓ | | | | | |
| Application Con- trol | | | ✓ | | | | | |
| Basic SMTP Proxy, Quar- antine Report, Mail Manager | | | | ✓ | | | | |
| SMTP & POP3 malware fil- tering | | | | ✓ | | | | |
| Endpoint Pro- tection, Antivirus | | | | | ✓ | | | |
| Endpoint Pro- tection, Device Control | | | | | ✓ | | | |
| Wireless Pro- tection | | | | | | ✓ | | |

| Feature | Base License | Network | Web | Email | Endpoint | Wireless | Webserver | Sandstorm |
|----------------------|--------------|---------|-----|-------|----------|----------|-----------|-----------|
| Webserver Protection | | | | | | | ✓ | |
| Sandstorm | | | | (✓) | | | (✓) | ✓ |

There is also a BasicGuard subscription, available for Sophos UTM appliance model 100, which offers its own subset of the above mentioned features (for more information, visit the [UTM website](#)).

Sophos UTM units can also be managed and licensed by Sophos UTM Manager (SUM). In this case, the SUM provides the MSP (Managed Service Provider) license to Sophos UTM, and the **Installation** tab is disabled. Subscriptions can only be enabled by your SUM service provider.

For more detailed information on subscriptions and their feature set please refer to your certified Sophos UTM Partner or the [Sophos UTM webpage](#).

Missing subscriptions result in disabled tabs in WebAdmin. Above the tabs a licensing warning message is displayed.

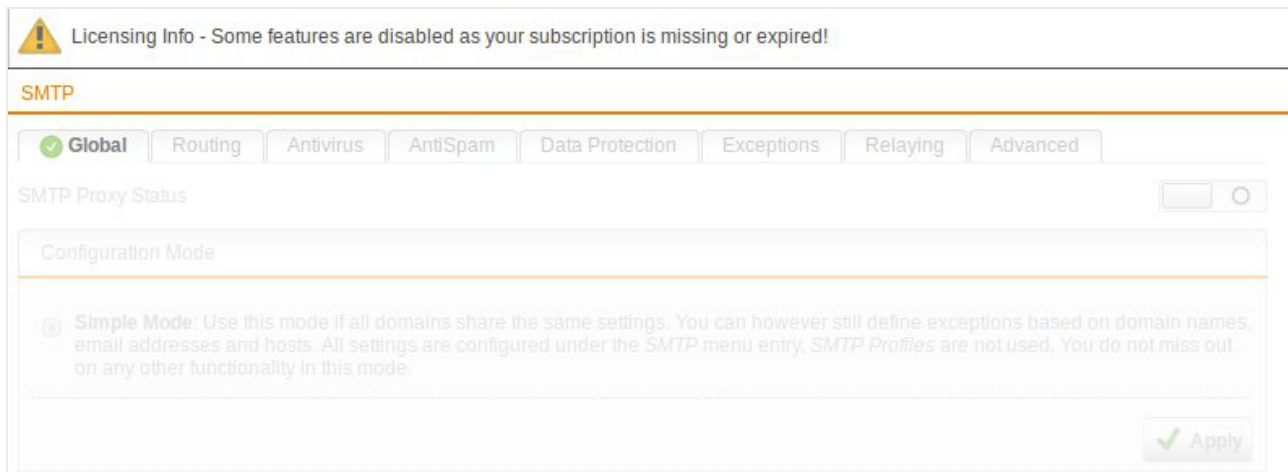


Figure 9 Licensing: Subscription Warning Message

Up2Dates

Each subscription enables full automatic update support, i.e. you will be automatically informed about new firmware updates. Also, firmware and pattern updates can be downloaded (and installed) automatically.

A base license without any subscriptions supports only limited automatic updates: solely pattern updates such as online help updates and the like will continue to be downloaded and installed automatically. You will, however, not be informed about available firmware updates, and the firmware updates have to be downloaded manually. Announcements for new firmware updates can be found in the [Sophos UTM Up2Date Blog](#).

Support and Maintenance

The base license comes with **Web Support**. You can use the [Sophos UTM Support Forum](#) and the [Sophos Knowledge Base](#).

As soon as you purchase one of the subscriptions you will be automatically upgraded to **Standard Support**, where you can additionally open a support case in [MyUTM Portal](#) or contact your certified Sophos UTM Partner.

There is also the possibility to purchase a **Premium Support** subscription, which offers 24/7 support with a Sophos UTM Engineer being your contact person.

4.3.3 Overview

The **Licensing > Overview** tab provides detailed information about your license and is divided into multiple areas:

- **Base License:** Shows basic license parameters such as ID, registration date, or type.
- **Network Protection, Email Protection, Web Protection, Webserver Protection, Wireless Protection, Sandstorm, Endpoint AntiVirus, BasicGuard:** These sections show information for subscriptions, such as whether they have been purchased and are therefore enabled, their expiration date, and a short description of the features they provide.

Note - When using MSP licensing, no expirations will be displayed, as licenses are managed by Sophos UTM Manager (SUM). Traditional keys and subscriptions are replaced with the SUM MSP system. For information about the managing SUM, see **Central Management > [Sophos UTM Manager](#)**.

- **Support Services:** Shows the support level plus the date until it is valid.

4.3.4 Installation

On the **Management > Licensing > Installation** tab you can upload and install a new license.

Note - When using MSP licensing, the tab is disabled, as licenses are managed by Sophos UTM Manager (SUM). New licenses can be installed by your SUM service provider. For information about the managing SUM, see **Central Management > [Sophos UTM Manager](#)**.

To install a license, proceed as follows:

1. Open the **Upload File** dialog window.
Click the Folder icon next to the **License file** box.
The **Upload File** dialog window opens.

2. Select the license file.

Browse to the directory where your license file resides.

Select the license file you want to upload.

3. Click **Start Upload**.

Your license file will be uploaded.

4. Click **Apply**.

Your license will be installed. Note that the new license will automatically replace any other license already installed.

The installation of the license will take approximately 60 seconds.

4.3.5 Active IP Addresses

The free Sophos UTM Manager license allows for unlimited IP addresses.

If you do not have a license allowing unlimited users (IP addresses), this tab displays information on IP addresses covered by your license. IP addresses that exceed the scope of your license are listed separately. If the limit is exceeded you will receive an email notification at regular intervals.

Note - IP addresses not seen for a period of seven days will automatically be removed from the license counter.

4.4 Up2Date

The **Management > Up2Date** menu allows the configuration of the update service of Sophos UTM. Regularly installed updates keep your Sophos UTM up-to-date with the latest bug fixes, product improvements, and virus patterns. Each update is digitally signed by Sophos—any unsigned or forged update will be rejected. By default new update packages are automatically downloaded to Sophos UTM. This option can be configured in the **Management > Up2Date > Configuration** menu.

There are two types of updates available:

- **Firmware updates:** A firmware update contains bug-fixes and feature enhancements for Sophos UTM Software.
- **Pattern updates:** A pattern update keeps the antivirus, antispam, intrusion prevention definitions as well as the online help up-to-date.

In order to download Up2Date packages, Sophos UTM opens a TCP connection to the update servers on port 443—allowing this connection without any adjustment to be made by you. However, if there is another firewall in between, you must explicitly allow the communication via the port 443 TCP to the update servers.

Updates in High Availability and Cluster Mode

In a high availability system there is an active and a passive node. When a new update is available, the passive node installs the most recent update and takes over the role of the active node. After that, the new passive node also starts the update process.

In a cluster you have several nodes: Master, Slave and Worker. If an update is available, the slave node and half of the worker nodes install the recent update. When the installation is finished, the slave node gets the role of the master. Then the other nodes start the update process. Therefore you have no service disruption. If one or more nodes are in **SYNCING** state, you cannot update Sophos UTM.

4.4.1 Overview

The **Management > Up2Date > Overview** tab provides a quick overview whether your system is up-to-date. From here, you can install new firmware and pattern updates.

Up2Date Progress

This section is only visible when you have triggered an installation process. Click the button **Watch Up2Date Progress in New Window** to monitor the update progress. If your browser does not suppress pop-up windows, a new window showing the update progress will be opened. Otherwise you will have to explicitly allow the pop-up window.

Note - A backup will be sent to the standard backup email recipients before an installation process is started.

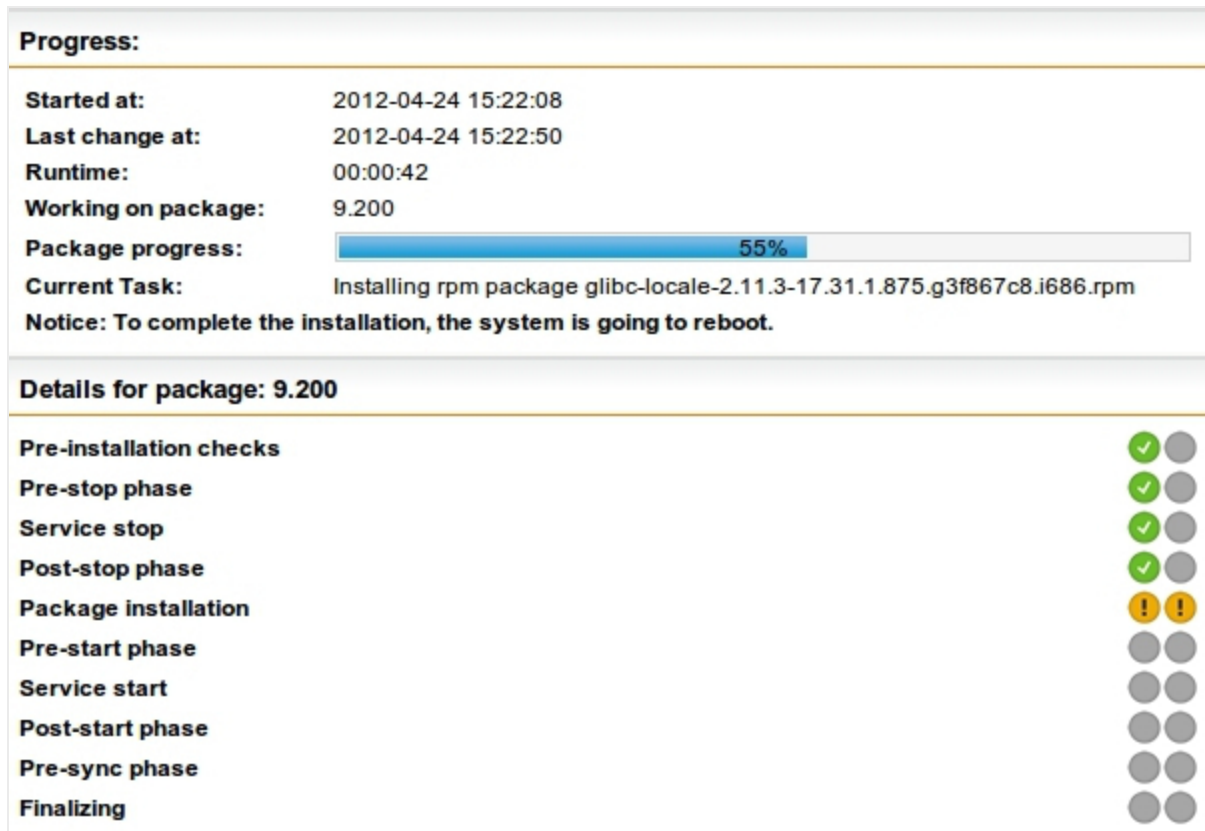


Figure 10 Up2Date: Progress Window

Firmware

The **Firmware** section shows the currently installed firmware version. If an update package is available, a button **Update to Latest Version Now** is displayed. Additionally, you will see a message in the **Available Firmware Up2Dates** section. You can directly download and install the most recent update that is displayed from here. Once you have clicked **Update To Latest Version Now**, you can watch the update progress in new a window. For this, click the **Reload** button of WebAdmin.

Available Firmware Up2Dates

If you have selected **Manual** on the **Configuration** tab, you can see a **Check for Up2Date Packages Now** button in this section, which you can use to download firmware Up2Date packages manually. If there are more than one Up2Dates available, you can select which one you are going to install. You can use the **Update to Latest Version Now** button in the **Firmware** section if you want to install the most recent version directly.

There is a **Schedule** button available for each Up2Date with which you can define a specific date and time where an update is to be installed automatically. To cancel a scheduled installation, click **Cancel**.

A note on "implicit" installations: There can be a constellation, where you schedule an Up2Date package which requires an older Up2Date package to be installed first. This

Up2Date package will be automatically scheduled for installation before the actual Up2Date package. However, you can define a specific time for this package, too, but you cannot prevent its installation.

Pattern

The **Pattern** section shows the current version of the installed patterns. If you have selected **Manual** on the **Configuration** tab, you can see a **Update Patterns Now** button. Use this button to download and install new patterns if available.

Note - The current pattern version does not need to be identical with the latest available pattern version in order for the Sophos UTM unit to be working correctly. A deviation between the current and the latest available pattern version might occur when new patterns are available, which, however, do not apply to the unit you are using. What patterns are downloaded is dependent on your settings and hardware configuration. For example, if you do not use the intrusion prevention feature of Sophos UTM, newly available IPS patterns will not be installed, thus increasing the divergence between the currently installed and the latest available pattern version.

4.4.2 Configuration

By default, new update packages are automatically downloaded to Sophos UTM.

Firmware Download Interval

This option is set to 15 minutes by default, that is Sophos UTM checks every 15 minutes for available firmware updates. Sophos UTM will automatically download (but not install) available firmware update packages. The precise time when this happens is distributed randomly within the limits of the selected interval. You can change the interval up to **Monthly** or you can disable automatic firmware download by selecting **Manual** from the drop-down list. If you select **Manual** you will find a **Check for Up2Date Packages Now** button on the **Overview** tab.

Pattern Download/Installation Interval

This option is set to 15 minutes by default, that is Sophos UTM checks every 15 minutes for available pattern updates. Sophos UTM will automatically download and install available pattern update packages. The precise time when this happens is distributed randomly within the limits of the selected interval. You can change the interval up to **Monthly** or you can disable automatic pattern download and installation by selecting **Manual** from the drop-down list. If you select **Manual** you will find a **Update Patterns Now** button on the **Overview** tab.

4.4.3 Advanced

The **Management > Up2Date > Advanced** tab lets you configure further Up2Date options such as selecting a parent proxy or Up2Date cache for your Sophos UTM.

Note - Update packages can be downloaded from [Sophos UTM Downloads](#).

Manual Up2Date Package Upload: If your Sophos UTM does not have direct access to the Internet or an Up2Date cache to download new update packages directly, you can upload the update package manually. To do so, proceed as follows:

1. Open the **Upload File** dialog window.
Click the Folder icon next to the **Up2Date file** box.
The **Upload File** dialog window opens.
2. Select the update package.
Click **Browse** in the **Upload File** dialog window and select the update package you want to upload.
3. Click **Start Upload**.
The update package will be uploaded to Sophos UTM.
4. Click **Apply**.
Your settings will be saved.

Parent Proxy

A parent proxy is often required in those countries that require Internet access to be routed through a government-approved proxy server. If your security policy requires the use of a parent proxy, you can set it up here by selecting the host definition and port.

Use a parent proxy:

1. Select the checkbox to enable parent proxy use.
2. Select or add the host.
3. Enter the port of the proxy.
How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.
4. Click **Apply**.
Your settings will be saved.

Proxy requires authentication: If the parent proxy requires authentication, enter username and password here.

Note - The parent proxy is disabled when the option **Use SUM Server as Up2Date Cache** is enabled on the **Central Management > Sophos UTM Manager** tab.

If a parent proxy is configured, Sophos UTM fetches both firmware and pattern Up2Dates from it.

4.5 Backup/Restore

The backup restoring function allows you to save the Sophos UTM settings to a file on a local disk. This backup file allows you to install a known good configuration on a new or mis-configured system.

Be sure to make a backup after every system change. This will ensure that the most current settings are always available. In addition, keep your backups in a safe place, as it also contains security-relevant data such as certificates and cryptographic keys. After generating a backup, you should always check it for readability. It is also a good idea to use an external program to generate MD5 checksums, for this will allow you to check the integrity of the backup later on.

4.5.1 Backup/Restore

On the **Management > Backup/Restore > Backup/Restore** tab you can create backups, import backups, as well as restore, download, send, and delete existing backups.

Available Backups

This section is only visible if at least one backup has been created before, either by the automatic backup function or manually (see section **Create Backup**).

All backups are listed giving date and time of their creation, their Sophos UTM version number, the user who created it, and the comment.

You can decide whether to download, restore, delete, or send a backup.

- **Download:** Opens a dialog window where you can decide to download the file encrypted (provide password) or unencrypted. Click **Download Backup**. You are prompted to select a location in the file system for the downloaded backup to reside.
- **Encrypt before downloading:** Before downloading or sending it, you have the option to encrypt the backup. Encryption is realized with Blowfish cipher in CBC mode. Provide a password (second time for verification). You will be asked for this password when importing the backup. The file extension for encrypted backups is `ebf`, for unencrypted backups `abf`.

Note - A backup does include administrator passwords, the high availability passphrase if configured, as well as all RSA keys and X.509 certificates. Since this information is confidential, it is good practice to enable encryption.

- **Restore:** Replaces the current system settings by the settings stored in a backup. You will have to log in again afterwards. If the selected backup contains all data you can log in directly. If the selected backup does not contain all data (see section **Create Backup**) you will have to enter the necessary data during the login procedure. If only the host data has been removed in the selected backup you can add an additional administrative email address if you want. It will be used where no recipient is given and as additional address where multiple recipients are possible.

Note - Backup restoration is only backward compatible. Only backups from versions smaller than the current one are considered functional. If there is a version conflict the version number in the **Available backups** list will be orange.

- Restoring backups from USB flash drive: You can also restore unencrypted backup files (file extension `.abf`) from a FAT formatted USB flash drive such as a simple USB stick. To restore a backup from a USB flash drive, copy the backup file to the USB flash drive and plug the device into Sophos UTM prior to boot up. If several backup files are stored on the device, the lexicographically first file will be used (numbers precede letters). For example, suppose the backup files `gateway_backup_2012-04-17.abf` and `2011-03-20_gateway_backup.abf` are both stored on the USB flash drive. During the boot up, the second file will be used because it begins with a number, although it is much older than the other one.

In addition, a lock file is created after the successful recovery of a backup, preventing the installation of the same backup over and over again while the USB flash drive is still being plugged in. However, if you want to install a previous backup once again, you must first reboot with no USB flash drive plugged in. This will delete all lock files. When you now boot with the USB flash drive plugged in again, the same backup can be installed.

- **Delete:** Deletes a backup from the list. Using the Delete icon on the bottom of the list, you can delete all selected backups. To select backups, click the checkboxes to the left of the backups or use the checkbox on the bottom to select all backups.
- **Send:** In a dialog window you can specify the email recipients. By default, the address(es) provided on the **Automatic Backups** tab are selected. Then decide if you want to send the file encrypted (provide password) or unencrypted. Click **Send Now** to send the backup.
 - **Encrypt before sending:** See **Encrypt before downloading** above.

Create Backup

Backups are not only useful to restore your system after an (unwanted) change or failure. Moreover, they can be used as templates to set up systems that should have a similar configuration so that those systems are already pre-configured in some way which can save you a lot of time. For that, you can strip certain information from a backup before it is created, e.g. hostname, certificates, etc.

To create a backup with the current system state, proceed as follows:

1. In the **Create Backup** section, enter a comment (optional).

The comment will be displayed along with the backup in the backup list.

2. Make the following settings (optional):

Remove unique site data: Select this option to create the backup without host-specific data. This includes hostname, system ID, SNMP data, HA data, license, shell user passwords, and anonymization passwords as well as all certificates, public and private keys, fingerprints and secrets of Email Protection, Web Protection, Client Authentication, IPsec, SSL VPN, RED, WebAdmin, Web Application Firewall, and proxies.

Such backups are a convenient means to set up multiple similar systems. There are some things to consider though: 1) After restoring you are presented the basic system setup. 2) Only the first interface is configured, the primary IP address being the one that has been configured during installation. All other interfaces will be disabled and set to IP address 0.0.0.0.

Caution - Although most of the host-specific data is being removed, such a backup template still contains confidential information, such as user passwords. Therefore it is good practice to always encrypt it.

Remove administrative mail addresses: Select this option to additionally remove the administrator email addresses used in various parts of Sophos UTM, e.g. postmaster addresses in Email Protection, notifications, etc. This option is especially useful for IT partners who set up Sophos UTM devices at customers' sites.

3. Click **Create Backup Now**.

The backup appears in the list of available backups.

If a backup is created with one or both of the options selected, the backup entry contains a respective additional comment.

Note - The HA settings are part of the hardware configurations and cannot be saved in a backup. This means that the HA settings will not be overwritten by a backup restore.

Import Backup

To import a backup, proceed as follows:

1. Click the Folder icon and select a backup file to upload.
2. Click **Start Upload**.
3. Decrypt the backup.

If you want to upload an encrypted backup file, you must provide the correct passphrase prior to importing the backup.

4. Click **Import Backup** to import the backup.

Note that the backup will not instantly be restored. Instead, it will be added to the **Available backups** list.

4.5.2 Automatic Backups

On the **Management > Backup/Restore > Automatic Backup** tab you can configure several options dealing with the automatic generation of backups. To have backups created automatically, proceed as follows:

1. Enable automatic backups on the **Automatic Backups** tab.

Click the toggle switch.

The toggle switch turns green and the **Options** and **Send Backups by Email** areas become editable.

2. Select the interval.

Automatic backups can be created at various intervals.

You can choose between daily, weekly, and monthly.

3. Specify the maximum number of backups to be stored.

Automatically created backups are stored up to the number you enter here. Once the maximum has been reached, the oldest automatic backups will be deleted.

Note that this applies to automatically created backups only. Backups created manually and backups created automatically before a system update will not be deleted.

4. Click **Apply**.

Your settings will be saved.

The toggle switch turns green.

To save you the work of backing up your Sophos UTM manually, the backup feature supports emailing the backup file to a list of defined email addresses.

Recipients: Automatically generated backups will be sent to users contained in the **Recipients** box. Multiple addresses can be added. By default, the first administrator's email address is used.

Encrypt email backups: In addition, you have the option to encrypt the backup (Triple DES encryption).

Password: Once you have selected the **Encrypt email backups** option, provide a password (second time for verification). You will be prompted for this password when importing the backup.

Automatically created backups will appear in the **Available Backups** list on the **Backup/Restore** tab, marked with the `System` flag indicating the **Creator**. From there, they can be restored, downloaded, or deleted as any backup you have created by yourself.

4.6 User Portal

The User Portal of Sophos UTM is a special browser-based application on the unit providing personalized email and remote access services to authorized users. It can be accessed by browsing to the URL of Sophos UTM, for example, `https://192.168.2.100` (note the HTTPS protocol and the missing port number 4444 you would normally enter for accessing the WebAdmin interface).

Among other things, the User Portal contains the email quarantine, which holds messages that are infected by malicious software, contain suspicious attachments, are identified as spam, or contain certain expressions you have explicitly declared forbidden.

On the login page, users can select a language from the drop-down list located on the right side of the header bar.

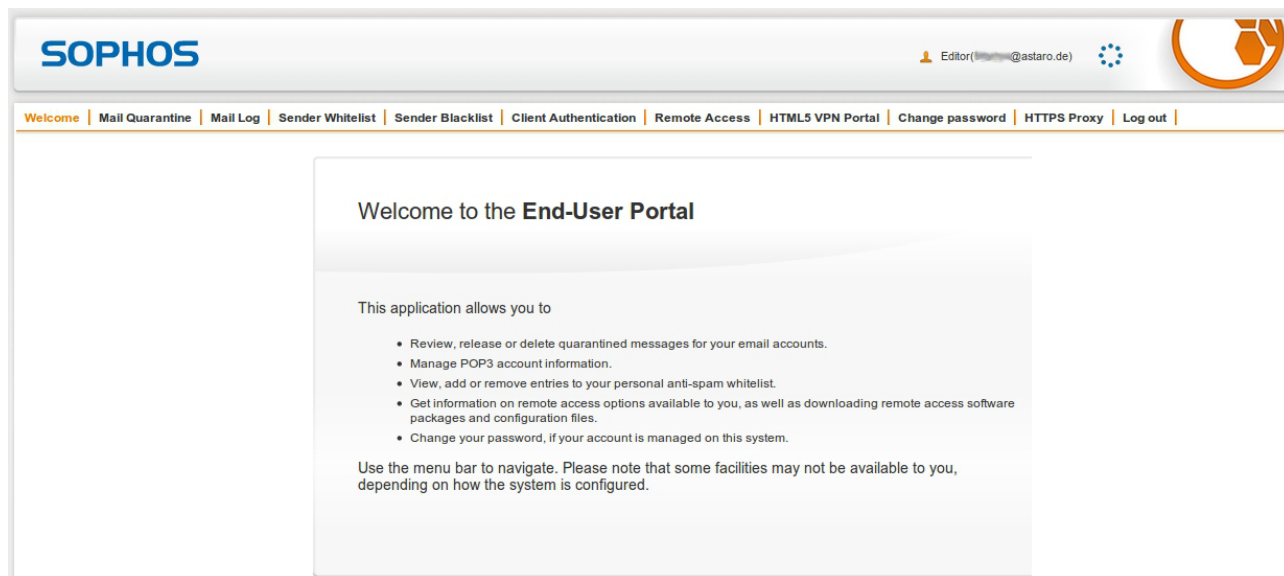


Figure 11 User Portal: Welcome Page

On the User Portal, users have access to the following services:

- **SMTP Quarantine:** Users can view and release messages held in quarantine. Which types of messages they are allowed to release can be determined on the **Email Protection > Quarantine Report > Advanced** tab. (The tab is called **Mail Quarantine** when POP3 is disabled.)

- **SMTP Log:** Here, users can view the SMTP log of their mail traffic. (The tab is called **Mail Log** when POP3 is disabled.)
- **POP3 Quarantine:** Users can view and release messages held in quarantine. Which types of messages they are allowed to release can be determined on the **Email Protection > Quarantine Report > Advanced** tab. (The tab is called **Mail Quarantine** when SMTP is disabled.)
- **POP3 Accounts:** Users can enter their credentials of POP3 accounts they use. Only those spam emails will appear in the User Portal for which POP3 account credentials are given. Users for whom POP3 account credentials are stored will receive an individual Quarantine Report for each email address. Note that allowed POP3 servers must be specified on the **Email Protection > POP3 > Advanced** tab.
- **Sender Whitelist:** Here, senders can be whitelisted, thus messages from them are not regarded as spam. However, emails with viruses or unscannable emails will still be quarantined. Whitelisted senders can be specified by either entering valid email addresses (e.g., `jdoe@example.com`) or all email addresses of a specific domain using an asterisk as wildcard (e.g., `*@example.com`). If the exact email address is listed on both, whitelist and blacklist, the address is blacklisted.
- **Sender Blacklist:** Here, users can blacklist email senders, e.g. `phishing@hotmail.com`, or whole domains, e.g. `*@hotmail.com`. The blacklist is applied to both SMTP and POP3 email, if these are in use on the system. Blacklisted senders can be specified by clicking the Plus icon, entering the address and clicking the Tick icon to save it.
- **Hotspots:** Here, users can find and manage access data for hotspots. The tab is only available if at least one hotspot has been enabled for the specific users. For hotspots of the type password-of-the-day, the current password is available and can be changed. For hotspots of the type voucher, vouchers can be generated, printed, exported, and deleted. A list of generated vouchers shows information on their usage. For more information see **Wireless Protection > Hotspots**.
- **Client Authentication:** Here, users can download the setup file of Sophos Authentication Agent (SAA). The SAA can be used as authentication mode for the Web Filter. The **Client Authentication** tab is only available if Client Authentication is enabled. For more information see **Definitions & Users > Client Authentication**.
- **OTP Token:** Here, users find one or more QR codes and the respective detail information for configuring the one-time password service of Sophos UTM on their mobile devices. For more information see **Definitions & Users > Authentication Services > One-time Password**.
- **Remote Access:** Users can download remote access client software and configuration files provided for them. However, the **Remote Access** tab is only available if at least one remote access mode has been enabled for the specific users.
- **HTML5 VPN Portal:** Here, users can open VPN connections to predefined hosts using predefined services. The tab is only available if at least one VPN connection has been

enabled for the specific users. For more information, see **Remote Access > [HTML5 VPN Portal](#)**.

- **Change Password:** Users can change the password for accessing the User Portal.
- **HTTPS Proxy:** Users can import the HTTP/S Proxy CA certificate to get rid of error messages when visiting secure websites. After clicking **Import Proxy CA Certificate**, users will be prompted by their browser to trust the CA for different purposes. For more information see **Web Protection > Filtering Options > [HTTPS CAs](#)**.
- **Log out:** Click here to log out of the User Portal. This is only necessary when you have selected **Remember My Login** at login (which creates a cookie) and you want to explicitly logout and have this cookie deleted. Otherwise, there is no need to use the **Log out** link—closing the browser tab or window is sufficient.

4.6.1 Global

On the **Management > User Portal > Global** tab you can enable the User Portal. Additionally you can specify which networks and which users should be granted access to the User Portal.

To enable User Portal access, proceed as follows:

1. Enable the User Portal.

Click the toggle switch.

The toggle switch turns amber and the **User Portal Options** area becomes editable.

2. Select allowed networks.

Add or select the networks that should be allowed to access the User Portal. How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.

3. Select allowed users.

By default, all users are allowed to access the User Portal, where “all users” means users known to the system. For backend authentication, the user directory must be synchronized with the UTM for those users to be able to log in to the User Portal.

If you want to grant access to particular users or groups, unselect the **Allow all users** checkbox and select users or user groups individually.

4. Click **Apply**.

Your settings will be saved.

The toggle switch turns green.

4.6.2 Advanced

On the **Advanced** tab you can configure an alternative hostname and port number for the User Portal as well as language and security options.

Language

During login, the User Portal fetches the language settings of the web browser and loads the respective locales to display the portal in the same language as the browser defaults. For browser language settings that are not available for the User Portal, you can select here which language will be the fallback language. Users have additionally the option to select a language on the User Portal login page.

Security

The User Portal uses cookies to track sessions. Persistent cookies permit to return after having closed a session without having to log in again. They can always be deleted from user-side, however, by using the **Log Out** button of the User Portal.

Disable Portal Items

For the features listed here a menu item is displayed in the User Portal when the respective feature has been enabled in WebAdmin. However, here you can define menu items that should *not* be displayed in the User Portal. To do so, select the respective option(s) and click **Apply**.

Network Settings

Hostname: By default, this is the hostname of Sophos UTM as given on the **Management > System Settings > Hostname** tab. However, if you want to grant access to the User Portal for users gaining access over the Internet, it might be necessary to enter an alternative host-name here that can be publicly resolved.

Listen address: Default value is **Any**. When using the web application firewall you need to give a specific interface address for the service to listen for User Portal connections. This is necessary for the User Portal connection handler and the web application firewall to be able to differentiate between the incoming SSL connections.

Port: By default, port 443 for HTTPS is selected. You can change the port to any value in the range from 1024 to 65535. Note that you cannot select either 10443 or the **WebAdmin TCP Port**, which is configured on the **Management > WebAdmin Settings > Advanced** tab. Independent of the defined port, the User Portal can always be accessed via HTTPS only.

Welcome Message

You can customize the welcome message of the User Portal. Simple HTML markup and hyperlinks are allowed.

Note - Changing the welcome message is not possible when using a home use license.

4.7 Notifications

Sophos UTM comes with a notification feature that informs you immediately about all sorts of security-relevant events occurring on Sophos UTM, either by email or SNMP trap. All events that might possibly be of interest to an administrator are represented by various error, warning, and information codes. What notifications are sent depends on the selection you have configured on the **Notifications** tab.

4.7.1 Global

On the **Management > Notifications > Global** tab you can configure the sender address (i.e., the **From** address) to be taken for notification emails sent by Sophos UTM. By default, this is `do-not-reply@fw-notify.net`. If you want to change this address, it is advisable to enter an email address of your domain, as some mail servers might be configured to check whether a given sender address really exists.

In addition, you can specify the recipients of the Sophos UTM notifications. By default, this is the administrator's email address you had entered during the initial setup.

Limit notifications: Some security-relevant events such as detected intrusion attempts will create a lot of notifications, which may quickly clog the notification recipients' email inboxes. For this reason, Sophos UTM has sensible default values to limit the number of notifications sent per hour. If you disable this option, every security-relevant event will create a notification, provided the event is configured so as to send a notification on the **Management > Notifications > Notifications** tab.

Device Specific Text

Here you can enter a description of Sophos UTM, e.g. its location, which will be displayed in the notifications sent.

4.7.2 Notifications

Notifications are divided into three categories:

- **CRIT:** Messages informing about critical events that might render Sophos UTM inoperable.
- **WARN:** Warnings about potential problems that need your attention, for example, exceeding thresholds.
- **INFO:** Merely informational messages such as the restart of a system component, for example.

You can select whether you want to send the notification as email or SNMP trap.

4.7.3 Advanced

In case your Sophos UTM cannot send emails directly, you can configure a smarthost to send the emails. Proceed as follows:

1. Enable **External SMTP server status** on the **Management > Notifications > Advanced** tab.

Click the toggle switch.

The toggle switch turns amber and the **External SMTP Server** area becomes editable.

2. Enter your smarthost.

You can use drag-and-drop. The port is preset to the default SMTP port 25.

- **Use TLS:** Select this checkbox if you want to enforce STARTTLS when sending notifications. Note that notifications will not be sent if the smarthost does not support TLS.

3. Specify the authentication settings.

If the smarthost requires authentication, check the **Authentication** checkbox and enter the corresponding username and password.

4. Click **Apply**.

Your settings will be saved.

The toggle switch turns green.

4.8 Customization

The tabs under **Management > Customization** allow you to customize and localize email notifications and status messages created by Sophos UTM, making it possible to adapt those messages to both your policy and your corporate identity.

In addition, you can edit and upload custom web templates to further change the way that users receive block messages and other notifications.

Note - Customization is not possible when using a home use license.

4.8.1 Global

On the **Management > Customization > Global** tab you can customize global display options for the system messages presented to users. Note that UTF-8/Unicode is supported.

The example below shows the customizable global options (**Company Logo** and **Custom Company Text**), along with an example of a "Content Block" message, which is configured on the **Management > Customization > Web Messages** page.

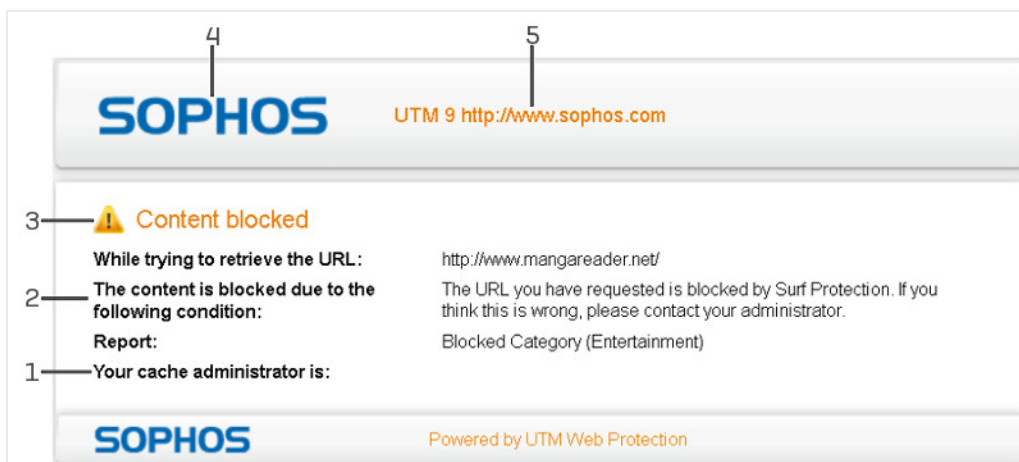


Figure 12 Customization: Example Blocked Page and Its Customizable Parts

| | |
|---|---|
| 1 | Web Filtering administrator information |
| 2 | Description |
| 3 | Subject |
| 4 | Company Logo |
| 5 | Custom company text |

Company Logo

You can upload your own logo/banner (in `png` format only), which is used in the following contexts:

- Web messages
- POP3 blocked messages
- Quarantine release status messages (which will appear in the Quarantine Report after a spam email has been released from the quarantine or whitelisted.)
- Quarantine Report

Some of the messages displayed to users have been optimized for the default logo (195 x 73 pixels with a transparent background). For the best-looking results, use an image that has the same attributes.

Note - With HTTPS connections, if the logo is larger than 512 KB, it will not be embedded.

To upload a logo:

1. Open the **Upload file** dialog window.
Click the Folder icon next to the **Upload new logo** box.
The **Upload File** dialog window opens.
2. Select the logo.

Browse to the location where the logo that you want to upload resides.

Once you have selected the logo, click **Start Upload**.

3. Click **Apply**.

The logo will be uploaded, replacing the file that is already installed.

Custom Company Text

Customize the message that will be displayed beneath the company logo whenever a website was blocked by the virus scanner or the content filter of Sophos UTM. For example, you might want to enter your (the administrator's) contact data here.

4.8.2 Web Messages

Customize the text for web filtering messages displayed by Sophos UTM. Some messages are displayed when users are restricted from downloading files that are too large, are of a certain type, or contain a virus. Other messages are displayed when users attempt to access restricted websites or applications, while users are downloading files, or when users are required to authenticate with Sophos UTM. You can translate messages into other languages or, for example, modify the messages to show customer support contact information.

Note - The text entered in the fields of the **Web Messages** tab can be referenced in custom web templates. For more information, see chapter [Web Templates](#).

The following messages are configurable:

- **Content Block**
 - **Surf Protection:** This message is displayed when users attempt to access a webpage whose URL matches a category that is configured to be blocked or the site's reputation falls below the specified threshold. For more information, see **Web Protection > Web Filtering**.
 - **Blacklist:** This message is displayed when users attempt to retrieve a webpage that matches a blacklisted URL. To blacklist URLs, see **Web Protection > Web Filtering > Policies > Website Filtering**.
 - **MIME Type:** This message is displayed when users request a file that is a blocked MIME type. For more about specifying MIME types, see **Web Protection > Web Filtering > Policies > Downloads**.
 - **File Extension:** This message is displayed when users request a blocked file extension. For more about specifying file extensions, see **Web Protection > Web Filtering > Policies > Downloads**.
 - **File Size:** This message is displayed when users request a file that exceeds the file size limit. To configure download size limits, see **Web Protection > Web Filtering > Policies > Downloads**.

- **Application Control:** This message is displayed when users attempt to use a type of network traffic that is configured to be blocked by Application Control. For more information, see **Web Protection > [Application Control](#)**.
- **Virus Detected:** This message is displayed when a file is blocked due to a virus infection. For more information on configuring virus protection, see **Web Protection > Web Filtering > Policies > [Antivirus](#)**.
- **Download/Scan**
 - **Download in Progress:** This message is displayed while a file is being downloaded. See **[Download Manager](#)**.
 - **Virus Scan in Progress:** This message is displayed while Sophos UTM scans files for malicious content. See **[Download Manager](#)**.
 - **Download Complete:** This message is displayed after a file has been fully downloaded, scanned, and determined safe. See **[Download Manager](#)**.
- **Authentication**
 - **Transparent Mode Authentication:** This option only applies if you use Web Filtering in Transparent Mode, and you have selected the "Browser" authentication mode. For more information, see **Web Protection > Web Filter Profiles > [Filter Profiles](#)**. The text is displayed on the authentication page, where users must log in before using the Web Filter. If the **Terms of Use** field is filled in, a disclaimer is displayed on the authentication page. If this field is empty (as it is by default), a disclaimer is not displayed.
 - **Bypass Content Block:** This message is displayed when a page is blocked by Surf Protection and the option to bypass blocking option is enabled (see **Web Protection > Filtering Options > [Bypass Users](#)**). If the **Terms of Use** field is filled in, a disclaimer is displayed on the authentication page. If this field is empty (as it is by default), a disclaimer is not displayed.
- **Error**
 - **Server Error:** This message is displayed if an error occurs while processing the user's request.
- **Administrator Information:** Here you can enter information about the administrator managing the Web Filter, including the administrator's email address.

4.8.2.1 Modifying a Web Message

To modify a message, do the following:

1. Select the message.

From the **Page** drop-down list, select the end user message that you want to edit.

The **Subject** and **Description** for that message are displayed.

2. Modify the subject and/or description.

Modify the default text as necessary.

3. Click **Apply**.

The text changes are saved.

4.8.2.2 Download Manager

If the Web Filter is enabled, the web browser will display the following download pages while downloading content greater than 1 MB in size that is neither text nor an image. The download page will not be displayed when video or audio streams are requested or more than 50 % of the file has been downloaded within five seconds.

The information provided on the download pages can be customized on the **Web Messages** tab.

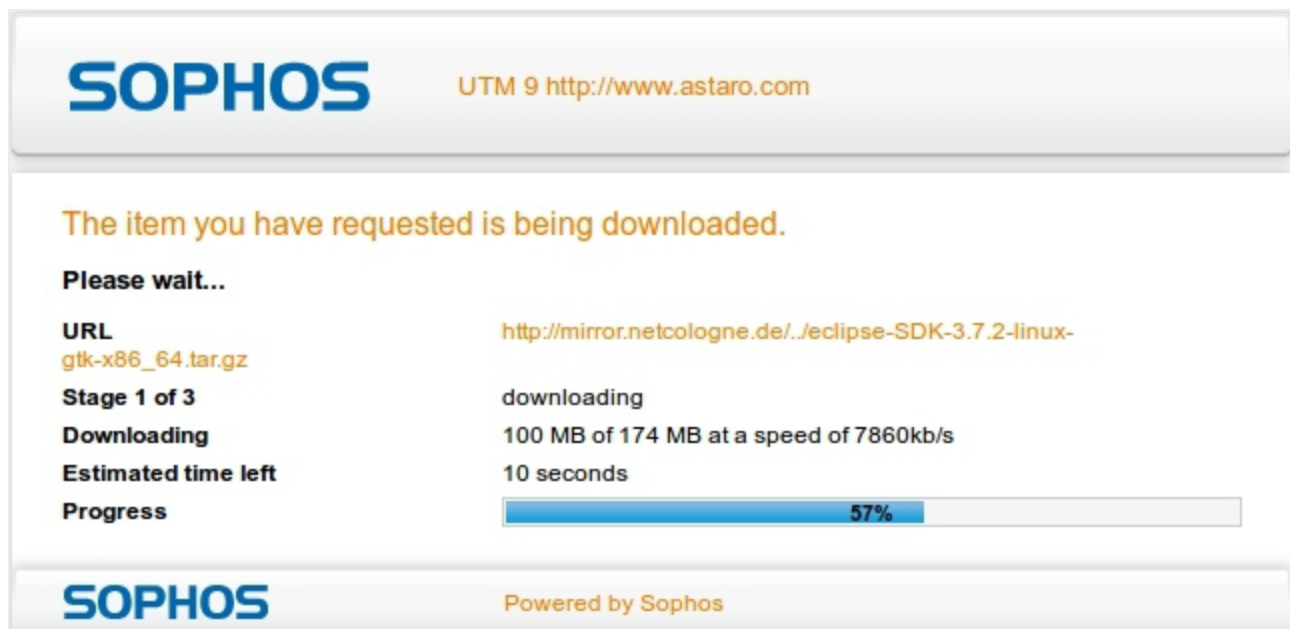


Figure 13 Customization: HTTP Download Page Step 1 of 3: Downloading File

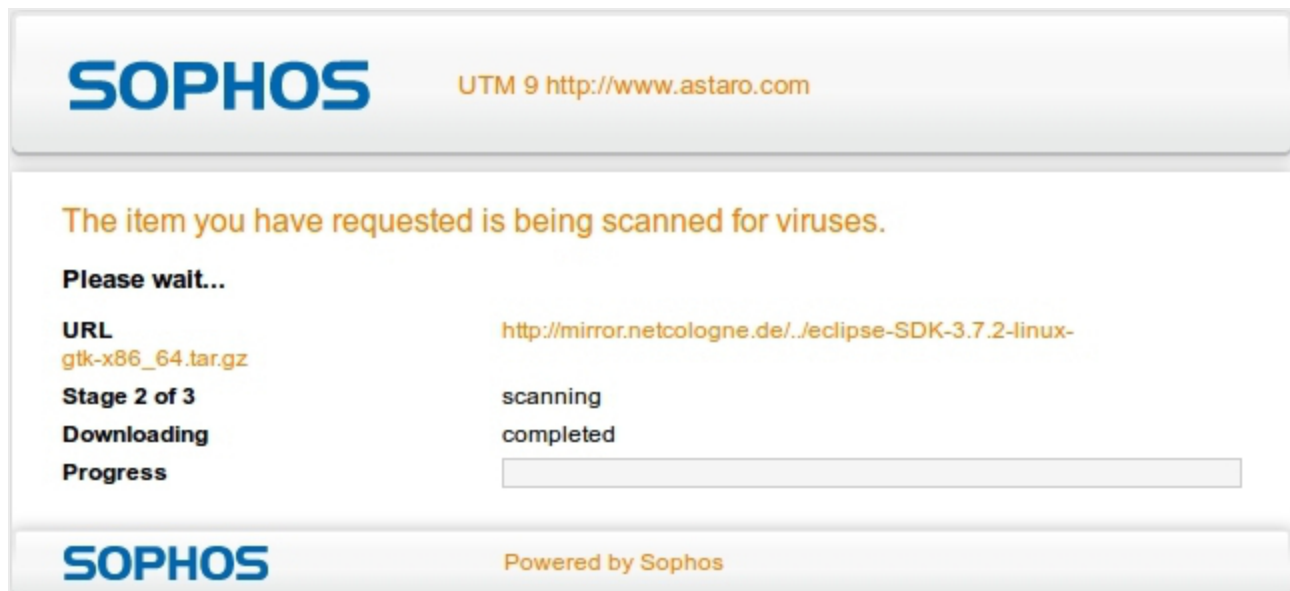


Figure 14 Customization: HTTP Download Page Step 2 of 3: Virus Scanning

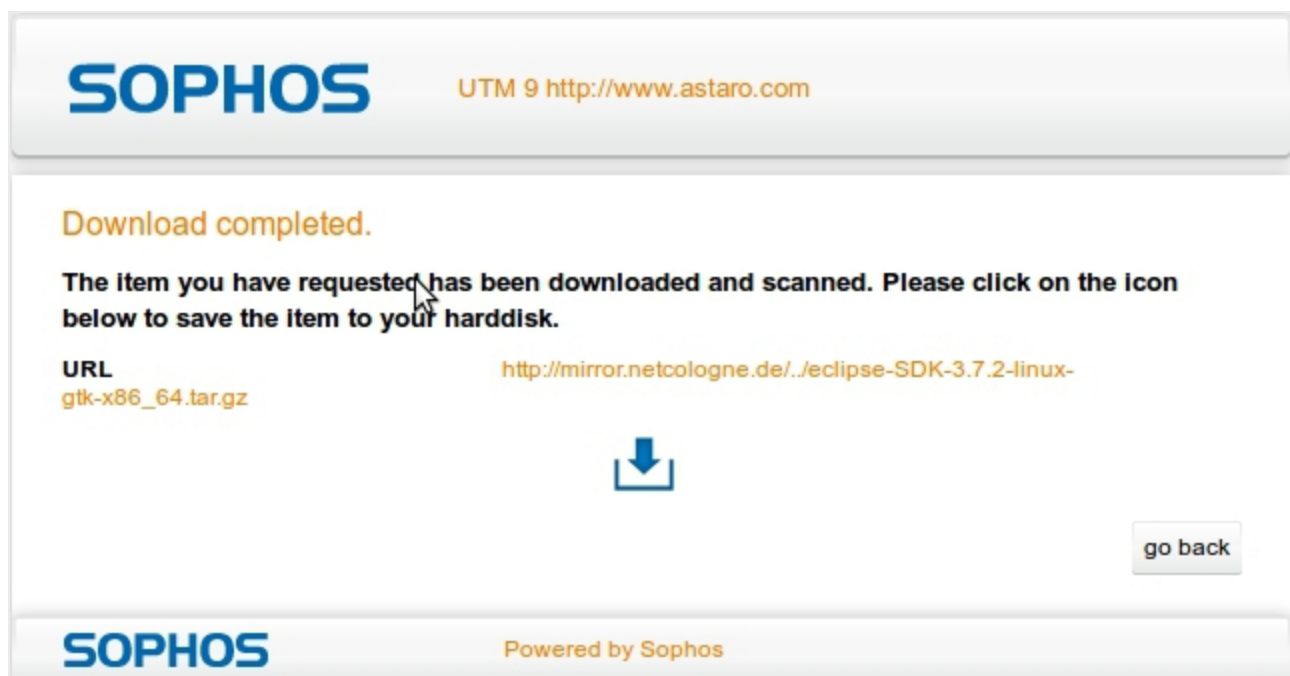


Figure 15 Customization: HTTP Download Page Step 3 of 3: File Download Completed

4.8.3 Web Templates

To customize both the appearance and content of messages that are displayed to users, you can upload HTML files to Sophos UTM. As a guide, Sophos provides several sample templates. These templates show you how to use variables that can dynamically insert information that is relevant for individual user messages. For example, if a file is blocked because it contains a virus, you can include a variable that inserts the name of the virus that was blocked.

4.8.3.1 Customizing Web Templates

Caution - Customizing Sophos UTM notifications is an advanced topic. Only those with sufficient knowledge of HTML and JavaScript should attempt these tasks.

You can upload custom versions of Sophos UTM notifications, including block messages, status messages, error messages, and authentication prompts. The four sample templates contain working examples of variables as well as several sample images. Either use the sample templates as a basis for your custom messages and notifications or upload your own HTML files. Valid variables are described in [Using Variables in Sophos UTM Web Templates](#) in the [Sophos Knowledge Base](#).

If you want to use the text from a message configured on the **Web Messages** tab, you can insert the appropriate variable in your custom template. For more information, see chapter [Web Messages](#).

To download the sample templates and images, click the link below, and save the .zip file:

http://www.astaro.com/lists/Web_Templates.zip

Note - The zip file contains examples with and without embedded images. If an image is embedded into an HTML file, you do not need to upload the corresponding image.

4.8.3.2 Uploading Custom Web Templates and Images

Once you have edited and saved your custom template, you are ready to upload it to Sophos UTM.

To upload a web template or image:

1. Open the **Upload File** dialog window.

Click the Folder icon next to the name of the type of template that you want to upload, or click the Folder icon next to **Images** if you want to upload an image.

Note - The supported file types are .png, .jpg, .jpeg, and .gif. Use embedded images and stylesheets with HTTPS connections.

The **Upload File** dialog window opens.

2. Select the template or image.

Browse to the location of the template or image that you want to upload.

Once you have selected the template or image, click **Start Upload**.

The **Upload File** dialog window closes.

3. Click **Apply**.

The template or image will be uploaded.

4.8.4 Email Messages

Customize the text that is displayed in user messages generated by the SMTP/POP3 proxies of Sophos UTM. You can translate these messages into other languages or modify them to show customer support contact information, for example. The following messages can be customized:

Quarantine

Email released from quarantine: This message is shown when an email was successfully released from the quarantine.

Error on releasing email from quarantine: This message is shown when an error occurred while releasing an email from the quarantine.

POP3

POP3 message blocked: This message is sent to the recipient when a POP3 email message was blocked.

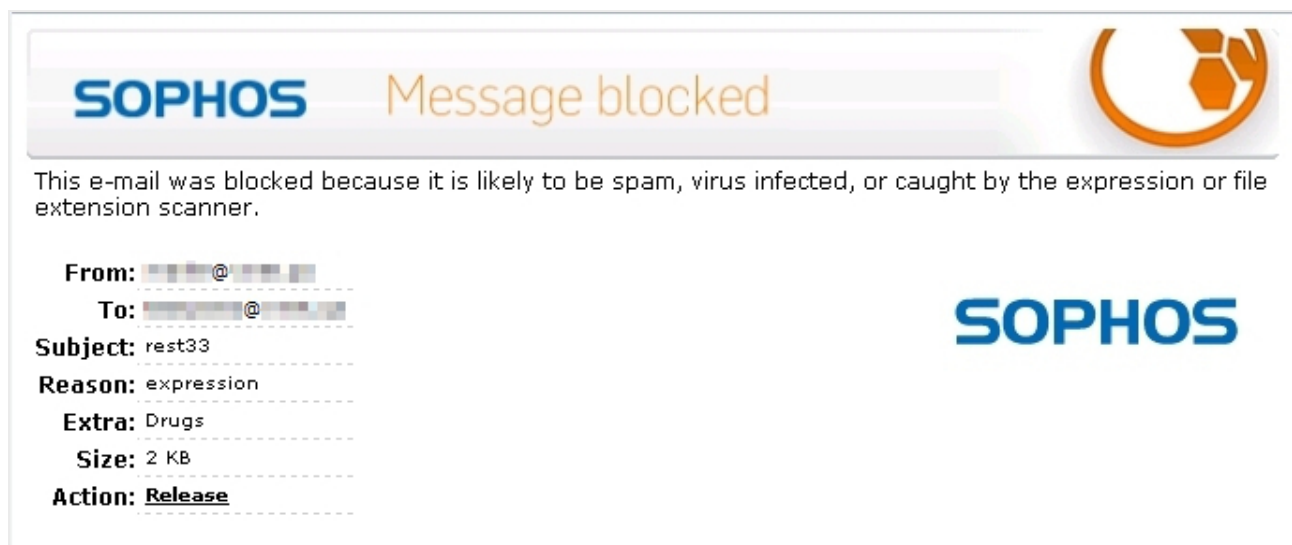


Figure 16 Customization: POP3 Proxy Blocked Message

SPX

These notification emails are sent when SPX Encryption is enabled and something went wrong. The notifications are sent to the specified persons (see **Email Encryption > SPX Encryption > SPX Configuration** tab).

Sender specified password missing: This email is sent to the specified person(s) when the email sender did not specify a password for SPX encryption.

Sender specified password too short: This email is sent to the specified person(s) when the password specified by the email sender is too short.

Sender specified password does not include special characters: This email is sent to the specified person(s) when the password specified by email sender does not contain the required special character.

Internal error: This email is sent to the specified person(s) when the email could not be delivered due to technical problems.

Internal error - sender notification: This email is sent to the specified person(s) when the email could not be delivered due to an error during the creation of SPX mail.

Reply portal URL not found: This message will be displayed on the reply portal page, when the recipient clicks the **Reply** button in the encrypted email, and the underlying URL cannot be found.

As the default settings show, some variables can be used in the notifications:

- %%SENDER%% (only in the email subject): The email sender
- %%RECIPIENT%%: The email recipient
- %%REASON%% (only in the email description): The reason for the message. Will be replaced by an appropriate error text

4.9 SNMP

The **Simple Network Management Protocol** (SNMP) is used by network management systems to monitor network-attached devices such as routers, servers, and switches. SNMP allows you to make quick queries about the condition of each monitored network device. You can configure Sophos UTM to reply to SNMP queries or to send SNMP traps to SNMP management tools. The former is achieved with so-called **management information bases** (MIBs). An MIB specifies what information can be queried for which network device. Sophos UTM supports SNMP version 2 and 3 and the following MIBs:

- **DISMAN-EVENT-MIB:** Event Management Information Base
- **HOST-RESOURCES-MIB:** Host Resources Management Information Base
- **IF-MIB:** Interfaces Group Management Information Base
- **IP-FORWARD-MIB:** IP Forwarding Table Management Information Base
- **IP-MIB:** Management Information Base for the **Internet Protocol** (IP)
- **NOTIFICATION-LOG-MIB:** Notification Log Management Information Base
- **RFC1213-MIB:** Management Information Base for Network Management of TCP/IP-based Internet: MIB II
- **SNMPv2-MIB:** Management Information Base for the **Simple Network Management Protocol** (SNMP)
- **TCP-MIB:** Management Information Base for the **Transmission Control Protocol** (TCP)
- **UDP-MIB:** Management Information Base for the **User Datagram Protocol** (UDP)

In order to get Sophos UTM system information, an SNMP manager must be used that has at least the RFC1213-MIB (MIB II) compiled into it.

4.9.1 Query

On the **Management > SNMP > Query** page you can enable the usage of SNMP queries.

To configure SNMP queries, proceed as follows:

1. Enable **SNMP Queries**.

Click the toggle switch.

The sections **SNMP Version** and **SNMP Access Control** become editable.

2. Select the SNMP version.

In the **SNMP Version** section, select a version from the drop-down list. SNMP version 3 requires authentication.

3. Select allowed networks.

Networks listed in the **Allowed Networks** box are able to query the SNMP agent running on Sophos UTM. You should only add networks to the **Allowed Networks** that will query the SNMP agent, it is not advisable to add any none private networks to the list. Note that the access is always read-only.

- **Community string:** When using version 2, enter a community string. An SNMP community string acts as a password that is used to protect access to the SNMP agent. By default, the SNMP community string is "public", but you can change it to any setting that best suits your needs.

Note - Allowed characters for the community string are: (a-z), (A-Z), (0-9), (+), (_), (@), (.), (-), (blank).

- **Username/Password:** When using version 3, authentication is required. Enter a username and password (second time for verification) to enable the remote administrator to send queries. The password must have at least eight characters. SNMPv3 uses SHA-1 for authentication and AES-128 for encryption. Note that username and password are used for both of them.

4. Click **Apply**.

Your settings will be saved.

Furthermore, you can enter additional information about Sophos UTM.

Device Information

The **Device Information** text boxes can be used to specify additional information about Sophos UTM such as its name, location, and administrator. This information can be read by SNMP management tools to help identify Sophos UTM.

Note - All SNMP traffic (protocol version 2) between Sophos UTM and the **Allowed Networks** is not encrypted and can be read during the transfer over public networks.

Astaro Notifier MIB

This section allows you to download the Astaro MIB which contains the definitions of the Sophos UTM notification SNMP traps. For historical reasons the MIB uses the Astaro Private Enterprise Code (SNMPv2-SMI::enterprises.astaro).

4.9.2 Traps

In the **Traps** tab you can define an SNMP trap server to which notifications of relevant events occurring on Sophos UTM can be sent as SNMP traps. Note that special SNMP monitoring software is needed to display those traps.

The messages that are sent as SNMP traps contain so-called object identifiers (OID), for example, `.1.3.6.1.4.1.9789`, which belong to the private enterprise numbers issued by [IANA](http://iana.org). Note that `.1.3.6.1.4.1` is the `iso.org.dod.internet.private.enterprise` prefix, while 9789 is Astaro's **Private Enterprise Number**. The OID for notification events is 1500, to which are appended the OIDs of the type of the notification and the corresponding error code (000–999). The following notification types are available:

- `DEBUG = 0`
- `INFO = 1`
- `WARN = 2`
- `CRIT = 3`

Example: The notification "INFO-302: New firmware Up2Date installed" will use the OID `.1.3.6.1.4.1.9789.1500.1.302` and has the following string assigned:

```
[<HOST>] [INFO] [302]
```

Note that `<HOST>` is a placeholder representing the hostname of the system and that only type and error code from the notification's subject field are transmitted.

To select an SNMP v2c trap server, proceed as follows:

1. Click **New SNMP Trap Sink**.

The **Add SNMP Trap Sink** dialog box opens.

2. Make the following settings:

SNMP version: Select **SNMP v2c** from the drop-down list.

Host: The host definition of the SNMP trap server.

Community: An SNMP community string acts as a password that is used to protect access to querying SNMP messages. By default, the SNMP community string is set to "public". Change it to the string that is configured on the remote SNMP trap server.

Note - Allowed characters for the community string are: (a-z), (A-Z), (0-9), (+), (_, (@), (.), (-), (blank).

Comment (optional): Add a description or other information.

3. Click **Save**.

The new SNMP trap server will be listed on the **Traps** tab.

The SNMP version 3 requires authentication. To select an SNMP v3 trap server, proceed as follows:

1. Click **New SNMP Trap Sink**.

The **Add SNMP Trap Sink** dialog box opens.

2. Make the following settings:

SNMP version: Select **SNMP v3** from the drop-down list.

Host: The host definition of the SNMP trap server.

Username: Enter username for authentication.

Authentication type: Select authentication type from the drop-down list.

Password: Enter password for authentication.

Repeat: Repeat password for authentication.

Encryption type: Select encryption type from the drop-down list.

Password: Enter password for encryption.

Repeat: Repeat password for encryption.

Engine ID: Enter the Engine ID.

Comment (optional): Add a description or other information.

3. Click **Save**.

The new SNMP trap server will be listed on the **Traps** tab.

4.10 Central Management

The pages of the **Central Management** menu let you configure interfaces to management tools that can be used to monitor or remotely administer the gateway.

4.10.1 Sophos UTM Manager

Sophos UTM Manager (SUM) is the central management product of Sophos. You can connect several Sophos UTM appliances to a SUM where they centrally can be monitored, configured and maintained. SUM 4.2 supports configuring Sophos UTM 9.2 only. Other Sophos UTM versions will appear in SUM as well and can be monitored. If for example a Sophos UTM 9.2 connects with a SUM 4.1 it falls into legacy mode. Then backups and up2date installations are still allowed.

On this tab, you can configure the connection of your Sophos UTM to one or two SUMs.

Note - When using MSP licensing, disabling SUM, changing the SUM host, or modifying the rights of the SUM administrator can only be done by Sophos UTM Manager (SUM).

To prepare Sophos UTM to be monitored by a SUM server, proceed as follows:

1. On the **Sophos UTM Manager** tab, enable SUM.

Click the toggle switch.

The toggle switch turns amber and the **SUM Settings** area becomes editable.

2. Specify the **SUM host**.

Select or add the SUM server the UTM should connect to. How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.

3. Activate authentication.

If the SUM server requires authentication, activate authentication and make the following settings:

- **Authentication** (optional): Enter the same password (shared secret) as configured on the SUM server.
- **SUM server certificate**: To ensure that the UTM establishes a connection to the correct SUM server, upload the SUM server certificate. You can download it from the SUM WebAdmin under **Management > Sophos UTM Manager > Device Security**.
Remove certificate: Select if you want to replace or remove the SUM certificate. Afterwards, you can upload a new certificate.
- **Use SUM server as Up2Date cache** (optional): Up2Date packages can be fetched from a cache located on the SUM server. If you want to use this functionality for your gateway, select the option **Use SUM server as Up2Date cache**. Please ensure that on your managing SUM server the Up2Date cache functionality is enabled accordingly. Note that usage of the Up2Date cache functionality is mutually exclusive with using a parent proxy configuration for Up2Dates.

4. Define the rights of the SUM administrator.

On SUM, the administrator responsible for this UTM can only administer those areas of your UTM which are explicitly allowed to be administered here. The rights listed here correspond to the SUM Gateway Manager main menu and administrative options.

Administration: If selected, the administrator can use all features located in the **Maintenance** and **Management** menus. He can, for example, view the inventory, create and restore backups, and schedule actions like firmware updates.

Reporting: If selected, the administrator can use all features located in the **Reporting** menu. He can, for example, request reports from UTM.

Monitoring: If selected, UTM will be displayed on the **Monitoring** pages and the administrator can use all associated features.

Configuration: If selected, the administrator can use all features located in the **Configuration** menu. He can, for example, deploy objects (networks, hosts, VPNs) to UTM.

Note - Please refer to the Sophos UTM Manager Administration Guide for detailed information.

5. Click **Apply**.

Your settings will be saved.

The toggle switch turns green.

UTM will now try to establish a connection to Sophos UTM Manager. Once the connection between both systems is established, the connection status will turn green. Then UTM can be monitored and administered by the SUM server selected here. You will be able to see the current connection status and health in the **SUM Health** section. Reloading the page will update this data. Please use the **Open Live Log** button and read carefully the messages from the message board to be able to diagnose connection problems should they occur.

Settings for a Second SUM

In this section, you can optionally add a second SUM. This is useful in case for example you do the configuration by yourself (first SUM server) but want your machines still to be monitored by a third party, e.g. your MSSP (second SUM server). The settings are almost identical to the first settings of SUM, except that the **Configuration** option is missing because they are limited to the first SUM. Sophos UTM will also not appear in the MSP section of the second SUM, which means MSP licensing is only possible from the first SUM.

Note - The communication between the gateway and SUM takes place on port 4433, whereas the Sophos UTM Manager can be accessed through a browser via the HTTPS protocol on port 4444 for the WebAdmin and on port 4422 for the Gateway Manager interface.

SUM Health

You will be able to see the current connection status and health in the section called **SUM Health**. Reloading the page will update this data.

SUM Objects

This area is disabled (grayed-out) unless there are objects that have been created via a SUM and if this SUM is now disconnected from Sophos UTM. SUM-created objects can be network definitions, remote host definitions, IPsec VPN tunnels, etc.

The button **Cleanup Objects** can be pressed to release any objects that were created by the SUM the device has formerly been managed with. These objects are normally locked and can only be viewed on the local device. After pressing the button, the objects become fully accessible and can be reused or deleted by a local administrator. In case there are objects which are not in use, they will be deleted directly and are not reusable.

Note - In case former SUM-created objects are cleaned up, they cannot be re-transformed when reconnecting to that same SUM. This means that if the remote SUM still hosts object definitions for a device which later re-establishes a connection to it, those objects will be deployed to the device again—although local copies will then already exist.

Live Log

You can use the live log to monitor the connection between your Sophos UTM and the SUM. Click the **Open Live Log** button to open the live log in a new window.

4.11 Sophos Mobile Control

With Sophos Mobile Control (SMC) you can manage, secure, update, control which apps are allowed to be installed, locate, secure company emails mobile devices like smartphones and tablets with iOS, Android or Windows Phone. The Sophos Mobile Control WebAdmin interface gives you the possibility to define compliant devices and users, set network access control and push the settings to the SMC server

For more information, visit the [Sophos Mobile Control](#) website.

SMC Server

SMC runs on a separate server. In Sophos UTM you can connect to the SMC server to get an overview of the compliant and non-compliant devices and users, define network access for VPN and wireless networks and push network configurations to the SMC server.

You can run an SMC server in two different ways:

- With an on-premise installation to keep your data in-house on your own server.
- Using the SMC as a service version where no hardware is necessary on your part.

Note - To use SMC you need a valid license. After downloading the software from the [Sophos Mobile Control Website](#), you receive a trial license. You can get a full license from your Sophos partner.

For more information on SMC server and licenses, see the [Sophos Mobile Control Documentation](#).

SMC Apps

To use SMC on your mobile devices you need to download the SMC app to your smartphone or tablet. You can download the app for free in each app store (Apple iTunes, Google Play or Windows App Store).

- [Download SMC app on iTunes for iOS](#)
- [Download SMC app on Google Play for Android](#)
- [Download SMC app on Windows App Store for Windows Phone](#)

4.11.1 General

The **Management > Sophos Mobile Control > General** tab allows you to define the Sophos Mobile Control host and specify customer details and credentials for logging into the SMC Server. The SMC administrator creates customer accounts and login data.

Note - You cannot create a SMC server on this tab. More information about creating a SMC server can be found in the [Sophos Mobile Control Documentation](#).

1. Enable Sophos Mobile Control:

Click the toggle switch.

The toggle switch turns amber and the **Global Settings** area becomes editable.

2. Make the following settings:

SMC Server: Add or select the server to host SMC.

Customer: Enter the SMC customer.

Username: Enter the SMC username.

Password: Enter the SMC password.

Note - You cannot create new customers or define users or passwords in Sophos UTM. New customers can only be created directly in SMC.

CA certificate: Select the Official Web CA or a custom Certificate Authority. On the **Site-to-site VPN > Certificate Management > Certificate Authority** tab you can add new Certificate Authorities to the unit.

3. The **Information** dialog window opens.

- Connection test passed: Connecting to the SMC server was successful.
- Connection test failed: Connecting to the SMC server failed.

Note - If connecting to the SMC server failed, use the Sophos Mobile Control live log to discover the problem.

4. Optionally, make the following advanced settings:

Enable debug mode: This option controls how much debug output is generated in the Sophos Mobile Control log. Select this option if you, for example encounter connection problems or need detailed information about the negotiation of client parameters.

5. Click **Apply**.

Your settings will be saved.

The toggle switch turns green.

Live Log

The Sophos Mobile Control live log logs all activities on the Sophos Mobile Control interface. Click the **Open Live Log** button to open the Sophos Mobile Control live log in a new window.

4.11.2 Compliance Overview

The **Management > Sophos Mobile Control > Compliance Overview** tab lists all mobile devices which are connected to Sophos UTM. The SMC server sets specific policies which allow mobile devices or users to connect. If mobile devices or users not comply to the policies they will be listed as non-compliant devices/users on a blacklist. Non-compliant to the policies could be if, for example the device has not the right platform or uses specific apps which are not allowed. Compliant devices are listed on a whitelist.

- **Non-compliant devices:** MAC addresses of all non-compliant devices which are on the wireless network blacklist.
- **Compliant devices:** MAC addresses of all compliant devices which are on the wireless network whitelist.
- **Non-compliant users:** Non-compliant user names which are on the VPN blacklist.

4.11.3 Network Access Control

The **Management > Sophos Mobile Control > Network Access Control** tab allows you to set the access settings for the VPN connections and wireless networks. Non-compliant devices will be blocked for the defined VPN or wireless networks.

Block access to specific VPN networks

Define the VPN and wireless networks which will be blocked for users if their mobile devices are not compliant with your company policies.

- **Enforce for L2TP over IPsec:** If selected, non-compliant users cannot connect via L2TP over IPsec to the Sophos Mobile Control.
- **Enforce for Cisco™ VPN:** If selected, non-compliant users cannot connect via Cisco™ VPN to the Sophos Mobile Control.
- **Also deny access for other VPN protocols:** If selected, non-compliant users cannot connect via other VPN protocols to the Sophos Mobile Control.

Enforce for Wireless Networks: Non-compliant devices connecting over these wireless network(s) to Sophos Mobile Control will be blocked.

Poll compliance status: Enter an interval in minutes (1-60) at which the current compliance status will be polled from the SMC server.

4.11.4 Configuration Settings

The **Management > Sophos Mobile Control > Configuration Settings** tab allows you to push VPN and wireless network configurations from the to the SMC server. These configurations define in which way the mobile devices and users connect to Sophos UTM. Configurations are sent from the SMC to the connected mobile devices. VPN and wireless network configuration do not have to be set manually.

Configuration Settings for Sophos Mobile Control

Define which VPN and wireless network configuration you want to push to the SMC server.

- **L2TP over IPsec configuration:** If selected, the L2TP over IPsec configuration will be pushed to the SMC server.
- **Cisco™ VPN configuration:** If selected, the Cisco™ VPN configuration will be pushed to the SMC server.

Wireless Networks: Select the wireless network(s) you want to push to the SMC server.

EAP methods: Select the EAP method (Extensible Authentication Protocol) you want to use for wireless network enterprise authentication.

Push Configuration

To transfer the current configuration to the SMC server, click the **Push Configuration Now** button.

Note - Use this function in exceptional cases only, for example when the servers were off-line during transmission. Normally, this button does not need to be used to push the configuration.

4.12 High Availability

The main cause for an Internet security system to fail is because of a hardware failure. The ability of any system to continue providing services after a failure is called failover. Sophos UTM provides high availability (HA) failover, allowing you to set up a hot standby system in case the primary system fails (active-passive). Alternatively, you can use Sophos UTM to set up a cluster, which operates by distributing dedicated network traffic to a collection of nodes (active-active) similar to conventional load-balancing approaches in order to get optimal resource utilization and decrease computing time.

The concepts **high availability** and **cluster** as implemented in Sophos UTM are closely related. For a high availability system can be considered a two-node cluster, which is the minimum requirement to provide redundancy.

Each node within the cluster can assume one of the following roles:

- **Master:** The primary system in a hot standby/cluster setup. Within a cluster, the master is responsible for synchronizing and distributing of data.
- **Slave:** The standby system in a hot standby/cluster setup which takes over operations if the master fails.
- **Worker:** A simple cluster node, responsible for data processing only.

All nodes monitor themselves by means of a so-called heart-beat signal, a periodically sent multicast UDP packet used to check if the other nodes are still alive. If any node fails to send this packet due to a technical error, the node will be declared **dead**. Depending on the role the failed node had assumed, the configuration of the setup changes as follows:

- If the master node fails, the slave will take its place and the worker node with the highest ID will become slave.
- If the slave node fails, the worker node with the highest ID will become slave.
- If a worker node fails, you may notice a performance decrease due to the lost processing power. However, the failover capability is not impaired.

Note - HA settings are part of the hardware configurations and cannot be saved in a backup. This also means that HA settings will not be overwritten by a backup restore.

Reporting

All reporting data is consolidated on the master node and is synchronized to the other cluster nodes at intervals of five minutes. In case of a takeover, you will therefore lose not more than five minutes of reporting data. However, there is a distinction in the data collection process. The graphs displayed in the **Logging & Reporting > Hardware** tabs only represent the data of the node currently being master. On the other hand, accounting information such as shown on the **Logging & Reporting > Network Usage** page represents data that was collected by all nodes involved. For example, today's CPU usage histogram shows the current processor utilization of the master node. In the case of a takeover, this would then be the data of the slave node. However, information about top accounting services, for example, is a collection of data from all nodes that were involved in the distributed processing of traffic that has passed the unit.

Notes

- The **Address Resolution Protocol (ARP)** is only used by the actual master. That is to say, slave and worker nodes do not send or reply to ARP requests.
- In case of a failover event, the unit that takes over operations performs an ARP announcement (also known as **gratuitous ARP**), which is usually an ARP request intended to update the ARP caches of other hosts which receive the request. Gratuitous ARP is utilized to announce that the IP of the master was moved to the slave.
- All interfaces configured on the master must have a physical link, that is, the port must be properly connected to any network device.

4.12.1 Hardware and Software Requirements

The following hardware and software requirements must be met to provide HA failover or cluster functionality:

- Valid license with the high availability option enabled (for the stand-by unit you only need an additional base license).
- Two Sophos UTM units with identical software versions and hardware or two Sophos UTM appliances of the same model.
- Heartbeat-capable Ethernet network cards. Check the HCL to figure out which network cards are supported. The HCL is available at the [Sophos Knowledge Base](#) (use "HCL" as search term).
- Ethernet crossover cable (for connecting master and slave in a hot standby system). Sophos UTM appliance models 320, 425, and 525, whose dedicated HA interface is a Gigabit auto-MDX device, can be connected through a standard IEEE 802.3 Ethernet cable as the Ethernet port will automatically exchange send/receive pairs.
- Network switch (for connecting cluster nodes).

4.12.2 Status

The **Management > High Availability > Status** tab lists all devices involved in a hot standby system or cluster and provides the following information:

- **ID:** The device's node ID. In a hot standby system, the node ID is either 1 or 2.
The node ID in a cluster can range from 1-10, as a cluster can have up to a maximum of 10 nodes.
- **Role:** Each node within the cluster can assume one of the following roles:
 - **MASTER:** The primary system in a hot standby/cluster setup. It is responsible for synchronizing and distributing of data within a cluster.
 - **SLAVE:** The standby system in a hot standby/cluster setup which takes over operations if the master fails.
 - **WORKER:** A simple cluster node, responsible for data processing only.
- **Device name:** The name of the device.
- **Status:** The state of the device concerning its HA status; can be one of the following:
 - **ACTIVE:** The node is fully operational. In case of a hot standby (active-passive) setup, this is the status of the active node.
 - **READY:** The node is fully operational. In case of a hot standby (active-passive) setup, this is the status of the passive node.
 - **RESERVED:** The node has no matching version and is not involved in the process.
 - **UNLINKED:** One or more interface links are down.
 - **UP2DATE:** An Up2Date is in progress.
 - **UP2DATE-FAILED:** An Up2Date has failed.
 - **DEAD:** The node is not reachable.
 - **SYNCING:** Data synchronization is in progress. This status is displayed when a node connects to a master. The initial synchronizing time is at least 5 minutes. It can, however, be lengthened by all synchronizing-related programs. While a SLAVE is synchronizing and in state **SYNCING**, there is no graceful takeover, e.g. due to link failure on master node.
- **Version:** Version number of Sophos UTM Software installed on the system.
- **Last status change:** The time when the last status change occurred.

Reboot/Shutdown: With these buttons, a device can be manually rebooted or shut down.

Remove Node: Use this button to remove a dead cluster node via WebAdmin. All node-specific data like mail quarantine and spool is then taken over by the master.

Click the button **Open HA Live Log** in the upper right corner to open the high availability live log in a separate window.

4.12.3 System Status

The **Management > High Availability > System Status** tab lists all devices involved in a hot standby system or cluster and provides information about the resource usage of each device:

- The CPU utilization in percent
- The RAM utilization in percent. Please note that the total memory displayed is the part that is usable by the operating system. With 32-bit systems, in some cases that does not represent the actual size of the physical memory installed, as part of it is reserved for hardware.
- The swap utilization in percent
- The amount of hard disk space consumed by the log partition in percent
- The amount of hard disk space consumed by the root partition in percent
- The status of the UPS (uninterruptible power supply) module (if available)

4.12.4 Configuration

The high availability functionality of Sophos UTM covers four basic settings:

- Off
- Automatic configuration
- Hot Standby (Active-Passive)
- Cluster (Active-Active)

Automatic configuration: Sophos UTM features a plug-and-play configuration option for Sophos UTM appliances that allows the setup of a hot standby system/cluster without requiring reconfiguration or manual installation of devices to be added to the cluster. Simply connect the dedicated HA interfaces (`eth3`) of your Sophos UTM appliances with one another, select **Automatic configuration** for all devices, and you are done.

Note - Automatic configuration is only enabled by default on appliances with a fixed `eth3` port. On appliances which only offer modular (removable) FlexiPort modules this feature is disabled by default but can be enabled on any preferred port (Sync NIC) as described further below.

Note - For Automatic configuration to work, all Sophos UTM appliances must be of the same model. For example, you can only use two Sophos UTM 320 appliances to set up a HA system; one Sophos UTM 220 unit on the one hand and one Sophos UTM 320 unit on the other hand cannot be combined.

If you connect two Sophos UTM appliances through this dedicated interface, all devices will recognize each other and configure themselves automatically as an HA system—the device

with the longer uptime becoming master. If the unlikely case should occur that the uptime is identical, the decision which device is becoming master will be made based on the MAC address.

Using Sophos UTM Software, the **Automatic Configuration** option is to be used on dedicated slave systems to automatically join a master or already configured hot standby system/cluster. For that reason, **Automatic Configuration** can be considered a transition mode rather than a high availability operation mode in its own right. For the high availability operation mode will change to **Hot Standby** or **Cluster** as soon as a device with **Automatic Configuration** selected joins a hot standby system or cluster, respectively. The prerequisite, however, for this feature to work is that the option **Enable Automatic Configuration of New Devices** is enabled on the master system. This function will make sure that those devices will automatically be added to the hot standby system/cluster whose high availability operation mode is set to **Automatic Configuration**.

Hot Standby (active-passive): Sophos UTM features a hot standby high availability concept consisting of two nodes, which is the minimum required to provide redundancy. One of the major improvements introduced in Sophos UTM Software 9 is that the latency for a takeover could be reduced to less than two seconds. In addition to firewall connection synchronization, the gateway also provides IPsec tunnel synchronization. This means that road warriors as well as remote VPN gateways do not need to re-establish IPsec tunnels after the takeover. Also, objects residing in the quarantine are also synchronized and are still available after a takeover.

Cluster (active-active): (Not available with BasicGuard subscription.) To cope with the rising demand of processing large volumes of Internet traffic in real time, Sophos UTM features a clustering functionality that can be employed to distribute processing-intensive tasks such as content filtering, virus scanning, intrusion prevention, or decryption equally among multiple cluster nodes. Without the need of a dedicated hardware-based load balancer, the overall performance of the gateway can be increased considerably.

Note - When configuring a cluster, make sure you have configured the master node first before connecting the remaining units to the switch.

Setting up the master, slaves, or workers is pretty similar. Proceed as follows:

1. Select a high availability operation mode.

By default, high availability is turned off. The following modes are available:

- Automatic Configuration
- Hot Standby (active-passive)
- Cluster (active-active)

Note - If you want to change the high availability operation mode, you must always set the mode back to **Off** before you can change it to either **Automatic Configuration**, **Hot Standby**, or **Cluster**.

Note - If the license/subscription has expired or is non-existent, the operation mode changing is limited to **Off** and the current operation mode.

Depending on your selection, one or more options will be displayed.

2. Make the following settings:

Sync NIC: Select the network interface card through which master and slave systems will communicate. If link aggregation is active you can select here a link aggregation interface, too.

Note - It is recommended to separate the HA synchronization from the other network traffic. For example **VLAN**.

Note - Only those interfaces are displayed that have not been configured yet. It is possible to change the synchronization interface in a running configuration. Note that afterwards all nodes are going to reboot.

The following options can only be configured if you either select **Hot Standby** or **Cluster** as operation mode:

Device name: Enter a descriptive name for this device.

Device node ID: Select the node ID of the device. In a case of a failure of the primary system, the node with the highest ID will become master.

Encryption key: The passphrase with which the communication between master and slave is encrypted (enter the passphrase twice for verification). Maximum key length is 16 characters.

3. Click **Apply**.

The high-availability failover is now active on the device.

The gateway in hot standby mode will be updated at regular intervals over the data transfer connection. Should the active primary system encounter an error, the secondary will immediately and automatically change to normal mode and take over the primary system's functions.

Note - When you deactivate a hot standby system/cluster, the slave and worker nodes will perform a factory reset and shut down.

More information (especially use cases) can be found in the **HA/Cluster Guide**, which is available at the [Sophos Knowledge Base](#).

Advanced

This section allows you to make some advanced settings.

Enable automatic configuration of new devices: If you have configured a hot standby system/cluster manually, this option will make sure that those devices will automatically be added to the hot standby system/cluster whose high-availability operation mode is set to **Automatic configuration**. However, this option is of no effect on slave systems, so you can leave it enabled, which is the default setting.

Keep node(s) reserved during Up2Date: If selected, during an update to a new system version, half of the HA/Cluster nodes will keep the current system version. When the new version is stable, you can update the remaining nodes on the **Management > High Availability > Status** page. In case the new version leads to a failure of all updated nodes, the remaining nodes will build a new HA/Cluster with the old version. You can then install the old version on the failed nodes or wait for the next update.

If **Keep Node(s) Reserved During Up2Date** is enabled, reserved nodes will not be synchronized anymore after an update, because synchronization is restricted to nodes having the same system version. Instead, the state of the reserved nodes will be preserved. So, if for whatever reason you decide to reactivate the reserved nodes, configuration changes or reporting data coming up in the time span between update start and reactivation will be lost.

Preferred master: Here you can define a designated master node by selecting a node from the drop-down list. In case of a failover, the selected node will not stay in Slave mode after the link recovers but instead will switch back to Master mode.

Backup interface: To prevent that both master and slave become master at the same time (master-master situations), for example, because of a failure of the HA synchronization interface or an unplugged network cable, a backup heartbeat interface can be selected. This additional heartbeat interface can be any of the configured and active Ethernet interfaces (not Ethernet Bridge or Ethernet VLAN). If a backup interface is selected, an additional heartbeat signal is sent via this interface in one direction from the master to the slave to make sure that the master-slave configuration stays intact. If the master-slave connection is disabled and the backup interface becomes involved, the administrator will receive a notification informing that one of the cluster nodes is dead. However, this option is of no effect on slave systems, so you can leave it unconfigured.

Note - In case of a failure of the HA synchronization interface, no configuration is synchronized anymore. The backup interface only prevents master-master situations.

4.13 Shutdown and Restart

On this tab you can manually shut down or restart Sophos UTM.

Shutdown: This action allows you to shut down the system and to stop all services in a proper manner. For systems without a monitor or LCD display, the end of the shutdown process is signaled by an endless series of beeps at intervals of one second.

To shut down Sophos UTM, proceed as follows:

1. Click **Shutdown (Halt) the System Now**.
2. Confirm the warning message.

When asked "Really shut down the system?", click **OK**.

The system is going down for halt.

Depending on your hardware and configuration, this process may take several minutes to complete. Only after the system has completely shut down you should turn off the power. If you turn off the power without the system being shut down properly, the system will check the consistency of its file system during the next booting, meaning that the boot-up process will take much longer than usual. In the worst case, data may have been lost.

The system will beep five times in a row to indicate a successful system start.

Restart: This action will shut down the system completely and reboot. Depending on your hardware and configuration, a complete restart can take several minutes.

To restart Sophos UTM, proceed as follows:

1. Click **Restart (Reboot) the System Now**.
2. Confirm the warning message.

When asked "Really restart the system?", click **OK**.

The system is going down for halt and reboot.

5 Definitions & Users

This chapter describes how to configure network, service, and time period definitions used throughout Sophos UTM. The **Definitions Overview** page in WebAdmin shows the number of network definitions according to type as well as the numbers of service definitions according to protocol type.

The pages of the **Definitions & Users** menu allow you to define networks and services that can be used in all other configuration menus in one central place. This allows you to work with the names you define rather than struggling with IP addresses, ports, and network masks. Another benefit of definitions is that you can group individual networks and services together and configure them all at once. If, for example, you assign certain settings to these groups at a later time, these settings will apply to all networks and services within this group.

Additionally, this chapter describes how to configure user accounts, user groups, and external authentication servers of Sophos UTM as well as authentication for client PCs.

The following topics are included in this chapter:

- [Network Definitions](#)
- [Service Definitions](#)
- [Time Period Definitions](#)
- [Users & Groups](#)
- [Client Authentication](#)
- [Authentication Services](#)

5.1 Network Definitions

The **Definitions & Users > Network Definitions** menu lets you create hosts, networks, and network groups as well as MAC address definitions. The definitions created here can be used in many other WebAdmin configurations.

5.1.1 Network Definitions

The **Definitions & Users > Network Definitions > Network Definitions** tab is the central place for defining hosts, networks, and network groups on Sophos UTM. The definitions created here can be used on many other WebAdmin configuration menus.

Opening the tab, by default, all network definitions are displayed. Using the drop-down list on top of the list, you can choose to display network definitions with certain properties.

Tip - When you click on the Info icon of a network definition in the **Network Definitions** list, you can see all configuration options in which the network definition is used.

The network table also contains static networks, which were automatically created by the system and which can neither be edited nor deleted:

- **Internal (Address):** A definition of this type will be added for each network interface. It contains the current IP address of the interface. Its name consists of the interface name with "(Address)" appended to it.
- **Internal (Broadcast):** A definition of this type will be added for each Ethernet-type network interface. It contains the current IPv4 broadcast address of the interface. Its name consists of the interface name with "(Broadcast)" appended to it.
- **Internal (Network):** A definition of this type will be added for each Ethernet-type network interface. It contains the current IPv4 network of the interface. Its name consists of the interface name with "(Network)" appended to it.
- **Any (IPv4/IPv6):** A network definition (for IPv4 and IPv6 each, if IPv6 is enabled) bound to the interface which serves as default gateway. Making use of it in your configuration should make the configuration process easier. With uplink balancing enabled, the definition **Internet** is bound to **Uplink Interfaces**.

Note - IPv6 entries are only visible if it is activated in **Interfaces & Routing > IPv6**.

Note - User network objects authenticated via client authentication will always be shown as unresolved due to performance reasons.

To create a network definition, proceed as follows:

1. On the **Network Definitions** tab, click **New Network Definition**.

The **Add Network Definition** dialog box opens.

2. Make the following settings:

(Note that further parameters of the network definition will be displayed depending on the selected definition type.)

Name: Enter a descriptive name for this definition.

Type: Select the network definition type. The following types are available:

- **Host:** A single IP address. Provide the following information:
 - **IPv4 address/IPv6 address:** The IP address of the host (note that you cannot enter the IP address of a configured interface).
 - **DHCP Settings** (optional): In this section you can create static mappings between hosts and IP address. For that purpose, you need a configured DHCP server (see **Network Services > DHCP > Servers**).

Note - To avoid an IP address clash between regularly assigned addresses from the DHCP pool and those statically mapped make sure that the latter are

not in the scope of the DHCP pool. For example, a static mapping of 192.168.0.200 could result in two systems receiving the same IP address if the DHCP pool is 192.168.0.100 - 192.168.0.210.

IPv4 DHCP: Select the IPv4 DHCP server to be used for static mapping.

MAC addresses: Enter the MAC addresses of the hosts' network interface cards. The MAC addresses are usually specified in a format consisting of six groups of two hexadecimal digits, separated by colons or hyphens (e.g., 00:04:76:16:EA:62).

Note - The MAC address range 00:1a:8c:f0.xx.xx is used by HA/Cluster. You cannot use this range for other purpose as MAC addresses within this range will be overwritten by the system.

IPv6 DHCP: Select the IPv6 DHCP server to be used for static mapping.

DHCP unique IDs: Enter the DUIDs of the hosts. With e.g. Windows operating systems, the DUID can be found in the Windows Registry: HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\services\TCPIP6\Parameters

Please note that you have to enter the groups of two hexadecimal digits separated by colons (e.g., 00:01:00:01:13:30:65:56:00:50:56:b2:07:51).

- **DNS Settings** (optional): If you do not want to set up your own DNS server but need static DNS mappings for a few hosts of your network, you can enter these mappings in this section of the respective hosts. Note that this only scales for a limited number of hosts and is by no means intended as a replacement of a fully operable DNS server.

Hostname: Enter the fully qualified domain name (FQDN) of the host.

Reverse DNS: Select the checkbox to enable the mapping of the host's IP address to its name. Note that although several names can map to the same IP address, one IP address can only ever map to one name.

Additional Hostnames: Click the Plus icon to add additional hostnames for the host.

- **DNS host:** A DNS hostname, dynamically resolved by the system to produce an IP address. DNS hosts are useful when working with dynamic IP endpoints. The system will re-resolve these definitions periodically according to the TTL (Time To Live) values and update the definition with the new IP address (if any). Provide the following information:
 - **Hostname:** The hostname you want to resolve.

- **DNS group:** Similar to DNS host, but can cope with multiple RRs (Resource Records) in DNS for a single hostname. It is useful for defining firewall rules and exceptions in transparent proxies.
- **Network:** A standard IP network, consisting of a network address and a netmask. Provide the following information:
 - **IPv4 address/IPv6 address:** The network address of the network (note that you cannot enter the IP address of a configured interface).
 - **Netmask:** The bit mask used to tell how many bits in an octet(s) identify the subnetwork, and how many bits provide room for host addresses.
- **Range:** Select to define a whole IPv4 address range. Provide the following information:
 - **IPv4 from:** First IPv4 address of the range.
 - **IPv4 to:** Last IPv4 address of the range.
 - **IPv6 from:** First IPv6 address of the range.
 - **IPv6 to:** Last IPv6 address of the range.

Network range objects cannot be used with every network configuration throughout WebAdmin. For more information on network range objects, see section **Where Network Range Objects Can Be Used**.

- **Multicast group:** A network that comprises a defined multicast network range.
 - **IPv4 address:** The network address of the multicast network, which must be in the range `224.0.0.0` to `239.255.255.255`.
 - **Netmask:** The bit mask used to tell how many bits in an octet(s) identify the subnetwork, and how many bits provide room for host addresses.
- **Network group:** A container that includes a list of other network definitions. You can use them to bundle networks and hosts for better readability of your configuration. Once you have selected **Network group**, the **Members** box appears where you can add the group members.
- **Availability group:** A group of hosts and/or DNS hosts sorted by priority. Alive status of all hosts is checked with ICMP pings at an interval of 60 seconds, by default. The host with the highest priority and an alive status is used in configuration. Once you have selected **Availability group**, the **Members** box appears where you can add the group members.

Comment (optional): Add a description or other information.

3. Optionally, make the following advanced settings:

The options displayed depend on the selected **Type** above.

Interface (optional): You can bind the network definition to a certain interface, so that connections to the definition will only be established via this interface.

Caution - Be careful with binding network definitions to particular interfaces, as this might lead to conflicts with other configurations. Data packets sent through these particular interfaces could get lost and this would be hard to detect.

Monitoring type (only with type **Availability group**): Select the service protocol for the alive status checks. Select either **TCP** (TCP connection establishment), **UDP** (UDP connection establishment), **Ping** (ICMP Ping), **HTTP host** (HTTP requests), or **HTTPS hosts** (HTTPS requests) for monitoring. When using **UDP** a ping request will be sent initially which, if successful, is followed by a UDP packet with a payload of 0. If ping does not succeed or the ICMP port is unreachable, the host is regarded as down.

Port (only with monitoring type **TCP** or **UDP**): Number of the port the request will be sent to.

URL (optional, only with monitoring types **HTTP host** or **HTTPS host**): URL to be requested. You can use other ports than the default ports 80 or 443 by adding the port information to the URL, e.g., `http://example.domain:8080/index.html`. If no URL is entered, the root directory will be requested.

Interval: Enter a time interval in seconds at which the hosts are checked.

Timeout: Enter a maximum time span in seconds for the hosts to send a response. If a host does not respond during this time, it will be regarded as dead.

Always resolved: This option is selected by default, so that if all hosts are unavailable, the group will resolve to the host which was last available. Otherwise the group will be set to **unresolved** if all hosts are dead.

4. Click **Save**.

The new definition appears on the network definition list.

To either edit or delete a network definition, click the corresponding buttons.

Where Network Range Objects Can Be Used

Network range objects can be used in the following configurations:

- **Management > System Settings > Shell Access**, section **Allowed Networks**
- **Management > WebAdmin Settings > General**, section **WebAdmin Access Configuration**, **Allowed Networks** box
- **Management > SNMP > Query**, section **SNMP Access Control**, **Allowed Networks** box
- **Interfaces & Routing > Quality of Service (QoS) > Traffic Selectors**, section **Add Traffic Selector**, **Source** and **Destination** field
- **Network Services > DNS > Global**, section **Allowed Networks**
- **Network Services > NTP**, section **NTP Options**, **Allowed Networks** box

- **Network Protection > Firewall > Rules**, section **Add Rule**, **Source** and **Destination** box
- **Network Protection > Firewall > Country Blocking Exceptions**, section **Add Exception List**, **Host/Networks** box
- **Network Protection > NAT > Masquerading**, section **Add Masquerading Rule**, **Network** field
- **Network Protection > NAT > NAT**, section **Add NAT Rule**, **For Traffic from** and **Going to** field
- **Network Protection > Advanced > SOCKS Proxy**, section **SOCKS Proxy Options**, **Allowed Networks** box
- **Web Protection > Filtering Options > Misc**, section **Transparent Mode Skiplist**, **Skip Transparent Mode Source Hosts/Nets** and **Skip Transparent Mode Destination Hosts/Nets** box
- **Web Protection > FTP > Global**, section **FTP Settings**, **Allowed Networks** box
- **Email Protection > SMTP > Relaying**, section **Host-Based Relay**, **Allowed Hosts/Networks** box
- **Email Protection > SMTP > Advanced**, section **Transparent Mode**, **Skip Transparent Mode Hosts/Nets** box
- **Wireless Protection > Hotspots > Advanced**, section **Walled Garden**, **Allowed Hosts/Networks** box

5.1.2 MAC Address Definitions

The **Definitions & Users > Network Definitions > MAC Address Definitions** tab is the central place for defining MAC address definitions, i.e., lists of MAC addresses. A MAC address definition can be used like a network definition. Additionally it can be used to further restrict a rule based on hosts/IP addresses to only match devices which have one of the defined MAC addresses.

Tip - When you click on the Info icon of a MAC address definition, you can see all configuration options in which the definition is used.

To create a MAC address definition, proceed as follows:

1. On the **MAC Address Definitions** tab, click **New MAC Address List**.

The **Add MAC Address List** dialog box opens.

2. Make the following settings:

Name: Enter a descriptive name for this definition.

MAC Addresses: Click the Plus icon to enter individual MAC addresses subsequently or use the Action icon to import a list of MAC addresses via copy and paste. The MAC

addresses are usually specified in a format consisting of six groups of two hexadecimal digits, separated by colons or hyphens (e.g., 00:04:76:16:EA:62).

Note - The MAC address range 00:1a:8c:f0.xx.xx is used by HA/Cluster. You cannot use this range for other purpose as MAC addresses within this range will be overwritten by the system.

Hosts: Add or select the hosts whose MAC addresses you want to add to the MAC address definition. The MAC addresses defined in the **DHCP Settings** section of the host definition will be added to the MAC address list. How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.

Note - The number of addresses per address definition is limited for the following uses: To restrict access to a wireless network, it is not recommended to have more than 5000. To restrict access to a RED appliance, you can add a maximum of 200 MAC addresses for RED 10, 300 for RED 15(w), and 400 for RED 20, 50, and 60.

Note - You can either enter MAC addresses or hosts or both.

Comment (optional): Add a description or other information.

3. Click **Save**.

The new definition appears on the **MAC Address Definition** list.

To either edit or delete a MAC address definition, click the corresponding buttons.

5.2 Service Definitions

On the **Definitions & Users > Service Definitions** page you can centrally define and manage services and service groups. Services are definitions of certain types of network traffic and combine information about a protocol such as TCP or UDP as well as protocol-related options such as port numbers. You can use services to determine the types of traffic accepted or denied by Sophos UTM.

Tip - When you click on the Info icon of a service definition in the **Service Definitions** list, you can see all configuration options in which the service definition is used.

To create a service definition, proceed as follows:

1. On the **Service Definitions** page, click **New Service Definition**.

The **Add Service Definition** dialog box opens.

2. Make the following settings:

(Note that further parameters of the service definition will be displayed depending on the selected definition type.)

Name: Enter a descriptive name for this definition.

Type of definition: Select the definition type. The following types are available:

- **TCP:** Transmission Control Protocol (TCP) connections use port numbers ranging from 0 to 65535. Lost packets can be recognized through TCP and be requested again. In a TCP connection, the receiver notifies the sender when a data packet was successfully received (connection related protocol). TCP sessions begin with a three way handshake and connections are closed at the end of the session.
Provide the following information:
 - **Destination port:** Enter the destination port either as single port number (e.g., 80) or as a range (e.g., 1024 : 64000), using a colon as delimiter.
 - **Source port:** Enter the source port either as single port number (e.g., 80) or as a range (e.g., 1024 : 64000), using a colon as delimiter.
- **UDP:** The **User Datagram Protocol** (UDP) uses port numbers between 0 and 65535 and is a stateless protocol. Because it does not keep state, UDP is faster than TCP, especially when sending small amounts of data. This statelessness, however, also means that UDP cannot recognize when packets are lost or dropped. The receiving computer does not signal the sender when receiving a data packet. When you have selected **UDP**, the same configuration options can be edited as for TCP.
- **TCP/UDP:** A combination of TCP and UDP appropriate for application protocols that use both sub protocols such as DNS. When you have selected **TCP/UDP**, the same configuration options can be edited as for TCP or UDP.
- **ICMP/ICMPv6:** The **Internet Control Message Protocol** (ICMP) is chiefly used to send error messages, indicating, for example, that a requested service is not available or that a host or router could not be reached. Once you have opted for **ICMP** or **ICMPv6**, select the ICMP code/type. Note that IPv4 firewall rules do not work with ICMPv6 and IPv6 firewall rules do not work with ICMP.
- **IP:** The **Internet Protocol** (IP) is a network and transport protocol used for exchanging data over the Internet. Once you have selected **IP**, provide the number of the protocol to be encapsulated within IP, for example 121 (representing the SMP protocol).
- **ESP:** The **Encapsulating Security Payload** (ESP) is a part of the IPsec tunneling protocol suite that provides encryption services for tunneled data via VPN. Once you have selected ESP or AH, provide the **Security Parameters Index** (SPI), which identifies the security parameters in combination with the IP address. You can either enter a value between 256 and 4,294,967,296 or keep the default setting given as the range from 256 to 4,294,967,296 (using a colon as delimiter), espe-

cially when using automatic IPsec key exchange. Note that the numbers 1-255 are reserved by the **Internet Assigned Numbers Authority (IANA)**.

- **AH:** The **Authentication Header (AH)** is a part of the IPsec tunneling protocol suite and sits between the IP header and datagram payload to maintain information integrity, but not secrecy.
- **Group:** A container that includes a list of other service definitions. You can use them to bundle service definitions for better readability of your configuration. Once you have selected **Group**, the **Members** box opens where you can add group members (i.e., other service definitions).

Comment (optional): Add a description or other information.

3. Click **Save**.

The new definition appears on the **Service Definitions** list.

To either edit or delete a definition, click the corresponding buttons.

Note - The type of definition cannot be changed afterwards. If you want to change the type of definition, you must delete the service definition and create a new one with the desired settings.

5.3 Time Period Definitions

On the **Definitions & Users > Time Period Definitions** page you can define single or recurring time slots that can in turn be used to limit for example firewall rules or content filter profile assignments to specific time ranges.

Tip - When you click on the Info icon of a time period definition in the **Time Period Definitions** list, you can see all configuration options in which the time period definition is used.

To create a time period definition, proceed as follows:

1. On the **Time Period Definitions** tab, click **New Time Period Definition**.

The **Add Time Period Definition** dialog box opens.

2. Make the following settings:

Name: Enter a descriptive name for this time period definition.

Type: Select the time period definition type. The following types are available:

- **Recurring event:** These events will be repeated periodically. You can select the start time, the end time, and the weekdays on which the time period definition should be applied. If the time span extends into the next day, the selected weekdays refer to the start time. Start and stop dates cannot be selected for this type.

- **Single event:** These events will only take place once. You can both select a start date/time and an end date/time. As these definitions do not recur, the option **Week-days** cannot be selected for this type.

Comment (optional): Add a description or other information.

3. Click **Save**.

The new time period definition appears on the **Time Period Definitions** list.

To either edit or delete a time period definition, click the corresponding buttons.

5.4 Users & Groups

The **Definitions & Users > Users & Groups** menu lets you create users and groups for WebAdmin access as well as for remote access, User Portal access, email usage etc.

5.4.1 Users

On the **Definitions & Users > Users & Groups > Users** tab you can add user accounts to Sophos UTM. In its factory default configuration, Sophos UTM has one administrator called **admin**.

Tip - When you click on the Info icon of a user definition in the **Users** list, you can see all configuration options in which the user definition is used.

When you specify an email address in the **New User** dialog box, an X.509 certificate for this user will be generated simultaneously while creating the user definition, using the email address as the certificate's VPNID. On the other hand, if no email address is specified, a certificate will be created with the user's **Distinguished Name** (DN) as VPN ID. That way, if users are authenticated by means of a backend group such as eDirectory, a certificate will be created even if no email address is set in the corresponding backend user object.

Because the VPN ID of each certificate must be unique, each user definition must have a different and unique email address. Creating a user definition with an email address already present in the system will fail. The certificates can be used for various [remote access](#) methods supported by Sophos UTM with the exception of PPTP, L2TP over IPsec using PSK, and native IPsec using RSA or PSK.

To add a user account, proceed as follows:

1. On the **Users** tab, click **New User**.

The **Add User** dialog box opens.

2. Make the following settings:

Username: Enter a descriptive name for this user (e.g. jdoe). Note that for using remote access via PPTP or L2TP over IPsec, the username may only contain ASCII printable characters¹.

Real name: Enter the user's real name (e.g. John Doe).

Email address: Enter the user's primary email address.

Additional email addresses (optional): Enter additional email addresses of this user. Spam emails sent to any of these addresses will be listed in an Quarantine Report, which will be send to the primary email address specified above.

Authentication: Select the authentication method. The following methods are available:

- **Local:** Select to authenticate the user locally on Sophos UTM.
- **Remote:** Select to authenticate the user using one of the external authentication methods supported by Sophos UTM. For more information, see **Definitions & Users > Authentication Services**.
- **None:** Select to prevent the user from authentication completely. This is useful, for example, to disable a user temporarily without the need to delete the user definition altogether.

Password: Enter a user password (second time for verification). Only available if you selected **Local** as authentication method. Note that Basic User Authentication does not support umlauts. Note that for using remote access via PPTP or L2TP over IPsec, the password may only contain ASCII printable characters².

Backend sync: Some basic settings of the user definition such as the real name or the user's email address can be updated automatically by synchronizing the data with external backend authentication servers (only available if you selected **Remote** as authentication method). Note that the option will automatically be set according to the **Enable Backend Sync on Login** option on the **Authentication Services > Advanced** tab, if the user is selected for prefetching.

Note - Currently, only data with Active Directory and eDirectory servers can be synchronized.

X.509 certificate: Once the user definition has been created, you can assign an X.509 certificate for this user when editing the user definition. By default, this is the certificate that was automatically generated upon creating the user definition. However, you can also assign a third-party certificate, which you can upload on the **Remote Access > Certificate Management > Certificates** tab.

Use static remote access IP (optional): Select if you want to assign a static IP address for users gaining remote access instead of assigning a dynamic IP address from an IP

¹http://en.wikipedia.org/wiki/ASCII#ASCII_printable_characters

²http://en.wikipedia.org/wiki/ASCII#ASCII_printable_characters

address pool. For IPsec users behind a NAT router, for example, it is mandatory to use a static remote access IP address.

Note - The static remote access IP can only be used for remote access through PPTP, L2TP, and IPsec. It cannot be used, however, for remote access through SSL.

Comment (optional): Add a description or other information.

3. Optionally, make the following advanced settings:

Users can create and maintain their own email whitelist and blacklist (see chapter [User Portal](#)). You can view those lists here and, if necessary, modify them.

4. Click **Save**.

The new user account appears on the **Users** list.

If you want to make users regular administrators having access to the web-based administrative interface WebAdmin, add the users to the group of **SuperAdmins**, which is configured on the **Definitions & Users > Users & Groups > [Groups](#)** tab in WebAdmin.

Note - If you have deleted a user object and want to create a user object with the same name, make sure you have also deleted the certificate associated with this user on the **Remote Access > Certificate Management > [Certificates](#)** tab. Otherwise you will get an error message stating that an item with that name already exists.

You can download remote access certificates and/or configurations of users for whom some sort of remote access has been enabled. For that, select the checkbox in front of the respective users and select the desired option from the **Actions** drop-down list in the list header. Remote access users can also download those files themselves when they are allowed to use the User Portal.

5.4.2 Groups

On the **Definitions & Users > Users & Groups > Groups** page you can add user groups to Sophos UTM. In its factory default configuration, Sophos UTM has one user group called **SuperAdmins**. If you want to assign administrative privileges to users, that is, granting access to WebAdmin, add them to the group of **SuperAdmins**; this group should not be deleted.

Tip - When you click on a group definition in the **Groups** list, you can see all configuration options in which the group definition is used.

To add a user group, proceed as follows:

1. On the **Groups** tab, click **New Group**.

The **Add Group** dialog box opens.

2. Make the following settings:

Group name: Enter a descriptive name for this group. Note that this name does not need to correspond to the names of your backend groups.

Group type: Select the type of the group. You can choose between a group of static members and two group types promoting dynamic membership.

- **Static members:** Select the local users who shall become member of this group.
- **IPsec X509 DN mask:** Users are dynamically added to an IPsec X509 DN group definition if they have successfully logged in to the gateway through an IPsec connection and if specific parameters of their distinguished names match the values specified in the **DN Mask** box.
- **Backend membership:** Users are dynamically added to a group definition if they have been successfully authenticated by one of the supported authentication mechanisms. To proceed, select the appropriate backend authentication type:
 - **Active Directory:** An Active Directory user group of Sophos UTM provides group memberships to members of Active Directory server user groups configured on a Windows network. For more information, see **Definitions & Users > Authentication Services > Servers**.
 - **eDirectory:** An eDirectory user group of Sophos UTM provides group memberships to members of eDirectory user groups configured on an eDirectory network. For more information, see **Definitions & Users > Authentication Services > Servers**.
 - **RADIUS:** Users are automatically added to a RADIUS backend group when they have been successfully authenticated using the RADIUS authentication method.
 - **TACACS+:** Users are automatically added to a TACACS+ backend group when they have been successfully authenticated using the TACACS+ authentication method.
 - **LDAP:** Users are automatically added to an LDAP backend group when they have been successfully authenticated using the LDAP authentication method.

Limit to backend group(s) membership (optional; only with backend groups **Active Directory** or **eDirectory**): For all X.500-based directory services you can restrict the membership to various groups present on your backend server if you do not want all users of the selected backend server to be included in this group definition. The group(s) you enter here once selected this option must match a **Common Name** as configured on your backend server. Note that if you select this option for an Active Directory backend, you can omit the **CN=** prefix. If you select this option for an eDirectory backend, you can use the eDirectory browser that lets you conveniently select the eDirectory groups that should be included in this group definition. However, if you do not use the eDirectory browser, make sure to include the **CN=** prefix when entering eDirectory containers.

Check an LDAP attribute (optional; only with backend group **LDAP**): If you do not want all users of the selected backend LDAP server to be included in this group definition, you can select this checkbox to restrict the membership to those users

matching a certain LDAP attribute present on your backend server. This attribute is then used as an LDAP search filter. For example, you could enter `groupMembership` as attribute with `CN=Sales, O=Example` as its value. That way you could include all users belonging to the sales department of your company into the group definition.

Comment (optional): Add a description or other information.

3. Click **Save**.

The new user group appears on the **Groups** list.

To either edit or delete a group, click the corresponding buttons.

5.5 Client Authentication

Sophos provides an authentication client for Windows and Mac OS so that users directly authenticate at Sophos UTM. This gives you user-based control on web surfing and network traffic by, for example, creating firewall rules based on user networks or group networks. Additionally, wherever possible, IP addresses, hostnames, and the like are replaced by user-names to provide a better readability of reporting data and objects.

Note - In , user network objects authenticated via client authentication will always be shown as unresolved due to performance reasons.

This page shows the Transparent Client Authentication status, online users connected and enables you to configure Client Authentication and the Sophos Transparent Authentication Suite.

5.5.1 Global

The **Client Authentication > Global** tab gives an overview of all online users that have been configured for Sophos Transparent Authentication Suite (STAS).

Once STAS is configured each logon to a Windows workstation is reflected by Sophos UTM and is displayed as Online User record with username, real name, and IP address. After logout from the workstation, the respective entry is deleted from the display after a maximum of 20 minutes.

This status display applies only for Sophos Transparent Authentication Suite, there is no status display for Client Authentication.

5.5.2 Client Authentication

Users who want or should use Client Authentication need to install the Sophos Authentication Agent (SAA) on their client PC or Mac OS computer. The SAA can be downloaded either via this page or via the User Portal. Note that only users who are within the user group of the Client Authentication configuration will find a download link on their User Portal page.

To configure Client Authentication, do the following:

1. On the **Client Authentication** tab, enable client authentication.

Click the toggle switch.

The toggle switch turns green and the **Client Authentication Options** area becomes editable.

2. Select the allowed networks.

Add or select the networks that should use Client Authentication. Note that those networks need to be directly connected to Sophos UTM for Client Authentication to work. How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.

3. Select the allowed users and groups.

Select single users or groups or add new users into the **Allowed Users and Groups** box. This can be also your already existing authentication group, e.g. an Active Directory user group. How to add users is explained on the **Definitions & Users > Users & Groups > Users** page.

4. Click **Apply**.

Your settings will be saved.

Client Authentication is now available for the selected networks.

Client Authentication Program

When Client Authentication is enabled, you can download the Sophos Authentication Agent (SAA) here. You can either distribute the SAA manually or have your users download the client from the User Portal.

Download EXE: Downloads the Client Authentication program including the CA certificate for direct installation on client PCs. This is the same file as can be downloaded from the User Portal.

Download MSI: Downloads the Client Authentication MSI package. This package is designed for automatic package installation via domain controller (DC) and does not contain the CA certificate.

Download DMG: Downloads the Client Authentication Mac OS X disk image. This image is designed for installation on client computers having an OS X operating system.

Download CA: Downloads the CA certificate that has to be rolled out in addition to the MSI package.

The SAA can be used as authentication mode for the Web Filter. For more information, see **Web Protection > Web Filtering > Global**.

5.5.3 Sophos Transparent Authentication Suite

Sophos Transparent Authentication Suite (STAS) enables transparent authentication whereby Microsoft Windows credentials can be used to authenticate. Users have to log in only once to access the network resources. A client installation on users' machine is not required.

The Sophos Transparent Authentication Suite program can be fetched from the [UTM Support Downloads](#) page in section **Sophos Transparent Authentication Suite (STAS)**. There, you can also download the Sophos Transparent Authentication installation guide.

To configure Sophos Transparent Authentication Suite, do the following:

1. On the **Sophos Transparent Authentication Suite** tab, enable transparent Client Authentication.

Click the toggle switch.

Note - STAS requires automatic user creation and an Active Directory server to be configured as backend server. You can enable automatic user creation under **Definitions & Users > Authentication Services > Global Settings** and add an Active Directory server under **Definitions & Users > Authentication Services > Servers > Active Directory**.

2. Click **New STAS Collector**.

The **Add STAS Collectors** dialog box opens.

3. Make the following settings:

Name: Enter a descriptive name for the STAS collector.

Host: Select a host from the list or add a new one. For each new host you must specify an IP address.

Port: Select a special port or choose the default port (**STAS Collector**).

Comment: Enter a comment if desired.

4. Click **Save**.

Your settings will be saved.

Login to Windows workstations and logout will be reflected as Online User display in the **Global** tab.

Disabling or removing the Active Directory will lead to a warning message and disable the STAS feature.

5.6 AWS Profiles

An AWS profile is a feature that allows Sophos UTM to communicate to different AWS services such as Amazon CloudWatch, Amazon Virtual Private Cloud (VPC), etc. This profile stores your account security credentials in order to retrieve or post information to the different AWS services.

If you are running Sophos UTM on AWS, the AWS profile will be automatically generated using the Elastic Compute Cloud (EC2) instance profile hosting Sophos UTM.

Note - For more information on the EC2 instance profile, see the [AWS Documentation](#).

If you are using Sophos UTM outside of AWS and would like Sophos UTM to interact with different AWS services or you would like to restrict Sophos UTM access down to the daemon level for different AWS services, you will need to configure an AWS profile.

To create an AWS profile, proceed as follows:

1. On the **Profiles** page click **New Profile**.

The **Add Profile** dialog box opens.

2. Make the following settings:

Profile name: Enter the name for the AWS profile.

Region: Select the region where your AWS instance is located.

Access key ID: Enter your AWS access key.

Note - For more information on access keys, see the [AWS Documentation](#).

Secret access key: Enter your AWS secret access key.

Output format: If required, change the output format.

Comment (optional): Add a description or other information.

3. Optionally, make the following advanced settings:

Session token: Enter your session token for temporary access to your AWS instance.

Note - A session token is only required if you use the CLI. For more information on session tokens, see the [AWS Documentation](#).

4. Click **Save**.

The profile appears in the list.

5.7 Authentication Services

On the **Definitions & Users > Authentication Services** page databases and backend servers of external user authentication services like [Single Sign-On](#) or [One-time Password](#) can be managed. External user authentication allows you to validate user accounts against existing user databases or directory services on other servers of your network. Authentication services currently supported are:

- Novell's eDirectory
- Microsoft's Active Directory
- RADIUS
- TACACS+
- LDAP

5.7.1 Global Settings

The **Definitions & Users > Authentication Services > Global Settings** tab lets you configure basic authentication options. The following options are available:

Create users automatically: When this option is selected, Sophos UTM will automatically create a user object whenever unknown users of a configured backend group successfully authenticate against one of the various authentication services supported by Sophos UTM. For example, if you configure a RADIUS backend group and you add this group as a member to one of the roles defined on the **Management > WebAdmin Settings > Access Control** tab, Sophos UTM will automatically create a user definition for RADIUS users who have successfully logged in to WebAdmin.

Note - To use the Sophos Transparent Authentication Suite, you need to enable the automatic user creation for STAS.

- **Automatic User Creation for Facilities:** Automatic user creation can be enabled or disabled for specific services. Users are only created for enabled services. This option is not available—and automatic user creation is disabled for all facilities—when the **Create users automatically** option is not selected.

Note - This feature does not work for Active Directory **Single Sign-On** (SSO).

Those user objects are also needed to grant access to the [User Portal](#) of Sophos UTM. In addition, for all user objects created automatically an X.509 certificate will be generated. Note, however, that automatic user creation will fail in case of an email address conflict, for the user definition to be created automatically must not have configured an email address that is already present on the system. All email addresses must be unique within the system because they are used as identifiers for X.509 certificates.

Important Note - Authentication (i.e., the action of determining who a user is) and authorization (i.e., the action of determining what a user is allowed to do) for users whose user object was created automatically are always done on the remote backend server/directory service. Therefore, automatically created user objects in Sophos UTM are useless if the corresponding backend server is not available or if the user object has been deleted on the remote site.

Note also that except for Active Directory **Single Sign-On** (SSO) Sophos UTM caches user authentication data it has retrieved from a remote authentication server for 300 seconds. For this reason, changes made to the remote user settings will only take effect after the cache has expired.

Authentication Cache

Every time Sophos UTM gets a user request, e.g., `http`, from a yet unknown user and authentication is required, the Sophos User Authentication (SUA) writes an entry to the authentication cache. Over time, in environments with frequently changing users it can be reasonable to empty the cache from time to time. Also, if you want to force an immediate new authentication for all users. Use the button **Flush Authentication Cache** to empty the authentication cache.

An authentication is valid for 300 seconds. During this time, other authentication requests by the same user are looked up directly in the cache. This technique takes load off backend authentication services like eDirectory.

Note - Flushing the cache does not affect users that are remotely logged on.

Live Log

Open Live Log: Click the button to see the log of the **Sophos User Authentication** (SUA) in a new window.

5.7.2 Servers

On the **Definitions & Users > Authentication Services > Servers** tab, you can create one or more authentication servers. Follow the links to create them:

- [eDirectory](#)
- [Active Directory](#)
- [LDAP](#)
- [RADIUS](#)
- [TACACS+](#)

5.7.2.1 eDirectory

Novell eDirectory is an X.500 compatible directory service for centrally managing access to resources on multiple servers and computers within a given network. eDirectory is a hierarchical, object-oriented database that represents all the assets in an organization in a logical tree. Those assets can include people, servers, workstations, applications, printers, services, groups, and so on.

To configure eDirectory authentication, proceed as follows:

1. On the **Servers** tab, click **New Authentication Server**.

The dialog box **Add Authentication Server** opens.

2. Make the following settings:

Backend: Select **eDirectory** as backend directory service.

Position: Select a position for the backend server. Backend servers with lower numbers will be queried first. For better performance, make sure that the backend server that is likely to get the most requests is on top of the list.

Server: Select or add an eDirectory server. How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.

SSL: Select this option to enable SSL data transfer. The **Port** will then change from 389 (LDAP) to 636 (ldaps = LDAP over SSL).

Port: Enter the port of the eDirectory server. By default, this is port 389.

Bind DN: The **Distinguished Name** (DN) of the user to bind to the server with. This user is needed if anonymous queries to the eDirectory server are not allowed. Note that the user must have sufficient privileges to obtain all relevant user object information from the eDirectory server in order to authenticate users. eDirectory users, groups, and containers can be specified by the full distinguished name in LDAP notation, using commas as delimiters (e.g., `CN=administrator,DC=intranet,DC=example,DC=com`).

Password: Enter the password of the bind user.

Test server settings: Pressing the **Test** button performs a bind test with the configured server. This verifies that the settings on this tab are correct, and the server is up and accepts connections.

Base DN: The starting point relative to the root of the LDAP tree where the users are included who are to be authenticated. Note that the base DN must be specified by the full distinguished name (FDN) in LDAP notation, using commas as delimiters (e.g., `O=Example,OU=RnD`). Base DN may be empty. In this case, the base DN is automatically retrieved from the directory.

Username: Enter the username of a test user to perform a regular authentication.

Password: Enter the password of the test user.

Authenticate example user: Click the **Test** button to start the authentication test for the test user. This verifies that all server settings are correct, the server is up and accepting connections, and users can be successfully authenticated.

- Optionally, make the following advanced settings:

Authentication timeout (sec): Enter the timeout for the communication with the server to support higher latency scenarios if you use third party authentication solutions.

- Click **Save**.

The server will be displayed in the **Servers** list.

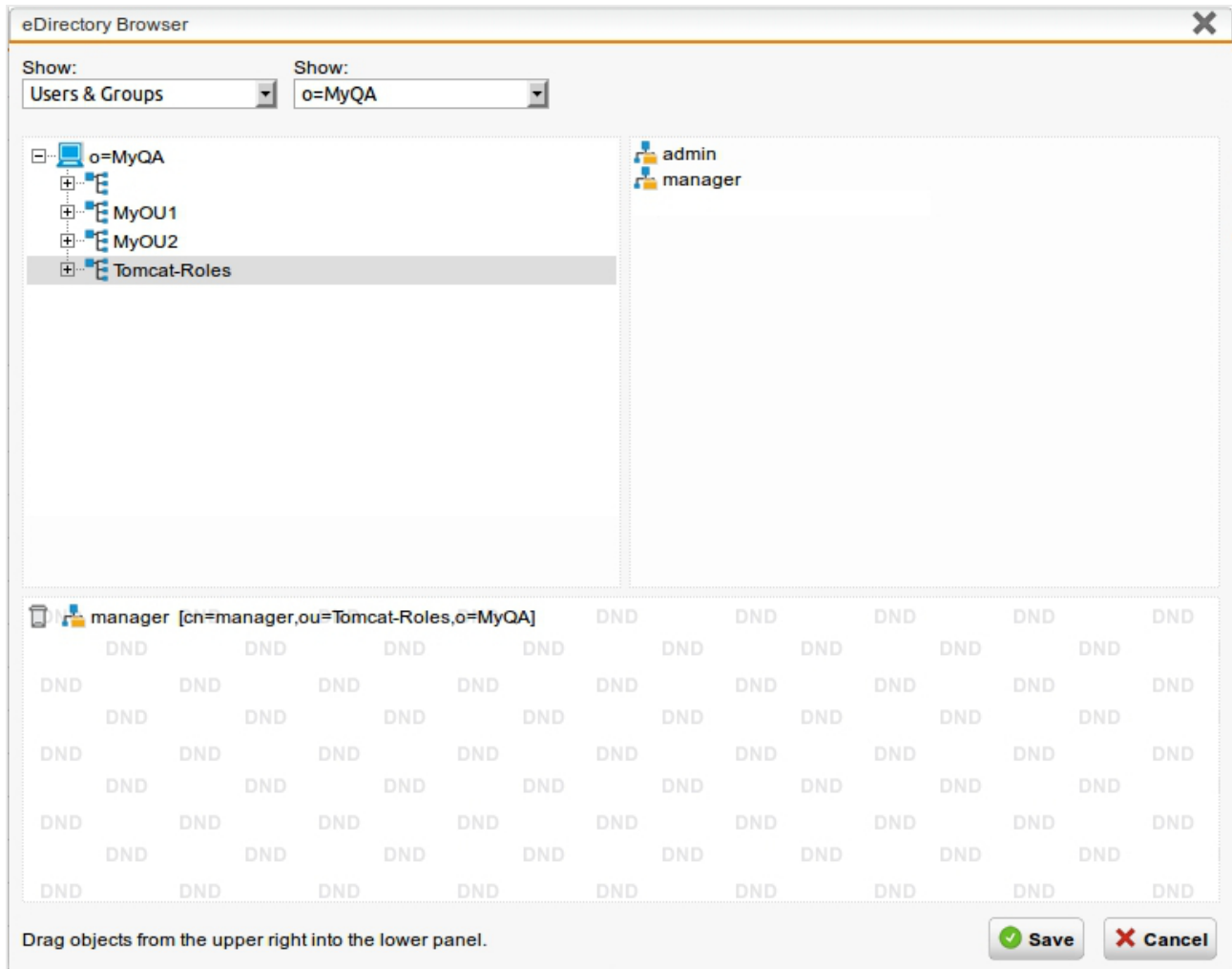


Figure 17 Groups: eDirectory Browser of Sophos UTM

5.7.2.2 Active Directory

Active Directory (AD) is Microsoft's implementation of a directory service and is a central component of Windows 2000/2003 servers. It stores information about a broad range of resources residing on a network, including users, groups, computers, printers, applications, services, and any type of user-defined objects. As such it provides a means of centrally organizing, managing, and controlling access to these resources.

Note - Sophos UTM supports Active Directory 2003 and newer.

The Active Directory authentication method allows you to register Sophos UTM at a Windows domain, thus creating an object for Sophos UTM on the primary **domain controller** (DC). Sophos UTM is then able to query user and group information from the domain.

Note - The default group Domain User, which is automatically created by the AD, cannot be used for reverse authentication as this is denied by Sophos UTM. The default group Domain User is not returned by the AD in the memberOf attribute. If you want to use AD groups for reverse authentication, create new groups in AD. Manual created groups are returned by the AD in the memberOf attribute.

To configure Active Directory authentication, proceed as follows:

1. On the **Servers** tab, click **New Authentication Server**.

The dialog box **Add Authentication Server** opens.

2. Make the following settings:

Backend: Select **Active Directory** as backend directory service.

Position: Select a position for the backend server. Backend servers with lower numbers will be queried first. For better performance, make sure that the backend server that is likely to get the most requests is on top of the list.

Server: Select or add an Active Directory server. How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.

SSL: Select this option to enable SSL data transfer. The **Port** will then change from 389 (LDAP) to 636 (ldaps = LDAP over SSL).

Port: Enter the port of the Active Directory server. By default, this is port 389.

Bind DN: The full **Distinguished Name** (DN) of the user to bind to the server in LDAP notation. This user is needed if anonymous queries to the Active Directory server are not allowed. The bind user must have sufficient privileges to obtain all relevant user object information from the Active Directory server in order to authenticate users; a requirement usually met by the administrator of the domain.

Each DN consists of one or more **Relative Distinguished Names** (RDN) constructed from some attributes of the Active Directory user object and includes its username, the node where it resides, and the top-level DN of the server, all specified in LDAP notation and separated by commas.

- The username must be the name of the user who is able to access the directory and is to be specified by the **CN** designator (e.g., **CN=user**). While using a popular account with domain permissions, such as "admin" is possible, it is highly recommended for best practices that the user not have admin rights, as it is sufficient for them to have read permission on all objects of the subtree starting at the given

base DN.

- The information of the node where the user object resides must include all sub-nodes between the root node and the user object and is usually comprised of so-called **organizational units** and **common name** components. Organizational units (indicated by the combined folder/book icon in the Microsoft Management Console) are to be specified by the `OU` designator. Note that the order of the nodes is from the lowest to the highest node, that is, the more specific elements come first (e.g., `OU=Management_US, OU=Management`). On the other hand, default Active Directory containers (indicated by a simple Folder icon) such as the pre-defined **Users** node are to be specified using the `CN` designator (e.g., `CN=Users`).
- The top-level DN of the server can consist of several domain components, each specified by the `DC` designator. Note that the domain components are given in the same order as the domain name (for example, if the domain name is `example.com`, the DN part would be `DC=example, DC=com`).

An example bind user DN for a user named `administrator` whose object is stored in the `Users` container in a domain called `example.com` would look like this:
`CN=administrator, CN=Users, DC=example, DC=com`

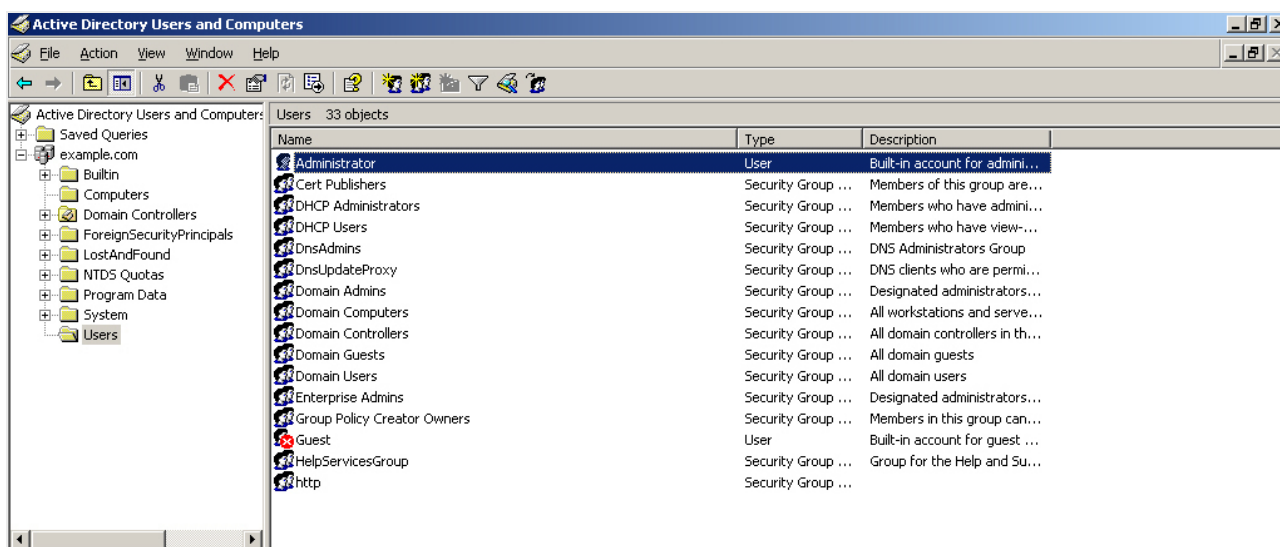


Figure 18 Authentication: Microsoft Management Console

Now, suppose you create an organizational unit called **Management** with the subnode **Management_US** and move the administrator user object into it, the DN of the administrator would change to: `CN=administrator, OU=Management_US, OU=Management, DC=example, DC=com`

Password: Enter the password of the bind user.

Test server settings: Pressing the **Test** button performs a bind test with the configured server. This verifies that the settings on this tab are correct, and the server is up and accepts connections.

Base DN: The starting point relative to the root of the LDAP tree where the users are included who are to be authenticated. Note that the base DN must be specified by the full distinguished name (FDN) in LDAP notation, using commas as delimiters (e.g., `O=Example, OU=RnD`). Base DN may be empty. In this case, the base DN is automatically retrieved from the directory.

Username: Enter the username of a test user to perform a regular authentication.

Password: Enter the password of the test user.

Authenticate example user: Click the **Test** button to start the authentication test for the test user. This verifies that all server settings are correct, the server is up and accepting connections, and users can be successfully authenticated.

3. Optionally, make the following advanced settings:

Authentication timeout (sec): Enter the timeout for the communication with the server to support higher latency scenarios if you use third party authentication solutions.

4. Click **Save**.

The server will be displayed in the **Servers** list.

Cross Reference - Find information about configuring user authentication with Active Directory in the [Sophos Knowledge Base](#).

User Principal Name

Sometimes users should be required to use the User Principal Name notation 'user-@domain' when entering their credentials, for example when using Exchange servers in combination with Active Directory servers.

- Clone a desired server to start a new server
- Change **Backend** to **LDAP**
- Change **User Attribute** to >
- Enter **userPrincipalname** into **Custom** field.

If not present already, this will set up a 'LDAP Users' group which you will have to use instead of the 'Active Directory Users' group.

Note - The format `domain\user` is not supported. Use the format `user@domain` instead.

5.7.2.3 LDAP

LDAP, an abbreviation for **Lightweight Directory Access Protocol**, is a networking protocol for querying and modifying directory services based on the X.500 standard. Sophos UTM uses the LDAP protocol to authenticate users for several of its services, allowing or denying access based on attributes or group memberships configured on the LDAP server.

To configure LDAP authentication, proceed as follows:

1. On the **Servers** tab, click **New Authentication Server**.

The dialog box **Add Authentication Server** opens.

2. Make the following settings:

Backend: Select **LDAP** as backend directory service.

Position: Select a position for the backend server. Backend servers with lower numbers will be queried first. For better performance, make sure that the backend server that is likely to get the most requests is on top of the list.

Server: Select or add an LDAP server. How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.

SSL: Select this option to enable SSL data transfer. The **Port** will then change from 389 (LDAP) to 636 (ldaps = LDAP over SSL).

Port: Enter the port of the LDAP server. By default, this is port 389.

Bind DN: The **Distinguished Name** (DN) of the user to bind to the server with. This user is mandatory. For security reasons, anonymous queries to the LDAP server are not supported. Note that the user must have sufficient privileges to obtain all relevant user object information from the LDAP server in order to authenticate users. LDAP users, groups, and containers can be specified by the full distinguished name in LDAP notation, using commas as delimiters (e.g.,

CN=administrator,DC=intranet,DC=example,DC=com).

Password: Enter the password of the bind user.

Test server settings: Pressing the **Test** button performs a bind test with the configured server. This verifies that the settings on this tab are correct, and the server is up and accepts connections.

User attribute: Select the user attribute that is to be used as the filter for searching the LDAP directory. The user attribute contains the actual login name users are prompted for, for example by remote access services. The following user attributes can be selected:

- CN (Common Name)
- SN (Surname)
- UID (User ID)

If usernames in your LDAP directory are not stored in any of these forms, select **<<Custom>>** from the list and enter your custom attribute into the **Custom** field below. Note that this attribute must be configured on your LDAP directory.

Base DN: The starting point relative to the root of the LDAP tree where the users are included who are to be authenticated. Note that the base DN must be specified by the full distinguished name (FDN) in LDAP notation, using commas as delimiters (e.g.,

O=Example, OU=RnD). Base DN may be empty. In this case, the base DN is automatically retrieved from the directory.

Username: Enter the username of a test user to perform a regular authentication.

Password: Enter the password of the test user.

Authenticate example user: Click the **Test** button to start the authentication test for the test user. This verifies that all server settings are correct, the server is up and accepting connections, and users can be successfully authenticated.

3. Optionally, make the following advanced settings:

Authentication timeout (sec): Enter the timeout for the communication with the server to support higher latency scenarios if you use third party authentication solutions.

4. Click **Save**.

The server will be displayed in the **Servers** list.

5.7.2.4 RADIUS

RADIUS, the acronym of **Remote Authentication Dial In User Service** is a widespread protocol for allowing network devices such as routers to authenticate users against a central database. In addition to user information, RADIUS can store technical information used by network devices, such as supported protocols, IP addresses, routing information, and so on. This information constitutes a user profile, which is stored in a file or database on the RADIUS server.

The RADIUS protocol is very flexible, and servers are available for most operating systems. The RADIUS implementation on Sophos UTM allows you to configure access rights on the basis of proxies and users. Before you can use RADIUS authentication, you must have a running RADIUS server on the network. Whereas passwords are encrypted using the RADIUS secret, the username is transmitted in plain text.

To configure RADIUS authentication, proceed as follows:

1. On the **Servers** tab, click **New Authentication Server**.

The dialog box **Add Authentication Server** opens.

2. Make the following settings:

Backend: Select **RADIUS** as backend directory service.

Position: Select a position for the backend server. Backend servers with lower numbers will be queried first. For better performance, make sure that the backend server that is likely to get the most requests is on top of the list.

Server: Select or add a RADIUS server. How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.

Port: Enter the port of the RADIUS server. By default, this is port 1812.

Shared Secret: The shared secret is a text string that serves as a password between a RADIUS client and a RADIUS server. Enter the shared secret.

Test server settings: Pressing the **Test** button performs a bind test with the configured server. This verifies that the settings on this tab are correct, and the server is up and accepts connections.

Username: Enter the username of a test user to perform a regular authentication.

Password: Enter the password of the test user.

NAS identifier: Select the appropriate NAS identifier from the list. For more information see the Note and the table below.

Authenticate example user: Click the **Test** button to start the authentication test for the test user. This verifies that all server settings are correct, the server is up and accepting connections, and users can be successfully authenticated.

- Optionally, make the following advanced settings:

Authentication timeout (sec): Enter the timeout for the communication with the server to support higher latency scenarios if you use third party authentication solutions.

- Click **Save**.

The server will be displayed in the **Servers** list.

Note - Each user authentication service of Sophos UTM such as PPTP or L2TP querying the RADIUS server sends a different identifier (NAS identifier) to the RADIUS server. For example, the PPTP service sends the NAS identifier `pptp` to the RADIUS server when trying to authenticate this user. That way, the various services can be differentiated on the RADIUS server, which is useful for authorization purposes, that is, the granting of specific types of service to users. Below you can find the list of user authentication services and their corresponding NAS identifier.

| User Authentication Service | NAS Identifier |
|-----------------------------|----------------|
| SSL VPN | ssl |
| PPTP | pptp |
| IPsec | ipsec |
| L2TP over IPsec | l2tp |
| SMTP proxy | smtp |
| User Portal | portal |
| WebAdmin | webadmin |
| SOCKS proxy | socks |
| Web Filter | http |

| User Authentication Service | NAS Identifier |
|------------------------------|--------------------------------------|
| Authentication Client | agent |
| Web Application Filter (WAF) | reverseproxy |
| Wireless Access Points | NAS ID is the wireless network name. |

Table 1: RADIUS NAS Identifiers

5.7.2.5 TACACS+

TACACS+ (the acronym of **T**erminal **A**ccess **C**ontroller **A**ccess **C**ontrol **S**ystem) is a proprietary protocol by Cisco Systems, Inc. and provides detailed accounting information and administrative control over authentication and authorization processes. Whereas RADIUS combines authentication and authorization in a user profile, TACACS+ separates these operations. Another difference is that TACACS+ utilizes the TCP protocol (port 49) while RADIUS uses the UDP protocol.

To configure TACACS+ authentication, proceed as follows:

1. On the **Servers** tab, click **New Authentication Server**.

The dialog box **Add Authentication Server** opens.

2. Make the following settings:

Backend: Select **TACACS+** as backend directory service.

Position: Select a position for the backend server. Backend servers with lower numbers will be queried first. For better performance, make sure that the backend server that is likely to get the most requests is on top of the list.

Server: Select or add a TACACS+ server. How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.

Port: Enter the port of the TACACS+ server. By default, this is port 49.

Key: Enter the authentication and encryption key for all TACACS+ communication between Sophos UTM and the TACACS+ server. The value for the key to be entered here should match the one configured on the TACACS+ server. Enter the key (second time for verification).

Test server settings: Pressing the **Test** button performs a bind test with the configured server. This verifies that the settings on this tab are correct, and the server is up and accepts connections.

Username: Enter the username of a test user to perform a regular authentication.

Password: Enter the password of the test user.

Authenticate example user: Click the **Test** button to start the authentication test for the test user. This verifies that all server settings are correct, the server is up and accepting connections, and users can be successfully authenticated.

3. Optionally, make the following advanced settings:

Authentication timeout (sec): Enter the timeout for the communication with the server to support higher latency scenarios if you use third party authentication solutions.

4. Click **Save**.

The server will be displayed in the **Servers** list.

5.7.3 Single Sign-On

On the **Definitions & Users > Authentication Services > Single Sign-On** tab you can configure single sign-on functionality for Active Directory and/or eDirectory.

Active Directory Single Sign-On (SSO)

Note that the Active Directory SSO facility is currently only used with the Web Filter to provide single sign-on with browsers that support NTLMv2 or Kerberos authentication.

To activate the single sign-on functionality, Sophos UTM must join the Active Directory domain. In order for the domain joining to work, the following prerequisites must be met:

- There MUST NOT be a time difference of more than five minutes between the gateway clock and the DC clock.
- The Sophos UTM hostname must exist in the ADDNS system.
- Sophos UTM must use the AD DNS as forwarder, or must have a DNS request route for the AD domain which points to the AD DNS server.

Note - Active Directory Group Membership Synchronization uses the Single Sign-On (SSO) password to communicate with the AD server. If this password is changed, the new password needs to be entered and Sophos UTM re-joined, for Sophos UTM to sync with the server again.

To configure Active Directory SSO, do the following:

1. Create an Active Directory server on the **Servers** tab.
2. Make the following settings:

Domain: Name of the domain (for example `intranet.mycompany.com`). Sophos UTM searches all DCs retrievable via DNS.

Admin username: User with administrative privileges who is allowed to add computers to that domain (usually "Administrator").

Password: The password of the admin user.

3. Click **Apply**.

Your settings will be saved.

Note on Kerberos authentication support: In order for opportunistic SSO Kerberos support to work, the clients **MUST** use the FQDN hostname of Sophos UTM in their proxy settings—using the IP address will not work. NTLMv2 mode is not affected by this requirement, and will automatically be used if it is not met, or if the browser does not support Kerberos authentication.

eDirectory Single Sign-On (SSO)

Here, you can configure SSO for eDirectory. If you have configured **eDirectory SSO** as authentication method in **Web Protection > Web Filtering**, the eDirectory server selected here will be used.

To configure eDirectory SSO, do the following:

1. Create an eDirectory server on the **Servers** tab.

2. Make the following settings:

Server: eDirectory server for which you want to enable SSO.

Sync interval: Time (in seconds) between two synchronization events between Sophos UTM and eDirectory server.

3. Click **Apply**.

Your settings will be saved.

5.7.4 One-time Password

On the **Definitions & Users > Authentication Services > One-time Password** tab you can configure the one-time password (OTP) service, and you can monitor or edit the tokens of the one-time password users. One-time passwords are a method to improve security for password-based authentication. The user-specific password, which is sometimes too weak, will be amended with a one-time password that is valid for only one login. Thus, even if an attacker gets hold of it, he will not be able to log in with it.

One-time passwords generally change consistently, in regular intervals, being calculated automatically by a specific algorithm. Soon after a new password is calculated, the old password expires automatically. To calculate one-time passwords, users need to have either a mobile device with an appropriate software, or a special hardware or security token. Hardware tokens are ready to use from the start. On the mobile device, end users need to install Google Authenticator or a similar software and deploy the configuration, which is available in the User Portal as a QR code, on the start page or on the **OTP Token** page (see **User Portal** page). Having done that, the device calculates one-time passwords in token-specific intervals. It is important that date and time are correct on the mobile device as the time stamp is used for one-time password generation.

Note - To authenticate on the facilities where the one-time password is required, users have to enter their user-specific Sophos UTM password, directly followed by the one-time password.

You can also generate one-time passwords, also known as passcodes, manually. In this case, you have to ensure that these not time-limited one-time passwords are safely transmitted to the end users. This process, however, should only be considered as a temporary solution, for example when users temporarily have no access to his or her password calculating device.

Note - Once an OTP token is created an information icon appears on the right side for each token. You can view the QR code and its details by clicking on the information icon.

Enabling and Configuring One-time Password Service

To configure the one-time password service, do the following:

1. In the **OTP Settings** section, make the following settings:

All users must use one-time passwords: By default, this checkbox is enabled and all users have to use one-time passwords. If only specific users should use one-time passwords, disable the checkbox and select or add users or groups to the box.

Caution - If you disabled the function **All users must use one-time passwords**, this automatically affects the **Users/Groups** in other parts of Sophos UTM. For example, **Reverse Authentication**.

Note - The option **Create users automatically** must be activated for users with backend authentication. You can find the option under **Definitions & Users > Authentication Services > Global Settings > Automatic User Creation**.

Auto-create OTP tokens for users: If selected, a QR code for configuring the mobile device software will be presented to the authorized users the next time they log in to the User Portal. For this to work, make sure that the users have access to the User Portal (see **Management > User Portal** pages). When users log in to the User Portal, their respective token will appear in the **OTP Tokens** list. Enabling this feature is recommended when you are using soft tokens on mobile devices. If your users only use hardware tokens you should instead disable the checkbox and add or import the tokens before enabling the OTP feature.

Hash algorithm used: Select a hash algorithm ([RFC 6234](#)) to encrypt the auto-created OTP tokens.

Enable OTP for facilities: Here you select Sophos UTM facilities that should be accessed with one-time passwords by the selected users. When you select the **Auto-create OTP tokens for users** checkbox, the User Portal needs to be enabled for

security reasons: As the User Portal gives access to the OTP tokens, it should have no weaker protection itself. To activate OTP for secure shell access, you have to additionally enable shell access usage for the respective tokens (see [Adding or Editing OTP Tokens Manually](#)). The corresponding users then have to log in as **loginuser** with the loginuser password, appended by the one-time password.

Caution - Especially when selecting WebAdmin or Shell Access for OTP usage, you have to ensure that the selected users have access to the one-time password tokens. Otherwise you may log them out permanently.

2. In the **Timestep Settings** section, make the following settings:

Default token timestep: To synchronize one-time password generation on the mobile device and on Sophos UTM, the timestep has to be identical on both sides. Some hardware tokens use 60 seconds. Other software OTP tokens use a timestep of 30 seconds which is the default value here. If the timestep does not match, authentication fails. The value entered here is used automatically for each new OTP token. The allowed range for the timestep is 10-120.

Maximum passcode offset: With help of this option you can set the maximum passcode offset steps. This means if you for example set 3 steps you restrict the clock of a token to drift no more than 3 timesteps between two logins. The maximum passcode offset requires a range of 0-10.

Maximum initial passcode offset: With help of this option you can set the maximum initial passcode offset steps. This means if you for example set 10 steps you restrict the clock of a token to drift no more than 10 timesteps between two logins. The maximum initial passcode offset requires a range of 0-600.

3. Click **Apply**.

Your settings will be saved.

4. If you use hardware tokens, import or add them into the **OTP Tokens** section.

Click the Import icon on the top right of the list. Select the method **CSV Import**. Then paste the CSV separated data into the text box and click **Save**.

PSKC Upload: OTP tokens which are using the OATH-TOTP standard are mostly delivered in a file which contains serial numbers and secrets using PSKC format. For encrypted files the decryption key is being supplied by out-of-band (paper-based). The standardized PSKC schema version 1.0 is supported (see <https://tools.ietf.org/html/rfc6030>).

Note - Please refer to the following draft for additional information about the TOTP profile: [draft-hoyer-keyprov-pskc-algorithm-profiles-01.txt](#).

Click the Import icon on the top right of the list. Select the method **PSKC Upload**. Select the requested file and click **Start Upload**. If the file is encrypted, enter the **Decryption Key** and click **Save**.

Note - Sophos does not support public key encryption/authentication, only preshared key with AES/SHA1.

CSV Import: Use the data received from the hardware token vendor to generate a CSV file, using semicolons, in UTF-8 encoding. The file needs to contain three columns with the following content: secret, timestep, and comment. The secret, a unique, device-specific string, is mandatory, and should have a hexadecimal format and a length of minimum 128 bit. The other columns may be empty. If timestep is empty, the default token timestep defined in the **OTP Settings** section is used.

After the import/upload you can modify the entries using the Edit icon. Additionally, you can always add single entries by clicking the Plus icon (see [Adding or Editing OTP Tokens Manually](#)).

5. Enable the one-time password service.

Click the toggle switch on top of the page. The toggle switch turns green.

If **Auto-create OTP tokens for users** is enabled, as soon as one of the users specified for one-time password authentication logs in to the User Portal for the first time, Sophos UTM auto-creates the OTP token entry if it was not generated up front. Additionally, the **Reset** icon of the entry is enabled.


Using the toggle switch of an entry you can disable it, for example in case a user has lost his hardware token. Using the appropriate icon, you can delete an entry, for example if a hardware token is broken. Be aware that in both cases, if the **Auto-create OTP tokens for users** option is enabled, users can still re-authenticate because they have access to the token secret. In the **OTP Tokens** list, a new entry will be displayed.






On the top right of the **OTP Tokens** list, a search box and navigation icons are available to navigate through and to filter the list.

Cross Reference - Find information about configuring OTP in the [Sophos Knowledge Base](#).

Icons

In the OTP Tokens area are some additional functional icons.

| Functional icons | Meaning |
|---|--|
|  | Sets the token to a 'never-used' state, the so-called initial state. If the reset was performed, users will see the QR code again when logging in to the User Portal. The reset function is available if users logged in with OTP at least once. |

| Functional icons | Meaning |
|---|--|
|  | Shows that the token is configured to be used for remote shell access. |
|  | Shows that the token information will not be displayed in the User Portal. |
|  | Shows additional token codes. |
|  | Allows you to show the token time-offsets. |
|  | Shows the QR code of the token and its information. |

Adding or Editing OTP Tokens Manually

You can add or edit OTP tokens.

Tip - Usually you would not add single OTP tokens but either import them—in case of hardware tokens—or, using mobile devices, automatically generate them, using the **Auto-create OTP tokens for users** option.

1. Open the dialog to add or edit the OTP token.

To add an OTP token, click the green Plus icon on the top right of the **OTP Tokens** list.

To edit an OTP token, click the Edit icon in front of the respective entry in the **OTP Tokens** list.

2. Make the following settings:

User: Select or add the user to whom the token should be assigned.

Secret: This is the shared secret of the user's hardware token or soft token. A hardware token has an unchangeable secret, given by the hardware producer. The soft token is created randomly by Sophos UTM, when **Auto-create OTP tokens for users** is enabled. The secret should have a hexadecimal format and a length of 128 bit.

Comment (optional): Add a description or other information. This text will be displayed with the QR code in the User Portal. If you define different tokens for one person, e.g., a hardware token and a soft token for the mobile phone, it is useful to enter some explanation here as users will be displayed all QR codes side by side.

3. Optionally, make the following advanced settings:

Use custom token timestep: If you need another timestep for a token than the default token timestep defined in the **OTP Settings** section, enable this checkbox and enter the value. The timestep defined here has to correspond with the timestep of the user's password generation device, otherwise authentication fails.

Hide token information in User Portal: If enabled, the token will not be displayed in the User Portal. This can be useful for hardware tokens, where no configuration is needed, or for example when the soft tokens should not be configured by end users, but centrally, by you.

Token can be used for shell access: If enabled, the token can be used for command-line access to Sophos UTM. For this to work, shell access has to be enabled in the **OTP Settings** section, and shell access with password authentication has to be enabled for Sophos UTM in general (see **Management > System Settings > Shell Access**). OTP tokens with permission for shell access have a Command Shell icon on the right. For one-time password shell access, users then have to log in as **loginuser** with the loginuser password, appended by the one-time password.

Additional codes (only when editing an OTP token): You can add one-time passwords manually for a token. Either click the green Plus icon to enter one one-time password at a time, or use the **Generate** button to generate 10 one-time passwords at once. You can also import or export the one-time passwords using the Action icon. These one-time passwords are not time-limited. One-time passwords will be deleted automatically when users have logged in with it. OTP tokens with additional one-time passwords have a Plus icon on the right. Hovering the cursor on it shows the list of one-time passwords.

4. Click **Save**.

Your settings will be saved.

Synchronizing OTP Token Time

When hardware OTP tokens, their build-in quartz clocks might run slower or faster than 'real world' clocks. VASCO token specification for example allows a time-drift of about 2 seconds each day. After some month, the time drift of the hardware token might be so big, that the OTP code on the token will not match the calculated OTP of Sophos UTM anymore and also be so high that it does not match the default accepted OTP windows of +/- one token code. So the OTP code will be denied by Sophos UTM.

Each time users log on to Sophos UTM using a valid hardware token code, Sophos UTM calculates whether the token code is more than one time-step value away or not. If yes, Sophos UTM changes the token-specific time drift value automatically.

With Sophos UTM you can calculate the time-offset and synchronize it. Proceed as follows:

1. In the OTP Tokens area click on the Stopwatch icon.

The check OTP token time-offset dialog box opens. The current offset for this token is displayed.

2. Enter the **Token Passcode**.

The token passcode is a six digit number created by the hardware device.

3. Click **Check**.

The result will be displayed after a few seconds. If the passcode was vaild the message says if and how many timesteps the token is off.

4. If you want to set the offset for the token, click **OK**.

The token time-offset is updated.

5. Click **Cancel**.

The dialog box closes.

5.7.5 Advanced

Block Password Guessing

This function can be used to prevent password guessing. After a configurable number of failed login attempts (default: 3), the IP address trying to gain access to one of the facilities will be blocked for a configurable amount of time (default: 600 seconds).

Drop packets from blocked hosts: If enabled, all packets coming from blocked hosts will be dropped for the specified time. This option serves to avoid DoS attacks.

Facilities: The check will be performed for the selected facilities.

Never block networks: Networks listed in this box are exempt from this check.

Local Authentication Passwords

Using this option, you can force the use of strong passwords for administrators or locally registered users having administrative privileges. You can configure password complexity to adhere to the following security requirements:

- Minimum password length, default is eight characters
- Require at least one lowercase character
- Require at least one uppercase character
- Require at least one numeral
- Require at least one non-alphanumeric character

To enable the selected password properties select the **Require complex passwords** checkbox and click **Apply**.

Active Directory Group Membership Synchronization

Use this option to enable background syncing of AD group membership information.

The UTM can periodically synchronize group membership information and cache it locally to reduce traffic to the Active Directory server. When this option is enabled, group membership information will be synchronized with the configured Active Directory Single Sign-On server.

Click **Synchronize Now** to immediately synchronize group membership information.

Prefetch Directory Users

Users from eDirectory or Active Directory can be synchronized with Sophos UTM. This will pre-create user objects on Sophos UTM such that these user objects already exist, when users log in. The synchronization process can run weekly or daily.

To enable prefetching, make the following settings:

Server: The drop-down list contains servers that have been created on the **Servers** tab. Select a server for which you want to enable prefetching.

Prefetch interval: Select an interval to prefetch users. To run the synchronization weekly, select the day of the week when synchronization should start. To run the synchronization daily, select **Daily**.

Prefetch time: Select a time to prefetch users.

Groups: To specify which groups should be pre-created, enter the groups here. You can use the integrated LDAP browser to select these groups.

Click **Apply** to save your settings.

Prefetch Now: Click this button to start prefetching immediately.

Open Prefetch Live Log: Click this button to open the prefetch live log.

Enable backend sync on login (optional): With every prefetch event, the **Backend sync** option of the involved users (**Users & Groups > Users** tab) will be set to the value defined here. If the option is enabled, the users' **Backend sync** option will be enabled, if the option is disabled, the users' **Backend sync** option will be disabled.

6 Interfaces & Routing

This chapter describes how to configure interfaces and network-specific settings in Sophos UTM. The **Network Statistics** page in WebAdmin provides an overview of today's top ten accounting services, top source hosts, and concurrent connections. Each of the sections contains a **Details** link. Clicking the link redirects you to the respective reporting section of WebAdmin, where you can find more statistical information.

The following topics are included in this chapter:

- [Interfaces](#)
- [Quality of Service \(QoS\)](#)
- [Uplink Monitoring](#)
- [IPv6](#)
- [Static Routing](#)
- [Dynamic Routing \(OSPF\)](#)
- [Border Gateway Protocol](#)
- [Multicast Routing \(PIM-SM\)](#)

6.1 Interfaces

A gateway requires at least two network interface cards to connect an internal LAN to an external one (e.g., the Internet) in a secure fashion. In the following examples, the network card `eth0` is always the interface connected to the internal network. Network card `eth1` is the interface connected to the external network (for example, to the Internet). These interfaces are also called the trusted and untrusted interfaces, respectively.

Network cards are automatically recognized during the installation. With the Software Appliance, if new network cards are added later, a new installation will be necessary. To reinstall the system, simply make a backup of your configuration, install the software, and restore your backup.

The gateway must be the only point of contact between internal and external networks. All data must pass through Sophos UTM. We strongly recommend against connecting both internal and external interfaces to one hub or switch, except if the switch is configured as a VLAN switch. There might be wrong ARP resolutions (Address Resolution Protocol), also known as "ARP clash", which cannot be administered by all operating systems (for example, such as those from Microsoft). Therefore, one physical network segment has to be used for each gateway network interface.

The **Interfaces** menu allows you to configure and manage all network cards installed on Sophos UTM and also all interfaces with the external network (Internet) and interfaces to the internal networks (LAN, DMZ).

Note - While planning your network topology and configuring Sophos UTM, take care to note which interface is connected to which network. In most configurations, the network interface with SysID `eth1` is chosen as the connection to the external network. In order to install the high availability (HA) failover, the selected network cards on both systems must have the same SysID. Installing the HA failover is described in more detail on page **Management > High Availability**.

The following sections explain how to manage and configure different interface types on the tabs **Interfaces**, **Additional Addresses**, **Link Aggregation**, **Uplink Balancing**, **Multipath Rules**, and **Hardware**.

6.1.1 Interfaces

On the **Interfaces** tab you can configure network cards and virtual interfaces. The list shows the already defined interfaces with their symbolic name, hardware device, and current addresses. The interface status is also displayed. By clicking the toggle switch, you can activate and deactivate interfaces. Please note that interface groups do not have a toggle switch.

Tip - When you click the Info icon of an interface definition in the **Interfaces** list, you can see all configuration options in which the interface definition is used.

Newly added interfaces may show up as **Down** while they are in the process of being set up. You can select to edit and delete interfaces by clicking the respective buttons.

6.1.1.1 Automatic Interface Network Definitions

Each interface on your Sophos UTM has a symbolic name and a hardware device assigned to it. The symbolic name is used when you reference an interface in other configuration settings. For each interface, a matching set of network definitions is automatically created by Sophos UTM:

- A definition containing the current IP address of the interface, its name consisting of the interface name and the **(Address)** suffix.
- A definition containing the network attached to the interface, its name consisting of the interface name and the **(Network)** suffix. This definition is not created for **Point-to-Point** (PPP) type interfaces.
- A definition containing the broadcast address of the interface, its name consisting of the interface name and the **(Broadcast)** suffix. This definition is not created for **Point-to-Point** (PPP) type interfaces.

When the interface uses a dynamic address allocation scheme (such as DHCP or remote assignment), these definitions are automatically updated. All settings referring to these definitions, for example firewall and NAT rules, will also automatically be updated with the changed addresses.

One interface with the symbolic name **Internal** is already predefined. It is the management interface and will typically be used as the "internal" Sophos UTM interface. If you want to rename it, you should do so right after the installation.

6.1.1.2 Interface Types

The following list shows which interface types can be added to Sophos UTM, and what type of hardware is needed to support them:

Group: You can organize your interfaces in groups. In appropriate configurations, you can then select a single interface group instead of multiple interfaces individually.

3G/UMTS: This is an interface based on a USB modem stick. The stick needs to be plugged in and Sophos UTM needs to be rebooted before interface creation.

DSL (PPPoA/PPTP): PPP over ATM. A DSL PPPoA device lets you attach your gateway to **PPP-over-ATM** compatible DSL lines. These devices use the PPTP protocol to tunnel IP packets. They require a dedicated Ethernet connection (they cannot co-exist with other interfaces on the same hardware). You must attach a DSL modem to the interfaces network segment. The network parameters for these device types can be assigned by the remote station (typically, your ISP). In addition, you need to enter username and password for your ISP account. You also need to enter the IP address of your modem. This address is usually hard-wired in the modem and cannot be changed. To communicate with the modem, you have to enter a NIC IP address and netmask. The modem's IP address must be inside the network defined by these parameters. The **Ping Address** must be a host on the other side of the PPTP link that responds to ICMP ping requests. You can try to use the DNS server of your ISP. If this address cannot be pinged, the connection is assumed to be dead, and will be reinitiated.

DSL (PPPoE): PPP over Ethernet. A DSL PPPoE device lets you attach your gateway to **PPP-over-Ethernet** compatible DSL lines. These devices require a dedicated Ethernet connection (they cannot co-exist with other interfaces on the same hardware). You must attach a DSL modem to the interfaces network segment. The network parameters for these device types can be assigned by the remote station (typically, your ISP). In addition, you need to enter username and password for your ISP account.

Ethernet DHCP: This is a standard Ethernet interface with DHCP.

Ethernet: This is a normal Ethernet interface, with 10, 100, or 1000 Mbit/s bandwidth.

Ethernet Bridge: This is a Ethernet interface using a bridge to connect Ethernet networks or segments to each other.

Ethernet VLAN: VLAN (Virtual LAN) is a method to have multiple layer-2 separated network segments on a single hardware interface. Every segment is identified by a "tag", which is just an integer number. When you add a VLAN interface, you will create a "hardware" device that can be used to add additional interfaces (aliases), too. PPPoE and PPPoA devices cannot be run over VLAN virtual hardware.

Modem (PPP): This type of interface lets you connect Sophos UTM to the Internet through a PPP modem. For the configuration you need a serial interface and an external modem on Sophos UTM. And you also need the DSL access data including username and password. You will get these data from your ISP.

About Flexible Slots

Certain types of Sophos hardware appliances allow to easily change interface hardware by providing so-called slots where slot modules can be inserted and switched flexibly. If such hardware is being used, WebAdmin displays the slot information along with the hardware interfaces. This looks for example like **eth1 [A6] Intel Corporation 82576 Gigabit Network Connection**, where the slot information is provided in the square brackets, **A6** being the 6th port in slot A. Currently, up to three slots are possible, labeled A-C with up to eight ports each. Onboard interface cards will be labeled **[MGMT1]** and **[MGMT2]**.

Slot information is provided in the following places of WebAdmin:

- **Interfaces & Routing > Interfaces > Interfaces**
- **Interfaces & Routing > Interfaces > Hardware**
- Throughout WebAdmin in **Hardware** drop-down lists and lists where hardware interface information is displayed

For up-to-date information on which appliance types come with flexible slots, please refer to the [Sophos UTM webpage](#).

6.1.1.3 Group

You can combine two or more interfaces to a group. Groups can ease your configuration tasks. When creating multipath rules, you need to configure a group if you want to balance traffic over a defined group of uplink interfaces only instead of using all uplink interfaces.

To configure a **Group** interface, proceed as follows:

1. On the **Interfaces** tab, click **New Interface**.

The **Add Interface** dialog box opens.

2. Make the following settings:

Name: Enter a descriptive name for the interface.

Type: Select **Group** from the drop-down list.

Interfaces: Add the interfaces to be grouped.

Comment (optional): Add a description or other information.

3. Click **Save**.

The group is added to the interface list. Groups do not have a status.

To show only interfaces of a certain type, select the type of the interfaces you want to have displayed from the drop-down list. To either edit or delete an interface, click the corresponding buttons.

6.1.1.4 3G/UMTS

Sophos UTM supports network connections via 3G/UMTS USB sticks.

To configure a 3G/UMTS interface, proceed as follows:

1. On the **Interfaces** tab, click **New Interface**.

The **Add Interface** dialog box opens.

2. Make the following settings:

Name: Enter a descriptive name for the interface.

Type: Select **3G/UMTS** from the drop-down list.

Hardware: Select a USB modem stick from the drop-down list. Note that you need to reboot after you plugged the USB stick in.

Network: Select the mobile network type, which is either **GSM/W-CDMA**, **CDMA**, or **LTE**.

IPv4/IPv6 default GW (optional): Select this option if you want to use the default gateway of your provider.

PIN (optional): Enter the PIN of the SIM card if a PIN is configured.

APN autoselect (optional): By default, the APN (Access Point Name) used is retrieved from the USB modem stick. If you unselect the checkbox, enter APN information into the **APN** field.

Username/Password (optional): If required, enter a username and password for the mobile network.

Dial string (optional): If your provider uses a different dial string, enter it here. Default is *99#.

Comment (optional): Add a description or other information.

3. Optionally, make the following advanced settings:

Init string: Enter the string to initialize the USB modem stick. Remember that it might become necessary to adjust the init string to the USB modem stick. In this case, the init string can be gathered from the associated USB modem stick manual. If you do not have the required documentation available, keep the default setting **ATZ**.

Reset string: Enter the reset string for the USB modem stick. Keep in mind that it might be necessary to adjust the reset string to the USB modem stick. In this case you can gather it from the associated USB modem stick manual. If you do not have the required documentation available, keep the default setting **ATZ**.

MTU: Enter the maximum transmission unit for the interface in bytes. You must enter a value fitting your interface type here if you want to use traffic management. A sensible value for the interface type is entered by default. Changing this setting should only be done by technically adept users. Entering wrong values here can render the interface unusable. An MTU size greater than 1500 bytes must be supported by the network operator and the network card (e.g., Gigabit interface). By default, an MTU of 1500 bytes is set for the **3G/UMTS** interface type.

Default route metric: Enter the default route metric for the interface. The metric value is used to distinguish and prioritize routes to the same destination and is valid for all interfaces.

Asymmetric (optional): Select this option if your connection's uplink and downlink bandwidth are not identical and you want the Dashboard to reflect this. Then, two textboxes are displayed, allowing you to enter the maximum uplink bandwidth in either MB/s or KB/s. Select the appropriate unit from the drop-down list.

Displayed max (optional): Here you can enter the maximum downlink bandwidth of your connection, if you want the Dashboard to reflect it. The bandwidth can be given in either MB/s or KB/s. Select the appropriate unit from the drop-down list.

4. Click **Save**.

The system will now check the settings for validity. After a successful check the new interface will appear in the interface list. The interface is not yet enabled (toggle switch is gray).

5. Enable the interface.

Click the toggle switch to activate the interface.

The interface is now enabled (toggle switch is green). The interface might still be displayed as being **Down**. The system requires a short time to configure and load the settings. Once the **Up** message appears, the interface is fully operable.

To show only interfaces of a certain type, select the type of the interfaces you want to have displayed from the drop-down list. To either edit or delete an interface, click the corresponding buttons.

6.1.1.5 Ethernet

To configure a network card for a static Ethernet connection to an internal or external network, you must configure the network card with an IP address and netmask.

To configure a static Ethernet interface, proceed as follows:

1. On the **Interfaces** tab, click **New Interface**.

The **Add Interface** dialog box opens.

2. Make the following settings:

Name: Enter a descriptive name for the interface.

Type: Select **Ethernet** from the drop-down list.

Hardware: Select an interface from the drop-down list.

Tip - For an external connection (e.g., to the Internet) choose the network card with SysID eth1. Please note that one network card cannot be used as both an **Ethernet** interface and a **PPP over Ethernet (PPPoE DSL)** or **PPTP over Ethernet (PPPoA DSL)** connection simultaneously.

Dynamic IP: Activate if you want to use a dynamic IP address.

IPv4/IPv6 address: Enter the IP address of the interface.

Netmask: Select a network mask (IPv4) and/or enter an IPv6 network mask.

IPv4/IPv6 default GW (optional): Select this option if you want to use a statically defined default gateway.

Default GW IP (optional): Enter the IP address of the default gateway.

Note - You can configure an interface to have an IPv4 and an IPv6 address simultaneously.

Comment (optional): Add a description or other information.

3. Optionally, make the following advanced settings:

Hostname: If your ISP requires to receive the hostname of your system, enter it here.

MTU: Enter the maximum transmission unit for the interface in bytes. You must enter a value fitting your interface type here if you want to use traffic management. A sensible value for the interface type is entered by default. Changing this setting should only be done by technically adept users. Entering wrong values here can render the interface unusable. An MTU size greater than 1500 bytes must be supported by the network operator and the network card (e.g., Gigabit interface). By default, an MTU of 1500 bytes is set for the **Ethernet** interface type.

Default route metric: Enter the default route metric for the interface. The metric value is used to distinguish and prioritize routes to the same destination and is valid for all interfaces.

Proxy ARP: To enable the function, select the checkbox. By default, the **Proxy ARP** function is disabled (Off). This option is available on broadcast-type interfaces. When you switch it on, Sophos UTM will "attract" traffic on that interface for hosts "behind" it and pass it on. It will do that for all hosts that it has a direct interface route for. This allows you to build "transparent" network bridging while still doing firewalling. Another use for this feature is when your ISP's router just puts your "official" network on its Ethernet interface (does not use a host route).

Asymmetric (optional): Select this option if your connection's uplink and downlink bandwidth are not identical and you want the Dashboard to reflect this. Then, two textboxes

are displayed, allowing you to enter the maximum uplink bandwidth in either MB/s or KB/s. Select the appropriate unit from the drop-down list.

Displayed max (optional): Here you can enter the maximum downlink bandwidth of your connection, if you want the Dashboard to reflect it. The bandwidth can be given in either MB/s or KB/s. Select the appropriate unit from the drop-down list.

4. Click **Save**.

The system will now check the settings for validity. After a successful check the new interface will appear in the interface list. The interface is not yet enabled (toggle switch is gray).

5. Enable the interface.

Click the toggle switch to activate the interface.

The interface is now enabled (toggle switch is green). The interface might still be displayed as being **Down**. The system requires a short time to configure and load the settings. Once the **Up** message appears, the interface is fully operable.

To show only interfaces of a certain type, select the type of the interfaces you want to have displayed from the drop-down list. To either edit or delete an interface, click the corresponding buttons.

6.1.1.6 Ethernet Bridge

Bridging is a packet forwarding technique primarily used in Ethernet networks. Unlike routing, bridging makes no assumptions about where in a network a particular address is located. Instead, it depends on broadcasting to locate unknown devices.

Through bridging, several Ethernet networks or segments can be connected to each other. The data packets are forwarded through bridging tables, which assign the MAC addresses to a bridge port. The resulting bridge will transparently pass traffic across the bridge interfaces.

Note - Such traffic must explicitly be allowed by means of appropriate firewall rules. Most virtual hosts do not permit MAC address changes or promiscuous mode by default on their virtual interfaces. For bridging to work on virtual hosts, make sure that on the virtual host MAC address validation is disabled and promiscuous mode is allowed.

Note - If you had an configured bridge in Sophos UTM version 9.2 under the **Interfaces & Routing > Bridging > Status** tab, this configuration will be displayed and marked with a note of the former version under the interface overview.

To configure a Ethernet Bridge, proceed as follows:

1. On the **Interfaces** tab, click **New Interface**.

The **Add Interface** dialog box opens.

2. Make the following settings:

Name: Enter a descriptive name for the interface.

Type: Select **Ethernet Bridge** from the drop-down list.

Note - If you edit an existing interface you can change the type and convert the interface into an **Ethernet Bridge**. After the conversion a note will be displayed under the changed interface in the interface overview. An converted **Ethernet Bridge** can also be converted back to an **Ethernet** interface.

Bridge selected NICs: You can select individual NICs that should form the bridge. This requires that there are unused network interface cards available. Select one or more of them to form the bridge. It is also possible to specify a **Convert Interface** that will be copied to the new bridge.

Dynamic IP Activate if you want to use a dynamic IP address.

IPv4 Address: Enter the IP address of the interface.

Note - IP address 0.0.0.0 is possible in **Ethernet Bridge**. In this case you have an bridge without address.

Netmask: Select a network mask (IPv4) and/or enter an IPv6 network mask.

IPv4/IPv6 default GW (optional): Select this option if you want to use a statically defined default gateway.

Default GW IP (optional): Enter the IP address of the default gateway.

Note - You can configure an interface to have an IPv4 and an IPv6 address simultaneously.

Comment (optional): Add a description or other information.

3. Optionally, make the following advanced settings:

MTU: Enter the maximum transmission unit for the interface in bytes. You must enter a value fitting your interface type here if you want to use traffic management. A sensible value for the interface type is entered by default. Changing this setting should only be done by technically adept users. Entering wrong values here can render the interface unusable. An MTU size greater than 1500 bytes must be supported by the network operator and the network card (e.g., Gigabit interface). By default, an MTU of 1500 bytes is set for the **Ethernet** interface type.

Default route metric: Enter the default route metric for the interface. The metric value is used to distinguish and prioritize routes to the same destination and is valid for all interfaces.

Proxy ARP: To enable the function, select the checkbox. By default, the **Proxy ARP** function is disabled (Off). This option is available on broadcast-type interfaces. When you switch it on, Sophos UTM will "attract" traffic on that interface for hosts "behind" it and pass it on. It will do that for all hosts that it has a direct interface route for. This allows you to build "transparent" network bridging while still doing firewalling. Another use for this feature is when your ISP's router just puts your "official" network on its Ethernet interface (does not use a host route).

4. Optionally, make the following advanced bridge settings:

Allow ARP broadcasts: Turn on to allow global ARP broadcasts to be forwarded by the bridge. If enabled, the bridge forwards broadcasts destined to the **Target MAC address** `FF:FF:FF:FF:FF:FF` of the ARP packet. This, however, could be used by an alleged attacker to gather various information about the network cards employed within the respective network segment or even the security product itself. Therefore, the default setting is not to let such broadcasts pass the bridge.

Spanning Tree Protocol: Enabling this option will activate the Spanning Tree Protocol (STP). This network protocol detects and prevents bridge loops.

Caution - Be aware that the Spanning Tree Protocol is known to provide no security, therefore attackers may be able to alter the bridge topology.

Ageing timeout: The amount of time in seconds after which an inactive MAC address will be deleted. The default time is 300 seconds.

Allow IPv6 pass through: Enabling this option will allow IPv6 traffic to pass the bridge without any inspection.

Virtual MAC address: Here you can enter a static MAC address for the bridge. By default (and as long as the entry is `00:00:00:00:00:00`), the bridge uses the lowest MAC address of all member interfaces.

Forwarded EtherTypes: By default, a bridge configured on Sophos UTM only forwards IP packets. If you want additional protocols to be forwarded, you have to add their Ether-Type to this box. The types have to be entered as four-digit hexadecimal numbers. Popular examples are AppleTalk (type 809B), Novell (type 8138), or PPPoE (types 8863 and 8864). A typical use case would be a bridge between your RED interfaces which should forward additional protocols between the connected networks.

5. Click **Save**.

The system will now check the settings for validity. After a successful check the new interface will appear in the interface list. The interface is not yet enabled (toggle switch is gray).

6. Enable the interface.

Click the toggle switch to activate the interface.

The interface is now enabled (toggle switch is green). The interface might still be displayed as being **Down**. The system requires a short time to configure and load the settings. Once the **Up** message appears, the interface is fully operable.

To show only interfaces of a certain type, select the type of the interfaces you want to have displayed from the drop-down list. To either edit or delete an interface, click the corresponding buttons.

6.1.1.7 Ethernet VLAN

In order to connect Sophos UTM to the virtual LANs, the system requires a network card with a tag-capable driver. A tag is a 2-byte header attached to packets as part of the Ethernet header. The tag contains the number of the VLAN that the packet should be sent to: the VLAN number is a 12-bit number, allowing up to 4095 virtual LANs. In WebAdmin this number is referred to as the **VLAN tag**.

Note - Sophos maintains a list of supported tag-capable network interface cards. The **Hardware Compatibility List (HCL)** is available at the [Sophos Knowledge Base](#). Use "HCL" as search term to locate the corresponding page.

To configure an Ethernet VLAN interface, proceed as follows:

1. On the **Interfaces** tab, click **New Interface**.

The **Add Interface** dialog box opens.

2. Make the following settings:

Name: Enter a descriptive name for the interface.

Type: Select **Ethernet VLAN** from the drop-down list.

Hardware: Select an interface from the drop-down list.

Dynamic IP: Select this option if you want to use a dynamic IP address.

VLAN Tag: Enter the VLAN tag to use for this interface.

IPv4/IPv6 address: Enter the IP address of the interface.

Netmask: Select a network mask (IPv4) and/or enter an IPv6 network mask.

IPv4/IPv6 default GW (optional): Select this option if you want to use a statically defined default gateway.

Default GW IP (optional): Enter the IP address of the default gateway.

Note - You can configure an interface to have an IPv4 and an IPv6 address simultaneously.

Comment (optional): Add a description or other information.

3. Optionally, make the following advanced settings:

MTU: Enter the maximum transmission unit for the interface in bytes. You must enter a value fitting your interface type here if you want to use traffic management. A sensible value for the interface type is entered by default. Changing this setting should only be done by technically adept users. Entering wrong values here can render the interface unusable. An MTU size greater than 1500 bytes must be supported by the network operator and the network card (e.g., Gigabit interface). By default, an MTU of 1500 bytes is set for the **Ethernet VLAN** interface type.

Default route metric: Enter the default route metric for the interface. The metric value is used to distinguish and prioritize routes to the same destination and is valid for all interfaces.

Proxy ARP: To enable the function, select the checkbox. By default, the **Proxy ARP** function is disabled (Off). This option is available on broadcast-type interfaces. When you switch it on, Sophos UTM will "attract" traffic on that interface for hosts "behind" it and pass it on. It will do that for all hosts that it has a direct interface route for. This allows you to build "transparent" network bridging while still doing firewalling. Another use for this feature is when your ISP's router just puts your "official" network on its Ethernet interface (does not use a host route).

Asymmetric (optional): Select this option if your connection's uplink and downlink bandwidth are not identical and you want the Dashboard to reflect this. Then, two textboxes are displayed, allowing you to enter the maximum uplink bandwidth in either MB/s or KB/s. Select the appropriate unit from the drop-down list.

Displayed max (optional): Here you can enter the maximum downlink bandwidth of your connection, if you want the Dashboard to reflect it. The bandwidth can be given in either MB/s or KB/s. Select the appropriate unit from the drop-down list.

4. Click **Save**.

The system will now check the settings for validity. After a successful check the new interface will appear in the interface list. The interface is not yet enabled (toggle switch is gray).

5. Enable the interface.

Click the toggle switch to activate the interface.

The interface is now enabled (toggle switch is green). The interface might still be displayed as being **Down**. The system requires a short time to configure and load the settings. Once the **Up** message appears, the interface is fully operable.

To show only interfaces of a certain type, select the type of the interfaces you want to have displayed from the drop-down list. To either edit or delete an interface, click the corresponding buttons.

6.1.1.8 DSL (PPPoE)

The configuration will require the DSL connection information, including username and password, provided by your ISP. VDSL is also supported by this interface type.

Note - Once the DSL connection is activated, Sophos UTM will be connected to your ISP 24 hours a day. You should therefore ensure that your ISP bills on a flat-rate or bandwidth-based system rather than based on connection time.

To configure a DSL (PPPoE) interface, proceed as follows:

1. On the **Interfaces** tab, click **New Interface**.

The **Add Interface** dialog box opens.

2. Make the following settings:

Name: Enter a descriptive name for the interface.

Type: Select **DSL (PPPoE)** from the drop-down list.

Hardware: Select an interface from the drop-down list.

VDSL: Select this checkbox if and only if your connection is a VDSL connection. The **MTU** changes to 1476.

Static PPPoE IP (optional): Select the checkbox if you have a static IP address assigned by your ISP, and enter the IP address and corresponding netmask into the appearing textboxes.

- **IPv4/IPv6 Address:** Enter the IP address of the interface.
- **Netmask:** Select a netmask from the drop-down list and/or enter an IPv6 netmask.

Note - You can configure an interface to have an IPv4 and an IPv6 address simultaneously.

IPv4/IPv6 Default GW (optional): Select this option if you want to use the default gateway of your provider.

Username: Enter the username, provided by your ISP.

Password: Enter the password, provided by your ISP.

Comment (optional): Add a description or other information.

3. Optionally, make the following advanced settings:

MTU: Enter the maximum transmission unit for the interface in bytes. You must enter a value fitting your interface type here if you want to use traffic management. A sensible value for the interface type is entered by default. Changing this setting should only be done by technically adept users. Entering wrong values here can render the interface unusable. An MTU size greater than 1500 bytes must be supported by the network operator and the network card (e.g., Gigabit interface). By default, an MTU of 1492 bytes is set for the **DSL (PPPoE)** interface type.

Default route metric: Enter the default route metric for the interface. The metric value is used to distinguish and prioritize routes to the same destination and is valid for all interfaces.

VLAN tag (only if VDSL is enabled): Enter the VLAN tag to be added to the PPPoE packets. For the correct tag, refer to your VDSL provider. Default is 7, which is currently used for the PPPoE connection of the Deutsche Telekom.

Daily reconnect: Define at what time you want the connection to close and reopen. You can select either **Never** or pick a specific time.

Reconnect delay: Here you can change the reconnect delay. By default, it is set to **5 Seconds**. If your ISP demands a longer delay you can set it to **One Minute** or **Fifteen Minutes**.

Asymmetric (optional): Select this option if your connection's uplink and downlink bandwidth are not identical and you want the Dashboard to reflect this. Then, two textboxes are displayed, allowing you to enter the maximum uplink bandwidth in either MB/s or KB/s. Select the appropriate unit from the drop-down list.

Displayed max (optional): Here you can enter the maximum downlink bandwidth of your connection, if you want the Dashboard to reflect it. The bandwidth can be given in either MB/s or KB/s. Select the appropriate unit from the drop-down list.

Multilink: If enabled, you can bundle multiple PPP connections. A multilink PPP connection only works if your ISP supports Multilink PPP.

Multilink slaves: Select the interfaces you want to bundle with the hardware selected above to one multilink.

4. Click **Save**.

The system will now check the settings for validity. After a successful check the new interface will appear in the interface list. The interface is not yet enabled (toggle switch is gray).

5. Enable the interface.

Click the toggle switch to activate the interface.

The interface is now enabled (toggle switch is green). The interface might still be displayed as being **Down**. The system requires a short time to configure and load the settings. Once the **Up** message appears, the interface is fully operable.

To show only interfaces of a certain type, select the type of the interfaces you want to have displayed from the drop-down list. To either edit or delete an interface, click the corresponding buttons.

6.1.1.9 DSL (PPPoA/PPTP)

To configure a connection using the **PPP over ATM Protocol** (PPPoA), you will need an unused Ethernet interface on Sophos UTM as well as an external ADSL modem with an Ethernet port. The connection to the Internet proceeds through two separate connections.

Between Sophos UTM and the ADSL modem, a connection using the **PPTP over Ethernet Protocol** is established. The ADSL modem is, in turn, connected to the ISP using the **PPP over ATM Dialing Protocol**.

The configuration will require the DSL connection information, including username and password, provided by your Internet Service Provider (ISP).

Note - Once the DSL connection is activated, Sophos UTM will be connected to your ISP 24 hours a day. You should therefore ensure that your ISP bills on a flat-rate or bandwidth-based system rather than based on connection time.

To configure a DSL (PPPoA/PPTP) interface, proceed as follows:

1. On the **Interfaces** tab, click **New Interface**.

The **Add Interface** dialog box opens.

2. Make the following settings:

Name: Enter a descriptive name for the interface.

Type: Select **DSL (PPPoA/PPTP)** from the drop-down list.

Hardware: Select an interface from the drop-down list.

IPv4/IPv6 default GW (optional): Select this option if you want to use the default gateway of your provider.

Username: Enter the username, provided by your ISP.

Password: Enter the password, provided by your ISP.

Comment (optional): Add a description or other information.

3. Optionally, make the following advanced settings:

Modem IP: Enter the IP address of your ADSL modem here. This address will usually be provided by your ISP or the modem hardware and cannot be changed. Example: 10.0.0.138 (with AonSpeed).

NIC address: Enter the IP address of the network card on Sophos UTM which is attached to the modem here. This address must be in the same subnet as the modem. Example: 10.0.0.140 (with AonSpeed).

NIC netmask: Enter the network mask to use here. Example: 255.255.255.0 (with AonSpeed).

Ping address (optional): Enter the IP address of a host on the Internet that responds to ICMP ping requests. In order to test the connection between Sophos UTM and the external network, you have to enter an IP address of a host on the other side of the PPTP link. You can try to use the DNS server of your ISP. Sophos UTM will send ping requests to this host: if no answer is received, the connection will be broken.

MTU: Enter the maximum transmission unit for the interface in bytes. You must enter a value fitting your interface type here if you want to use traffic management. A sensible value for the interface type is entered by default. Changing this setting should only be done by technically adept users. Entering wrong values here can render the interface unusable. An MTU size greater than 1500 bytes must be supported by the network operator and the network card (e.g., Gigabit interface). By default, an MTU of 1492 bytes is set for the **DSL (PPPoA)** interface type.

Default route metric: Enter the default route metric for the interface. The metric value is used to distinguish and prioritize routes to the same destination and is valid for all interfaces.

Daily reconnect: Define at what time you want the connection to close and reopen. You can select either **Never** or pick a specific time.

Reconnect delay: Here you can change the reconnect delay. By default, it is set to **5 Seconds**. If your ISP demands a longer delay you can set it to **One Minute** or **Fifteen Minutes**.

Asymmetric (optional): Select this option if your connection's uplink and downlink bandwidth are not identical and you want the Dashboard to reflect this. Then, two textboxes are displayed, allowing you to enter the maximum uplink bandwidth in either MB/s or KB/s. Select the appropriate unit from the drop-down list.

Displayed max (optional): Here you can enter the maximum downlink bandwidth of your connection, if you want the Dashboard to reflect it. The bandwidth can be given in either MB/s or KB/s. Select the appropriate unit from the drop-down list.

4. Click **Save**.

The system will now check the settings for validity. After a successful check the new interface will appear in the interface list. The interface is not yet enabled (toggle switch is gray).

5. Enable the interface.

Click the toggle switch to activate the interface.

The interface is now enabled (toggle switch is green). The interface might still be displayed as being **Down**. The system requires a short time to configure and load the settings. Once the **Up** message appears, the interface is fully operable.

To show only interfaces of a certain type, select the type of the interfaces you want to have displayed from the drop-down list. To either edit or delete an interface, click the corresponding buttons.

6.1.1.10 Modem (PPP)

For the configuration you need a serial interface and an external PPP modem on Sophos UTM. And you also need the DSL access data including username and password. You will get these data from your Internet Service Provider (ISP).

To configure a **Modem (PPP)** interface, proceed as follows:

1. On the **Interfaces** tab, click **New Interface**.

The **Add Interface** dialog box opens.

2. Make the following settings:

Name: Enter a descriptive name for the interface.

Type: Select **Modem (PPP)** from the drop-down list.

Hardware: Select an interface from the drop-down list.

IPv4/IPv6 default GW (optional): Select this option if you want to use the default gateway of your provider.

Username: Enter the username, provided by your ISP.

Password: Enter the password, provided by your ISP.

Dial String: Enter the phone number. Example: 5551230

Comment (optional): Add a description or other information.

3. Optionally, make the following advanced settings:

Line speed: Set the speed in bits per seconds for the connection between Sophos UTM and the modem. Common values are 57,600 Bits/s and 115,200 Bits/s.

Flow control: Select the method to control the data flow.

If the data is transferred via the serial connection it might happen that the system cannot process incoming data fast enough. To ensure that no data is lost, this method of controlling the data flow becomes necessary. With the serial connection two methods are available:

- **Hardware** signals
- **Software** signals

Since in a PPP connection all eight bits are used for the data transfer line and the transferred data contains the bytes of the command signs **Control S** and **Control Q**, we recommend keeping the default setting **Hardware** and using a serial connection cable.

Init string: Enter the string to initialize the modem. Remember that it might become necessary to adjust the init string to the modem. In this case, the init string can be gathered from the associated modem manual. If you do not have the required documentation available, keep the default setting **ATZ**.

Reset string: Enter the reset string for the modem. Keep in mind that it might be necessary to adjust the reset string to the modem. In this case you can gather it from the associated modem manual. If you do not have the required documentation available, keep the default setting **ATZ**.

MTU: Enter the maximum transmission unit for the interface in bytes. You must enter a value fitting your interface type here if you want to use traffic management. A sensible

value for the interface type is entered by default. Changing this setting should only be done by technically adept users. Entering wrong values here can render the interface unusable. An MTU size greater than 1500 bytes must be supported by the network operator and the network card (e.g., Gigabit interface). By default, an MTU of 1492 bytes is set for the **Modem (PPP)** interface type.

Default route metric: Enter the default route metric for the interface. The metric value is used to distinguish and prioritize routes to the same destination and is valid for all interfaces.

Asymmetric (optional): Select this option if your connection's uplink and downlink bandwidth are not identical and you want the Dashboard to reflect this. Then, two textboxes are displayed, allowing you to enter the maximum uplink bandwidth in either MB/s or KB/s. Select the appropriate unit from the drop-down list.

Displayed max (optional): Here you can enter the maximum downlink bandwidth of your connection, if you want the Dashboard to reflect it. The bandwidth can be given in either MB/s or KB/s. Select the appropriate unit from the drop-down list.

4. Click **Save**.

The system will now check the settings for validity. After a successful check the new interface will appear in the interface list. The interface is not yet enabled (toggle switch is gray).

5. Enable the interface.

Click the toggle switch to activate the interface.

The interface is now enabled (toggle switch is green). The interface might still be displayed as being **Down**. The system requires a short time to configure and load the settings. Once the **Up** message appears, the interface is fully operable.

To show only interfaces of a certain type, select the type of the interfaces you want to have displayed from the drop-down list. To either edit or delete an interface, click the corresponding buttons.

6.1.2 Additional Addresses

One network card can be configured with additional IP addresses (also called **aliases**). This function allows you to manage multiple logical networks on one physical network card. It can also be used to assign further addresses to a Sophos UTM running NAT (Network Address Translation).

To configure additional addresses on standard Ethernet interfaces, proceed as follows:

1. On the **Additional Addresses** tab, click **New Additional Address**.

The **Add Additional Address** dialog box opens.

2. Make the following settings:

Name: Enter a descriptive name for the new additional address.

On interface: Select an interface from the drop-down list to which the address is to be assigned.

IPv4/IPv6 address: Enter the additional IP address of the interface.

Netmask: Select a netmask from the drop-down list and/or enter an IPv6 netmask.

Assigned to node: This option is only available when Sophos UTM is set up in a cluster. Select a node from the drop-down list for the additional address. If you assign an additional address to a HA/Cluster node, then the traffic will be send to this dedicated node for monitoring. This can be useful to monitor individual nodes of a HA/Cluster.

Note - All traffic for the additional address will be send exclusively to the dedicated node. If the node is down, no other node will handle the traffic for the additional address.

Note - You can configure an interface to have an IPv4 and an IPv6 address simultaneously.

Comment (optional): Add a description or other information.

3. Click **Save**.

The system will now check the settings for validity. After a successful check the new interface will appear in the interface list. The interface is not yet enabled (toggle switch is gray).

4. Enable the additional address.

Click the toggle switch to activate the additional address.

The additional address is now enabled (toggle switch is green). The additional address might still be displayed as being **Down**. The system requires a short time to configure and load the settings. Once the **Up** message appears, the additional address is fully operable.

To either edit or delete an additional address, click the corresponding buttons.

6.1.3 Link Aggregation

Link aggregation, which is also known as "port trunking" or "NIC bonding", allows you to aggregate multiple Ethernet network ports into one virtual interface. The aggregated ports appear as a single IP address to your system. Link aggregation is useful to increase the link speed beyond the speed of any one single NIC or to provide basic failover and fault tolerance by redundancy in the event any port or switch fails. All traffic that was being routed over the failed port or switch is automatically re-routed to use one of the remaining ports or switches. This failover is completely transparent to the system using the connection.

Note - In a high-availability environment, Ethernet connections can even be on different HA units.

You can define up to four different link aggregation groups. A group can consist of one or multiple interfaces.

To create a link aggregation group (LAG), proceed as follows:

1. For each LAG, select the interfaces you want to add.

A group can consist of a configured interface and/or one or more unconfigured interfaces.

To use a configured interface, select it from the **Convert Interface** drop-down list. To use unconfigured interfaces, select the respective checkbox(es).

2. Enable the LAG.

Activate a group by clicking the button **Enable this group**.

Once the link aggregation group has been configured, a new LAG interface (e.g., `lag0`) becomes available for selection if you are going to create an interface definition on the **Interfaces** tab. On top of the bonding interface you can create one of the following:

- Ethernet Static
- Ethernet VLAN
- Ethernet DHCP
- Alias interfaces

To disable a LAG, clear the checkboxes of the interfaces that make up the LAG, click **Update this Group**, and confirm the warning message. The status of the LAG interface is shown on the **Support > Advanced > Interfaces Table** tab.

6.1.4 Uplink Balancing

With the uplink balancing function you can combine more than one Internet uplink, either for having backup uplinks available or for using load balancing among multiple uplinks. Combining up to 32 different uplinks is supported. Note that with BasicGuard subscription, only two uplinks can be combined.

Uplink balancing is automatically enabled when you assign a default gateway to an interface in addition to an already existing interface with a default gateway. All interfaces possessing a default gateway will be added to the **Active Interfaces** box and uplink balancing automatically organizes the balancing between those interfaces from then on. Any other interface with a default gateway will automatically be added, too.

On the **Multipath Rules** tab you can define specific rules for the traffic to be balanced.

To manually set up uplink balancing, proceed as follows:

1. Enable uplink balancing.

Click the toggle switch.

The toggle switch turns amber and the **Uplink Balancing** area becomes editable.

2. Select active interfaces.

Add one or more interfaces by clicking the Folder icon and dragging interfaces from the object list. With multiple interfaces, traffic coming from clients is balanced by source, i.e., all traffic coming from one source uses the same interface, whereas traffic from another source can be sent to another interface. If one of the interfaces is unavailable, traffic will be taken over by the remaining interface(s).

Note - Initially, when uplink balancing has been enabled automatically, the **Active Interfaces** list already contains all interfaces having a default gateway. If you remove an interface from the list, the **Default gateway** checkbox of the interface will automatically be unselected. Thus, every interface having a default gateway has to be either on this list or on the **Standby Interfaces** box below. However, you can add interfaces without default gateway and enter the default gateway address later on.

Note - The sequence of the interfaces is important: In configurations where only one interface can be used, and for packets sent from Sophos UTM itself, by default the first available active interface is used. You can change the interface sequence by clicking the Sort icons in the box.

Using the Edit Scheduler icon on the box header, you can set individual balancing behavior and interface persistence of the active interfaces:

Weight: Weight can be set from 0 to 100 and specifies how much traffic is processed by an interface relative to all other interfaces. A weighted round robin algorithm is used for this, a higher value meaning that more traffic is routed to the respective interface. The values are evaluated relative to each other so they need not add up to 100. Instead, you can have a configuration for example, where interface 1 has value 100, interface 2 has value 50 and interface 3 has value 0. Here, interface 2 gets only half the traffic of interface 1, whereas interface 3 only comes into action when none of the other interfaces is available. A value of zero means that always another interface with a higher value is chosen if available.

Persistence: Interface persistence is a technique which ensures that traffic having specific attributes is always routed over the same uplink interface. Persistence has a default timeout of one hour.

3. Select standby interfaces (optional).

Here, you can optionally add failover interfaces that should only come into action if all active interfaces become unavailable. In this case, the first available standby interface in the given order will be used. You can change the interface sequence by clicking the Sort icons in the box.

4. Change monitoring settings (optional).

By default, **Automatic monitoring** is enabled to detect possible interface failures. This means that the health of all uplink interfaces is monitored by having them contact a specific host on the Internet at an interval of 15 seconds. By default, the monitoring host is the third ping-allowing hop on the route to one of the root DNS servers. However, you can define the hosts for monitoring the server pool yourself. For these hosts you can select another service instead of ping, and modify the monitoring interval and timeout.

If the monitoring hosts do not send a response anymore, the respective interface is regarded as dead and not used anymore for distribution. On the Dashboard, in the **Link** column of the interface, **Error** will be displayed.

Note - Automatically, the same monitoring settings are used for both uplink monitoring (**Uplink Monitoring > Advanced**) and uplink balancing (**Interfaces > Uplink Balancing**).

5. Click **Apply**.

Your settings will be saved.

The toggle switch turns green.

A new virtual network interface named **Uplink Interfaces** is automatically created and now available for use by other functions of Sophos UTM, e.g. IPsec rules. The virtual network interface **Uplink Interfaces** comprises all uplink interfaces added to the interface list.

Additionally, a new network group named **Uplink Primary Addresses** is automatically created and now available for use by other functions of Sophos UTM, e.g. firewall rules. It refers to the primary addresses of all **Uplink Interfaces**.

In case of an interface failure, open VPN tunnels can be automatically re-established over the next available interface provided DynDNS is used or the remote server accepts the IP addresses of all uplink interfaces. As a prerequisite, the IPsec rule must use the **Uplink Interfaces** as **Local interface**.

Defining Monitoring Hosts

To define hosts for monitoring the server pool yourself, proceed as follows:

1. Unselect the **Automatic monitoring** checkbox.

The **Monitoring hosts** box becomes editable.

2. Add monitoring hosts.

Select or add one or more hosts that you want to use for monitoring instead of random hosts. If an interface is monitored by more than one host, it will only be regarded as dead if all monitoring hosts do not respond in the defined time span. How to add a defin-

ition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.

Note - If a selected host is bound to an interface, it will only be used to monitor this interface. If a host is not bound to an interface, it will be used to monitor all interfaces. Interfaces not covered by the selected hosts will be monitored by automatic monitoring.

Click the Monitoring Settings icon in the box header to set the monitoring details:

Monitoring type: Select the service protocol for the monitor checks. Select either **TCP** (TCP connection establishment), **UDP** (UDP connection establishment), **Ping** (ICMP Ping), **HTTP Host** (HTTP requests), or **HTTPS Host** (HTTPS requests) for monitoring. When using **UDP** a ping request will be sent initially which, if successful, is followed by a UDP packet with a payload of 0. If ping does not succeed or the ICMP port is unreachable, the connection is regarded as down.

Port (only with monitoring types **TCP** and **UDP**): Port number the request will be sent to.

URL (optional, only with monitoring types **HTTP/S Host**): URL to be requested. You can use other ports than the default ports 80 or 443 by adding the port information to the URL, e.g., `http://example.domain:8080/index.html`. If no URL is entered, the root directory will be requested.

Interval: Enter a time interval in seconds at which the hosts are checked.

Timeout: Enter a maximum time span in seconds for the monitoring hosts to send a response. If all monitoring hosts of an interface do not respond during this time, the interface will be regarded as dead.

3. Click **Apply**.

Your settings will be saved.

6.1.5 Multipath Rules

On the **Interfaces & Routing > Interfaces > Multipath Rules** tab you can set rules for uplink balancing. The rules are applied to the active interfaces on the **Uplink Balancing** tab when there is more than one interface to balance traffic between. Without multipath rules, all services are balanced by source, i.e., all traffic coming from one source uses the same interface, whereas traffic from another source can be sent to another interface. Multipath rules allow you to change this default interface persistence.

Note - Multipath rules can be set up for the service types TCP, UDP, or IP.

To create a multipath rule, proceed as follows:

1. On the **Multipath Rules** tab, click **New Multipath Rule**.

The **Add Multipath Rule** dialog box opens.

2. Make the following settings:

Name: Enter a descriptive name for the multipath rule.

Position: The position number, defining the priority of the rule. Lower numbers have higher priority. Rules are matched in ascending order. Once a rule has matched, rules with a higher number will not be evaluated anymore. Place the more specific rules at the top of the list to make sure that more vague rules match last.

Source: Select or add a source IP address or network to match.

Service: Select or add the network service to match.

Destination: Select or add a destination IP address or network to match.

Tip - How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.

lbf. persistence: Interface persistence is a technique which ensures that traffic having specific attributes is always routed over the same uplink interface. Persistence has a default timeout of one hour, however you can change this timeout on the **Uplink Balancing** tab. You can decide what should be the basis for persistence:

- **By connection:** (default) Balancing is based on the connection, i.e., all traffic belonging to a particular connection uses the same interface, whereas traffic of another connection can be sent to another interface.
- **By source:** Balancing is based on the source IP address, i.e., all traffic coming from one source uses the same interface, whereas traffic from another source can be sent to another interface.

Note - Basically, persistence by source cannot work when using a proxy because the original source information is lost. The HTTP proxy however is an exception: Traffic generated by the HTTP proxy will match against the original client source IP address and thus complies with interface persistence rules **By source**, too.

- **By destination:** Balancing is based on the destination IP address, i.e., all traffic going to one destination uses the same interface, whereas traffic to another destination can be sent to another interface.
- **By source/destination:** Balancing is based on the source/destination IP address combination, i.e., all traffic coming from a specific source A and going to a specific destination B uses the same interface. Traffic with another combination can be sent to another interface. Also, please notice the note above.

- **By interface:** Select an interface from the **Bind Interface** drop-down list. All traffic applying to the rule will be routed over this interface. In case of an interface failure and if no subsequent rules match, the connection falls back to default behavior.

Comment (optional): Add a description or other information.

3. Optionally, make the following advanced settings:

Balanced to (not with persistence by interface): Add an interface group to the field. All traffic applying to the rule will be balanced over the interfaces of this group. By default, **Uplink Interfaces** is selected, so connections are balanced over all uplink interfaces.

Skip rule on interface error (only available if the **lbf. Persistence** is set to **By Interface**): If selected, in case of an interface failure, the next matching multipath rule will be used for the traffic. If unselected, no other multipath rule will be used for the defined traffic in case of an interface failure. This for example makes sense when you want to ensure that SMTP traffic is only sent from a specific static IP address to prevent your emails from being classified as spam by the recipients due to an invalid sender IP address.

4. Click **Save**.

The new multipath rule is added to the **Multipath Rules** list.

Enable the multipath rule.

5. The new rule is disabled by default (toggle switch is gray). Click the toggle switch to enable the rule. The rule is now enabled (toggle switch is green).

To either edit or delete a rule, click the corresponding buttons.

6.1.6 Hardware

The **Interfaces & Routing > Interfaces > Hardware** tab lists all configured interfaces showing information such as the Ethernet mode of operation or the MAC address. On Sophos UTM hardware devices, for each interface, auto negotiation can be enabled or disabled.

Auto Negotiation: Usually, the Ethernet mode of operation (1000BASE-T full-duplex, 100BASE-T full-duplex, 100BASE-T half-duplex, 10BASE-T full-duplex, 10BASE-T half-duplex, and so on) between two network devices is automatically negotiated by choosing the best possible mode of operation supported by both devices, where higher speed (e.g. 1000 Mbit/sec) is preferred over lower speed (e.g. 100 Mbit/sec), and full duplex is preferred over half duplex at the same speed.

Caution - For proper 1000 Mbit/sec operation, auto negotiation is always required and mandatory by IEEE Std 802.3ab. Thus, be careful to never switch **Auto Negotiation** off for any interface with **Link mode 1000BASE-T**. The timing of your network link may fail, causing service degradation or failure. For 100 Mbit/sec and 10 Mbit/sec operation, auto negotiation is optional, but still recommended for use whenever possible.

Auto negotiation is enabled by default. In the rare case that you need to switch it off, click the **Edit** button of the corresponding interface card and change the setting in the appearing

dialog box **Edit NIC Parameters** via the drop-down list **Link Mode**. Note that the drop-down list is only available with Sophos UTM hardware devices. Click **Save** to save your changes.

Caution - Be careful when disabling auto negotiation, as this might lead to mismatches, resulting in a significant performance decrease or even disconnect. If the respective network interface card is your interface to WebAdmin you may lose access to WebAdmin!

In case one of your interfaces lost its network link due to manipulation of auto negotiation or speed settings, just changing the settings back will typically not bring the interface back to normal operation: Changing auto negotiation or speed settings on disconnected interfaces is not reliable. Therefore first switch on auto negotiation and then reboot Sophos UTM to bring back normal operation.

HA Link Monitoring: If high availability is enabled, all configured interfaces are monitored for link status. In case of a link failure, a takeover is triggered. If a configured interface is not always connected (e.g. management interface) please disable HA link monitoring for the corresponding interface. Otherwise all HA nodes will stay in status UNLINKED. To disable HA link monitoring click the **Edit** button of the corresponding interface card and change the setting in the appearing dialog box **Edit NIC Parameters**. Click **Save** to save your changes.

Set Virtual MAC: Sometimes it is useful to be able to change the MAC address of a device. For example, there are some ISPs where the modem must be reset when the device connected to it changes and by that the MAC address of that device. By setting the MAC address to the value of the former device, a reset of the modem can be avoided.

Sophos UTM, however, does not overwrite the original MAC address of the device but instead sets a virtual MAC address. To do so, click the **Edit** button of the corresponding interface card. In the appearing dialog box **Edit NIC Parameters**, select the checkbox **Set Virtual MAC** and enter a valid MAC address. Click **Save** to save your changes.

To restore the original MAC address, click the **Edit** button of the corresponding interface card. In the appearing dialog box **Edit NIC Parameters**, unselect the checkbox **Set Virtual MAC**. Click **Save** to save your changes.

Enable Power over Ethernet (PoE): This option is only available if the configured interfaces support PoE. If enabled, you can provide connected access points with electric power and data through one Ethernet cable.

Note - Power over Ethernet requires an additional power adapter in the Sophos UTM appliance. If the PoE interface runs without power adapter, the interface works as a normal LAN port without PoE support.

6.2 Quality of Service (QoS)

Generally speaking, **Quality of Service** (QoS) refers to control mechanisms to provide better service to selected network traffic, and to provide priority in terms of guaranteed bandwidths in particular. In Sophos UTM, priority traffic is configured on the **Quality of Service**

(QoS) tabs, where you can reserve guaranteed bandwidths for certain types of outbound network traffic passing between two points in the network, whereas shaping of inbound traffic is optimized internally by various techniques such as **Stochastic Fairness Queuing** (SFQ) or **Random Early Detection** (RED).

6.2.1 Status

The **Quality of Service (QoS) > Status** tab lists the interfaces for which QoS can be configured. By default, QoS is disabled for each interface.

To configure QoS for an interface, proceed as follows:

1. Click the **Edit** button of the respective interface.

The **Edit Interface** dialog box opens.

2. Make the following settings:

Downlink Mbit/sec/Uplink Mbit/sec: Enter the uplink and downlink bandwidth (in Mbit/s) provided by your ISP. For example, for a 5 Mbit/s Internet connection for both uplink and downlink, enter 5.

Note - Enter the uplink and downlink bandwidth in Mbit/s - even if an error message assumes Kbit/s (which is displayed if the entered value is invalid).

If you have a fluctuating bandwidth, enter the lowest value that is guaranteed by your ISP. For example, if you have a 5 Mbit/s Internet connection for both uplink and downlink with a variation of 0.8 Mbit/s, enter 4.3 Mbit/s. Note that if the available bandwidth becomes temporarily higher than the configured lowest guaranteed value, the gateway can make a projection taking the new bandwidth into account, so that the percentage bandwidth for the priority traffic will be increased as well; unfortunately, this does not work vice versa.

Limit uplink: Selecting this option tells the QoS function to use the configured downlink and uplink bandwidth as the calculation base for prioritizing traffic that passes this interface. The **Limit uplink** option is selected by default and should be used for the following interface types:

- Ethernet interface (with a router sitting in between the gateway and the Internet—the bandwidth provided by the router is known)
- Ethernet VLAN interface (with a router sitting in between the gateway and the Internet—the bandwidth provided by the router is known)
- DSL (PPPoE)
- DSL (PPPoA/PPTP)
- Modem (PPP)

Unselect the **Limit uplink** checkbox for these interfaces whose traffic shaping calculation base can be determined by the maximum speed of the interface. However, this only applies to the following interface types:

- Ethernet interface (directly connected to the Internet)
- Ethernet VLAN interface (directly connected to the Internet)

For interfaces with no specific uplink limit given, the QoS function shapes the entire traffic proportionally. For example, if you have configured 512 Kbit/s for VoIP traffic on a Ethernet DHCP interface and the available bandwidth has decreased by half, then 256 Kbit/s would be used for this traffic (note that proportional shaping works in both directions in contrast to interfaces that rely on a fix maximum limit).

Limit Downlink: If enabled, **Stochastic Fairness Queuing (SFQ)** and **Random Early Detection (RED)** queuing algorithms will avoid network congestion. In case the configured downlink speed is reached, packets from the most downlink consuming stream will be dropped.

Upload optimizer: If enabled, this option will automatically prioritize outgoing TCP connection establishments (TCP packets with **SYN** flag set), acknowledgment packets of TCP connections (TCP packets with **ACK** flag set and a packet length between 40 and 60 bytes) and DNS lookups (UDP packets on port 53).

3. Click **Save**.

Your settings will be saved.

4. Enable QoS for the interface.

Click the toggle switch of the interface.

The toggle switch turns green.

6.2.2 Traffic Selectors

A traffic selector can be regarded as a QoS definition which describes certain types of network traffic to be handled by QoS. These definitions later get used inside the bandwidth pool definition. There you can define how this traffic gets handled by QoS, like limiting the overall bandwidth or guarantee a certain amount of minimum bandwidth.

To create a traffic selector, proceed as follows:

1. On the **Traffic Selector** tab, click **New Traffic Selector**.

The **Add Traffic Selector** dialog box opens.

2. Make the following settings:

Name: Enter a descriptive name for this traffic selector.

Selector type: You can define the following types:

- **Traffic selector:** Using a traffic selector, traffic will be shaped based on a single service or a service group.
- **Application selector:** Using an application selector, traffic will be shaped based on applications, i.e. which traffic belongs to which application, independent from the port or service used.
- **Group:** You can group different service and application selectors into one traffic selector rule. To define a group, there must be some already defined single selectors.

Source: Add or select the source network for which you want to enable QoS.

Service: Only with **Traffic selector**. Add or select the network service for which you want to enable QoS. You can select among various predefined services and service groups. For example, select VoIP protocols (SIP and H.323) if you want to reserve a fixed bandwidth for VoIP connections.

Destination: Add or select the destination network for which you want to enable QoS.

Tip - How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.

Control by: Only with **Application selector**. Select whether to shape traffic based on its application type or by a dynamic filter based on categories.

- **Applications:** The traffic is shaped application-based. Select one or more applications in the box **Control these applications**.
- **Dynamic filter:** The traffic is shaped category-based. Select one or more categories in the box **Control these categories**.

Control these applications/categories: Only with **Application selector**. Click the Folder icon to select applications/categories. A dialog window opens, which is described in detail in the next section.

Productivity: Only with **Dynamic filter**. Reflects the productivity score you have chosen.

Risk: Only with **Dynamic filter**. Reflects the risk score you have chosen.

Note - Some applications cannot be shaped. This is necessary to ensure a flawless operation of Sophos UTM. Such applications miss a checkbox in the application table of the **Select Application** dialog window, e.g. **WebAdmin**, **Teredo** and **SixXs** (for IPv6 traffic), **Portal** (for User Portal traffic), and some more. When using dynamic filters, shaping of those applications is also prevented automatically.

Comment (optional): Add a description or other information.

3. Optionally, make the following advanced settings:

TOS/DSCP (only with selector type **Traffic Selector**): In special cases it can be useful to distinguish traffic to be handled by QoS not only by its source, destination, and service but additionally based on its TOS or DSCP flags in the IP header.

- **Off:** With this default option all traffic matching the source, service and destination selected above will be handled by QoS.
- **TOS bits:** Select this option if you want to restrict the traffic handled by QoS to IP packets with specific TOS bits (Type of Service) settings. You can choose between the following settings:
 - Normal service
 - Minimize monetary cost
 - Maximize reliability
 - Maximize throughput
 - Minimize delay
- **DSCP bits:** Select this option if you want to restrict the traffic handled by QoS to IP packets with specific DSCP bits (Differentiated Services Code Point) settings. You can either specify a single **DSCP Value** (an integer in the range from 0-63) or select a predefined value from the **DSCP Class** list (e.g., **BE default dscp (000000)**).

Amount of data sent/received: Select the checkbox if you want the traffic selector to match based on the amount of bytes transferred by a connection so far. With this feature you can e.g. limit the bandwidth of large HTTP uploads without constraining regular HTTP traffic.

- **Sent/Received:** From the drop-down list, select **More than** to define the traffic selector only for connections which exceed a certain amount of traffic. Select **Less than** to define it for connections with less traffic so far.
- **kByte:** Enter the threshold for the amount of traffic.

Helper: Some services use dynamic port ranges for data transmission. For each connection, the ports to be used are negotiated between the endpoints via a control channel. Sophos UTM uses a special connection tracking helper monitoring the control channel to determine which dynamic ports are being used. To include the traffic sent through the dynamic ports in the traffic selector, select **Any** in the **Service** box above, and select the respective service from the **Helper** drop-down list.

4. Click **Save**.

The new selector appears on the **Traffic Selectors** list.

If you defined many traffic selectors, you can combine multiple selectors inside a single traffic selector group, to make the configuration more convenient.

This traffic selector or traffic selector group can now be used in each bandwidth pool. These pools can be defined on the **Bandwidth Pools** tab.

The Select Application or Category Dialog Window

When creating application control rules you need to choose applications or application categories from a dialog window called **Select one or more applications/categories to control**.

The table in the lower part of the dialog window displays the applications you can choose from or which belong to a defined category. By default, all applications are displayed.

The upper part of the dialog window provides three configuration options to limit the number of applications in the table:

- **Category:** Applications are grouped by category. This list contains all available categories. By default, all categories are selected, which means that the table below displays all applications available. If you want to limit the displayed applications to certain categories, click into the category list and select only one or more categories relevant to you.
- **Productivity:** Applications are also classified by their productivity impact which means how much they influence productivity. Example: Salesforce, a typical business software, has the score 5 which means its usage adds to productivity. On the contrary, Farmville, an online game, has the score 1 which means its usage is counterproductive. The network service DNS has the score 3 which means its productivity impact is neutral.
- **Risk:** Applications are also classified by the risk they carry when used with regard to malware, virus infections, or attacks. A higher number means a higher risk.

Tip - Each application has an Info icon which, when clicked, displays a description of the respective application. You can search the table by using the filter field in the table header.

Now, depending on the type of control you selected in the **Create New Traffic Selector** dialog box, do the following:

- Control by dynamic filter: Select the categories from the **Category** box and click **Apply** to adopt the selected categories to your rule.
- Control by application: From the table, select the applications you want to control by clicking the checkbox in front. Click **Apply** to adopt the selected applications to your rule.

After clicking **Apply**, the dialog window closes and you can continue to edit the settings of your traffic selector rule.

6.2.3 Bandwidth Pools

On the **Quality of Service (QoS) > Bandwidth Pools** tab you can define and manage bandwidth pools for bandwidth management. With a bandwidth pool, you reserve a guaranteed

bandwidth for a specific outgoing traffic type, optionally limited by a maximum bandwidth limit.

To create a bandwidth pool, proceed as follows:

1. On the **Bandwidth Pools** tab, select an interface.

From the **Bound to interface** drop-down list, select the interface for which you want to create a bandwidth pool.

2. Click **New Bandwidth Pool**.

The **Add Bandwidth Pool** dialog box opens.

3. Make the following settings:

Name: Enter a descriptive name for this bandwidth pool.

Position: The position number, defining the priority of the bandwidth pool. Lower numbers have higher priority. Bandwidth pools are matched in ascending order. Once a bandwidth pool has matched, bandwidth pools with a higher number will not be evaluated anymore. Place the more specific pools at the top of the list to make sure that more vague pools match last. For example, if you have configured a traffic selector for web traffic (HTTP) in general and for web traffic to a particular host, place the bandwidth pool that uses the latter traffic selector on top of the bandwidth pool list, that is, select position 1 for it.

Bandwidth: Enter the uplink bandwidth (in Kbit) you want to reserve for this bandwidth pool. For example, if you want to reserve 1 Mbit/s for a particular type of traffic, enter 1024.

Note - You can only assign up to 90 % of the entire available bandwidth to a bandwidth pool. The gateway always reserves 10 % of the bandwidth for so-called unshaped traffic. To stay with the example above, if your uplink Internet connection is 5 Mbit/s and you want to assign as much bandwidth as possible to VoIP traffic, you can at most enter a value of 4608 Kbit/s.

Specify upper bandwidth limit: The value you entered in the **Bandwidth** field above represents the guaranteed bandwidth to be reserved for a specific kind of traffic. However, a bandwidth pool usually allocates more bandwidth for its traffic if available. If you want a particular traffic not to consume more than a certain amount of your bandwidth, select this option to restrict the allocation of bandwidth to be used by this bandwidth pool to an upper limit.

Traffic selectors: Select the traffic selectors you want to use for this bandwidth pool.

Comment (optional): Add a description or other information.

4. Click **Save**.

The new bandwidth pool appears on the **Bandwidth Pools** list.

Enable the rule.

5. The new rule is disabled by default (toggle switch is gray). Click the toggle switch to enable the rule. The rule is now enabled (toggle switch is green).

To either edit or delete a bandwidth pool, click the corresponding buttons.

6.2.4 Download Throttling

On the **Quality of Service (QoS) > Download Throttling** tab you can define and manage rules to throttle incoming traffic. If packets are coming in faster than the configured threshold, excess packets will be dropped immediately without being listed in the firewall rules log file. As a result of TCP congestion avoidance mechanisms, affected senders should reduce their sending rates in response to the dropped packets.

To create a download throttling rule, proceed as follows:

1. On the **Download Throttling** tab, select an interface.

From the **Bound to interface** drop-down list, select the interface for which you want to create a download throttling rule.

2. Click **New Download Throttling Rule**.

The **Add Throttling Rule** dialog box opens.

3. Make the following settings:

Name: Enter a descriptive name for this download throttling rule.

Position: The position that defines the priority of the rule. Lower numbers have higher priority. Rules are matched in ascending order. Once a rule has matched, rules with a higher number will not be evaluated anymore. Place the more specific rules at the top of the list to make sure that more vague rules match last.

Limit (kbit/s): The upper limit (in Kbit) for the specified traffic. For example, if you want to limit the rate to 1 Mbit/s for a particular type of traffic, enter 1024.

Limit: Combination of traffic source and destination where the above defined limit should apply:

- **shared:** The limit is equally distributed between all existing connections. I.e., the overall download rate of the traffic defined by this rule is limited to the specified value.
- **each source address:** The limit applies to each particular source address.
- **each destination address:** The limit applies to each particular destination address.
- **each source/destination:** The limit applies to each particular pair of source or destination address.

Traffic selectors: Select the traffic selectors for which you want to throttle the download rates. The defined limit will be divided between the selected traffic selectors.

Comment (optional): Add a description or other information.

4. Click **Save**.

The new download throttling rule appears on the **Download Throttling** list.

Enable the rule.

5. The new rule is disabled by default (toggle switch is gray). Click the toggle switch to enable the rule. The rule is now enabled (toggle switch is green).

To either edit or delete a rule, click the corresponding buttons.

6.2.5 Advanced

Keep classification after encapsulation

Select this checkbox if you want to make sure that after encapsulation a packet will still match the traffic selector of the original service if no other traffic selector matches.

The assignment of an encapsulated IP packet to a traffic selector works as follows:

1. The original IP packet is compared with the existing traffic selectors in the given order. The packet is assigned to the first matching traffic selector (e.g., Internal -> HTTP -> Any).
2. The IP packet gets encapsulated, and the service changes (e.g., to IPsec).
3. The encapsulated packet is compared with the existing traffic selectors in the given order. The packet is assigned to the first matching traffic selector (e.g., Internal -> IPsec -> Any).
4. If no traffic selector matches, the assignment depends on the **Keep classification after encapsulation** option:
 - If the option is selected, the encapsulated packet will be assigned to the traffic selector found in step 1.
 - If the option is not selected, the encapsulated packet will not be assigned to any traffic selector and therefore cannot be part of a bandwidth pool.

Explicit Congestion Notification support

ECN (Explicit Congestion Notification) is an extension to the Internet Protocol and allows end-to-end notifications of network congestion without dropping packets. ECN only works if both endpoints of a connection successfully negotiate to use it. Selecting this checkbox, Sophos UTM will send the information that it is willing to use ECN. If the other endpoint agrees, they will exchange ECN information. Note that the underlying network and involved routers must support ECN as well.

6.2.6 How to Use QoS

This article outlines the basic functionality of Quality of Service (QoS) to shape or limit bandwidth.

6.2.6.1 Overview

You need to make settings on four tabs under **Interfaces & Routing > Quality of Service** for a full QoS implementation. The logic of QoS on the UTM is:

1. Do I have QoS enabled?
2. Does QoS match a pattern that I have defined?
3. What does QoS do with this traffic?

Note: All bandwidth references in QoS are in kilobits per second.

6.2.6.2 Status

You start the configuration on the **Status** tab. It shows all configured physical interfaces on the system. QoS works on a per-interface basis. Click the switch of an interface to enable QoS for it.

6.2.6.3 Traffic Selectors

On the **Traffic Selectors** tab, specify the type of traffic you want to control. The UTM classifies traffic based on IP address and service type or application type.

To specify a new traffic selector, do as follows:

1. Click **New Traffic Selector**.
2. Enter a descriptive name.
3. Select the type. Types are either **Traffic Selector**, **Application Selector**, or **Group**. A group lets you bind several individual selectors together.
4. Select a source IP address.
5. Select a service or application.
6. Select a destination IP address.
7. Under **Advanced**, you can optionally select how to use TOS or DSCP.
8. Click **Save**.

6.2.6.4 Bandwidth Pools

Bandwidth pools define the action the UTM takes with matching traffic. The UTM can prioritize, limit, or guarantee bandwidth for packets that matches a traffic selector. If you've

turned on the TOS or DSCP options, the UTM takes that into account as well.

To specify a new bandwidth pool, follow these steps:

1. Click **New Bandwidth Pool**.

Name: Enter a descriptive name.

Interface: Select the interface on which you want to apply QoS.

Position: The position that defines the priority of the rule. Lower numbers have higher priority. Rules are matched in ascending order. Once a rule has matched, rules with a higher number will not be evaluated anymore.

Bandwidth: The guaranteed bandwidth for the traffic. This specifies an amount of bandwidth that the UTM won't use for any other service. If the traffic that matches the traffic selector needs more bandwidth, it will get more bandwidth, unless you set an upper limit.

Specify an upper bandwidth limit: Select to define a maximum bandwidth for the traffic.

Traffic Selectors: Select the traffic selectors that apply to this bandwidth pool.

3. Click **Save**.

Example Scenario

Control outbound TCP port 12345 traffic.

First, create a traffic selector as follows:

1. Go to **Interfaces & Routing > Quality of Service (QoS) > Traffic Selectors**.
2. Add a new traffic selector with the following settings:
 - **Name:** TCP port 12345
 - **Selector type:** Traffic Selector
 - **Source:** Internal (Network)
 - **Service:** Create a new service for the TCP port 12345.
 - **Destination:** Any
 - **TOS/DSCP:** off
3. Save the traffic selector.

Next, use the new selector with a bandwidth pool.

1. Go to the **Bandwidth Pools** tab.
2. Look at **Bound to Interface** and confirm that you're about to use the intended target interface.
3. Add a new bandwidth pool with the following settings:

- **Name:** TCP port 12345
- **Position:** Bottom
- **Bandwidth:** 1000 kbit/s
- **Specify upper bandwidth limit:** Enable and set the limit to 5000 kbit/s.
- **Traffic Selectors:** Check the traffic selector you created before: TCP port 12345.

4. Save the bandwidth pool.

Finally, enable QoS on the target interface as follows:

1. On the **Bandwidth Pools** tab, click the switch of the **TCP port 12345** bandwidth pool.
QoS is now enabled for that interface and will guarantee and limit bandwidth as specified.

6.2.6.5 Download Throttling

You can use download throttling similar to bandwidth pools to limit the amount of traffic allowed from the internet to client devices.

To specify a new download throttling rule, do as follows:

1. Go to **Interfaces & Routing > Quality of Service (QoS) > Download Throttling**.
2. Look at **Bound to Interface** and confirm that you're about to use the intended target interface.
3. Click **New Download Throttling Rule**.
4.
 - **Name:** Enter a descriptive name.
 - **Position:** The position that defines the priority of the rule. Lower numbers have higher priority. Rules are matched in ascending order. Once a rule has matched, rules with a higher number will not be evaluated anymore.
 - **Limit:** Set the bandwidth limit for the traffic that specifies the maximum bandwidth for the traffic.
 - **Traffic Selectors:** Select the traffic selectors to use with this bandwidth pool.
5. Save the download throttling rule.

Example Scenario

Control inbound TCP port 12345 traffic.

First, create a traffic selector as follows.

1. Go to **Interfaces & Routing > Quality of Service (QoS) > Traffic Selectors**.
2. Add a new traffic selector with the following settings:

- **Name:** TCP port 12345
- **Selector Type:** Selector
- **Source:** Any
- **Service:** Create a new service for the TCP port 12345.
- **Destination:** Create a new host with the IP address 192.168.0.10.
- **TOS/DSCP:** off

3. Save the traffic selector.

Next, use the new selector with a bandwidth pool.

1. Go to **Interfaces & Routing > Quality of Service (QoS) > Download Throttling**.
2. Look at **Bound to Interface** and confirm that you're about to use the intended target interface.
3. Add a new download throttling rule with the following settings:
 - **Name:** TCP port 12345
 - **Position:** Bottom
 - **Bandwidth:** 5000 kbit/s
 - **Traffic Selectors:** Check the traffic selector you created before: TCP port 12345.
4. Save the download throttling rule.

Finally, enable QoS on the target interface.

1. On the **Download Throttling** tab, click the switch of the **TCP port 12345** download throttling rule.

QoS is now enabled and will limit bandwidth as specified.

6.2.6.6 TOS and DSCP

We're giving a high-level explanation of these terms. For more information, refer to the official RFC publications.

TOS

TOS stands for type of service and is a set of bit flags in an IP header. Depending on which bits are set to 1, a router can take different actions. This is a list of settings:

- Normal
- Minimize monetary cost
- Maximize reliability
- Maximize throughput
- Minimize delay

DSCP

Also known as DiffServ. The DSCP portion of the IP header specifies the urgency of traffic flow. DSCP is largely used in VoIP infrastructure. This is an advanced setting and is not recommended for use unless the value of the DSCP bits or the DSCP Class is known before configuration. There are limitations:

- QoS only works on outbound traffic, relative to the UTM. This means if you want to use QoS for inbound traffic, you must specify a bandwidth pool and associate it with the internal interface.
- QoS is a function of the iptables framework. If you are using a configuration that bypasses iptables functionality, QoS doesn't work as intended.
- QoS only works on physical interfaces. This means that QoS doesn't work well with VPN tunnels.

6.2.7 How QoS Works in the Backend

6.2.7.1 Overview

On the UTM, the term Quality of Service (QoS) encompasses a variety of technologies to shape network traffic. You configure QoS to look for specific types of traffic and how to handle it, for example, prioritize or limit it.

The UTM chooses the most appropriate technology to achieve the result you want. In general, the Linux *tc* command (short for traffic control) is used for this. Traffic control is very complex which is why this article only provides a pragmatic look at it from the point of view of a UTM administrator.

6.2.7.2 Basic Operation

In WebAdmin, you enable QoS on an interface and set the total bandwidth on an interface. For example, if you have a T1 connection, you configure 1.581 Mbit/s. This tells the UTM that all traffic should not exceed 1.581 Mbit/s.

Then, you configure a traffic selector. It tells the UTM what kind of traffic to look for, for example, any DNS traffic.

You then create a bandwidth pool to tell the UTM what to do with the traffic selector. For example, for the DNS traffic selector, you guarantee 100 kbits/s of your total bandwidth.

6.2.7.3 Filters and iptables

The actual implementation of QoS rules in the backend uses a combination of *iptables* and *tc* filters.

When a packet enters the UTM, iptables evaluates it and determines whether the packet is destined for the UTM itself or a device behind it. iptables is able to modify packets on a

binary level ("mangle"). For example, if a packet matches a certain criterion, iptables can alter some information of the packet.

In terms of QoS, if iptables finds a match of a specific type of traffic (as configured in the WebAdmin traffic selectors), it changes an IP header field to contain something called a "handle". Next, tc takes the handle and matches it to a specific class (see ["HFSC" on page 187](#) below). After that, tc applies its internal logic to shape the traffic.

Commands

To view iptables rules in the backend, access your UTM through SSH and run the following command:

```
utm:/root # iptables -nvL QOS_AUTO_PRIO -t ips

Chain QOS_AUTO_PRIO (2 references)

pkts  bytes target  prot opt in out source  destination
934   48736 CLASSIFY tcp  --  *  *    0.0.0.0/0 0.0.0.0/0  tcp flags:0x17/0x02
-m length2 --layer4 --length 20:40 CLASSIFY set 2:1
12998 564K  CLASSIFY tcp  --  *  *    0.0.0.0/0 0.0.0.0/0  tcp flags:0x15/0x10
-m length2 --layer4 --length 20:40 CLASSIFY set 2:1
30    4587  CLASSIFY tcp  --  *  *    0.0.0.0/0 0.0.0.0/0  tcp spts:1:65535
dpt:53 CLASSIFY set 2:1
1093  87436 CLASSIFY udp  --  *  *    0.0.0.0/0 0.0.0.0/0  udp spts:1:65535
dpt:53 CLASSIFY set 2:1
```

Here's an explanation of the command line output from iptables:

| | |
|---|---|
| tcp -- * * 0.0.0.0/0 0.0.0.0/0 tcp spts:1:65535 dpt:53 | Indicates the traffic selector parameters. |
| CLASSIFY set 2:1 | Action that iptables will take when this rule matches (set a parameter in the IP header). |
| tcp flags:0x15/0x10 | Flag that is set, to be referenced by tc (set 0x15 to a value of 0x10). |

To view tc rules in the backend, access your UTM through SSH and run the following command:

```
utm:/root # tc filter show dev eth0

filter parent 1: protocol all pref 1 fw
filter parent 1: protocol all pref 1 fw handle 0x2711 classid 1:20
filter parent 1: protocol all pref 1 fw handle 0x2710 classid 1:1
```

Here's an explanation of the command line output from tc:

| | |
|-------------------------------|---|
| <code>parent 1</code> | Indicates which class this filter applies to. |
| <code>protocol all</code> | Indicates which protocol (tcp, udp, icmp, etc...) this filter applies to. |
| <code>fw handle 0x2710</code> | Indicates which flag matches this filter. |
| <code>classid 1:10</code> | Indicates which class to use for a packet that matches this filter. |

Now you know how the UTM filters the traffic.

6.2.7.4 Queue Disciplines

How the UTM knows what to do with identified packets.

A Queue Discipline (qdisc) is an algorithm that determines how to handle traffic shaping. There are several algorithms. Here, you get to know a few of them and how they relate to the UTM.

pfifo_fast

This is the default queue discipline for Linux. The acronym *fifo* is a common computing term meaning "first in, first out". In the context of QoS this means that the bytes (packets) that enter the QoS subsystem are queued. When dequeued, the bytes that entered first are the ones that leave first. The discipline uses 3 distinct queues, also known as priorities (0, 1 and 2).

In the TCP header for all TCP packets, there is a byte reserved for type of service (TOS) information. Depending on the value of this TOS byte, pfifo_fast queues the packet in queue 0, 1 or 2. pfifo_fast empties queue 0 before queue 1, and once the queues 0 and 1 are empty, it empties queue 2. If not set already, pfifo_fast sets the TOS byte to 0x0 and puts the packet into queue 1.

In WebAdmin, this queue discipline comes into play automatically if another device set the TOS byte. You can also set TOS bits under **Network > Quality of Service (QoS) > Traffic Selector**. If the byte is set, the UTM prioritizes the traffic and when sent to the next hop, the TOS byte remains. (What happens after that is not in the control of the UTM.)

WebAdmin limits what you can set for the TOS byte. In theory, you can use any byte value (hexadecimal 0-f).

Using the command `tc qdisc`, you see a sequence of 16 digits that can be either 0, 1 or 2. This sequence is the priority map. The digits specify the queue to use for a packet with a given TOS value. Starting from left to right, the value increments (0x0, 0x1, 0x2 ... 0xf). Here's an example of an output:

```
utm:/root # tc qdisc
pfifo_fast 0: dev eth1 root bands 3 priomap 1 2 2 2 1 2 0 0 1 1 1 1 1 1 1 1
```

Note that qdisc uses pfifo_fast in this output. This output is for *dev eth1*. You should have at least one pfifo_fast qdisc for each configured interface.

The table below shows the detail of the priority map. Compare your WebAdmin configuration to this to see which configurations are available and how they are used in the backend.

| WebAdmin Value | Normal Service | Minimize Monetary Cost | Maximize Reliability | N/A | Maximize Reliability | N/A | N/A | N/A | Maximize Throughput | N/A | N/A | N/A | N/A | N/A | N/A | Minimize Delay |
|----------------|----------------|------------------------|----------------------|-------|----------------------|-------|-------|-------|---------------------|-------|-------|-------|-------|-------|-------|----------------|
| Hex | 0x0 | 0x1 | 0x2 | 0x-3 | 0x4 | 0x-5 | 0x-6 | 0x-7 | 0x8 | 0x-9 | 0x-a | 0x-b | 0xc | 0x-d | 0x-e | 0xf |
| Binary | 0000 | 0001 | 0010 | 00-11 | 0100 | 01-01 | 01-10 | 01-11 | 1000 | 10-01 | 10-10 | 10-11 | 11-00 | 11-01 | 11-10 | 1111 |
| Queue | 1 | 2 | 2 | 2 | 1 | 2 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

HFSC

This queue discipline uses an algorithm called Hierarchical Fair Service Curve (HFSC). Hierarchical refers to the algorithm using classes. Bandwidth allocation takes place similar to a tree structure: Under full operation, HFSC can use a full tree with child nodes and leaf nodes. The UTM only uses leaf nodes. In WebAdmin, you configure the total bandwidth for the parent node under **Network > Quality of Service (QoS) > Status**. You then configure the guaranteed and limited bandwidth on the **Bandwidth Pools** tab.

For more information on HFSC, go to: <http://linux-ip.net/articles/hfsc.en/>

To view HFSC configurations on the command line, access your UTM through SSH and run following command:

```
utm:/root # tc class show dev eth0

class hfsc 1: root

class hfsc 1:1 parent 1: sc m1 0bit d 0us m2 102400Kbit ul m1 0bit d 0us m2 102400Kbit

class hfsc 1:10 parent 1:1 leaf 100: sc m1 0bit d 0us m2 1024Kbit ul m1 0bit d 0us m2 102400Kbit

class hfsc 1:20 parent 1:1 leaf 200: sc m1 0bit d 0us m2 100000bit ul m1 0bit d 0us m2 250000bit

class hfsc 1:30 parent 1:1 leaf 300: sc m1 0bit d 0us m2 101276Kbit ul m1 0bit d 0us m2 102400Kbit
```

The table shows an explanation of the most important fields:

| | |
|------------|---|
| 1:[x[x]] | Indicates the hierarchy. 1: is root. 1:1 is the parent. 1: followed by 2 digits is the leaf node. HFSC also supports mode nodes, but the UTM doesn't use these. |
| parent 1:1 | Indicates which parent to use. It references the hierarchy indicator. |

| | |
|-------------------------------|---|
| <code>leaf xxx</code> | Assigns a leaf number to be used elsewhere. |
| <code>first bit value</code> | The guaranteed bandwidth. Should see m2 before and u1 after this field. |
| <code>second bit value</code> | The limit bandwidth. This is the final field in the line. |

Note that if you didn't specify an upper limit, HFSC uses the total bandwidth as upper limit.

6.2.7.5 How To Use tc To Diagnose Connections

With the tc command you can use the option -s for stats and -d for details.

Show queue disciplines:

```
tc [-s|-d] qdisc [dev eth#]
```

Show classes:

```
tc [-s|-d] show classes dev eth#
```

View a real-time list of stats (updated every 0.2 seconds):

```
watch -n .2 'tc -s qdisc'
```

Sample output of the above command is below. Troubleshooting with this method is similar to watching iptables counters: You can see which rules are being used:

```
Every 0.2s: tc -s qdisc
qdisc ingress ffff: dev eth0 -----
    Sent 844798 bytes 11284 pkt (dropped 0, overlimits 0 requeues 0) rate 0bit
    0pps
    backlog 0b 0p requeues 0
qdisc hfsc 1: dev eth0 default 30
    Sent 959520 bytes 1801 pkt (dropped 0, overlimits 405 requeues 0) rate 0bit
    0pps
    backlog 0b 0p requeues 0
```

From the tc man page (<https://man7.org/linux/man-pages/man8/tc.8.html>).

DEV is the interface name, for example, eth0:

```
tc qdisc [ add | change | replace | link ] dev DEV [ parent qdisc-id | root ] [
handle qdisc-id ] qdisc [ qdisc specific parameters ]

tc class [ add | change | replace ] dev DEV parent qdisc-id [ classid class-id
] qdisc [ qdisc specific parameters ]
```

```
tc filter [ add | change | replace ] dev DEV [ parent qdisc-id | root ] pro-
tocol protocol prio priority filtertype [ filtertype specific parameters ]
flowid flow-id
```

```
tc [-s | -d ] qdisc show [ dev DEV ]
```

```
tc [-s | -d ] class show dev DEV
```

```
tc filter show dev DEV
```

Examples

Default config with no QoS rules

Three physical interfaces and one SSL VPN interface

```
utm:/root # tc qdisc
```

```
qdisc pfifo_fast 0: dev eth2 root refcnt 2 bands 3 priomap 1 2 2 2 1 2 0 0 1 1
1 1 1 1 1 1
```

```
qdisc pfifo_fast 0: dev eth1 root refcnt 2 bands 3 priomap 1 2 2 2 1 2 0 0 1 1
1 1 1 1 1 1
```

```
qdisc pfifo_fast 0: dev eth0 root refcnt 2 bands 3 priomap 1 2 2 2 1 2 0 0 1 1
1 1 1 1 1 1
```

```
qdisc pfifo_fast 0: dev tun0 root refcnt 2 bands 3 priomap 1 2 2 2 1 2 0 0 1 1
1 1 1 1 1 1
```

```
utm:/root # tc class show dev eth1
```

```
utm:/root #
```

```
utm:/root # iptables -nvL QOS_AUTO_PRIO -t ips
```

```
Chain QOS_AUTO_PRIO (0 references)
```

```
pkts bytes target prot opt in out source destination
```

```
utm:/root # tc filter show dev eth0
```

```
utm:/root #
```

With one QoS rule

On eth1, guarantee 1024 kbit/s for DNS. Note that there are two defined traffic selectors, but only one is used.

```

karlsruheutm:/home/login # tc qdisc

qdisc pfifo_fast 0: dev eth2 root refcnt 2 bands 3 priomap 1 2 2 2 1 2 0 0 1 1
1 1 1 1 1 1

qdisc hfsc 1: dev eth1 root refcnt 2 default 3

qdisc fq_codel 803d: dev eth1 parent 1:2 limit 10240p flows 1024 quantum 1514
target 5.0ms interval 100.0ms ecn

qdisc prio 2: dev eth1 parent 1:3 bands 3 priomap 1 2 2 2 1 2 0 0 1 1 1 1 1 1 1
1

qdisc fq_codel 803e: dev eth1 parent 2:1 limit 10240p flows 1024 quantum 1514
target 5.0ms interval 100.0ms ecn

qdisc fq_codel 803f: dev eth1 parent 2:2 limit 10240p flows 1024 quantum 1514
target 5.0ms interval 100.0ms ecn

qdisc fq_codel 8040: dev eth1 parent 2:3 limit 10240p flows 1024 quantum 1514
target 5.0ms interval 100.0ms ecn

qdisc ingress ffff: dev eth1 parent ffff:fff1 -----

qdisc hfsc 1: dev eth0 root refcnt 2 default 2

qdisc prio 2: dev eth0 parent 1:2 bands 3 priomap 1 2 2 2 1 2 0 0 1 1 1 1 1 1 1
1

qdisc fq_codel 8041: dev eth0 parent 2:1 limit 10240p flows 1024 quantum 1514
target 5.0ms interval 100.0ms ecn

qdisc fq_codel 8042: dev eth0 parent 2:2 limit 10240p flows 1024 quantum 1514
target 5.0ms interval 100.0ms ecn

qdisc fq_codel 8043: dev eth0 parent 2:3 limit 10240p flows 1024 quantum 1514
target 5.0ms interval 100.0ms ecn

qdisc ingress ffff: dev eth0 parent ffff:fff1 -----

qdisc pfifo_fast 0: dev tun0 root refcnt 2 bands 3 priomap 1 2 2 2 1 2 0 0 1 1
1 1 1 1 1 1

qdisc tbf 1: dev ifb0 root refcnt 2 rate 95Mbit burst 57Kb lat 4295.0s

qdisc fq_codel 10: dev ifb0 parent 1:1 limit 10240p flows 1024 quantum 1514
target 5.0ms interval 100.0ms ecn

qdisc tbf 1: dev ifb1 root refcnt 2 rate 972800Kbit burst 596812b lat 4295.0s

qdisc fq_codel 10: dev ifb1 parent 1:1 limit 10240p flows 1024 quantum 1514
target 5.0ms interval 100.0ms ecn

utm:/home/login # tc class show dev eth1

class hfsc 1: root

```

```

class hfsc 1:1 parent 1: sc m1 0bit d 0us m2 100Mbit ul m1 0bit d 0us m2
100Mbit

class hfsc 1:2 parent 1:1 leaf 803d: sc m1 0bit d 0us m2 1024Kbit

class hfsc 1:3 parent 1:1 leaf 2: sc m1 0bit d 0us m2 98976Kbit

class fq_codel 803d:37c parent 803d:

class prio 2:1 parent 2: leaf 803e:

class prio 2:2 parent 2: leaf 803f:

class prio 2:3 parent 2: leaf 8040:

class fq_codel 803f:13b parent 803f:

utm:/root # iptables -nvL QOS_AUTO_PRIO -t ips
Chain QOS_AUTO_PRIO (2 references)

pkts bytes target prot opt in out source destination
934 48736 CLASSIFY tcp -- * * 0.0.0.0/0 0.0.0.0/0 tcp flags:0x17/0x02
-m length2 --layer4 --length 20:40 CLASSIFY set 2:1
12998 564K CLASSIFY tcp -- * * 0.0.0.0/0 0.0.0.0/0 tcp flags:0x15/0x10
-m length2 --layer4 --length 20:40 CLASSIFY set 2:1
30 4587 CLASSIFY tcp -- * * 0.0.0.0/0 0.0.0.0/0 tcp spts:1:65535
dpt:53 CLASSIFY set 2:1
1093 87436 CLASSIFY udp -- * * 0.0.0.0/0 0.0.0.0/0 udp spts:1:65535
dpt:53 CLASSIFY set 2:1

utm:/root # tc filter show dev eth1

utm:/root #

```

With two QoS rules:

On eth1, guarantee 1024 kbit/s for DNS, and guarantee a minimum of 100 kbits and a maximum of 250 kbits for port 9100.

```

karlsruheutm:/home/login # tc qdisc

qdisc pfifo_fast 0: dev eth2 root refcnt 2 bands 3 priomap 1 2 2 2 1 2 0 0 1 1
1 1 1 1 1 1

qdisc hfsc 1: dev eth1 root refcnt 2 default 4

qdisc fq_codel 8044: dev eth1 parent 1:2 limit 10240p flows 1024 quantum 1514
target 5.0ms interval 100.0ms ecn

qdisc fq_codel 8045: dev eth1 parent 1:3 limit 10240p flows 1024 quantum 1514
target 5.0ms interval 100.0ms ecn

```

```

qdisc prio 2: dev eth1 parent 1:4 bands 3 priomap 1 2 2 2 1 2 0 0 1 1 1 1 1 1 1
1

qdisc fq_codel 8046: dev eth1 parent 2:1 limit 10240p flows 1024 quantum 1514
target 5.0ms interval 100.0ms ecn

qdisc fq_codel 8047: dev eth1 parent 2:2 limit 10240p flows 1024 quantum 1514
target 5.0ms interval 100.0ms ecn

qdisc fq_codel 8048: dev eth1 parent 2:3 limit 10240p flows 1024 quantum 1514
target 5.0ms interval 100.0ms ecn

qdisc ingress ffff: dev eth1 parent ffff:fff1 -----

qdisc hfsc 1: dev eth0 root refcnt 2 default 2

qdisc prio 2: dev eth0 parent 1:2 bands 3 priomap 1 2 2 2 1 2 0 0 1 1 1 1 1 1 1
1

qdisc fq_codel 8049: dev eth0 parent 2:1 limit 10240p flows 1024 quantum 1514
target 5.0ms interval 100.0ms ecn

qdisc fq_codel 804a: dev eth0 parent 2:2 limit 10240p flows 1024 quantum 1514
target 5.0ms interval 100.0ms ecn

qdisc fq_codel 804b: dev eth0 parent 2:3 limit 10240p flows 1024 quantum 1514
target 5.0ms interval 100.0ms ecn

qdisc ingress ffff: dev eth0 parent ffff:fff1 -----

qdisc pfifo_fast 0: dev tun0 root refcnt 2 bands 3 priomap 1 2 2 2 1 2 0 0 1 1
1 1 1 1 1 1

qdisc tbf 1: dev ifb0 root refcnt 2 rate 95Mbit burst 57Kb lat 4295.0s

qdisc fq_codel 10: dev ifb0 parent 1:1 limit 10240p flows 1024 quantum 1514
target 5.0ms interval 100.0ms ecn

qdisc tbf 1: dev ifb1 root refcnt 2 rate 972800Kbit burst 596812b lat 4295.0s

qdisc fq_codel 10: dev ifb1 parent 1:1 limit 10240p flows 1024 quantum 1514
target 5.0ms interval 100.0msecn

utm:/home/login # tc class show dev eth1

class hfsc 1: root

class hfsc 1:1 parent 1: sc m1 0bit d 0us m2 100Mbit ul m1 0bit d 0us m2
100Mbit

class hfsc 1:2 parent 1:1 leaf 8044: sc m1 0bit d 0us m2 1024Kbit

class hfsc 1:3 parent 1:1 leaf 8045: sc m1 0bit d 0us m2 100Kbit ul m1 0bit d
0us m2 250Kbit

class hfsc 1:4 parent 1:1 leaf 2: sc m1 0bit d 0us m2 98876Kbit

class fq_codel 8044:333 parent 8044:

```

```

class prio 2:1 parent 2: leaf 8046:
class prio 2:2 parent 2: leaf 8047:
class prio 2:3 parent 2: leaf 8048:
class fq_codel 8047:e3 parent 8047:
class fq_codel 8047:2cc parent 8047:

utm:/root # iptables -nvL QOS_AUTO_PRIO -t ips
Chain QOS_AUTO_PRIO (2 references)

pkts  bytes target  prot opt in out source  destination
934   48736 CLASSIFY tcp  --  *  *    0.0.0.0/0 0.0.0.0/0  tcp flags:0x17/0x02
-m length2 --layer4 --length 20:40 CLASSIFY set 2:1
12998 564K  CLASSIFY tcp  --  *  *    0.0.0.0/0 0.0.0.0/0  tcp flags:0x15/0x10
-m length2 --layer4 --length 20:40 CLASSIFY set 2:1
30     4587  CLASSIFY tcp  --  *  *    0.0.0.0/0 0.0.0.0/0  tcp spts:1:65535
dpt:53 CLASSIFY set 2:1
1093  87436 CLASSIFY udp  --  *  *    0.0.0.0/0 0.0.0.0/0  udp spts:1:65535
dpt:53 CLASSIFY set 2:1

utm:/root # tc filter show dev eth1
utm:/root #

```

6.2.7.6 More Information

Linux Advanced Routing & Traffic Control How-to: <https://tldp.org/HOWTO/Adv-Routing-HOWTO/>

tc man page: <https://man7.org/linux/man-pages/man8/tc.8.html>

Good HFSC primer: <http://linux-ip.net/articles/hfsc.en/>

6.3 Uplink Monitoring

The menu **Interfaces & Routing > Uplink Monitoring** gives you the possibility to monitor your uplink connection and to define certain actions which will be automatically applied in case the connection status changes.

For example, you can automatically turn on a backup VPN tunnel using another link, or disable an alias IP address so that it will trigger a monitoring service.

6.3.1 Global

On the **Uplink Monitoring > Global** tab you can enable or disable uplink monitoring.

To enable uplink monitoring, click the toggle switch.

The toggle switch turns green.

If uplink monitoring is enabled, the **Uplink Status** section shows all current uplink interfaces and their statuses:

- **ONLINE:** The uplink connection is established and functional.
- **OFFLINE:** According to the monitoring, the uplink connection is defective.
- **DOWN:** Either the uplink interface is disabled administratively, or—in case of a dynamic interface—the remote PPP or DHCP server is not reachable.
- **STANDBY:** The interface is defined as a standby interface on the **Interfaces > Uplink Balancing** tab, and it is currently not in use.

Note - If uplink balancing is enabled, the uplinks will always be monitored, even if uplink monitoring is disabled. Therefore, even if uplink monitoring is disabled, the uplink interfaces are displayed on this page when uplink balancing is enabled. In this case, the monitoring settings can be modified on the **Interfaces > Uplink Balancing** tab.

6.3.2 Actions

On the **Interfaces & Routing > Uplink Monitoring > Actions** tab you can define actions that will be automatically applied in case the uplink connection status changes. For example, you might want to disable an additional address when your uplink connection is down.

Note - It is always the first uplink that will be monitored.

To create a new action, do the following:

1. On the **Actions** tab, click **New Action**.

The dialog box **Create New Action If Uplink Goes Offline** opens.

2. Make the following settings:

Name: Enter a descriptive name for the action.

Type: Select the connection type for which you want to define an action.

- **IPsec tunnel:** Select this option from the drop-down list if you want to define an action for an IPsec tunnel.
- **Additional address:** Select this option from the drop-down list if you want to define an action for an additional address.

IPsec tunnel: (Only available with Type **IPsec Tunnel**.) If there are any IPsec tunnels defined, you can select one of them here. For more information, see [Remote Access > IPsec](#).

Add. address: (Only available with Type **Additional Address**.) If there are any additional addresses defined, you can select one of them here. For more information, see **Interfaces & Routing > Interfaces > [Additional Addresses](#)**.

Action: You can either select **Enable** or **Disable** here, which means that, in case of an uplink interruption, the above selected IPsec tunnel or additional address is going to be enabled or disabled.

Comment (optional): Add a description or other information.

3. Click **Save**.

The action will be saved and applied in case the uplink connection is interrupted.

To either edit or delete an action, click the corresponding buttons.

6.3.3 Advanced

On the **Uplink Monitoring > Advanced** tab you can disable automatic monitoring of the uplink connection and define one or more hosts instead which are used for monitoring.

By default, **Automatic monitoring** is enabled to detect possible interface failures. This means that the health of all uplink interfaces is monitored by having them contact a specific host on the Internet at an interval of 15 seconds. By default, the monitoring host is the third ping-allowing hop on the route to one of the root DNS servers. However, you can define the hosts for monitoring the server pool yourself. For these hosts you can select another service instead of ping, and modify the monitoring interval and timeout.

The monitoring hosts will then be contacted in certain periods and if none of them is reachable, the uplink connection is regarded as down. Subsequently, the actions defined on the **Actions** tab will be carried out.

Note - Automatically, the same monitoring settings are used for both uplink monitoring (**Uplink Monitoring > Advanced**) and uplink balancing (**Interfaces > Uplink Balancing**).

To use your own hosts for monitoring, do the following:

1. Unselect the **Automatic monitoring** checkbox.

The **Monitoring hosts** box becomes editable.

2. Add monitoring hosts.

Select or add one or more hosts that you want to use for monitoring instead of random hosts. If an interface is monitored by more than one host, it will only be regarded as dead if all monitoring hosts do not respond in the defined time span. How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.

Note - If a selected host is bound to an interface, it will only be used to monitor this interface. If a host is not bound to an interface, it will be used to monitor all interfaces. Interfaces not covered by the selected hosts will be monitored by automatic monitoring.

Click the Monitoring Settings icon in the box header to set the monitoring details:

Monitoring type: Select the service protocol for the monitor checks. Select either **TCP** (TCP connection establishment), **UDP** (UDP connection establishment), **Ping** (ICMP Ping), **HTTP Host** (HTTP requests), or **HTTPS Host** (HTTPS requests) for monitoring. When using **UDP** a ping request will be sent initially which, if successful, is followed by a UDP packet with a payload of 0. If ping does not succeed or the ICMP port is unreachable, the connection is regarded as down.

Port (only with monitoring types **TCP** and **UDP**): Port number the request will be sent to.

URL (optional, only with monitoring types **HTTP/S Host**): URL to be requested. You can use other ports than the default ports 80 or 443 by adding the port information to the URL, e.g., `http://example.domain:8080/index.html`. If no URL is entered, the root directory will be requested.

Interval: Enter a time interval in seconds at which the hosts are checked.

Timeout: Enter a maximum time span in seconds for the monitoring hosts to send a response. If all monitoring hosts of an interface do not respond during this time, the interface will be regarded as dead.

3. Click **Apply**.

Your settings will be saved.

6.4 IPv6

Since version 8, Sophos UTM supports IPv6, the successor of IPv4.

The following functions of Sophos UTM fully or partly support IPv6.

- Access to WebAdmin and User Portal
- SSH
- NTP
- SNMP
- SLAAC (Stateless Address Autoconfiguration) and DHCPv6 client support for all dynamic interface types
- DNS
- DHCP server
- BGP

- OSPF
- IPS
- Firewall
- NAT
- ICMP
- Server Load Balancing
- Web Filter
- Application Control
- Web Application Firewall
- SMTP
- IPsec (Site-to-site only)
- Syslog server

6.4.1 Global

On the **IPv6 > Global** tab you can enable IPv6 support for Sophos UTM. Moreover, if enabled, IPv6 information is provided here, e.g., status information or prefix delegation information.

IPv6 support is disabled by default. To enable IPv6, do the following:

1. On the **Global** tab, enable IPv6.

Click the toggle switch.

The toggle switch turns green. If IPv6 has never been enabled or configured before, the **Connectivity** area displays the string **None**.

As soon as IPv6 is enabled, you will find several network and other object definitions referring explicitly to IPv6 around WebAdmin. You can generally use them as you are used to from IPv4 objects.

Note - If IPv6 is enabled, the icons of network objects and the like bear an additional mark that tells you whether the respective object is an IPv6 object or IPv4 object or both. Between enabling and disabling IPv6 should be at least 10 seconds.

6.4.2 Prefix Advertisements

On the **IPv6 > Prefix Advertisements** tab you can configure your Sophos UTM to assign clients an IPv6 address prefix which in turn enables them to pick an IPv6 address by themselves. Prefix advertisement (or router advertisement) is an IPv6 feature where routers (or in this case Sophos UTM) behave like a DHCP server in IPv4, in a way. However, the routers do not assign IPs directly to clients. Instead, clients in an IPv6 network assign themselves a so-called link-local address for the primary communication with the router. The

router then tells the client the prefix for its network segment. Subsequently, the clients generate an IP address consisting of the prefix and their MAC address.

To create a new prefix, do the following:

1. On the **Prefix Advertisements** tab, click **New Prefix**.

The dialog box **Add Prefix** opens.

2. Make the following settings:

Interface: Select an interface that has an IPv6 address with a 64 bit netmask configured.

DNS server 1/2 (optional): The IPv6 addresses of the DNS servers.

Domain (optional): Enter the domain name that will be transmitted to the clients (e.g., `intranet.example.com`).

Valid lifetime: The time the prefix is to be valid. Default is 30 days.

Preferred lifetime: The time after which another prefix, whose preferred lifetime has not yet expired, is to be selected by the client. Default is 7 days.

3. Optionally, make the following advanced settings:

Stateless integrated server: This option is selected by default. Creating a prefix advertisement automatically starts a DHCPv6 server. Note that this DHCPv6 configuration is hidden and therefore not visible or editable via the DHCP configuration menu.

Managed (stateful): This option is not available when **Stateless integrated server** is selected. It allows to start stateful DHCPv6 server in the same interface with prefix advertisement. You can configure a DHCPv6 server under the **Network Services > DHCP > Servers** tab.

Other config: This option is not available when **Stateless integrated server** is selected. It ensures that a given DNS server and domain name are additionally announced via DHCPv6 for the given prefix. This is useful since, at the moment, there are too few clients which are able to fetch the DNS information from the prefix advertisement ([RFC 5006/ RFC 6106](#)).

4. Click **Save**.

The new prefix configuration appears on the **Prefix Advertisements** list.

6.4.3 Renumbering

On the **IPv6 > Renumbering** tab you can allow automatic renumbering of IPv6 addresses managed by Sophos UTM in case of a prefix change. Additionally, you can renumber IPv6 addresses manually.

The following IPv6 addresses will be modified:

- Hosts, networks, and range definitions
- Primary and secondary interface addresses

- DHCPv6 server ranges and mappings
- DNS mappings

An IPv6 prefix provided via tunnel brokerage will not be renumbered.

Automatic IPv6 Renumbering

By default, IPv6 addresses managed by your Sophos UTM are automatically renumbered in the event that the IPv6 prefix changes. Prefix changes are initiated by your ISP via DHCPv6 prefix delegation. To deactivate renumbering, unselect the checkbox and click **Apply**.

Manual IPv6 Renumbering

You can renumber particular IPv6 addresses managed by Sophos UTM manually. This can be useful if you change your ISP, and your new provider assigns a new IPv6 prefix statically to you instead of automatically via DHCPv6.

1. Specify the current prefix of the IPv6 addresses to be renumbered.

Enter the prefix into the **Old prefix** field.

2. Specify the new prefix.

Enter the prefix into the **New prefix** field.

3. Click **Apply**.

All IPv6 addresses with the defined current prefix will be renumbered using the new prefix.

6.4.4 6to4

On the **IPv6 > 6to4** tab you can configure your Sophos UTM to automatically tunnel IPv6 addresses over an existing IPv4 network. With 6to4, every IPv4 address has a /48 prefix from the IPv6 network to which it is mapped. The resulting IPv6 address consists of the prefix 2002 and the IPv4 address in hexadecimal notation.

Note - You can either have **6to4** enabled or **Tunnel Broker**.

To enable IP address tunneling for a certain interface, do the following:

1. On the **6to4** tab, enable 6to4.

Click the toggle switch.

The toggle switch turns amber and the **6to4** area and the **Advanced** area become editable.

2. Select an interface.

Select an interface from the **Interface** drop-down list which has a public IPv6 address configured.

3. Click **Apply**.

Your settings will be saved.

The toggle switch turns green and the interface status is displayed on the **Global** tab.

Advanced

You can change the **Server address** to use a different 6to4 relay server. For that, enter a new server address and click **Apply** to save your settings.

6.4.5 Tunnel Broker

On the **IPv6 > Tunnel Broker** tab you can enable the use of a tunnel broker. Tunnel brokerage is a service offered by some ISPs which allows you to access the Internet using an IPv6 address.

Note - You can either have **6to4** enabled or **Tunnel Broker**.

Sophos UTM supports the following tunnel brokers:

- Teredo (only anonymous)
- Freenet6 (by [GoGo6](#)) (anonymous or with user account)
- [SixXS](#) (user account necessary)
- [Hurricane Electric](#) (user account necessary)

To use a tunnel broker, do the following:

1. On the **Tunnel Broker** tab, enable the use of tunnel broker.

Click the toggle switch.

The toggle switch turns green and the **Tunnel Broker** area and the **Advanced** area become editable. The tunnel broker is immediately active using anonymous authentication at Teredo. The connection status is displayed on the **Global** tab.

If you use SixXS tunnels and the IPv6 connection gets lost the SixXS tunnels do not restart automatically. In this case check the log files which appear in **Logging & Reporting > View Log Files > Today's Log Files**.

Tunnel Broker

You can change the default tunnel broker settings.

Authentication: Select an authentication method from the drop-down list.

- **Anonymous:** Using this method you do not need a user account at the respective broker. The IP address assigned will be, however, temporary.
- **User:** You need to register at the respective broker to get a user account.

Broker: You can select another broker from the drop-down list.

Username (only available with **User**): Provide your username for the respective broker.

Password (only available with **User**): Provide your password for the username.

Click **Apply** to save your settings.

Advanced

Here you can provide another server address for your selected tunnel broker.

Click **Apply** to save your settings.

6.5 Static Routing

Every computer connected to a network uses a routing table to determine the path along which an outbound data packet must be sent to reach its destination. For example, the routing table contains the information whether the destination address is on the local network or if the data packet must be forwarded to a router. If a router is involved, the table contains information about which router is to be used for which network.

Two types of routes can be added to the routing table of Sophos UTM: standard static routes and policy routes. With static routes, the routing target is exclusively determined by the packet's destination address. With policy routes, however, it is possible to make routing decisions based on the source interface, source address, service, or destination address.

Note - You do not need to set additional routes for networks attached to the interfaces of Sophos UTM, as well as default routes. The system inserts these routes automatically.

6.5.1 Standard Static Routes

The system automatically inserts routing entries into the routing table for networks that are directly connected to the system. Manual entries are necessary in those cases where there is an additional router which is to be accessed via a specific network. Routes for networks, that are not directly connected and that are inserted to the routing table via a command or a configuration file, are called static routes.

To add a standard static route, proceed as follows:

1. On the **Standard Static Routes** tab click **New Static Route**.

The **Add Static Route** dialog box opens.

2. Make the following settings:

Route type: The following route types are available:

- **Interface route:** Packets are sent out on a particular interface. This is useful in two cases. First, for routing on dynamic interfaces (PPP), because in this case the IP address of the gateway is unknown. Second, for defining a default route having a

gateway located outside the directly connected networks.

- **Gateway route:** Packets are sent to a particular host (gateway).
- **Blackhole route:** Packets are discarded silently. This is useful in connection with OSPF or other dynamic adaptive routing protocols to avoid routing loops, route flapping, and the like.

Network: Select the destination networks of data packets Sophos UTM must intercept.

Interface: Select the interface through which the data packets will leave Sophos UTM (only available if you selected **Interface Route** as route type).

Gateway: Select the gateway/router to which Sophos UTM will forward data packets (only available if you selected **Gateway Route** as route type).

Comment (optional): Add a description or other information.

3. Optionally, make the following advanced setting:

Metric: Enter a metric value which can be an integer from 0 to 4294967295 with a default of 5. The metric value is used to distinguish and prioritize routes to the same destination. A lower metric value is preferred over a higher metric value. IPsec routes automatically have the metric 0.

4. Click **Save**.

The new route appears on the **Standard Static Route** list.

5. Enable the route.

Click the toggle switch to activate the route.

To either edit or delete a route, click the corresponding buttons.

6.5.2 Policy Routes

When a router receives a data packet, it normally decides where to forward it based on the destination address in the packet, which is then used to look up an entry in a routing table. However, in some cases, there may be a need to forward the packet based on other criteria. Policy-based routing allows for forwarding or routing of data packets according to your own policies.

To add a policy route, proceed as follows:

1. On the **Policy Routes** tab click **New Policy Route**.

The **Add Policy Route** dialog box opens.

2. Make the following settings:

Position: The position number, defining the priority of the policy route. Lower numbers have higher priority. Routes are matched in ascending order. Once a route has matched, routes with a higher number will not be evaluated anymore.

Route type: The following route types are available:

- **Interface route:** Packets are sent out on a particular interface. This is useful in two cases. First, for routing on dynamic interfaces (PPP), because in this case the IP address of the gateway is unknown. Second, for defining a default route having a gateway located outside the directly connected networks.
- **Gateway route:** Packets are sent to a particular host (gateway).

Source interface: The interface on which the data packet to be routed has arrived. The **Any** setting applies to all interfaces.

Source network: The source network of the data packets to be routed. The **Any** setting applies to all networks.

Service: The service definition that matches the data packet to be routed. The drop-down list contains all predefined services as well as the services you have defined yourself. These services allow you to specify precisely which kind of traffic should be processed. The **Any** setting matches any combination of protocols and source and destination ports.

Destination network: The destination network of the data packets to be routed. The **Any** setting applies to all networks.

Note - Destination networks which are bound to interfaces are treated like normal networks. The binding has no effect on policy routes. Therefore you have to use the option **Target interface**. This option is only available with the route type **Interface Route**.

Target interface: The interface for the data packets to be sent to (only available with the route type **Interface Route**).

Gateway: Select the gateway/router to which the gateway will forward data packets (only available if you selected **Gateway Route** as route type).

Comment (optional): Add a description or other information.

3. Click **Save**.

The new route appears on the **Policy Routes** list.

4. Enable the route.

Click the toggle switch to activate the route.

To either edit or delete a route, click the corresponding buttons.

6.6 Dynamic Routing (OSPF)

The **Open Shortest Path First** (OSPF) protocol is a link-state hierarchical routing protocol primarily used within larger autonomous system networks. Sophos UTM supports OSPF version 2. Compared to other routing protocols, OSPF uses cost as its routing metric. The cost

of an OSPF-enabled interface is an indication of the overhead required to send packets across a certain interface. The cost of an interface is inversely proportional to the bandwidth of that interface. Therefore, a higher bandwidth indicates a lower cost. For example, there is more overhead (higher cost) and time delays involved in crossing a 56 Kbit/s serial line than crossing a 10 Mbit/s Ethernet line.

The OSPF specification does not specify how the cost of an attached network should be computed—this is left to the vendor. Therefore you are free to define your own computation formula. However, if your OSPF network is adjacent to other networks that have cost already defined, you are advised to apply the same computation base.

By default, the cost of an interface is calculated based on the bandwidth. Cisco, for example, computes the cost by dividing 10^8 through the bandwidth of the interface in bits per second. Using this formula, it will cost $10^8/10000000 = 10$ to cross a 10 Mbit/s Ethernet line, whereas it will cost $10^8/1544000 = 64$ to cross a 1.544 Mbit/s line (T1) (note that the cost is rounded down to the nearest integer).

6.6.1 Global

On the **Interfaces & Routing > Dynamic Routing (OSPF) > Global** tab you can make the basic settings for OSPF. Before you can enable the OSPF function, you must have at least one OSPF area configured (on the **Area** tab).

Caution – Configuring the OSPF function of Sophos UTM requires a technically adept and experienced administrator who is familiar with the OSPF protocol. The descriptions of configuration options given here are by far not sufficient to provide a comprehensive understanding of the OSPF protocol. You are thus advised to use this feature with caution, as a misconfiguration may render your network inoperable.

To configure OSPF, proceed as follows:

1. On the **Area** tab, create at least one OSPF area.
2. On the **Global** tab, enable OSPF.

Click the toggle switch.

The toggle switch turns amber and the **Router** area becomes editable.

3. Enter the router ID.

Enter a unique router ID to identify the Sophos UTM device to other OSPF routers.

4. Click **Apply**.

Your settings will be saved.

The toggle switch turns green.

To disable OSPF click the toggle switch.

6.6.2 Area

An OSPF network is divided into areas. These are logical groupings of routers whose information may be summarized towards the rest of the network. Areas are identified by a 32-bit ID in dot-decimal notation similar to the notation of IP addresses.

Altogether, there are six types of OSPF areas:

- **Backbone:** The area with ID 0 (or 0 . 0 . 0 . 0) is reserved for the OSPF network backbone, which forms the core of an OSPF network—all other areas are connected to it.
- **Normal:** A normal or regular area has a unique ID ranging from 1 (or 0 . 0 . 0 . 1) to 4,294,967,295 (or 255 . 255 . 255 . 255). Normal areas handle external routes by flooding them bi-directionally across the **Area Border Router** (ABR). Note that external routes are defined as routes which were distributed in OSPF from another routing protocol.
- **Stub:** Typically, a stub area does not have direct connections to any external networks. Injecting external routes into a stub area is unnecessary because all traffic to external networks must be routed through an **Area Border Router** (ABR). Therefore, a stub area substitutes a default route for external routes to send traffic to external networks.
- **Stub no-summary:** A **Stub no-summary** or **Totally stubby area** is similar to a stub area, however this area does not allow so-called summary routes, that is, it restricts type 3 summary link state advertisements (LSAs) from flowing into the area.
- **NSSA:** A not-so-stubby area (NSSA) is a type of stub area that in contrast to stub areas can support external connections. Note that NSSAs do not support virtual links.
- **NSSA no-summary:** A **NSSA no-summary** is similar to a NSSA, however this area does not allow so-called summary routes, that is, it restricts type 3 summary link state advertisements (LSAs) from flowing into the area.

To create an OSPF area, proceed as follows:

1. On the **Area** tab, click **New OSPF Area**.

The **Add OSPF Area** dialog box opens.

2. Make the following settings:

Name: Enter a descriptive name for the area.

Area ID: Enter the ID of the area in dot-decimal notation (e.g., 0 . 0 . 0 . 1 for a normal area or 0 . 0 . 0 . 0 for the backbone area).

Area type: Select an area type (see description above) to specify the characteristics of the network that will be assigned to the area in question.

Auth-type: Select the authentication type used for all OSPF packets sent and received through the interfaces in the area. The following authentication types are available:

- **MD5:** Select to enable MD5 authentication. MD5 (Message-Digest algorithm 5) is a widely-used cryptographic hash function with a 128-bit hash value.
- **Plain-Text:** Select to enable plain-text authentication. The password is transmitted in clear text over the network.
- **Off:** Select to disable authentication.

Connect via Interface: Select an OSPF-enabled interface. Note that to specify an OSPF-enabled interface here it must have been created on the **Interfaces** tab first.

Connect Virtual Links: All areas in an OSPF **autonomous system** (AS) must be physically connected to the backbone area (area 0). In some cases where this physical connection is not possible, you can use a virtual link to connect to the backbone through a non-backbone area. In the **Connect Virtual Links** box, enter the router ID associated with the virtual link neighbor in decimal dot notation (e.g., 10.0.0.8).

Cost: The cost of sending or receiving a data packet in this area. Valid values for cost are in the range from 1 to 65535. Default is 0. If you choose 0, the system calculates an adequate value based on the formula reference bandwidth divided by interface bandwidth. For example, in the case of Ethernet, it is 100 Mbps / 10 Mbps = 10.

Comment (optional): Add a description or other information.

3. Click **Save**.

The new area definition appears on the **Area** tab.

To either edit or delete an OSPF area, click the corresponding buttons.

Open Live Log: The OSPF live log logs all activities on the OSPF interface. Click the button to open the live log in a new window.

6.6.3 Interfaces

On the **Interfaces & Routing > Dynamic Routing (OSPF) > Interfaces** tab you can create interface definitions to be used within an OSPF area. Each definition contains various parameters that are specific for OSPF-enabled interfaces.

To create an OSPF interface definition, proceed as follows:

1. On the **Interfaces** tab, click **New OSPF Interface**.

The **Add OSPF Interface** dialog box opens.

2. Make the following settings:

Name: Enter a descriptive name for this interface.

Interface: Select the interface to associate with this OSPF interface definition.

Auth-type: Select the authentication type used for all OSPF packets sent and received through this interface. The following authentication types are available:

- **MD5:** Select to enable MD5 authentication. MD5 (Message-Digest algorithm 5) is a widely-used cryptographic hash function with a 128-bit hash value.
- **Plain-Text:** Select to enable plain-text authentication. The password is transmitted in clear text over the network.
- **Off:** Select to disable authentication.

Message Digest: Select the message digest (MD) to specify that MD5 authentication is used for this OSPF interface. Note that to select a message digest here it must have been created on the **Message Digests** tab first.

Cost: The cost of sending a data packet on this interface. Valid values for cost are in the range from 1 to 65535.

Advanced (optional): Select this checkbox to reveal further configuration options:

- **Hello interval:** Specify the period of time (in seconds) that Sophos UTM waits between sending **Hello** packets through this interface. The default value is ten seconds.
- **Retransmit interval:** Specify the period of time (in seconds) between link state advertisement (LSA) retransmissions for the interface when an acknowledgment for the LSA is not received. The default value is five seconds.
- **Dead interval:** Specify the period of time (in seconds) Sophos UTM waits to receive a **Hello** data packet through the interface. The default value is 40 seconds. By convention, the **Dead Interval** value is four times greater than the value for the **Hello Interval**.
- **Priority:** Specify the router priority, which is an 8-bit number ranging from 0 to 255 primarily used in determining the designated router (DR) for the particular network. The router with the highest priority will be more eligible to become designated router. Setting the value to 0, makes the router ineligible to become designated router. The default value is 1.
- **Transmit delay:** Specify the estimated period of time (in seconds) it takes to transmit a link state update packet on the interface. The range is from 1 to 65535 seconds; the default value is 1.

Comment (optional): Add a description or other information.

3. Click **Save**.

The OSPF interface definition appears on the **Interfaces** tab.

To either edit or delete an OSPF interface, click the corresponding buttons.

Open Live Log: The OSPF live log logs all activities on the OSPF interface. Click the button to open the live log in a new window.

6.6.4 Message Digests

On the **Interfaces & Routing > Dynamic Routing (OSPF) > Message Digests** tab so-called message digest keys can be generated. Message digest keys are needed to enable MD5 authentication with OSPF. MD5 authentication uses the password to generate a message digest, which is a 128-bit checksum of the data packet and password. The message digest is sent with the data packet along with a key ID associated with the password.

Note - The receiving routers must be configured with an identical message digest key.

To create a message digest key, proceed as follows:

1. On the **Message Digest** tab, click **New Message Digest Key**.

The **Add Message Digest Key** dialog box opens.

2. Make the following settings:

ID: Enter the key identifier for this message digest key; the range is from 1 to 255.

MD5-key: Enter the associated password, which must be a string of up to 16 alphanumeric characters.

3. Click **Save**.

The new key appears on the **Message Digests** list.

To either edit or delete a digest key, click the corresponding buttons.

6.6.5 Debug

The **Interfaces & Routing > Dynamic Routing (OSPF) > Debug** tab shows detailed information about relevant OSPF parameters in a separate browser window. The following information is available:

- **Show IP OSPF Neighbor:** Used to display OSPF neighbor information on a per-interface basis.
- **Show IP OSPF Routes:** Used to display the current state of the routing table.
- **Show IP OSPF Interface:** Used to display OSPF-related interface information.
- **Show IP OSPF Database:** Used to display lists of information related to the OSPF database for a specific router.
- **Show IP OSPF Border-Routers:** Used to display the internal OSPF routing table entries to an **Area Border Router (ABR)** and **Autonomous System Boundary Router (ASBR)**.

6.6.6 Advanced

On the **Interfaces & Routing > Dynamic Routing (OSPF) > Advanced** tab further OSPF-related configuration options are located concerning the injection (redistribution) of routing information from a domain other than OSPF into the OSPF domain.

Note - Policy routes cannot be redistributed.

Redistribute connected: Select if you want to redistribute routes of directly connected networks; the default metric (cost) value is 10.

Redistribute static: Select if you want to redistribute static routes.

Note - IPsec tunnels must have **Strict Routing** disabled to be redistributed (see chapter [Connections](#)).

Redistribute IPsec: Select if you want to redistribute the IPsec routes; the **Bind To Interface** option should be disabled.

Redistribute SSL VPN: Select if you want to redistribute SSL VPN; the default metric (cost) value is 10.

Redistribute BGP: Select if you want to redistribute BGP routes; the default metric (cost) value is 10.

Announce default route: Select if you want to redistribute a default route into the OSPF domain; the default metric (cost) value is 25. **Announce default route** does not work with IPv6.

Note - A default route will be advertised into the OSPF domain regardless of whether it has a route to 0.0.0.0/0.

Interface link detection: Select if routes on interfaces should only be announced if an interface link is detected.

6.7 Border Gateway Protocol

The Border Gateway Protocol (BGP) is a routing protocol used mainly by Internet Service Providers (ISP) to enable communication between multiple autonomous systems (AS), that is between multiple ISPs, thus being the backbone of the Internet. An autonomous system is a collection of connected IP networks controlled by one or more ISPs and connected via an internal routing protocol (e.g. IGP). BGP is described as path vector protocol and, in contrast to IGP, makes routing decisions based on path, network policies, and/or rulesets. For this reason it can be regarded as a reachability protocol rather than a routing protocol.

Each ISP (or other network provider) must have an officially registered Autonomous System Number (ASN) to identify themselves on the network. Although an ISP may support multiple

autonomous systems internally, to the Internet only the routing protocol is relevant. ASN with a number of the range 64512-65534 are private and can only be used internally.

BGP uses TCP as the transport protocol, on port 179.

When BGP is used between routers of a single AS it's called interior BGP (iBGP); when it is used between routers of different AS it is called exterior BGP (eBGP).

A strength of eBGP is that it prevents routing loops, that is an IP packet never passes an AS twice. This is accomplished in the following way: An eBGP router maintains a complete list of all AS an IP packet needs to pass to reach a certain network segment. When sending, it shares that information with neighbor eBGP routers which in turn update their routing list if necessary. When an eBGP router finds that it is already on such an UPDATE list it does not add itself again.

6.7.1 Global

On the **Border Gateway Protocol > Global** page, you can enable and disable BGP for Sophos UTM.

1. To be able to enable BGP, create at least one neighbor on the **Neighbor** page.
2. On the **Global** page, enable BGP.

Click the toggle switch.

The toggle switch turns amber and the **BGP System** section becomes editable.

3. Make the following settings:

AS number: Enter the Autonomous System Number (ASN) of your system.

Router ID: Enter an IPv4 address as router ID which is sent to neighbors during session initialization.

Networks: Add or select the networks and/or hosts that should be announced to the neighbors by the system. How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.

Note - The network which is to be announced has to be assigned to a physical or virtual interface. Any request accessing a non-existing IP will loop between BGP neighbor and Sophos UTM.

4. Click **Apply**.

The toggle switch turns green and BGP becomes active. After a short time, the **BGP Summary** section displays status information.

6.7.2 Systems

On the **Border Gateway Protocol > Systems** page you can create an environment with multiple autonomous systems.

Note - This page is only accessible if you enable the use of multiple AS on the **Advanced** page.

To create a new BGP system, do the following:

1. On the **Systems** page, click **New BGP System**.

The **Add BGP System** dialog box opens.

2. Make the following settings:

Name: Enter a descriptive name for the system.

ASN: Enter the Autonomous System Number (ASN) of your system.

Router ID: Enter an IPv4 address as router ID which is sent to neighbors during session initialization.

Neighbor: Select the checkboxes of those neighbors who belong to the AS of this system. Note that you need to create the neighbors beforehand on the **Neighbor** page.

Networks: Add or select the networks that should be announced by the system. How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.

Install routes: This option is enabled by default and should only be disabled if you want a BGP router to know the routes but not to actively take part in the BGP routing process. If there are multiple AS systems where this option is selected, filter lists must be created to ensure that there are no duplicate networks. Otherwise the routing behavior for identical networks is undefined.

3. Click **Save**.

The system appears on the **Systems** list.

6.7.3 Neighbor

On the **Border Gateway Protocol > Neighbor** page, you can create one or more BGP neighbor routers. A neighbor router (or peer router) builds the connection between multiple autonomous systems (AS) or within a single AS. During the first communication, two neighbors exchange their BGP routing tables. After that they send each other updates about changes in the routing table. Keepalive packets are sent to ensure that the connection is up. In case of errors, notifications packets are sent.

Policy routing in BGP differentiates between inbound and outbound policies. This is why defined route maps and filter lists can be applied separately for inbound or outbound traffic.

You need to create at least one neighbor router to be able to enable BGP on the **Global** page.

To create a new BGP neighbor, do the following:

1. On the **Neighbor** page, click **New BGP Neighbor**.

The **Add BGP neighbor** dialog box opens.

2. Make the following settings:

Name: Enter the name of the BGP neighbor router.

Host: Add or select the host definition of the neighbor. The defined IP address must be reachable from Sophos UTM. How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.

Remote ASN: Enter the Autonomous System Number (ASN) of the neighbor.

Authentication: If the neighbor requires authentication, select **TCP MD5 Signature** from the drop-down list and enter the password which must correspond to the password the neighbor has set.

3. Make the following advanced settings, if required:

Route in/out: If you have defined a route map, you can select it here. With **In** or **Out** you define whether to apply the route map to ingoing or outgoing announcements.

Filter in/out: If you have defined a filter list, you can select it here. With **In** or **Out** you define whether to apply the filter to ingoing or outgoing announcements.

Next-Hop-Self: In an iBGP network, when a router announces an external eBGP network internally, iBGP routers with no direct external connection will not know how to route packets to that network. Selecting this option, the eBGP router announces itself as next hop to reach the external network.

Multihop: In some cases, a Cisco router can run eBGP with a third-party router that does not allow direct connection of the two external peers. To achieve the connection, you can use eBGP multihop. The eBGP multihop allows a neighbor connection between two external peers that do not have direct connection. The multihop is only for eBGP and not for iBGP.

Soft-Reconfiguration: Enabled by default. This option enables storing updates sent by the neighbor.

Default Originate: Sends the default route 0.0.0.0 to the neighbor. The neighbor uses this route only if he needs to reach a network that is not in his routing table.

Weight: Cisco-specific option. Sets a generic weight for all routes learned from this neighbor. You can enter a value between 0 and 65535. The route with the highest weight is preferred to reach a particular network. The weight given here overrides route map weight.

4. Click **Save**.

The neighbor appears on the **Neighbor** list.

6.7.4 Route Map

In BGP, route-map is a command to set conditions for redistributing routes and to enable policy routing. On the **Border Gateway Protocol > Route Map** page, you can create route maps for particular networks, setting metric, weight, and/or preference values.

The best path algorithm, which decides which route to take, works as follows:

1. Weight is checked.*
2. Local preference is checked.*
3. Local route is checked.
4. AS path length is checked.
5. Origin is checked.
6. Metric is checked.*

This is only a short description. Since the calculation of the best path is very complex, please refer to pertinent documentation for detailed information which is available on the Internet.

Items followed by an asterisk (*) can be directly configured.

To create a BGP route map, do the following:

1. On the **Route Map** page, click **New BGP Route Map**.

The **Add BGP Route Map** dialog box opens.

2. Make the following settings:

Name: Enter a descriptive name for the route map.

Match by: Select whether the route map should match the IP address of a particular router or a whole AS.

- **IP address:** In the **Networks** dialog box, add or select hosts or networks the filter should apply to. How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.
- **AS number:** In the **AS Regex** box, use BGP regular expressions to define AS numbers the filter should apply to. Example: `_100_` matches any route going through AS100.

Networks: Add or select networks and/or hosts the route map should apply to. How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.

Metric: By default, a router dynamically learns route metrics. However, you can set your own metric value which can be an integer from 0 to 4294967295. A lower metric value is preferred over a higher metric value.

Weight: Weight is used to select a best path. It is specified for a specific router and it is not propagated. When multiple routes to the same destination exist, routes with a higher weight value are preferred. Weight is based on the first matched AS path and can be an integer from 0 to 4294967295.

Note - If a neighbor has been given a weight, it overrides the route map weight if the route to a specified network matches.

Preference: You can set a preference value for the AS path which is sent only to all routers in the local AS. Preference (or local preference) tells the routers in an AS which path has to be preferred to reach a certain network outside the AS. It can be an integer from 0 to 4294967295 and the default is 100.

AS prepend: AS path prepending is used if preference settings for some reason do not suffice to avoid a certain route, for example a backup route which should only be taken in case the main route is unavailable. It allows you to extend the AS path attribute by repeating your own AS number, e.g. 65002 65002 65002. This influences the BGP route selection since the shortest AS path is preferred. Note that route maps with AS prepend set need to be selected in the **Route Out** field of a neighbor to work as intended.

3. Click **Save**.

The route map appears on the **Route Map** list.

You can now use the route map on a neighbor definition.

6.7.5 Filter List

On the **Border Gateway Protocol > Filter List** page you can create filter lists used to regulate traffic between networks based on IP address or AS number.

To create a filter list, do the following:

1. On the **Filter List** page, click **New BGP Filter List**.

The **Add BGP Filter List** dialog box opens.

2. Make the following settings:

Name: Enter a descriptive name for the filter list.

Filter by: Select whether the filter should match the IP address of a particular router or a whole AS.

- **IP address:** In the **Networks** dialog box, add or select hosts or networks the filter should apply to. How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.

- **AS number:** In the **AS Regex** box, use BGP regular expressions to define AS numbers the filter should apply to. Example: `_100_` matches any route going through AS100.

Networks: Add or select networks and/or hosts that should be denied or permitted information on certain networks. How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.

Action: From the drop-down list, select an action that should be taken if a filter matches. You can either deny or permit traffic.

- **Deny:** If you deny a network for a particular neighbor via the **Filter In** field on the **Neighbor** page, Sophos UTM will ignore announcements for that network. If you do the same via the **Filter Out** field, Sophos UTM will not send announcements to that neighbor for that network.
- **Permit:** If you permit a network for a particular neighbor via the **Filter In** field on the **Neighbor** page, Sophos UTM will receive announcements for that network only. If you do the same via the **Filter Out** field, Sophos UTM will send announcements to that neighbor for that network only, but not for any other network you might have defined on the **Global** or **Systems** page.

Note - If the filter rule is set to **Deny** for a network and to **Permit** for a host on the same network, the traffic will be denied. To pass traffic to specific hosts only, the rule set should be **Permit** for the network and **Deny** for all hosts except the specific hosts.

3. Click **Save**.

The filter list appears on the **Filter List** list.

You can now use the filter list on a neighbor definition.

6.7.6 Advanced

On the **Border Gateway Protocol > Advanced** page you can make some additional settings for BGP and you can access BGP debug information windows.

Allow Multiple Autonomous Systems

Allow multiple AS: Select this checkbox if you want to configure multiple AS. This will enable the **Systems** page, where you can then add multiple AS. At the same time, the **BGP System** section on the **Global** page will be disabled, and the **Global** page will display information for all AS.

Strict IP Address Match

Strict IP address match: Select this checkbox to strictly match IP addresses. Example: 10.0.0.0/8 will only match 10.0.0.0/8, but not 10.0.1.0/24.

Multiple Path Routing

Normally only one route path is used, even if there are multiple routes with the same cost. If selected, up to eight equal routes can be used at the same time. This allows load balancing between multiple interfaces.

Note - The balancing between multiple interfaces only works with neighbors which use the same ASN.

Multiple Path Routing for eBGP: Select this checkbox to activate multiple path routing for eBGP (exterior BGP). eBGP does not need to use the same ASN as the neighbors to load balance between multiple interfaces.

Multiple Path Routing for iBGP: Select this checkbox to activate multiple path routing for iBGP (interior BGP). iBGP needs to use the same ASN as the neighbors to load balance between multiple interfaces.

BGP Debug

This section provides access to three debug information windows. Click a button to open a window. The name of a button corresponds to the BGP command you would normally invoke on the command line. The window will then display the result of that command in form of a command line output.

Show IP BGP Neighbor: Displays information on the neighbors of Sophos UTM. Check that the link state for each neighbor is **Established**.

Show IP BGP Unicast: Displays the current BGP routing table which gives the preferred paths. This is especially useful to get an overview of your metric, weight, and preference settings and their impact.

Show IP BGP Summary: Displays the status of all BGP connections. This information is also displayed in the **BGP Summary** section on the **Global** page.

6.8 Multicast Routing (PIM-SM)

The menu **Interfaces & Routing > Multicast Routing (PIM-SM)** enables you to configure **Protocol Independent Multicast Sparse Mode (PIM-SM)** for use on your network. PIM is a protocol to dynamically route multicast packets in networks. Multicast is a technique to deliver packets that are to be received by more than one client efficiently using as little traffic as possible. Normally, packets for more than one client are simply copied and sent to every client individually, multiplying the consumed bandwidth by the number of users. Thus servers which have a lot of clients requesting the same packets at the same time, like e.g. servers for streaming content, need a lot of bandwidth.

Multicast, in contrast, saves bandwidth by sending packets only once over each link of the network. To achieve this, multicast includes adequately configured routers in the decision

when to create copies on the way from the server (sender) to the client (receiver). The routers use PIM-SM to keep track of active multicast receiver(s) and use this information to configure routing.

A rough scheme of PIM-SM communication is as follows: A sender starts transmitting its multicast data. The multicast router for the sender registers via PIM-SM with the RP router which in turn sends a join message to the sender's router. Multicast packets now flow from the sender to the RP router. A receiver registers itself via an IGMP broadcast for this multicast group at its local PIM-SM router. This router sends a join request for the receiver towards the RP router, which then in turn forwards multicast traffic to the receiver.

Multicast has its own IP address range which is `224.0.0.0/4`.

6.8.1 Global

On the **Multicast Routing (PIM-SM) > Global** tab you can enable and disable PIM. The **Routing Daemon Settings** area displays the status of interfaces and routers involved.

Before you can enable PIM you need to define at least two interfaces to serve as PIM interfaces on the **Interfaces** tab and one router on the **RP Routers** tab.

To enable PIM-SM, do the following:

1. On the **Global** tab enable PIM-SM.

Click the toggle switch.

The toggle switch turns amber and the **Routing Daemon Settings** area becomes editable.

2. Make the following settings:

Active PIM-SM interfaces: Select at least two interfaces to use for PIM-SM. Interfaces can be configured on the **Interfaces** tab.

Active PIM-SM RP routers: Select at least one RP router to use for PIM-SM. RP routers can be defined on the **RP Routers** tab.

3. Click **Apply**.

Your settings will be saved.

The toggle switch turns green and PIM-SM communication is now active in your network.

To cancel the configuration, click the amber colored toggle switch. To disable PIM-SM click the green toggle switch.

Live Log

Click the **Open Live Log** button to open the PIM live log in a new window.

6.8.2 Interfaces

On the **Multicast Routing (PIM-SM) > Interfaces** tab you can define over which interfaces of Sophos UTM multicast communication should take place.

To create a new PIM-SM interface, do the following:

1. On the **Interfaces** tab, click **New PIM-SM Interface**.

The dialog box **Add PIM-SM Interface** opens.

2. Make the following settings:

Name: Enter a descriptive name for PIM-SM interface.

Interface: Select an interface that is to accept PIM and IGMP network traffic.

DR priority (optional): Enter a number that defines the designated router (DR) priority for the interface. The router with the highest priority honors IGMP requests if more than one PIM-SM routers are present on the same network segment. Numbers from 0 to 2^{32} are possible. If you do not provide a priority, 0 is used by default.

IGMP: Select the version of the **Internet Group Management Protocol** that is to be supported. IGMP is used by recipients to establish multicast group memberships.

Comment (optional): Add a description or other information.

3. Click **Save**.

The new PIM-SM interface is added to the interfaces list.

To either edit or delete a PIM-SM interface, click the corresponding buttons.

6.8.3 RP Routers

In order to be able to use multicast on your network you need to configure one or more rendezvous point routers (RP routers). An RP router accepts registrations both from multicast receivers and senders. An RP router is a regular PIM-SM router that is chosen to be the RP router for certain multicast groups as well. All PIM-SM routers must agree on which router is to be the RP router.

To create an RP router, do the following:

1. On the **RP Routers** tab, click **New Rendezvous Point Router**.

The dialog box **Add RP Router** opens.

2. Make the following settings:

Name: Enter a descriptive name for the RP router.

Host: Create (or select) the host that should act as rendezvous point router.

Priority: Enter a number that defines the priority of the RP router. Join messages are sent to the RP router with the lowest priority. Numbers from 0 to 255 are possible. If you do not provide a priority, 0 is used by default.

Multicast Group Prefixes: Enter the multicast group the RP router is responsible for. You can define group prefixes like `224.1.1.0/24` if the RP is responsible for more than one multicast group. The multicast group (prefix) must be within the multicast address range which is `224.0.0.0/4`.

Comment (optional): Add a description or other information.

3. Click **Save**.

The new RP router is added to the routers list.

To either edit or delete an RP router, click the corresponding buttons.

6.8.4 Routes

You need to set up a continuous communication route between receivers and sender(s). If recipient, sender and/or RP router are not within the same network segment, you will need to create a route to enable communication between them.

To create a PIM-SM route, do the following:

1. On the **Routes** tab, click **New PIM-SM Route**.

The dialog box **Add PIM-SM Route** opens.

2. Make the following settings:

Route type: The following route types are available:

- **Interface route:** Packets are sent out on a particular interface. This is useful in two cases. First, for routing on dynamic interfaces (PPP), because in this case the IP address of the gateway is unknown. Second, for defining a default route having a gateway located outside the directly connected networks.
- **Gateway route:** Packets are sent to a particular host (gateway).

Network: Select the destination address range where the PIM traffic is to be routed to.

Gateway: Select the gateway/router to which the gateway will forward data packets (only available if you selected **Gateway Route** as route type).

Interface: Select the interface to which the gateway will forward data packets (only available if you selected **Interface Route** as route type).

Comment (optional): Add a description or other information.

3. Click **Save**.

The new PIM-SM route is added to the routes list.

To either edit or delete a PIM-SM route, click the corresponding buttons.

6.8.5 Advanced

On the **Interfaces & Routing > Multicast Routing (PIM-SM) > Advanced** tab you can configure some advanced settings for PIM.

Shortest Path Tree Settings

In some networks the PIM communication route between sender, RP, and recipient is not the shortest network path possible. The option **Enable Switch to Shortest Path Tree** allows to move an existing communication between sender and recipient to the shortest path available, omitting the RP as moderator, when a certain traffic threshold is reached.

Auto Firewall Settings

With this option enabled, the system will automatically create all necessary firewall rules needed to forward multicast traffic for the specified multicast groups.

Debug Settings

Select the option **Enable Debug Mode** to see additional debugging information in the PIM-SM routing daemon log.

7 Network Services

This chapter describes how to configure several network services of Sophos UTM for your network.

The following topics are included in this chapter:

- [DNS](#)
- [DHCP](#)
- [NTP](#)

7.1 DNS

The tabs of the **Network Services > DNS** menu contain miscellaneous configuration options, all related to the **Domain Name System** (DNS), a system primarily used to translate domain names (computer hostnames) to IP addresses.

7.1.1 Global

Allowed Networks

You can specify the networks that are to be allowed to use Sophos UTM as a recursive DNS resolver. Typically, you will select your internal networks here.

Caution - It is extremely important not to select an **Any** network object, because this introduces a serious security risk and opens your appliance up to abuse from the Internet.

Note - If you already run an internal DNS server, for example as part of Active Directory, you should leave this box empty.

DNSSEC

The Domain Name System Security Extensions (DNSSEC) is a set of extensions to DNS to enhance security. It works by digitally signing DNS lookup records using public-key cryptography. If unselected, Sophos UTM accepts all DNS records. If selected, Sophos UTM validates incoming DNS requests with regard to DNSSEC signing. Only correctly signed records will be accepted from signed zones.

Note - If selected, DNS records might be rejected by DNSSEC-incapable forwarders that are manually installed or assigned by ISP. In this case, on the **Forwarders** tab, remove the DNS forwarders from the box and/or disable the **Use forwarders assigned by ISP** checkbox.

Flush Resolver Cache

The DNS proxy uses a cache for its records. Each record has an expiration date (TTL, time-to-live) at which it will be deleted, which is normally one day. However, you can empty the cache manually e.g. if you want recent changes in DNS records to take effect immediately, not having to wait for the TTL to expire. To empty the cache, click **Flush Resolver Cache Now**.

7.1.2 Forwarders

On the **Network Services > DNS > Forwarders** tab you can specify so-called DNS forwarders. A DNS forwarder is a **Domain Name System** (DNS) server on a network used to forward DNS queries for external DNS names to DNS servers outside of that network. If possible, add a DNS forwarder to your configuration. This should be a host "near" your site, preferably one provided by your Internet provider. It will be used as a "parent" cache. This will speed up DNS requests considerably. If you do not specify a forwarding name server, the root DNS servers will be queried for zone information first, taking a longer time to complete requests.

To create a DNS forwarder, proceed as follows:

1. Select a DNS forwarder.

Select or add a DNS forwarder. How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.

Use forwarders assigned by ISP (optional): Select the **Use forwarders assigned by ISP** checkbox to forward DNS queries to the DNS servers of your ISP. When this box is checked, all forwarders automatically assigned by your ISP will be listed in the line below the box.

2. Click **Apply**.

Your settings will be saved.

7.1.3 Request Routing

Suppose you run your own internal DNS server, this server could be used as an alternate server to resolve DNS queries for a domain you do not want to be resolved by DNS forwarders. On the **Network Services > DNS > Request Routing** tab you can define routes to your own DNS servers.

To create a DNS request route, proceed as follows:

1. On the **Request Routing** tab, click **New DNS Request Route**.

The **Add DNS Request Route** dialog box opens.

2. Make the following settings:

Domain: Enter the domain for which you want to use an alternate DNS server.

Target servers: Select or add one or more DNS servers to use for resolving the domain entered above. How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.

Comment (optional): Add a description or other information.

3. Click **Save**.

The new route appears on the **DNS Request Route** list and is immediately active.

To either edit or delete a DNS request route, click the corresponding buttons.

7.1.4 Static Entries

If you do not want to set up your own DNS server but need a static DNS mapping for a few hosts of your network, you can enter these mappings.

Starting with Sophos UTM version 9.1, this feature has moved to the **Definitions & Users > Network Definitions** tab. DNS mappings are now defined along with the involved hosts.

When you click the **Static Entries** button, the **Definitions & Users > Network Definitions** tab opens. Automatically, only hosts with static entry are displayed. Use the drop-down list on top of the list to change the filter settings.

7.1.5 DynDNS

Dynamic DNS, or DynDNS for short, is a domain name service which allows static Internet domain names to be assigned to a computer with a varying IP address. You can sign up for the DynDNS service at the website of the respective DynDNS service provider to get a DNS alias that will automatically be updated when your uplink IP address changes. Once you have registered to this service, you will receive a hostname, username, and password, which are necessary for the configuration.

To configure DynDNS, proceed as follows:

1. On the **DynDNS** tab, click **New DynDNS**.

The **Add DynDNS** dialog box opens.

2. Make the following settings:

Type: The following DynDNS services are available:

- **DNS-O-Matic:** The generic hostname `all.dnsomatic.com` can be used to update all configured services at once instead of just a specific hostname (see also: www.dnsomatic.com/wiki/api). Official website: www.dnsomatic.com
- **DNS Park:** Official website: www.dnspark.com
- **DtDNS:** Official website: www.dtdns.com

- **Dyn:** Standard DNS service of the service provider Dynamic Network Services Inc. (Dyn). Official website: www.dyn.com
- **Dyn custom:** Custom DNS service of the service provider Dynamic Network Services Inc. (Dyn) (www.dyn.com). Custom DNS is designed primarily to work with domains owned or registered by yourself.
- **easyDNS:** Official website: www.easydns.com
- **FreeDNS:** Official website: freedns.afraid.org
- **Namecheap:** Official website: www.namecheap.com
- **No-IP.com:** Official website: www.noip.com
- **OpenDNS IP update:** Official website: www.opendns.com
- **selfHOST:** Official website: www.selfhost.de
- **STRATO AG:** Official website: www.strato.de
- **zoneedit:** Official website: www.zoneedit.com

Note - In the **Server** field the URL is displayed to which Sophos UTM sends the IP changes.

Assign (not with type **FreeDNS**): Define the IP address the DynDNS name is to be associated with. Selecting **IP of Local Interface** is useful when the interface in question has a public IP address. Typically, you will use this option for your DSL uplink. When you select **First public IP on the default route** no interface needs to be specified. Instead, your Sophos UTM will send a WWW request to a public DynDNS server which in return will respond with the public IP you are currently using. This is useful when your Sophos UTM does not have a public IP address but is located inside a private network, connected to the Internet via a masquerading router.

Note - FreeDNS always uses the first public IP address on the default route.

Interface (only with **IP of local interface**): Select the interface for which you want to use the DynDNS service, most likely this will be your external interface connected to the Internet.

Record (only with **Dyn** and **FreeDNS**): Select the record you want to use for the DynDNS service. Decide between **A (IPv4)**, **A & AAAA (dual stack)** (only with **Dyn**) and **AAAA (IPv6)** (only with **FreeDNS**).

Hostname (not with type **Open DNS IP update**): Enter the domain name you received from your DynDNS service provider (e.g., `example.dyndns.org`). Note that you need not adhere to a particular syntax for the hostname to be entered here. What you must enter here exclusively depends on what your DynDNS service provider requires. Apart from that, you can also use your DynDNS hostname as the gateway's main hostname, which, however, is not mandatory.

Label (only with type **Open DNS IP update**): Enter the label given to the network. Please refer to the OpenDNS Knowledge Base for further information.

Aliases (optional, only with some types): Use this box to enter additional hostnames which should point to the same IP address as the main hostname above (e.g., `mail.example.com`, `example.com`).

MX (optional, only with type **DNS Park**, **DynDNS**, or **easyDNS**): Mail exchangers are used for directing mail to specific servers other than the one a hostname points to. MX records serve a specific purpose: they let you specify the host (server) to which mail for a specific domain should be sent. For example, if you enter `mail.example.com` as Mail Exchanger, mail addressed to `user@example.com` would be delivered to the host `mail.example.com`.

MX priority (optional, only with type **DNS Park**): Enter a positive integer number indicating whether the specified mail server should be preferred for delivery of mail to the domain. Servers with lower numbers are preferred over servers with higher numbers. You can usually leave the field blank because DNS Park uses a default value of 5 which is appropriate for almost all purposes. For technical details about mail exchanger priorities, see [RFC 5321](#).

Backup MX (optional, only with type **DynDNS** or **easyDNS**): Select this checkbox only if the hostname named in the **Hostname** text box is to serve as main mail exchanger. Then the hostname from the **MX** text box will only be advertised as a backup mail exchanger.

Wildcard (optional, only with type **DynDNS** or **easyDNS**): Select this option if you want subdomains to point to the same IP address as your registered domain. Using this option an asterisk (*) will be added to your domain serving as a wildcard (e.g., `*.example.dyndns.org`), thus making sure that, for example, `www.example.dyndns.org` will point to the same address as `example.dyndns.org`.

Username: Enter the username you received from the DynDNS service provider.

Password: Enter the password you received from the DynDNS service provider.

Comment (optional): Add a description or other information.

3. Click **Save**.

The new DynDNS appears on the **DynDNS** list. The service is still disabled (toggle switch is gray).

4. Enable DynDNS.

Click the toggle switch to enable the DynDNS service.

The service is now enabled (toggle switch is green).

To either edit or delete a DynDNS, click the corresponding buttons.

You can use multiple DynDNS objects at the same time. When all settings for two host-names are identical, it is recommended to use the **Aliases** option—instead of creating two distinct objects.

7.2 DHCP

The **Dynamic Host Configuration Protocol** (DHCP) automatically distributes addresses from a defined IP address pool to client computers. It is designed to simplify network configuration on large networks, and to prevent address conflicts. DHCP distributes IP addresses, default gateway information, and DNS configuration information to its clients.

In addition to simplifying the configuration of client computers and allowing mobile computers to move painlessly between networks, DHCP helps to localize and troubleshoot IP address-related problems, as these are mostly issues with the configuration of the DHCP server itself. It also allows for a more effective use of address space, especially when not all computers are active at the same time, as addresses can be distributed as needed and reused when unneeded.

7.2.1 Servers

The tab **Network Services > DHCP > Server** allows to configure a DHCP server. Sophos UTM provides the DHCP service for the connected network as well as for other networks. The DHCP server can be used to assign basic network parameters to your clients. You can run the DHCP service on multiple interfaces, with each interface and each network to be provided having its own configuration set.

Note - On the **Options** tab you can define additional or different DHCP options to be sent to the clients. A DHCP option defined on the **Options** tab overwrites a setting made on the **Servers** tab if its scope is not set to be global. For example, defining DHCP options for selected hosts only, you can assign them a DNS server or lease time different from what is defined for the DHCP server.

To configure a DHCP server, proceed as follows:

1. On the **Servers** tab, click **New DHCP Server**.

The **Add DHCP Server** dialog box opens.

2. Make the following settings:

Interface: The interface from which the IP addresses should be assigned to the clients. You can only select an already configured interface.

Address type: This option is only available when IPv6 is globally enabled. Select the IP version of the DHCP server.

Note - Prefix Advertisements with **Stateful Autoconfiguration** (managed flag), either on Sophos UTM or via another device will be needed. You can configure prefix advertisements under the **Interfaces & Routing > IPv6 > Prefix Advertisements** tab.

Range start/end: The IP range to be used as an address pool on that interface. By default, the configured address area of the network card will appear in the text boxes. If the clients are in the same network, the range must be inside the network attached to the interface. If the clients are in another network, the range must be inside the network where the relayed DHCP requests are forwarded from.

Note - The bigger a defined DHCP IP range, the more memory Sophos UTM will reserve. Please make sure to reduce the DHCP range size to the values you need. The maximum allowed range is a /9 network.

DNS server 1/2: The IP addresses of the DNS servers.

Default gateway (only with IPv4): The IP address of the default gateway.

Note - Both wireless access points and RED appliances need the default gateway to be within the same subnet as the interface they are connected to.

Domain (optional): Enter the domain name that will be transmitted to the clients (e.g., `intranet.example.com`).

Lease time (only with IPv4): The DHCP client automatically tries to renew its lease. If the lease is not renewed during its lease time, the IP address lease expires. Here you can define this time interval in seconds. The default is 86,400 seconds (one day). The minimum is 600 seconds (10 minutes) and the maximum is 2,592,000 seconds (one month).

Valid lifetime (only with IPv6): The DHCP client automatically tries to renew its lease. If the lease is not renewed during its valid lifetime, the IP address lease status becomes invalid, the address is removed from the interface, and it may be assigned somewhere else. You can select an interval between five minutes and infinity, however the valid lifetime must be equal or greater than the preferred lifetime.

Preferred lifetime (only with IPv6): The DHCP client automatically tries to renew its lease. If the lease is not renewed during its preferred lifetime, the IP address lease status becomes deprecated, i.e., it is still valid but will not be used for new connections. You can select an interval between 5 minutes and infinity.

Comment (optional): Add a description or other information.

3. Optionally, make the following advanced settings:

WINS node type (only with IPv4): **Windows Internet Naming Service** (WINS) is Microsoft's implementation of **NetBIOS Name Server** (NBNS) on Windows, a name

server and service for NetBIOS computer names. A WINS server acts as a database that matches computer names with IP addresses, thus allowing computers using NetBIOS to take advantage of the TCP/IP network. The following WINS node types are available:

- **Do not set:** The WINS node type is not set and will be chosen by the client.
- **B-node (no WINS):** B-node systems use broadcasts only.
- **P-node (WINS only):** P-node systems use only point-to-point name queries to a Windows name server (WINS).
- **M-node (Broadcast, then WINS):** M-node systems broadcast first, then query the name server.
- **H-node (WINS, then Broadcast):** H-node systems query the name server first, then broadcast.

WINS server: Depending on your WINS node type selection, this text box appears. Enter the IP address of the WINS server.

Clients with static mappings only (optional): Select this option to have the DHCP server assign IP addresses only to clients that have a static DHCP mapping (see **Definition & Users > Network Definitions > Network Definitions**).

Enable HTTP proxy auto configuration: Select this option if you want to provide a PAC file for automatic proxy configuration of browsers. For more information, see chapter **Web Protection > Filtering Options > [Misc](#)**, section **Proxy Auto Configuration**.

Note - HTTP proxy auto configuration is currently not supported with IPv6 by Microsoft Windows.

Clients via DHCP relay agent (only with IPv4): If selected, the DHCP server assigns IP addresses to clients which are not in the network of the attached interface. In this case, the address range defined above has to be inside the network where relayed DHCP requests are forwarded from, and not within the network of the attached interface.

Netmask: Select the netmask of the network where relayed DHCP requests are forwarded from.

4. Click **Save**.

The new DHCP server definition appears on the DHCP server list and is immediately active.

To either edit or delete a DHCP server definition, click the corresponding buttons.

7.2.2 Relay

The **Network Services > DHCP > Relay** tab allows you to configure a DHCP relay. The DHCP service is provided by a separate DHCP server and Sophos UTM works as a relay. The DHCP relay can be used to forward DHCP requests and responses across network

segments. You need to specify the DHCP server and a list of interfaces between which DHCP traffic shall be forwarded.

To configure a DHCP relay, proceed as follows:

1. On the **Relay** tab, enable **DHCP Relay**.

Click the toggle switch.

The toggle switch turns amber and the **DHCP Relay Configuration** area becomes editable.

2. Select the DHCP server.

3. Add the interfaces involved.

Add the interface to the DHCP server as well as all interfaces to the clients' network(s) between which DHCP requests and responses should be forwarded.

4. Click **Apply**.

Your settings will be saved.

The toggle switch turns green.

To cancel the configuration, click the amber colored toggle switch.

7.2.3 DHCPv6 Relay

The **Network Services > DHCP > DHCPv6 Relay** tab allows you to configure a DHCP relay for IPv6. The DHCP service is provided by a separate DHCPv6 interface and Sophos UTM works as a relay. The DHCPv6 relay can be used to forward DHCP requests and responses across network segments.

Note - You have to activate IPv6 on the **Interfaces & Routing > IPv6 > Global** tab to use DHCPv6 relay.

To configure a DHCPv6 relay, proceed as follows:

1. On the **DHCPv6 Relay** tab, enable **DHCPv6 Relay**.

Click the toggle switch.

The toggle switch turns amber and the **DHCPv6 Relay Configuration** area becomes editable.

2. Add the interfaces facing clients involved.

Add the interfaces to the clients' network(s) between which DHCPv6 requests and responses should be forwarded.

3. Add the interfaces facing servers involved.

Add the interfaces facing the DHCPv6 server.

4. Click **Apply**.

Your settings will be saved.

The toggle switch turns green.

To cancel the configuration, click the amber colored toggle switch.

7.2.4 Static Mappings

You can create static mappings between client and IP address for some or all clients. Starting with Sophos UTM version 9.1, this feature has moved to the **Definitions & Users > Network Definitions** tab. DHCP mappings are now defined along with the involved hosts.

When you click the **Static Mappings** button, the **Definitions & Users > Network Definitions** tab opens. Automatically, only hosts with static mapping are displayed. Use the drop-down list on top of the list to change the filter settings.

7.2.5 IPv4 Lease Table

Using DHCP, a client no longer owns an IP address, but rather **leases** it from the DHCP server, which gives permission for a client to use the address for a period of time.

The lease table on the **Network Services > DHCP > IPv4 Lease Table** tab shows the current leases issued by the DHCP server, including information about the start date and the date when the lease will expire.

Add Static Mapping to New Host Definition

You can use an existing lease as template for a static MAC/IP mapping with a host to be defined. Do the following:

1. For the desired lease, click the button **Make Static** in the **Make static** column.

The dialog window **Make Static** opens.

2. Make the following settings:

Action: Select **Create a new host**.

Name: Enter a descriptive name for the new host.

DHCP server: Select the DHCP server to be used for static mapping. The corresponding DHCP range is displayed below the drop-down list.

IPv4 address: Change the IP address to an address outside the DHCP pool range.

Note - When converting a lease to a static mapping you should change the IP address so that it is no longer inside the scope of the DHCP pool. However, if you change the IP address, the address used by the client will not change immediately, but only when it tries to renew its lease for the next time.

DNS hostname: If you provide a DNS hostname, it will be used as static DNS entry of the host.

Reverse DNS: Select the checkbox to enable the mapping of the host's IP address to its name. Note that although several names can map to the same IP address, one IP address can only ever map to one name.

Comment (optional): Add a description or other information.

3. Click **Save**.

Your settings will be saved.

You can find the new host with the static mapping on the **Definitions & Users > Network Definitions** tab.

Add Static Mapping to Existing Host Definition

You can use an existing lease as template for a new static MAC/IP mapping with an existing host definition. Do the following:

1. For the desired lease, click the **Make Static** button in the **Make static** column.

The dialog window **Make Static** opens.

2. Make the following settings:

Action: Select **Use an existing host**.

Host: Add the host by clicking the Folder icon.

3. Click **Save**.

Your settings will be saved.

You can find the host with the static mapping on the **Definitions & Users > Network Definitions** tab.

7.2.6 IPv6 Lease Table

Using DHCP, a client no longer owns an IP address, but rather **leases** it from the DHCP server, which gives permission for a client to use the address for a period of time.

The lease table on the **Network Services > DHCP > IPv6 Lease Table** tab shows the current leases issued by the DHCP server, including information about the start date and the date when the lease will expire.

Note - Leases that have been granted via prefix advertisements are not shown in the table.

Add Static Mapping to New Host Definition

You can use an existing lease as template for a static MAC/IP mapping with a host to be defined. Do the following:

1. For the desired lease, click the button **Make Static**.

The dialog window **Make Static** opens.

2. Make the following settings:

Action: Select **Create a new host**.

Name: Enter a descriptive name for the new host.

DHCP server: Select the DHCP server to be used for static mapping. The corresponding DHCP range is displayed below the drop-down list.

IPv6 address: Change the IP address to an address outside the DHCP pool range.

Note - When converting a lease to a static mapping you should change the IP address so that it is no longer inside the scope of the DHCP pool. However, if you change the IP address, the address used by the client will not change immediately, but only when it tries to renew its lease for the next time.

DNS hostname: If you provide a DNS hostname, it will be used as static DNS entry of the host.

Reverse DNS: Select the checkbox to enable the mapping of the host's IP address to its name. Note that although several names can map to the same IP address, one IP address can only ever map to one name.

Comment (optional): Add a description or other information.

3. Click **Save**.

Your settings will be saved.

Add Static Mapping to Existing Host Definition

You can use an existing lease as template for a new static MAC/IP mapping with an existing host definition. Do the following:

1. For the desired lease, click the **Make Static** button in the **Make static** column.

The dialog window **Make Static** opens.

2. Make the following settings:

Action: Select **Use an existing host**.

Host: Add the host by clicking the Folder icon.

3. Click **Save**.

Your settings will be saved.

You can find the host with the static mapping on the **Definitions & Users > Network Definitions** tab.

7.2.7 Options

The **Network Services > DHCP > Options** tab allows to configure DHCP options. DHCP options are additional configuration parameters provided by a DHCP server to DHCP clients.

Example: For some VoIP phones, to provide them with the necessary information from your DHCP servers you have to create and activate three additional DHCP options on this page:

- **filename:** Name of the boot file.
- **next-server:** Name of the TFTP server which provides the boot file.
- **4 (time-servers):** IP address of the time server.

DHCP options can have different scopes: They can e.g. be provided to selected hosts only, or from selected servers only, or even globally. For this reason it is possible to define different parameters for the same host. Some DHCP options are already defined on the **DHCP > Servers** tab, e.g., DNS server (option 6). In case of conflicting parameter values, the parameters are provided to the client according to the following priority:

1. DHCP option with scope **Host**
2. DHCP option with scope **MAC prefix**
3. DHCP option with scope **Vendor ID**
4. DHCP option with scope **Server**
5. DHCP server parameter (**DHCP > Servers** tab)
6. DHCP option with scope **Global**

Note - With the DHCP request, a DHCP client submits the information which DHCP options it can deal with. As a result the DHCP server only provides the DHCP options the client understands, no matter which options are defined here.

To create a DHCP option, proceed as follows:

1. Click **New DHCP Option**.

The **Add DHCP Option** dialog box opens.

2. Make the following settings:

Address type (only if IPv6 is enabled): Select the IP version which you create the DHCP option for.

Code: Select the code of the DHCP option you want to create.

Note - With the entry **filename** you can specify a file to be loaded into the DHCP client to be executed there. With **next-server** you define the boot server. The numbered DHCP option codes are defined in [RFC 2132](#) and others.

Name: Enter a descriptive name for this option.

Type: Only available if you selected a code with the comment (**unknown**). Select the data type of the option. The data types **IP Address**, **Text** and **Hex** are available. Depending on the selected data type enter the appropriate data in the corresponding field below:

Address: Add or select the host or network group with the IP address(es) to be submitted with this DHCP option to the DHCP client. How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.

Text: Enter the text to be submitted with this DHCP option to the DHCP client.

Hex: Enter the hexadecimal value to be submitted with this DHCP option to the DHCP client. Please note that you have to enter the groups of two hexadecimal digits separated by colons (e.g., 00:04:76:16:EA:62).

Integer: Enter the integer value to be submitted with this DHCP option to the DHCP client.

Scope: Define on which condition the DHCP option should be sent.

- **Global:** The DHCP option will be sent by all defined DHCP servers to all DHCP clients.
- **Server:** In the **Server** box, select the DHCP servers which should send the DHCP option. The box displays all DHCP servers defined on the **DHCP Servers** tab.
- **Host:** In the **Host** box, add or select the hosts which should be provided the DHCP option. How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.
- **MAC prefix:** Enter a MAC prefix. All DHCP clients with a matching MAC address will be provided the DHCP option.
- **Vendor ID:** Enter a vendor ID or the prefix of a vendor ID. All DHCP clients which match this string will be provided the DHCP option.

Comment (optional): Add a description or other information.

3. Click **Save**.

The new DHCP option appears on the **DHCP Options** list and is immediately active.

To either edit or delete a DHCP option, click the corresponding buttons.

7.3 NTP

The menu **Network Services > NTP** allows you to configure an NTP server for the connected networks. The **Network Time Protocol** (NTP) is a protocol used for synchronizing the clocks of computer systems over IP networks. Instead of just synchronizing the time of Sophos UTM, which can be configured on the **Management > System Settings > Time and Date** tab, you can explicitly allow certain networks to use this service as well.

To enable the use of NTP time synchronization for specific networks, proceed as follows:

1. Enable the NTP server.

Click the toggle switch.

The toggle switch turns amber and the **NTP Options** area becomes editable.

2. Select **Allowed networks**.

Add or select the networks that should be allowed to access the NTP server. How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.

3. Click **Apply**.

Your settings will be saved.

The toggle switch turns green.

8 Network Protection

This chapter describes how to configure basic network protection features of Sophos UTM. The **Network Protection Statistics** page in WebAdmin shows an overview of intrusion prevention events and dropped data packets for both source and destination hosts. Each of the sections contains a **Details** link. Clicking the link redirects you to the respective reporting section of WebAdmin, where you can find more statistical information.

Note - You can directly add a **Network/Host Exception** or a **Threat Exception** by clicking the Plus icon in the **Advanced Threat Protection: Recent Events** list.

The following topics are included in this chapter:

- [Firewall](#)
- [NAT \(Network Address Translation\)](#)
- [Advanced Threat Protection](#)
- [Intrusion Prevention](#)
- [Server Load Balancing](#)
- [VoIP \(Voice over IP\)](#)
- [Advanced Settings](#)

8.1 Firewall

The menu **Network Protection > Firewall** allows you to define and manage firewall rules of the gateway. Generally speaking, the firewall is the central part of the gateway which functions in a networked environment to prevent some communications forbidden by the security policy. The default security policy of Sophos UTM states that all network traffic is to be blocked and logged, except for automatically generated rule sets that are necessary for other software components of the gateway to work. However, those auto-generated rule sets are not shown on the **Firewall > Rules** tab. This policy requires you to define explicitly which data traffic is allowed to pass the gateway.

8.1.1 Rules

On the **Network Protection > Firewall > Rules** tab you can manage the firewall rule set. Opening the tab, by default, user-created firewall rules are displayed only. Using the drop-down list on top of the list, you can choose to display automatic firewall rules instead, or both types of rules combined. Automatic firewall rules are displayed with a distinct background color. Automatic firewall rules are generated by Sophos UTM based on a selected **Automatic firewall rules** checkbox in one of your configurations, e.g., when creating IPsec or SSL connections.

All newly defined firewall rules are disabled by default once added to the rules table. Automatic firewall rules and enabled user-created firewall rules are applied in the given order until the first rule matches. Automatic firewall rules are always on top of the list. The processing order of the user-created firewall rules is determined by the position number, so if you change the order of the rules by their position numbers, the processing order changes as well.

Caution - Once a firewall rule matched, all other rules are ignored. For that reason, the sequence of rules is very important. Never place a rule such as **Any (Source) - Any (Service) - Any (Destination) - Allow (Action)** at the top of the rule table, as this will allow each packet to traverse the gateway in both directions, ignoring all other rules that may follow.

To create a firewall rule, proceed as follows:

1. On the **Rules** tab, click **New Rule**.

The **Add Rule** dialog box opens.

2. Make the following settings:

Group: The **Group** option is useful to group rules logically. With the drop-down list on top of the list you can filter the rules by their group. Grouping is only used for display purposes, it does not affect rule matching. To create a new group select the **<< New group >>** entry and enter a descriptive name in the **Name** field.

Position: The position that defines the priority of the rule. Lower numbers have higher priority. Rules are matched in ascending order. Once a rule has matched, rules with a higher number will not be evaluated anymore.

Sources: Add or select source network definitions, describing from which host(s) or networks the packets are originating.

Tip - How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.

Services: Add or select service definitions, describing the protocol(s) and, in case of TCP or UDP, the source and destination port(s) of the packets.

Destinations: Add or select destination network definitions, describing the target host(s) or network(s) of the packets.

Note - When you select more than one source, service and/or destination, the rule applies to every possible source-service-destination combination. A rule with e.g. two sources, two services and two destinations equates to eight single rules, from each source to each destination using both services.

Action: The action that describes what to do with traffic that matches the rule. The following actions can be selected:

- **Allow:** The connection is allowed and traffic is forwarded.
- **Drop:** Packets matching a rule with this action will be silently dropped.
- **Reject:** Connection requests matching rules with this action will be actively rejected. The sender will be informed via an ICMP message.

Comment (optional): Add a description or other information.

3. Optionally, make the following advanced settings:

Time period: By default, no time period definition is selected, meaning that the rule is always valid. If you select a time period definition, the rule will only be valid at the time specified by the time period definition. For more information, see [Time Period Definitions](#).

Log traffic: If you select this option, logging is enabled and packets matching the rule are logged in the firewall log.

Source MAC addresses: Select a MAC address list definition, describing from which MAC addresses the packets are originating. If selected, packets only match the rule if their source MAC address is listed in this definition. Note that you cannot use a MAC address list in combination with the source **Any**. MAC address list definitions are defined on the **Definitions & Users > Network Definitions > MAC Address Definitions** tab.

4. Click **Save**.

The new rule appears on the **Rules** list.

Enable the firewall rule.

5. The new rule is disabled by default (toggle switch is gray). Click the toggle switch to enable the rule.

The rule is now enabled (toggle switch is green).

To either edit or delete a rule, click the corresponding buttons.

Open Live Log: This will open a pop-up window containing a real-time log of filtered packets, whose regularly updating display shows recent network activity. The background color indicates which action has been applied:

- Red: The packet was dropped.
- Yellow: The packet was rejected.
- Green: The packet was allowed.
- Gray: The action could not be determined.

The live log also contains information about which firewall rule caused a packet to be rejected. Such information is essential for rule debugging. Using the search function, you can filter the firewall log for specific entries. The search function even allows to negate expressions by typing a dash in front of the expression, e.g. `-WebAdmin` which will successively hide all lines containing this expression.

Selecting the **Autoscroll** checkbox will automatically scroll down the window's scrollbar to always show the most recent results.

Below are some basic hints for configuring the firewall:

- **Dropped Broadcasts:** By default, all broadcasts are dropped, which in addition will not be logged (for more information, see chapter **Advanced**). This is useful for networks with many computers utilizing NetBIOS (for example, Microsoft Windows operating systems), because broadcasts will rapidly clutter up your firewall log file. To define a broadcast drop rule manually, group the definitions of the broadcast addresses of all attached networks, add another "global_broadcast" definition of `255.255.255.255/255.255.255.255`, then add a rule to drop all traffic to these addresses on top of your firewall configuration. On broadcast-heavy networks, this also has the benefit of increasing the system performance.
- **Rejecting IDENT Traffic:** If you do not want to use the IDENT reverse proxy, you can actively reject traffic to port 113 (IDENT) of your internal networks. This may prevent longer timeouts on services that use IDENT, such as FTP, IRC, and SMTP.

Note - If you use masquerading, IDENT requests for masqueraded networks will arrive on the masquerading interface.

- Since NAT will change the addresses of network packets, it has implications on the firewall functionality.
 - DNAT is applied *before* the firewall. This means that the firewall will "see" the already translated packets. You must take this into account when adding rules for DNAT related services.
 - SNAT and Masquerading is applied *after* the firewall. This means that the firewall still "sees" the untranslated packets with the original source addresses.

The control panels in the table header can be used to filter firewall rules for specific criteria to rearrange rules for better readability. If you have defined groups you can select a group from the drop-down menu and thus see all rules that belong to this group. Using the search field you can look for a keyword or just a string to see the rules related to it. The search comprises a rule's source, destination, service, group name, and comment.

8.1.2 Country Blocking

On the **Network Protection > Firewall > Country Blocking** tab you can enable blocking of traffic coming from or going to a certain country or location. You can either block single countries/locations or whole continents. The blocking is based on the GeoIP information of the host's IP address.

To enable country blocking, proceed as follows:

1. Enable country blocking.
Click the toggle switch.

The toggle switch turns amber and the **Countries** section becomes editable.

2. Select the locations to block.

Via the drop-down lists in front of the location names, specify the blocking status for the respective location:

- **All:** All traffic coming from or going to this location is blocked.
- **From:** Traffic coming from this location is blocked.
- **To:** Traffic going to this location is blocked.
- **Off:** Traffic from as well as to this location is allowed.

Tip - You can easily select an identical blocking status for all locations of a region. To do so, select the desired blocking status in the drop-down list in front of the respective region name.

3. Click **Apply**.

Your settings will be saved.

The toggle switch turns green and traffic from and/or to selected locations will be blocked now according to your settings. Note that you can define exceptions for the blocked locations on the **Country Blocking Exceptions** tab.

Tip - Each section of this page can be collapsed and expanded by clicking the Collapse icon on the right of the section header.

8.1.3 Country Blocking Exceptions

On the **Network Protection > Firewall > Country Blocking Exceptions** tab you can define exceptions for countries that are blocked on the **Country Blocking** tab. Exceptions can be made for traffic between a blocked country/location and specific hosts or networks, taking into account the direction and the service of the traffic.

To create a country blocking exception, proceed as follows:

1. Click **New Exception List**.

The **Add Exception List** dialog box opens.

2. Make the following settings:

Name: Enter a descriptive name for the exception.

Comment (optional): Add a description or other information.

Skip blocking of these:

- **Region:** Using this drop-down list, you can narrow down the countries displayed in the **Countries** box.

- **Countries:** Select the checkboxes in front of the locations or countries you want to make the exception for. To select all countries at once, enable the **Select all** checkbox.

Note - To select all IP addresses, including those that are not associated with any country, for example internal IP addresses, deselect all checkboxes using the **Deselect all** checkbox.

For all requests: Select the condition under which the country blocking should be skipped. You can choose between outgoing and incoming traffic, referring to the host/s/networks to be selected in the box below.

- **Hosts/networks:** Add or select the hosts/networks that should be allowed to send traffic to or receive traffic from the selected countries—depending on the entry selected in the drop-down list above. How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.

Using these services: Optionally, add the services that should be allowed between the selected hosts/networks and the selected countries/locations. If no service is selected, all services are allowed.

3. Click **Save**.

The new country blocking exception appears on the **Country Blocking Exception** list.

To either edit or delete an exception, click the corresponding buttons.

Using Country Blocking Exceptions

Use the country blocking exceptions as follows:

| Interface/remote host | Requests | Host/network | Countries |
|--------------------------------|-------------|---------------------------------|--------------------------|
| Local interface | Coming from | Enter a local interface address | Choose countries to skip |
| Local interface | Going to | Enter a local interface address | Choose countries to skip |
| Remote host (internal network) | Coming from | Enter an internal host/network | Choose countries to skip |
| Remote host (external network) | Coming from | Enter an external host | Do not choose countries |
| Remote host (internal network) | Going to | Enter an internal host/network | Choose countries to skip |
| Remote host (external network) | Going to | Enter an external host | Do not choose countries |

8.1.4 ICMP

On the **Network Protection > Firewall > ICMP** tab you can configure the settings for the **Internet Control Message Protocol (ICMP)**. ICMP is used to exchange connection-related status information between hosts. ICMP is important for testing network connectivity or troubleshooting network problems.

Allowing any ICMP traffic on this tab will override ICMP settings being made in the firewall. If you only want to allow ICMP for certain hosts or networks, you should use the **Firewall > Rules** tab instead.

Global ICMP Settings

The following global ICMP options are available:

- **Allow ICMP on Gateway:** This option enables the gateway to respond to ICMP packets of any kind.
- **Allow ICMP through Gateway:** This option enables forwarding of ICMP packets through the gateway if the packets originate from an internal network, i.e., a network without default gateway.
- **Allow ICMP through Gateway from external networks:** This option enables forwarding of ICMP packets through the gateway from an external network, i.e., the Internet.
- **Log ICMP redirects:** ICMP redirects are sent from one router to another to find a better route for a packet's destination. Routers then change their routing tables and forward the packet to the same destination via the supposedly better route. If you select this option, all ICMP redirects received by the gateway will be logged in the firewall log.

Note - If enabled, the ICMP settings apply to all ICMP packets, including ping and traceroute—if sent via ICMP—, even if the corresponding ping and traceroute settings are disabled.

Ping Settings

The program **ping** is a computer network tool used to test whether a particular host is reachable across an IP network. Ping works by sending ICMP **echo request** packets to the target host and listening for ICMP **echo response** replies. Using interval timing and response rate, ping estimates the round-trip time and packet loss rate between hosts.

The following ping options are available:

- **Gateway is ping visible:** The gateway responds to ICMP **echo request** packets. This feature is enabled by default.
- **Ping from gateway:** You can use the ping command on the gateway. This feature is enabled by default.

- **Gateway forwards pings:** The gateway forwards ICMP **echo request** and **echo response** packets originating from an internal network, i.e., a network without default gateway.

Note - If enabled, the ping settings also allow traceroute ICMP packets, even if the corresponding traceroute settings are disabled.

Traceroute Settings

The program **traceroute** is a computer network tool used to determine the route taken by packets across an IP network. It lists the IP addresses of the routers that were involved in transporting the packet. If the packet's route cannot be determined within a certain time frame, traceroute will report an asterisk (*) instead of the IP address. After a certain number of failures, the check will end. An interruption of the check can have many causes, but most likely it is caused by a firewall along the network path that blocks traceroute packets.

The following traceroute options are available:

- **Gateway is traceroute visible:** The gateway responds to traceroute packets.
- **Gateway forwards traceroute:** The gateway forwards traceroute packets originating from an internal network, i.e., a network without default gateway.

Note - The bridge mode in Sophos UTM uses the packet filter to allow the traffic to pass Sophos UTM, e.g., web surfing traffic. In this case, the options **Allow ICMP through gateway**, **Gateway forwards pings** and **Gateway forwards traceroute** will not work in bridge mode.

Note - In addition, the UDP ports for UNIX traceroute applications are opened, too.

Note - If enabled, the traceroute settings also allow ping packets, even if the corresponding ping settings are disabled.

8.1.5 Advanced

The **Network Protection > Firewall > Advanced** tab contains advanced settings for the firewall and the NAT rules.

Connection Tracking Helpers

So-called connection tracking helpers enable protocols that use multiple network connections to work with firewall or NAT rules. All connections handled by the firewall are tracked by the **conntrack** kernel module, a process better known as **connection tracking**. Some protocols such as FTP and IRC require several ports to be opened, and hence require special connection tracking helpers supporting them to operate correctly. These helpers are special kernel modules that help identify additional connections by marking

them as being related to the initial connection, usually by reading the related addresses out of the data stream.

For example, for FTP connections to work properly, the FTP conntrack helper must be selected. This is due to the specifics of the FTP protocol, which first establishes a single connection that is called the FTP control connection. When commands are issued through this connection, other ports are opened to carry the rest of the data (e.g., downloads or uploads) related to that specific command. The problem is that the gateway will not know about these extra ports, since they were negotiated dynamically. Therefore, the gateway will be unable to know that it should let the server connect to the client over these specific ports (active FTP connections) or to let clients on the Internet connect to the FTP server (passive FTP connections).

This is where the FTP conntrack helper becomes effective. This special helper is added to the connection tracking module and will scan the control connection (usually on port 21) for specific information. When it runs into the correct information, it will add that specific information to a list of expected connections as being related to the control connection. This in return enables the gateway to track both the initial FTP connection as well as all related connections properly.

Connection tracking helpers are available for the following protocols:

- FTP
- IRC (for DCC)
- PPTP
- TFTP

Note - The PPTP helper module needs to be loaded if you want to offer PPTP VPN services on the gateway. Otherwise PPTP sessions cannot be established. The reason for this is that PPTP first establishes a TCP port 1723 connection before switching to **Generic Routing Encapsulation** (GRE) communication, which is a separate IP protocol. If the PPTP helper module is not loaded, all GRE packets will be blocked by the gateway. Alternatively, if you do not want to use the PPTP helper module, you can manually add firewall rules allowing GRE packets for incoming and outgoing traffic.

Protocol Handling

Enable TCP window scaling: The TCP receive window (RWin) size is the amount of received data (in bytes) that can be buffered during a connection. The sending host can send only that amount of data before it must wait for an acknowledgment and window update from the receiving host. For more efficient use of high bandwidth networks, a larger TCP window size may be used. However, the TCP window size field controls the flow of data and is limited to 2 bytes, or a window size of 65535 bytes. Since the size field cannot be expanded, a scaling factor is used. TCP window scaling is a kernel option of the TCP/IP stack and can be used to increase the maximum window size from 65535 bytes to 1 Giga-byte. Window scaling is enabled by default. However, since some network devices such as

routers, load balancers, gateways, and so on still do not fully support window scaling, depending on your environment it might be necessary to turn it off.

Use strict TCP session handling: Enabled by default starting with new installations of version 9.706. If you update to 9.706, your setting is kept. With strict TCP session handling turned on, the UTM only allows traffic where the three-way handshake has been completed. Find more information in [Strict TCP session handling](#).

Validate packet length: If enabled, the firewall will check the data packets for minimal length if the ICMP, TCP, or UDP protocol is used. If the data packets are smaller than the minimal values, they will be blocked and a record will be written to the firewall log.

Block invalid packets: If enabled, the firewall will check the data packets for conntrack entries. The conntrack entries will be generated by sending connection initializing packets, for example, TCP SYN or ICMP echo requests. If someone tries to send a packet which does not match to an existing connection, for example, TCP ACK or ICMP echo reply and Sophos UTM cannot find a matching TCP SYN or ICMP echo request via the conntrack entry the data packet is invalid and will be dropped. A record will be written to the firewall log.

Spoof protection: By default, spoof protection is disabled. You can choose between the following settings:

- **Normal:** The gateway will drop and log packets which either have the same source IP address as the interface itself or which arrive on an interface which has a source IP of a network assigned to another of its interfaces.
- **Strict:** The gateway will also drop and log all packets which have a destination IP for an interface but arriving on an interface other than assigned, that is, if it arrives on an interface for which it is not destined. For example, those packets will be dropped that were sent from an external network to the IP address of the internal interface which is supposed to accept packets from the internal network only.

Logging Options

Log FTP data connections: Sophos UTM will log the FTP data connections of (file and directory listings). The log records are marked by the string "FTP data".

Log unique DNS requests: Sophos UTM will log all outgoing requests to DNS servers as well as their outcome. The log records are marked by the string "DNS request".

Log dropped broadcasts: By default, the firewall drops all broadcasts, which in addition will not be logged. However, if you need broadcasts to be logged in the firewall log, for example, for audit purposes, select this option.

Log invalid packets: Sophos UTM will log all invalid packets. If **Block invalid packets** is enabled the log records are marked by the string "INVALID_PKT".

8.1.5.1 Strict TCP session handling

If you turn on strict TCP session handling on **Network Protection > Firewall > Advanced**, the UTM only allows TCP connections that completed the three-way handshake. This means, all TCP traffic of a connection must pass the UTM. Connections that don't meet these criteria are dropped.

With strict TCP session handling turned on, you can't have asymmetrical routing where either inbound or outbound traffic doesn't pass the UTM because then the UTM doesn't see all parts of the traffic and therefore misses specific segments in the TCP header required for the handshake to complete.

If you turn off strict TCP session handling, the UTM can pick up existing TCP connections that aren't currently handled in the connection tracking table, for example, due to a network facility reset. This means that interactive sessions such as SSH and Telnet won't quit when a network interface is temporarily unavailable.

8.2 NAT

The menu **Network Protection > NAT** allows you to define and manage NAT rules of the gateway. **Network Address Translation** (NAT) is the process of rewriting the source and/or destination addresses of IP packets as they pass through a router or gateway. Most systems using NAT do so in order to enable multiple hosts on a private network to access the Internet using a single public IP address. When a client sends an IP packet to the router, NAT translates the sending address to a different, public IP address before forwarding the packet to the Internet. When a response packet is received, NAT translates the public address into the original address and forwards it to the client. Depending on system resources, NAT can handle arbitrarily large internal networks.

8.2.1 Masquerading

Masquerading is a special case of **Source Network Address Translation** (SNAT) and allows you to masquerade an internal network (typically, your LAN with private address space) behind a single, official IP address on a network interface (typically, your external interface connected to the Internet). SNAT is more generic as it allows to map multiple source addresses to several destination addresses.

Note - The source address is only translated if the packet leaves the gateway system via the specified interface. Note further that the new source address is always the current IP address of that interface (meaning that this address can be dynamic).

To create a masquerading rule, proceed as follows:

1. On the **Masquerading** tab, click **New Masquerading Rule**.

The **Add Masquerading Rule** dialog box opens.

2. Make the following settings:

Network: Select the (internal) network you want to masquerade.

Position: The position that defines the priority of the rule. Lower numbers have higher priority. Rules are matched in ascending order. Once a rule has matched, rules with a higher number will not be evaluated anymore.

Interface: Select the (external) interface that is connected to the Internet.

Use address: If the interface you selected has more than one IP address assigned (see **Interfaces & Routing > Interfaces > [Additional Addresses](#)**), you can define here which IP address is to be used for masquerading.

Comment (optional): Add a description or other information.

3. Click **Save**.

The new masquerading rule appears on the **Masquerading** rule list.

4. Enable the masquerading rule.

Click the toggle switch to activate the masquerading rule.

To either edit or delete a rule, click the corresponding buttons.

Note - You need to allow traffic from the internal network to the Internet in the firewall if you want your clients to access external servers.

IPsec packets are never affected by masquerading rules. To translate the source address of IPsec packets create an SNAT or Full NAT rule.

8.2.2 NAT

Destination Network Address Translation (DNAT) and **Source Network Address Translation (SNAT)** are both special cases of NAT. With SNAT, the IP address of the computer which initiated the connection is rewritten, while with its counterpart DNAT, the destination addresses of data packets are rewritten. DNAT is especially useful when your internal network uses private IP addresses, but you want to make some services available to the outside.

This is best demonstrated with an example. Suppose your internal network uses the address space `192.168.0.0/255.255.255.0` and a webserver running at IP address `192.168.0.20` port 80 should be available to Internet-based clients. Because the `192.168.0.0/255.255.255.0` address space is private, the Internet-based clients cannot send packets directly to the webserver. It is, however, possible for them to communicate with the external (public) address of Sophos UTM. DNAT can, in this case, take packets addressed to port 80 of the system's address and forward them to the internal webserver.

Note - PPTP VPN Access is incompatible with DNAT.

In contrast to masquerading, which always maps to the primary network interface address, SNAT maps the source address to the address specified in the SNAT rule.

1:1 NAT is a special case of DNAT or SNAT. In this case all addresses of an entire network are being translated one-to-one into the addresses of another network having the same net-mask. So the first address of the original network will be translated into the first address of the other network, the second into the second and so on. A 1:1 NAT rule can be applied to either the source or the destination address.

Note - By default, port 443 (HTTPS) is used for the User Portal. If you plan to forward port 443 to an internal server, you need to change the TCP port of the User Portal to another value (e.g., 1443) on the **Management > User Portal > Advanced** tab.

Because DNAT is done before firewalling, you must ensure that appropriate firewall rules are defined. For more information, see **Network Protection > Firewall > Rules**.

To define a NAT rule, proceed as follows:

1. On the **NAT** tab, click **New NAT Rule**.

The **Add NAT Rule** dialog box opens.

2. Make the following settings:

Group: The **Group** option is useful to group rules logically. With the drop-down list on top of the list you can filter the rules by their group. Grouping is only used for display purposes, it does not affect rule matching. To create a new group select the **<< New group >>** entry and enter a descriptive name in the **Name** field.

Position: The position that defines the priority of the rule. Lower numbers have higher priority. Rules are matched in ascending order. Once a rule has matched, rules with a higher number will not be evaluated anymore.

Rule type: Select the network address translation mode. Depending on your selection, various options will be displayed. The following modes are available:

- **SNAT (source):** Maps the source address of defined IP packets to one new source address. The service can be changed, too.

Note - You have to add the SNAT rules before you activate the Web Filter. Sophos UTM priorities Web Filter settings higher than SNAT rules. If you select a SNAT rule while the Web Filter is activated the rule may not work. You can activate or deactivate the Web Filter on the **Web Protection > Web Filtering > Global** page.

- **DNAT (destination):** Maps the destination address of defined IP packets to one new destination address. The service can be changed, too.

- **1:1 NAT (whole networks):** Maps IP addresses of a network to another network one-to-one. The rule applies either for the source or for the destination address of the defined IP packets.
- **Full NAT (source + destination):** Maps both the source address and the destination address of defined IP packets to one new source and one new destination address. The source service and the target service can be changed, too.
- **No NAT:** This option can be regarded as a kind of exception rule. For example, if you have a NAT rule for a defined network you can create a **No NAT** rule for certain hosts inside this network. Those hosts will then be exempted from NAT.

Matching Condition: Add or select the source and destination network/host and the service for which you want to translate addresses. How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.

- **For traffic from:** The original source address of the packets. This can be either a single host or an entire network, or, except for the **1:1 NAT** rule type, a network range.
- **Using service:** The original service type of the packets (consisting of source and destination ports as well as a protocol type).

Note - A traffic service can only be translated when the corresponding addresses are translated as well. In addition, a service can only be translated to another service when the two services use the same protocol.

- **Going to:** The original destination address of the packets. This can be either a single host or an entire network. With **SNAT** and **No NAT**, it can also be a network range.

Action: Add or select the source and/or destination and/or the service type into which you want to translate the original IP packet data. The displayed parameters depend on the selected **Rule type**. How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.

- **Change the source to** (only with **SNAT** or **Full NAT** mode): Select the source host, that is, the new source address of the packets.
- **Change the destination to** (only with **DNAT** or **Full NAT** mode): Select the destination host, that is, the new destination address of the packets.
- **And the service to** (only with **DNAT**, **SNAT** or **Full NAT** mode): Select the new service of the packets. Depending on the selected **Rule type** this can be the source and/or destination service.
- **1:1 NAT mode** (only with **1:1 NAT** rule type): Select one of the following modes:
 - **Map destination:** Changes the destination address.
 - **Map source:** Changes the source address.

Note - You need to add an entire network into the field **For traffic from** when you want to map the source, or into the field **Going to** when you want to map the destination.

- **Map to** (only with **1:1 NAT** mode): Select the network you want to translate the original IP addresses into. Please note that the original network and the translated network must have the same netmask.

Automatic firewall rule (optional): Select this option to automatically generate firewall rules to allow the corresponding traffic passing through the firewall.

Comment (optional): Add a description or other information.

3. Optionally, make the following advanced settings:

Rule applies to IPsec packets (only with **SNAT** or **Full NAT** mode): Select this option if you want to apply the rule to traffic which is going to be processed by IPsec. By default this option is not selected, thus IPsec traffic is excluded from source network address translation.

Log initial packets (optional): Select this option if you want to write the initializing packet of a communication to the firewall log. Whenever the NAT rule is used, you will then find a message in the firewall log saying "Connection using NAT". This option works for stateful as well as stateless protocols.

4. Click **Save**.

The new rule appears on the **NAT** list.

Enable the NAT rule.

5. The new rule is disabled by default (toggle switch is gray). Click the toggle switch to enable the rule.

To either edit or delete a rule, click the corresponding buttons.

8.3 Intrusion Prevention

On the menu **Network Protection > Intrusion Prevention** you can define and manage IPS rules of the gateway. The **Intrusion Prevention system** (IPS) recognizes attacks by means of a signature-based IPS rule set. The system analyzes the complete traffic and automatically blocks attacks before they can reach the network. The existing rule set and attack patterns are updated through the pattern updates. New IPS attack pattern signatures are automatically imported to the rule set as IPS rules.

8.3.1 Global

On the **Network Protection > Intrusion Prevention > Global** tab you can activate the **Intrusion Prevention System** (IPS) of Sophos UTM.

To enable IPS, proceed as follows:

1. Enable the intrusion prevention system.

Click the toggle switch.

The toggle switch turns amber and the **Global IPS Settings** area becomes editable.

2. Make the following settings:

Local networks: Add or select the networks that should be protected by the intrusion prevention system. If no local network is selected, intrusion prevention will automatically be deactivated and no traffic is monitored. How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.

Policy: Select the security policy that the intrusion prevention system should use if a blocking rule detects an IPS attack signature.

- **Drop silently:** The data packet will be dropped without any further action.
- **Terminate connection:** A terminating data packet (**RST** for TCP and **ICMP Port Unreachable** for UDP connections) will be sent to both communication partners to close the connection.

Note - By default, **Drop silently** is selected. There is usually no need to change this, especially as terminating data packets can be used by an alleged intruder to draw conclusions about the gateway.

Restart policy: Select the policy for connection handling when an IPS engine restart is required, for example when the engine is updated.

- **Drop (default):** All incoming and outgoing connections will be dropped during engine restart.
- **Bypass:** All incoming and outgoing connections will bypass IPS scanning while the engine is restarting.

3. Click **Apply**.

Your settings will be saved.

The toggle switch turns green.

Cross Reference - Find information about configuring IPS in the [Sophos Knowledge Base](#).

Live Log

The intrusion prevention live log can be used to monitor the selected IPS rules. Click the button to open the live log in a new window.

8.3.2 Attack Patterns

The **Network Protection > Intrusion Prevention > Attack Patterns** tab contains IPS rules grouped according to common attack patterns. Attack patterns have been combined as

follows:

- **Operating system specific attacks:** Attacks trying to exploit operating system related weaknesses.
- **Attacks against servers:** Attacks targeted at all sorts of servers (for example, web-servers, mail servers, and so on).
- **Attacks against client software:** Attacks aimed at client software such as web browsers, multimedia players, and so on.
- **Protocol anomaly:** Attack patterns look out for network anomalies.
- **Malware:** Software designed to infiltrate or damage a computer system without the owner's informed consent (for example, trojans, DoS communication tools, and the like).

To improve performance, you should clear the checkboxes that do not apply to services or software employed in your local networks. For example, if you do not operate a webserver in your local network, you can cancel the selection for **HTTP servers**.

For each group, the following settings are available:

Action: By default, each rule in a group has an action associated with it. You can choose between the following actions:

- **Drop:** The default setting. If an alleged attack attempt has been determined, the causing data packets will be dropped.
- **Alert:** Unlike the **Drop** setting, critical data packets are allowed to pass the gateway but will create an alert message in the IPS log.

Note - To change the settings for individual IPS rules, use the **Modified Rules** box on the **Intrusion Prevention > Advanced** tab. A detailed list of IPS rules used in Sophos UTM 9 is available at the [Sophos webserver](#).

Rule age: By default, IPS patterns are restricted to those dating from the last 12 months. Depending on individual factors like overall patch level, legacy systems, or other security requirements, you can select another time span. Selecting a shorter time span will reduce the number of rules and thus improve performance.

Add extra warnings: When this option is selected, each group will include additional rules increasing the IPS detection rate. Note that these rules are more general and vague than the explicit attack patterns and will therefore likely produce more alerts. For that reason, the default action for these rules is **Alert**, which cannot be configured.

Notify: When this option is selected, a notification is sent to the administrator for every IPS event matching this group. Note that this option only takes effect if you have enabled the notification feature for the intrusion prevention system on the **Management > Notifications > Notifications** tab. In addition, what type of notification (i.e., email or SNMP trap) is to be sent depends on the settings made there. Note further that it might take up to five minutes before changes of the notification settings will become effective.

8.3.3 Anti-DoS/Flooding

On the **Anti-DoS/Flooding** tab you can configure certain options aimed at defending **Denial of Service (DoS)** and **Distributed Denial of Service (DDoS)** attacks.

Generally speaking, DoS and DDoS attacks try to make a computer resource unavailable for legitimate requests. In the simplest case, the attacker overloads the server with useless packets in order to overload its performance. Since a large bandwidth is required for such attacks, more and more attackers start using so-called **SYN flood attacks**, which do not aim at overloading the bandwidth, but at blocking the system resources. For this purpose, they send so-called SYN packets to the TCP port of the service often with a forged sender address, thus causing the server to spawn a half-open connection by sending back a TCP/SYN-ACK packet, and waiting for an TCP/ACK packet in response from the sender address. However, because the sender address is forged, the response never comes. These half-open connections saturate the number of available connections the server is able to make, keeping it from responding to legitimate requests.

Such attacks, however, can be prevented by limiting the amount of SYN (TCP), UDP, and ICMP packets being sent into your network over a certain period of time.

TCP SYN Flood Protection

To enable SYN (TCP) flood protection, proceed as follows:

1. On the **Anti-DoS/Flooding** tab, select the checkbox **Use TCP SYN Flood Protection**.
2. Make the following settings:

Mode: The following modes are available:

- **Source and destination addresses:** Select this option if you want to drop SYN packets by both their source and destination IP address. First, SYN packets matching the source IP address are restricted to the source packet rate value specified below. Second, if there are still too many requests, they will additionally be filtered according to their destination IP address and restricted to the destination packet rate value specified below. This mode is set as default.
- **Destination address only:** Select this option if you want to drop SYN packets according to the destination IP address and destination packet rate only.
- **Source address only:** Select this option if you want to drop SYN packets according to the source IP address and source packet rate only.

Logging: This option lets you select the log level. The following levels are available:

- **Off:** Select this log level if you want to turn logging completely off.
- **Limited:** Select this log level to limit logging to five packets per seconds. This level is set as default.

- **Everything:** Select this log level if you want verbose logging for all SYN (TCP) connection attempts. Note that SYN (TCP) flood attacks may lead to extensive logging.

Source packet rate: Here you can specify the rate of packets per second that is allowed for source IP addresses.

Destination packet rate: Here you can specify the rate of packets per second that is allowed for destination IP addresses.

Note - It is important to enter reasonable values here, for if you set the rate too high, your webserver, for instance, might fail because it cannot deal with such an amount of SYN (TCP) packets. On the other hand, if you set the rate too low, your gateway might show some unpredictable behavior by blocking regular SYN (TCP) requests. Reasonable settings for every system heavily depend on your hardware. Therefore, replace the default values by numbers that are appropriate for your system.

3. Click **Apply**.

Your settings will be saved.

UDP Flood Protection

UDP Flood Protection detects and blocks UDP packet floods. The configuration of **UDP Flood Protection** is identical to **TCP SYN Flood Protection**.

ICMP Flood Protection

ICMP Flood Protection detects and blocks ICMP packet floods. The configuration of **ICMP Flood Protection** is identical to **TCP SYN Flood Protection**.

8.3.4 Anti-Portscan

The **Network Protection > Intrusion Prevention > Anti-Portscan** tab lets you configure general portscan detection options.

Portscans are used by hackers to probe secured systems for available services: In order to intrude into a system or to start a DoS attack, attackers need information on network services. If this information is available, attackers might take advantage of the security deficiencies of these services. Network services using the TCP and UDP Internet protocols can be accessed via special ports and this port assignment is generally known, for example the SMTP service is assigned to the TCP port 25. Ports that are used by the services are referred to as open, since it is possible to establish a connection to them, whereas unused ports are referred to as closed; every attempt to connect with them will fail. Attackers try to find the open ports with the help of a particular software tool, a port scanner. This program tries to connect with several ports on the destination computer. If it is successful, the tool displays the relevant ports as open and the attackers have the necessary information, showing which network services are available on the destination computer.

Since there are 65535 distinct and usable port numbers for the TCP and UDP Internet protocols, the ports are scanned at very short intervals. If the gateway detects an unusually large number of attempts to connect to services, especially if these attempts come from the same source address, the gateway is most likely being port scanned. If an alleged attacker performs a scan of hosts or services on your network, the portscan detection feature will recognize this. As an option, further portscans from the same source address can be blocked automatically. Please note that the portscan detection is limited to Internet interfaces, i.e. interfaces with a default gateway.

Technically speaking, a portscan is detected when a detection score of 21 points in a time range of 300 ms for one individual source IP address is exceeded. The detection score is calculated as follows:

- Scan of a TCP destination port less than 1024 = 3 points
- Scan of a TCP destination port greater or equal 1024 = 1 point

To enable portscan detection, proceed as follows:

1. On the **Anti-Portscan** tab, enable **Portscan Detection**.

Click the toggle switch.

The toggle switch turns green and the **Global Settings** area becomes editable.

2. Make the following settings:

Action: The following actions are available:

- **Log event only:** No measures are taken against the portscan. The event will be logged only.
- **Drop traffic:** Further packets of the portscan will be silently dropped. A port scanner will report these ports as filtered.
- **Reject traffic:** Further packets of the portscan will be dropped and an ICMP "destination unreachable/port unreachable" response will be sent to the originator. A port scanner will report these ports as closed.

Limit logging: Enable this option to limit the amount of log messages. A portscan detection may generate many logs while the portscan is being carried out. For example, each SYN packet that is regarded as belonging to the portscan will generate an entry in the firewall log. Selecting this option will restrict logging to five lines per second.

3. Click **Apply**.

Your settings will be saved.

8.3.5 Exceptions

On the **Network Protection > Intrusion Prevention > Exceptions** tab you can define source and destination networks that should be excluded from intrusion prevention.

Note - A new IPS exception only applies to new connections. To apply a new IPS exception to an existing connection, you can for example disconnect or restart the respective device.

To create an exception, proceed as follows:

1. On the **Exceptions** tab, click **New Exception List**.

The **Add Exception List** dialog box opens.

2. Make the following settings:

Name: Enter a descriptive name for this exception.

Skip these checks: Select the security checks that should be skipped:

- **Intrusion Prevention:** When you select this option, the IPS of Sophos UTM will be disabled.
- **Portscan Protection:** Selecting this option disables the protection from attacks aimed at searching your network hosts for open ports.
- **TCP SYN Flood Protection:** Once selected, the protection from TCP SYN flooding attacks will be disabled.
- **UDP Flood Protection:** Once selected, the protection from UDP flooding attacks will be disabled.
- **ICMP Flood Protection:** Once selected, the protection from ICMP flooding attacks will be disabled.

For all requests: Select at least one condition for which the security checks are to be skipped. You can logically combine several conditions by selecting either **And** or **Or** from the drop-down list in front of a condition. The following conditions can be set:

- **Coming from these source networks:** Select to add source hosts/networks that should be exempt from the security checks of this exception rule. Enter the respective hosts or networks in the **Networks** box that opens after selecting the condition.
- **Using these services:** Select to add services that should be exempt from the security checks of this exception rule. Add the respective services to the **Services** box that opens after selecting the condition.
- **Going to these destinations:** Select to add hosts/networks that should be exempt from the security checks of this exception rule. Enter the respective hosts or networks in the **Destinations** box that opens after selecting the condition.

Tip - How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.

Comment (optional): Add a description or other information.

3. Click **Save**.

The new exception appears on the **Exceptions** list.

4. Enable the exception.

The new exception is disabled by default (toggle switch is gray). Click the toggle switch to enable the exception.

The exception is now enabled (toggle switch is green).

To either edit or delete an exception, click the corresponding buttons.

Note - If you want to make an intrusion prevention exception for packets with the destination address of the gateway, selecting **Any** in the **Destinations** box will not succeed. You must instead select a definition that contains the gateway's IP address, for example the **Internal (Address)** or the external WAN address.

Note - If you use a Sophos UTM proxy, an intrusion prevention exception has to reflect this: A proxy replaces the original source address of a packet with its own address. Thus, to except intrusion prevention for proxied packets, you need to add the appropriate interface address definition of Sophos UTM to the source **Networks** box.

8.3.6 Advanced

Pattern Set Optimization

Activate file related patterns: By default, patterns against file-based attacks are disabled as protection against those threats is usually covered by the Antivirus engine. This default setting (disabled) provides maximum performance while enabling this option will provide maximum recognition rate. Enabling file-related patterns may be a sensible option where no other virus protection is available, e.g., Web Protection is turned off or no client Antivirus program is installed.

Manual Rule Modification

In this section, you can configure manual modifications to each IPS rule overwriting the default policy, which is taken from the attack pattern groups. Such modifications should be configured by experienced users only.

To create a modified rule, proceed as follows:

1. In the **Modified rules** box, click the Plus icon.

The **Modify Rule** dialog box opens.

2. Make the following settings:

Rule ID: Enter the ID of the rule you want to modify. To look up the rule ID, go to the list of IPS rules at the [Sophos webserver](#). (In the folder, look for files with **IPS-rules** in their names, available for different Sophos UTM versions and pattern versions, and both in

HTML and XML format.) In addition, they can either be determined from the IPS log or the IPS report.

Disable this rule: When you select this option, the rule of the respective ID will be disabled.

If you do *not* select this option, however, the following two options are available:

- **Disable notifications:** Selecting this option will not trigger a notification in case the rule in question was applied.
- **Action:** The action each rule is associated with it. You can choose between the following actions:
 - **Drop:** If an alleged attack attempt has been determined, the causing data packets will be dropped.
 - **Alert:** Unlike the **Drop** setting, critical data packets are allowed to pass the gateway but will create an alert message in the IPS log.

3. Click **Save**.

The rule appears in the **Modified Rules** box. Please note that you also need to click **Apply** on the bottom of the page to commit the changes.

Note - If you add a rule ID to the **Modified Rules** box and set the action to **Alert**, for example, this modification will only take effect if the group to which the rule belongs is enabled on the **Attack Patterns** tab. If the corresponding attack pattern group is disabled, modifications to individual IPS rules will have no effect.

Performance Tuning

In addition, to increase the performance of the intrusion prevention system and to minimize the amount of false positive alerts, you can limit the scope of IPS rules to only some of your internal servers. For example, suppose you have activated the **HTTP Servers** group on the **Attack Patterns** tab and you have selected a particular HTTP server here. Then, even if the intrusion prevention system recognizes an attack against an HTTP server, the associated action (**Drop** or **Alert**) will only be applied if the IP address of the affected server matches the IP address of the HTTP server selected here.

You can limit the scope of IPS rules for the following server types:

- **HTTP:** All attack pattern groups subsumed under **HTTP Servers**
- **DNS:** Attack pattern group **DNS**
- **SMTP:** Attack pattern groups **Exchange** and **Sendmail**
- **SQL:** All attack pattern groups subsumed under **SQL Servers**

8.4 Server Load Balancing

With the server load balancing function you can distribute incoming connections (e.g., SMTP or HTTP traffic) to several servers behind the gateway. Balancing is based on the source IP address with a persistence time of one hour. If the interval between two requests from the same source IP address exceeds that interval, the balancing is redetermined. The traffic distribution is based on a simple round-robin algorithm.

All servers from the server pool are monitored either by ICMP ping, TCP connection establishment, or HTTP/S requests. In case of a failure the affected server is not used anymore for distribution, any possible source IP persistence is overruled.

Note - A return code of HTTP/S requests must either be 1xx Informational, 2xx Success, 3xx Redirection, or 4xx Client Error. All other return codes are taken as failure.

8.4.1 Balancing Rules

On the **Network Protection > Server Load Balancing > Balancing Rules** tab you can create load balancing rules for Sophos UTM Software. After having created a rule, you can additionally define weight distribution between servers and set interface persistence.

To create a load balancing rule, proceed as follows:

1. On the **Balancing Rules** tab, click **New Load Balancing Rule**.

The **Add Load Balancing Rule** dialog box opens.

2. Make the following settings:

Service: The network service you want to balance.

Virtual server: The original target host of the incoming traffic. Typically, the address will be the same as the gateway's external address.

Real servers: The hosts that will in turn accept traffic for the service.

Tip - How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.

Check type: Select one of the following check types to monitor the service.

- **TCP:** TCP connection establishment
- **UDP:** UDP connection establishment
- **Ping:** ICMP Ping
- **HTTP host:** HTTP requests
- **HTTPS hosts:** HTTPS requests

When using **UDP** a ping request will be sent initially which, if successful, is followed by a UDP packet with a payload of 0. If ping does not succeed or the ICMP port is unreachable, the server is regarded as down. For **HTTP** and **HTTPS** requests you can enter a **URL**, which can either be with or without hostname, e.g. `index.html` or `http://www.example.com/index.html`.

Interval: Enter a check interval in seconds. The default is 15 seconds, i.e., every 15 seconds the health status of all real servers is checked.

Timeout: Enter a maximum time span in seconds for the real servers to send a response. If a real server does not respond during this time, it will be regarded as dead.

Automatic firewall rules (optional): Select this checkbox to automatically generate firewall rules. These rules allow forwarding traffic from any host to the real servers.

Shutdown virtual server address (optional): If and only if you use an additional address as virtual server for load balancing (see chapter **Interfaces > Additional Addresses**) this checkbox can be enabled. In case all real servers become unavailable that additional address interface will be automatically shut down.

Comment (optional): Add a description or other information.

3. Click **Save**.

The new rule appears on the **Balancing Rules** list.

Enable the load balancing rule.

4. The new rule is disabled by default (toggle switch is gray). Click the toggle switch to enable the rule.

The rule is now enabled (toggle switch is green).

To either edit or delete a rule, click the corresponding buttons.

Example: Suppose that you have two HTTP servers in your DMZ with the IP addresses `192.168.66.10` and `192.168.66.20`, respectively. Assumed further you want to distribute HTTP traffic arriving on the external interface of your gateway equally to both servers. To set up a load balancing rule, select or create a host definition for each server. You may call them **http_server_1** and **http_server_2**. Then, in the **Create New Load Balancing Rule** dialog box, select **HTTP** as **Service**. In addition, select the external address of the gateway as **Virtual server**. Finally, put the host definitions into the **Real servers** box.

Weight Distribution and Interface Persistence

To distribute weight between the load balancing servers and/or to set interface persistence of them, do the following:

1. Click the **Edit** button of a load balancing rule.

The **Edit Load Balancing Rule** dialog box opens.

2. Click the Scheduler button on the header of the **Real servers** box.

The **Edit Scheduler** dialog window opens.

3. Make the following settings:

Weight: Weight can be set from 0 to 100 and specifies how much traffic is processed by a server relative to all other servers. A weighted round robin algorithm is used for this, a higher value meaning more traffic is routed to the respective server. The values are evaluated relative to each other so they need not add up to 100. Instead, you can have a configuration for example, where server 1 has value 100, server 2 has value 50 and server 3 has value 0. Here, server 2 gets only half the traffic of server 1, whereas server 3 only comes into action when none of the other servers is available. A value of zero means that always another server with a higher value is chosen if available.

Persistence: Interface persistence is a technique which ensures that subsequent connections from a client are always routed over the same uplink interface. Persistence has a default timeout of one hour. You can also disable interface persistence for this balancing rule.

4. Click **Save**.

The **Edit Scheduler** dialog window closes and your settings are saved.

5. Click **Save**.

The **Edit Load Balancing Rule** dialog box closes.

8.5 VoIP

Voice over Internet Protocol (VoIP) is the routing of voice conversations over the Internet or through any other IP-based network. Sophos UTM offers support for the most frequently employed protocols used to carry voice signals over the IP network:

- [SIP](#)
- [H.323](#)

8.5.1 SIP

The **Session Initiation Protocol (SIP)** is a signalization protocol for the setup, modification, and termination of sessions between two or several communication partners. It is primarily used in setting up and tearing down voice or video calls. To use SIP, you first have to register your IP address and URLs at your ISP. SIP uses UDP or TCP on port 5060 to indicate which IP addresses and port numbers are to be used between the endpoints to exchange media data (video or voice). Since opening all ports for all addresses would cause a severe security issue, the gateway is able to handle SIP traffic on an intelligent basis. This is achieved by means of a special connection tracking helper monitoring the control channel to determine which dynamic ports are being used and then only allowing these ports to pass traffic when the control channel is busy. For that purpose you must specify both a SIP server network and a SIP client network definition in order to create appropriate firewall rules enabling the communication via the SIP protocol.

To enable support for the SIP protocol, proceed as follows:

1. On the **SIP** tab, enable SIP protocol support.

Click the toggle switch.

The toggle switch turns amber and the **Global SIP Settings** area becomes editable.

2. Make the following settings:

SIP Server Networks: Here you can add or select the SIP servers (provided by your ISP) the SIP clients should be allowed to connect to; for security reasons, do not select **Any**. How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.

SIP Client Networks: Add or select the hosts/networks of the SIP clients that should be allowed to initiate or respond to a SIP communication. A SIP client is an endpoint in the LAN that participates in real-time, two-way communications with another SIP client. How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.

Expectation mode: Select how strict the initializing of communication sessions should be:

- **Strict:** Incoming calls are only allowed from the ISP's registrar, i.e. the IP address the REGISTER SIP message was sent to. Additionally, Sophos UTM only accepts media (voice or video) data sessions from signaling endpoints, i.e., the devices that exchanged the SIP message. Some providers send the media data from another IP address than the SIP message, which will be rejected by Sophos UTM.
- **Client/server networks:** Incoming calls are allowed from all clients of the defined SIP server or client networks. Media data is accepted from another sender IP address than the one that sent the SIP message, provided that the address belongs to the defined SIP server or client networks.
- **Any:** Incoming calls as well as media data are permitted from anywhere.

Caution - Using the expectation mode **Any** without the necessary firewall rules (**Network Protection > Firewall > Rules**), introduces a serious security risk and opens your appliance up to abuse from the Internet.

3. Click **Apply**.

Your settings will be saved.

The toggle switch turns green.

To cancel the configuration, click the amber colored toggle switch.

8.5.2 H.323

H.323 is an international multimedia communications protocol standard published by the **International Telecommunications Union (ITU-T)** and defines the protocols to provide

audio-visual communication sessions on any packet-switched network. H.323 is commonly used in **Voice over IP (VoIP)** and IP-based videoconferencing.

H.323 uses TCP on port 1720 to negotiate which dynamic port range is to be used between the endpoints when setting up a call. Since opening all ports within the dynamic range would cause a severe security issue, the gateway is able to allow H.323-related traffic on an intelligent basis. This is achieved by means of a special connection tracking helper monitoring the control channel to determine which dynamic ports are being used and then only allowing these ports to pass traffic when the control channel is busy. For that purpose you must specify both an H.323 gatekeeper and a client network definition in order to create appropriate firewall rules enabling the communication via the H.323 protocol.

To enable support for the H.323 protocol, proceed as follows:

1. On the **H.323** tab, enable H.323 protocol support.

Click the toggle switch.

The toggle switch turns amber and the **Global H.323 Settings** area becomes editable.

2. Make the following settings:

H.323 Gatekeeper: Add or select an H.323 gatekeeper. An H.323 gatekeeper controls all H.323 clients (endpoints such as Microsoft's NetMeeting) in its zone. More specifically, it acts as a monitor of all H.323 calls within its zone on the LAN. Its most important task is to translate between symbolic alias addresses and IP addresses. How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.

H.323 Client: Here you can add or select the host/network to and from which H.323 connections are initiated. An H.323 client is an endpoint in the LAN that participates in real-time, two-way communications with another H.323 client. How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.

3. Click **Apply**.

Your settings will be saved.

The toggle switch turns green.

To cancel the configuration, click the amber colored toggle switch.

8.6 Advanced

The tabs of the **Network Protection > Advanced** menu let you configure additional network protection features such as a generic proxy, SOCKS proxy, and IDENT reverse proxy.

8.6.1 Generic Proxy

A generic proxy, also known as a port forwarder, combines both features of DNAT and masquerading, forwarding all incoming traffic for a specific service to an arbitrary server. The

difference to standard DNAT, however, is that a generic proxy also replaces the source IP address of a request with the IP address of the interface for outgoing connections. In addition, the destination (target) port number can be changed as well.

To add a generic proxy rule, proceed as follows:

1. On the **Generic Proxy** tab, click **New Generic Proxy Rule**.

The **Add Generic Proxy Rule** dialog box opens.

2. Make the following settings:

Interface: Select the interface for incoming connections.

Service: Add or select the service definition of the traffic to be proxied.

Host: Add or select the target host where the traffic should be forwarded to.

Service: Add or select the target service of the traffic to be proxied.

Allowed Networks: Add or select the networks to which port forwarding should be applied.

Tip - How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.

Comment (optional): Add a description or other information.

3. Click **Save**.

The new rule appears on the **Generic Proxy** rule list.

Enable the generic proxy rule.

4. The new rule is disabled by default (toggle switch is gray). Click the toggle switch to enable the rule. The rule is now enabled (toggle switch is green).

To either edit or delete a rule, click the corresponding buttons.

8.6.2 SOCKS Proxy

SOCKS is a versatile Internet protocol that allows client-server applications to transparently use the services of a network firewall. It is used by many client applications behind a firewall to communicate with hosts on the Internet. Examples are IRC/Instant Messaging clients, FTP clients, and Windows SSH/Telnet clients. Those clients behind a firewall wanting to access exterior servers connect to a SOCKS proxy server instead. This proxy server controls the eligibility of the client to access the external server and passes the request on to the server. Your client application must explicitly support the SOCKS 4 or SOCKS 5 protocol versions.

The default port for SOCKS is 1080. Almost all clients have implemented this default port setting, so it normally does not have to be configured. The differences between SOCKS and NAT are that SOCKS also allows "bind" requests (listening on a port on behalf of a client—a feature which is supported by very few clients only) and that SOCKS 5 allows user authentication.

When enabling the SOCKS proxy, you must define one or more networks which should have access to the proxy. When you require user authentication, you can also select the users or groups that should be allowed to use the SOCKS proxy.

Note - Without user authentication, the SOCKS proxy can be used with both the SOCKS 4 and SOCKS 5 protocols. When user authentication is selected, only SOCKS 5 will work. If you want the proxy to resolve hostnames in SOCKS 5 mode, you must also activate the DNS proxy, because otherwise DNS resolution will fail.

To configure the SOCKS proxy, proceed as follows:

1. On the **SOCKS Proxy** tab, enable the SOCKS proxy.

Click the toggle switch.

The toggle switch turns amber and the **SOCKS Proxy Options** area becomes editable.

2. Make the following settings:

Allowed Networks: Add or select the networks that should be allowed to use the SOCKS proxy. How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.

Enable user authentication: If you select this option, users must provide a username and password to log in to the SOCKS proxy. Because only SOCKS 5 supports user authentication, SOCKS 4 is automatically disabled.

Allowed Users: Select the users or groups or add new users that should be allowed to use the SOCKS proxy. How to add users is explained on the **Definitions & Users > Users & Groups > Users** page.

3. Click **Apply**.

Your settings will be saved.

The toggle switch turns green.

8.6.3 IDENT Reverse Proxy

The IDENT protocol is used by remote servers for a simple verification of the identity of accessing clients. Although this protocol is unencrypted and can easily be spoofed, many services still use (and sometimes require) the IDENT protocol.

To configure the IDENT relay, proceed as follows:

1. On the **IDENT Reverse Proxy** tab, enable the IDENT relay.

Click the toggle switch.

The toggle switch turns green and the **Global Settings** area becomes editable.

2. Make the following settings:

Forward to internal hosts (optional): Since IDENT queries are not covered by the gateway's connection tracking, they will get "stuck" if masquerading is used. You can select the **Forward to Internal Hosts** option to pass on IDENT queries to masqueraded hosts behind the gateway. Note that the actual IP connection will not be forwarded. Instead, the gateway will in turn ask the internal client for an IDENT reply and will forward that string to the requesting server. This scheme will work with most "mini-IDENT" servers built into popular IRC and FTP clients.

Default response: The gateway offers support for answering IDENT requests when you enable the IDENT relay. The system will always reply with the string entered in the **Default response** box, regardless of the local service that has initiated the connection.

3. Click **Apply**.

Your settings will be saved.

9 Web Protection

This chapter describes how to configure basic web protection features of Sophos UTM.

The following topics are included in this chapter:

- [Web Filtering](#)
- [Web Filter Profiles](#)
- [Filtering Options](#)
- [Policy Test](#)
- [Application Control](#)
- [FTP](#)

The **Web Protection Statistics** page in WebAdmin provides an overview of the most used applications and application categories, the most surfed domains according to time and traffic as well as the top users surfing. In addition, the top blocked website categories are shown. Each of the sections contains a **Details** link. Clicking the link redirects you to the respective reporting section of WebAdmin, where you can find more statistical information.

Note - You can find detailed information on how the web usage data is collected and how the statistics are calculated on the **Logging & Reporting > Web Protection > Web Usage Reports** page.

In the **Top Applications** section, hovering the cursor on an application displays one or two icons with additional functionality:

- Click the **Block** icon to block the respective application from now on. This will create a rule on the [Application Control Rules](#) page. This option is unavailable for applications relevant to the flawless operation of Sophos UTM. WebAdmin traffic, for example, cannot be blocked as this might lead to shutting yourself out of WebAdmin. Unclassified traffic cannot be blocked, either.
- Click the **Shape** icon to enable traffic shaping of the respective application. A dialog window opens where you are asked to define the rule settings. Click **Save** when you are done. This will create a rule both on the [Traffic Selectors](#) and on the [Bandwidth Pools](#) page. Traffic shaping is not available when viewing the **All Interfaces** Flow Monitor as shaping works interface-based.
- Click the **Throttle** icon to enable traffic throttling of the respective application. A dialog window opens where you are asked to define the rule settings. Click **Save** when you are done. This will create a rule both on the [Traffic Selectors](#) and on the [Download Throttling](#) page. Download throttling is not available when viewing the **All Interfaces** Flow Monitor as throttling works interface-based.

9.1 Web Filtering

The tabs of the **Web Protection > Web Filtering** menu allow you to configure Sophos UTM as an HTTP/S caching proxy. This includes Antivirus scanning on incoming and outgoing web traffic, protecting against spyware and detecting malicious websites. It can also control access to websites of different categories, allowing you to enforce policies regarding access to things such as gambling, pornography, or shopping, including blocking these sites or providing a click-through warning page.

Note - Web Filtering does not support HTTP pipelining.

Used in conjunction with Sophos Endpoint Software, Sophos UTM can enforce and monitor these same web policies on endpoint machines that are on external networks. Users can take a laptop home or around the world and the same policies will apply. To enable **Endpoint Web Control**, see **Endpoint Protection > Web Control**.

You can still manage your filter actions on the **Web Filter Profiles > Filter Actions** tab. There you can add, modify, clone or delete filter actions. But now you can create, modify, and assign filter actions by launching the **Add/Edit Filter Action** wizard on the **Web Filtering > Policies** tab.

9.1.1 Web Filtering Changes

As of the 9.2 release, Sophos UTM includes a new simplified interface for creating and managing your web filtering policies. While the interface has changed considerably, functionality has not changed. All of your existing settings have been preserved and if you make no changes the system will behave in the exact same way.

Previously, complex web policy involved creating web filtering profiles. These consisted of filter actions, created on the **Filter Actions** tab, which were then assigned to users and groups through filter assignments on the **Filter Assignments** tab, and then configured on the **Proxy Profiles** tab. Now, you can configure all aspects of your web filtering policy, including your default configuration and advanced filtering profiles from the **Web Filtering > Policies** tab.

Note - Take some time to familiarize yourself with the new interface and read the following overview. While it is different than previous releases, it should be much easier to create and maintain complex web policies.

9.1.1.1 Some Key Differences

- In 9.1 there were several tabs containing global options that were under **Web Protection > Web Filtering**. These tabs have moved to **Web Protection > Filtering Options**.

- In 9.1 a proxy profile had filter assignments, which allowed you to select different filter actions based on criteria. These are now called filter profiles with policies, which are presented in a table on a second tab of the profile.
- In 9.1 the default profile only supported a single filter assignment (called the default assignment). Now you can have many policies within the default profile.
- In 9.1 every profile had a fallback action. This is now called the base policy, however the functionality is the same. The base policy contains the filter action that is used if no other policies match.
- In 9.1 you created filter actions using multiple tabs on the default profile, and a very tall scrolling region for any additional. Now the creation of all filter actions is done with a multi-tabbed dialog, the **Filter Action Wizard**.

9.1.1.2 Common Tasks

The following is a brief overview of how you perform common tasks in 9.2 and later compared to the 9.1 interface.

| How do I: | 9.1 | 9.2 |
|---|---|--|
| Edit the default policy? | Configure the various tabs under Web Filtering : <ul style="list-style-type: none"> • Web Filtering > Antivirus/Malware • Web Filtering > URL Filtering • Web Filtering > Advanced | Web Filtering > Policies |
| Create or edit a proxy profile? | Web Filtering Profiles > Proxy Profiles | Web Filtering > Web Filtering Profiles |
| Assign a filter assignment to a proxy profile? | <ol style="list-style-type: none"> 1. Create a filter action on Web Filtering Profiles > Filter Actions 2. Create a filter assignment on Web Filtering Profiles > Filter Assignments 3. Edit or add a proxy profile on Web Filtering Profiles > Proxy Profiles | <ol style="list-style-type: none"> 1. On Web Filtering Profiles > Filter Profiles, click on the name of a Filter Profile, or create a profile by clicking the green Plus icon. 2. On the Policies tab, click the green Plus icon to add a policy. 3. Select a Filter Action, or click the green Plus icon to create one. |
| Add a website to a blacklist in my default filter action? | Web Filtering Profiles > Filter Assignments | On Web Filtering > Policies , when creating or editing a policy, click the green Plus icon next to Filter Action . |

| How do I: | 9.1 | 9.2 |
|--|---|---|
| Create a new filter action for my filter assignment? | Web Filtering > URL Filtering and click the green Plus icon next to Additional URLs/Sites to block | <ol style="list-style-type: none"> 1. Web Filtering > Policies 2. Select the Default content filter action 3. On the Websites tab, click the green Plus icon next to Block these websites |
| Modify advanced settings? | Web Filtering > Advanced | Filtering Options > Misc |
| Manage trusted HTTPS CAs? | Web Filtering > HTTPS CAs | Filtering Options > HTTPS CAs |

9.1.1.3 Migration

When you upgrade to version 9.2, your previous configuration and settings are preserved and your system will continue to behave the same. However, as the user interface has changed considerably, things may not be where you expect them to be. The **Web Filtering** menu item contains all the settings you need to apply a set of policies and actions to a single set of allowed networks. The **Web Filter Profiles** menu item contains corresponding settings, but allows you to create multiple profiles so you can apply different settings to different networks. All global settings are now on tabs on the **Filtering Options** menu item.

Some objects have been renamed. For example, **Proxy Profiles** are now **Filter Profiles** and **Filter Assignments** are now **Policies**. The **Fallback Action** is now called the **Base Policy**, as it is the policy/action that occurs if no other policies match. The relationship between these objects is much clearer, as all **Policies** are now listed on a tab of the profile. The **Filter Action** can be added or modified using a pop-up tabbed dialog that contains everything that can be configured for an action.

One of the limitations of 9.1 is that the default profile could only have one set of users assigned to it. This has been migrated to a policy called **Default content filter profile assignment** with a migrated filter action called **Default content filter action**. If you had other filter assignments created, these will now appear as disabled policies in the profile.

In 9.1 if you had created a profile just so that you could have multiple assignments you can simplify your configuration by enabling those policies in the default profile in the first menu option, making sure that your **Allowed Networks** is correct, and then deleting the now unnecessary additional profile.

9.1.2 Global

On the **Web Protection > Web Filtering > Global** tab you can make the global settings for the Web Filter.

To configure the Web Filter, proceed as follows:

1. On the **Global** tab, enable the Web Filter.

Click the toggle switch.

The toggle switch turns green and the **Default Web Filter Profile** area becomes editable.

2. Select the allowed networks.

Select the networks that should be allowed to use the Web Filter. By default, the Web Filter listens for client requests on TCP port 8080 and allows any client from the networks listed in the **Allowed Networks** box to connect.

Caution - It is extremely important not to select an **Any** network object, because this introduces a serious security risk and opens your appliance up to abuse from the Internet.

3. Select a mode of operation.

Note that when you select an operation mode that requires user authentication, you need to select the users and groups that shall be allowed to use the Web Filter. The following modes of operation are available:

- **Standard mode:** In standard mode, the Web Filter will listen for client requests on port 8080 by default and will allow any client from the networks listed in **Allowed Networks** box to connect. When used in this mode, clients must have specified the Web Filter as HTTP proxy in their browser configuration.

Select the default authentication mode.

- **None:** Select to not use any authentication.
- **Active Directory SSO:** This mode will attempt to authenticate the user who is currently logged in to the computer as the user of the proxy (single sign on). If the currently logged in user is a valid AD user with permission to use the proxy, the authentication should occur with no user interaction. You must have configured **Active Directory Single Sign-On (SSO)** on the **Definitions & Users > Authentication Services > Servers** tab. Clients can authenticate with NTLM or Kerberos.
- **Agent:** Select to use the Sophos Authentication Agent (SAA). Users need to start the agent and authenticate in order to be able to use the Web Filter. The agent can be downloaded from the User Portal. See: [User Portal](#).
- **Apple OpenDirectory SSO:** Select when you have configured **LDAP** on the **Definitions & Users > Authentication Services > Servers** tab and you are using Apple OpenDirectory. Additionally, you have to upload a MAC OS X Single Sign-On Kerberos keyfile on the **Web Protection > Filtering Options > Misc** tab for the proxy to work properly. When used in this mode, clients must

have specified the Web Filter as HTTP proxy in their browser configuration. Note that the Safari browser does not support SSO.

- **Basic user authentication:** In this mode, each client must authenticate itself against the proxy before using it. For more information on which authentication methods are supported, see **Definitions & Users > Authentication Services**. When used in this mode, clients must have specified the Web Filter as HTTP proxy in their browser configuration.
- **Browser:** When selected the users will be presented a login dialog window in their browser to authenticate themselves with the Web Filter. This mode allows for username-based tracking, reporting, and surfing without client-side browser configuration. Moreover, you can enable a disclaimer that is additionally displayed on that dialog window and needs to be accepted by users to be able to go on. For more information on the disclaimer, see **Management > Customization > Web Messages**.

Note - When using browser authentication, a pop-up will be generated from **passthrough.fw-notify.net**. Users should ensure **passthrough.fw-notify.net** is exempt from their browser's pop-up blocker.

- **eDirectory SSO:** Select when you have configured **eDirectory** on the **Definitions & Users > Authentication Services > Servers** tab.

Note - For eDirectory Single-Sign-On (SSO) modes, the Web Filter caches accessing IP addresses and credentials for up to fifteen minutes, for Apple OpenDirectory and Active Directory SSO it caches only the group information. This is done to reduce the load on the authentication servers. However it also means that changes to users, groups, or the login status of accessing users may take up to fifteen minutes to be reflected by the Web Filter.

If you chose an authentication mode that requires user authentication, select **Block access on authentication failure** to deny access to users that fail authentication.

- **Transparent mode:** In transparent mode, all connections made by client browser applications on port 80 (and port 443 if SSL is used) are intercepted and redirected to the Web Filter without client-side configuration. The client is entirely unaware of the Web Filter server. The advantage of this mode is that for many installations no additional administration or client-side configuration is necessary. The disadvantage however is that only HTTP requests can be processed. Thus, when you select the transparent mode, the client's proxy settings will become ineffective.

Note - In transparent mode, the Web Filter will strip NTLM authentication headers from HTTP requests. Furthermore, the Web Filter cannot handle FTP requests in this mode. If your clients want to access such services, you must open port (21) in

the firewall. Note further that some web servers transmit some data, in particular streaming video and audio, over a port different from port 80. These requests will not be noticed when the Web Filter operates in transparent mode. To support such traffic, you must either use a different mode or enter an explicit firewall rule allowing them.

- **None:** Select to not use any authentication.
- **Active Directory SSO:** This mode will attempt to authenticate the user who is currently logged in to the computer as the user of the proxy (single sign on). If the currently logged in user is a valid AD user with permission to use the proxy, the authentication should occur with no user interaction. You must have configured **Active Directory Single Sign-On (SSO)** on the **Definitions & Users > Authentication Services > Servers** tab. Clients can authenticate with NTLM (or Kerberos if Mac). For some environments additional configuration is required on the endpoint. If you are having problems with SSO in transparent mode, please see the [Sophos Knowledge Base](#).

Note - When defining the Active Directory user group, we highly recommend to add the desired entries to the **Active Directory groups** box by manually entering the plain Active Directory group or user names instead of the LDAP strings. Example: Instead of an LDAP string `CN=ads_group1,CN=Users,DC=example,DC=com`, just enter the name `ads_group1`.

Note - When using Kerberos, only add groups to the **Active Directory groups** box, as entries for users are not accepted by the Web Filter.

- **Agent:** Select to use the Sophos Authentication Agent (SAA). Users need to start the agent and authenticate in order to be able to use the Web Filter.
- **Browser:** When selected the users will be presented a login dialog window in their browser to authenticate themselves with the Web Filter. This mode allows for username-based tracking, reporting, and surfing without client-side browser configuration. Moreover, you can enable a disclaimer that is additionally displayed on that dialog window and needs to be accepted by users to be able to go on. For more information on the disclaimer, see **Management > Customization > Web Messages**.

Note - When using browser authentication, a pop-up will be generated from `passthrough.fw-notify.net`. Users should ensure `passthrough.fw-notify.net` is exempt from their browser's pop-up blocker.

- **Full transparent** (optional): Select to preserve the client source IP instead of replacing it by the gateway's IP. This is useful if your clients use public IP addresses that should not be disguised by the Web Filter. The option is only available when running in bridged mode.

The available authentication modes for **Full transparent** are the same as **Transparent**. See above.

Cross Reference - For more information on configuring browser authentication in standard mode, see the [Sophos Knowledge Base](#).

When configured to use authentication, you have the option to **Block access on authentication failure**. If you are using AD SSO and do not block access on failure, an SSO authentication failure will allow unauthenticated access without prompting the user. If you are using Browser authentication and do not block access on authentication failure, there will be an additional **Guest login** link on the login page to allow unauthenticated access.

4. Enable device-specific authentication.

To configure authentication modes for specific devices, select the **Enable device-specific authentication** checkbox. Once enabled you can click the green Plus icon to add device types and associated authentication modes.

5. Click **Apply**.

Your settings will be saved.

Important Note - When SSL scanning is enabled in combination with the transparent mode, certain SSL connections are destined to fail, e.g. SSL VPN tunnels. To enable SSL VPN connections, add the respective target host to the **Transparent Mode Skiplist** (see **Web Protection > Filtering Options > Misc**). Furthermore, to access hosts with a self-signed certificate you need to create an exception for those hosts, selecting the option **Certificate Trust Check**. The proxy will then not check their certificates.

Live Log

The Web Filtering live log gives you information on web requests. Click the **Open Live Log** button to open the Web Filtering live log in a new window.

9.1.3 HTTPS

On the **Web Protection > Web Filtering > HTTPS** tab you can configure how Web Filtering handles HTTPS traffic.

- **URL filtering only**: Select this option to filter based on domain name for categorization, tags, and if the site is listed in a whitelist or blacklist.

- **Decrypt and scan:** Select this option to perform URL Filtering and also perform HTTPS decryption for full scanning.
- **Decrypt and scan the following:** Select this option to perform URL Filtering, and to decrypt and scan selected categories or tagged sites.
 - **Scan These Tagged Websites:** Use this box to select which tagged sites will be decrypted and scanned. Select the folder icon to choose existing tags, or click the plus icon to add a new tag. To add an existing tag, select and drag it to the **Scan These Tagged Websites** list box.
 - **Scan These Categorized Websites:** Use this list box to choose which website categories will be decrypted and scanned. Click the trash icon next to a category to remove it from the list. Select the folder icon to list available categories. To add a category, select and drag it to the **Scan These Categorized Websites** list box.
- **Do not proxy HTTPS traffic in transparent mode:** Select this option to disable Web Filtering for all HTTPS traffic. Use this option only for transparent mode. When selected, the Web Filter will not proxy any HTTPS traffic. You must also create a firewall rule to allow HTTPS traffic through Sophos UTM.

9.1.4 Policies

Use the **Web Protection > Web Filtering > Policies** tab to create and manage web filtering policy assignments. Policies are used to apply different filtering actions to specific users, groups, or time periods. These policies apply to the **Allowed Networks** that are on the **Global** tab. The first policy that matches the user and time will be applied, with the Base Policy applied if no others match. All profiles have a Base Policy that is always last and cannot be disabled.

To create a new policy, proceed as follows:

1. Click the Plus icon on the upper right.

The **Add Policy** dialog is displayed.

2. Make the following settings:

Name: Enter a descriptive name for this policy.

Users/Groups: Select the users or user groups that this policy will apply to. You can also create new users or groups. How to add users is explained on the **Definitions & Users > Users & Groups > Users** page.

Time event: The policy will be active for the time period you select. Choose **Always** to enable the policy at all times. You can also click the green Plus icon to create a new time event. Time period definitions are managed on the **Definitions & Users > Time Period Definitions** tab.

Filter action: Select an existing filter action, which defines the types of web protection you want to apply in a policy. You can also click the green Plus icon to create a new

filter action using the **Filter Action Wizard**. Filter actions can also be managed on the **Web Filter Profiles > Filter Actions** tab.

Comment (optional): Add a description or other information.

Advanced Settings:

- **Apply this policy to requests that have skipped authentication due to an exception:** You can create exceptions on the **Filtering Options > Exceptions** tab to e.g. skip authentication for automatic updates that cannot use authentication. Select this checkbox to apply this policy to web requests that have skipped authentication.

3. Click **Save**.

The new policy appears at the top of the **Policies** list.

4. Enable the policy.

The new policy is disabled by default (toggle switch is gray). Click the toggle switch to enable the policy. The policy is now enabled (toggle switch is green).

- To modify a policy, click on its name.
- To change the order in which policies are executed, move them up or down in the list by clicking the up or down arrow to the right.
- To modify a filter action, click on the filter action name to display the **Edit Filter Action** wizard or switch to the **Web Filter Profiles > Filter Actions** tab.

Cross Reference - Find information about UI changes since Sophos UTM version 9.1 in the [Sophos Knowledge Base](#).

9.1.4.1 Filter Action Wizard

The **Add/Edit Filter Action** wizard is used to create or edit filter actions for use in your web policies. You can launch this wizard from the **Add Policy** or **Edit Policy** dialogs, or by clicking on the name of an existing filter action on the **Web Filtering > Policies** tab.

You can still manage your filter actions on the **Web Filter Profiles > Filter Actions** tab.

There you can add, modify, clone or delete filter actions. But now you can create, modify, and assign filter actions by launching the **Add/Edit Filter Action** wizard on the **Web Filtering > Policies** tab.

9.1.4.2 Categories

Configure default settings for controlling access to certain kinds of websites.

Name: Enter a descriptive name for this filter action.

Allow/Block selection: Decide whether your selection of website categories should be allowed or blocked. The following options are available:

- **Allow all content, except as specified below.**
- **Block all content, except as specified below.**

If you select **Allow all content, except as specified below** then all categories groups are defaulted to **Allow**, and can be changed to either **Warn**, **Block** or **Quota**. If there are categories that are not displayed here as part of a category group, they will also be allowed. If a website is a member of multiple categories and any of the categories are blocked, then the website is blocked.

If you select **Block all content, except as specified below** then all categories groups are defaulted to **Block**, and can be changed to either **Warn** or **Allow**. If there are categories that are not displayed here as part of a category group, they will also be blocked. If a website is a member of multiple categories and any of the categories are allowed, then the website is allowed.

Note - All site categories that have been set to **Quota** will count towards available quota time. Available quota time resets at midnight, or can be reset manually on the **Web Protection > Policy Helpdesk > Quota Status** page. You can set the available quota time on the **Additional Options** page of the **Filter Action wizard**.

Block spyware infection and communication: Selecting this option will block the spyware category. If you **Block all content**, then this is always selected.

Note - Advanced Threat Detection can detect and block additional Malware communication. This can be configured in **Advanced Protection > Advanced Threat Protection > Global**.

Categories: You can set whether you want users visiting websites of each category to be allowed, warned, blocked, or to count towards the users' available quota time. If you select **Warn** or **Quota**, users browsing to a site in that category will first be presented with a warning page, but they can proceed to the site if they choose.

Note - There are 107 categories that are by default grouped together into 18 "Filter Categories". These can be configured under **Web Protection > Filtering Options > URL Filtering Categories**. The **Filter Action Wizard** displays all Filter Categories that have been configured.

Uncategorized websites: You can set whether uncategorized websites should be **Allowed**, **Warned**, or **Blocked**.

Block websites with a reputation below a threshold of: Websites can be classified as either **Trusted**, **Neutral**, **Unverified**, **Suspicious**, or malicious, the latter not being listed. Unclassified websites are referred to as **Unverified**. You can select which reputation a website requires in order to be allowed access from your network. Websites below the selected threshold will be blocked. Note that this option is only available if the first option on the page is set to **Allow**.

Note - For more information on website reputations, see <https://secure2.sophos.com/en-us/threat-center/reassessment-request.aspx>. Here, you can request a categorization of yet uncategorized websites or inform yourself about existing categories for Sophos UTM.

Click **Next** to proceed to the next configuration page, **Save** to save your configuration, or **Cancel** to discard all changes and close the configuration dialog.

9.1.4.3 Websites

Block these websites: If you want to block a specific URL or website, or a subset of webpages of a specific domain, regardless of its category, define it here. This has the effect that websites defined here can be blocked even if they belong to a category you want to allow.

1. Click the Plus icon to open the **Add whitelist/blacklist object** dialog window.
2. Make the following settings:
 - **Name:** Enter a descriptive name for the whitelist/blacklist object.
 - **Match URLs based on: Domain** Enter one or more domain names. If you check **Include subdomains** subdomains will also be matched (example.com will also match www.example.com and mail.example.com). If you do not select **Include subdomains** only an exact domain name will match.
 - **Match URLs based on: Regular Expression.** Enter the regular expressions that you want to use to match against the entire URL. If you check **Perform matching on these domains only** you can specify a list of domains that must match before the regular expression is applied. Using a regular expression is useful if you need to match against the path.

Cross Reference - For detailed information on using regular expressions for web filtering, see the [Sophos Knowledge Base](#).

Note - Entries must be correct regular expressions. For instance, *.example.com is not valid. If you are trying to match a domain name, try not to use .* as that can expand into the path. For example, the regular expression http://.*example\com will also match http://www.google.com/search?www.example.com

- **Comment** (optional): Add a description or other information.

3. Click **Save**.

Cross Reference - For more information on the end user blocking page, see the [Sophos Knowledge Base](#).

Allow these websites: If you want to allow a specific URL or website, or a subset of webpages of a specific domain, regardless of its category, define it here. This has the effect that websites defined here can be allow even if they belong to a category you want to block.

1. Click the Plus icon to open the **Add Whitelist/Blacklist Object** dialog window.
2. Make the following settings:
 - **Name:** Enter a descriptive name for the whitelist/blacklist object.
 - **Match URLs based on: Domain** Enter one or more domain names. If you check **Include subdomains** subdomains will also be matched (example.com will also match www.example.com and mail.example.com). If you do not select **Include subdomains** only an exact domain name will match.
 - **Match URLs based on: Regular Expression.** Enter the regular expressions that you want to use to match against the entire URL. If you check **Perform matching on these domains only** you can specify a list of domains that must match before the regular expression is applied. Using a regular expression is useful if you need to match against the path.

Cross Reference - For detailed information on using regular expressions for web filtering, see the [Sophos Knowledge Base](#).

Note - Entries must be correct regular expressions. For instance, *.example.com is not valid. If you are trying to match a domain name, try not to use .* as that can expand into the path. For example, the regular expression http://.*example\..com will also match http://www.google.com/search?www.example.com

- **Comment** (optional): Add a description or other information.
3. Click **Save**.

Control sites tagged in the Website List: For sites that have an associated tag, you can control whether they are allowed, blocked, warned, or count toward available quota time. You can associate a tag with a website on the **Web Protection > Web Filter Profiles > Filter Actions > Websites** tab.

1. Click the Plus icon to add a new tag, or click the Folder icon to select from existing tags.
2. For each tag, select **Allow**, **Warn**, **Block**, or **Quota**.
3. Click **Save**.

9.1.4.4 Downloads

Configure which file types and MIME types are blocked or warned.

Warned File Extensions: If users try to download a file with an extension in the **Warned file extension** list, they will first be presented with a warning page. To add a file extension, click the Plus icon in the **Warned file extensions** box and enter the file extension you want to warn, for example `exe`. File extensions should not contain a leading dot.

Blocked File Extensions: If users try to download a file with an extension in the **Blocked file extension** list, they will be blocked. To add a file extension, click the Plus icon in the **Blocked file extensions** box and enter the file extension you want to block, for example `exe`. File extensions should not contain a leading dot.

Note - Files within archives (e.g. `zip` files) will not be scanned for blocked file types or blocked extensions. To protect your network from these within archived files, consider blocking archive file types such as `zip`, `rar`, etc. MIME types within archives will be blocked if **MIME Blocking Inspects HTTP Body** is enabled in **Web Protection > Filtering Options > Misc**.

Warned MIME Types: If users try to download a file of a MIME type listed in the **Warned MIME type** list, they will first be presented with a warning page. To add a MIME type, click the Plus icon in the **Warned MIME types** box and enter the MIME type. You can use wildcards (*) in the **Warned MIME types** list, such as `audio/*`.

Blocked MIME Types: If users try to download a file of a MIME type listed in the **Blocked MIME type** list, they will be blocked. To add a MIME type, click the Plus icon in the **Blocked MIME types** box and enter the MIME type. You can use wildcards (*) in the **Blocked MIME types** list, such as `audio/*`.

Block downloads larger than: Specify this option to prevent users from downloading files that exceed the specified size (in MB).

Click **Next** to proceed to the next configuration page, **Save** to save your configuration, or **Cancel** to discard all changes and close the configuration dialog.

9.1.4.5 Antivirus

On the **Filter Actions > Antivirus** page you can configure webfilter settings for antivirus and active content removal.

Antivirus

Use antivirus scanning: Select the option to have inbound and outbound web traffic scanned for viruses. Sophos UTM features several antivirus engines:

- **Single scan:** Default setting; provides maximum performance using the engine defined on the **System Settings > Scan Settings** tab.
- **Dual scan:** Provides maximum recognition rate by scanning the respective traffic twice using different virus scanners. Note that dual scan is not available with BasicGuard subscription.
- **Block potentially unwanted applications (PUAs):** PUAs are programs that are not malicious, but may be unsuitable for a business environment. This feature is only available when using the Sophos anti-virus engine. To allow specific PUAs if you enable blocking, add exceptions on **Web Filtering > Filtering Options > PUAs**.

Do not scan files larger than: Specify the maximum size of files to be scanned by the anti-virus engine(s). Files exceeding this size will be exempt from scanning.

Tip - If you want to prevent files larger than the maximum scanning size from being downloaded, set the **Block downloads larger than** value on the **Downloads** page.

Active Content Removal

In the **Active Content Removal** area you can configure the automatic removal of specific web content such as embedded objects in webpages. You can configure the following settings:

- **Disable JavaScript:** This feature will disable all `<SCRIPT>` tags in HTML pages, resulting in the deactivation of functions that are embedded in or included from HTML pages.
- **Remove embedded objects (ActiveX/Java/Flash):** This feature will remove all `<OBJECT>` tags from HTML pages, stripping off dynamic content including ActiveX, Flash, or Java from incoming HTTP traffic.

Note - Enabling this will cause downloaded items to be scanned by the scan engine, even if AV scanning is disabled or excluded by an exception. This option can affect the website usability.

Click **Next** to proceed to the next configuration page, **Save** to save your configuration, or **Cancel** to discard all changes and close the configuration dialog.

9.1.4.6 Additional Options

Enforce Website Protection Features

SafeSearch: Certain search providers have a SafeSearch feature that is designed to remove adult content from search results. You can enforce the use of SafeSearch for Google, Bing, or Yahoo. When enabled, a provider's SafeSearch will be enforced, and cannot be turned off or bypassed by web filter users. To configure this feature, select the provider whose SafeSearch you want to enforce.

With **Google SafeSearch**, the UTM uses forcesafesearch.google.com, a technique that also enforces SafeSearch for encrypted connections. Find out more on support.google.com.

Enforce license on image search results: If enabled, search engines will only return image results that have been labeled as being free to share, modify and reuse.

Enforce allowed domains for Google Apps: Google Apps can block users from accessing certain services unless their Google account is a member of the Google Apps domain. Turning this on enforces this feature, and cannot be turned off or bypassed by Web Filter users. To configure this feature, select **Enforce allowed domains for Google Apps**. Then, at the

top of the **Domains** box, click the Plus icon or the Action icon to add or import Google Apps domains.

Cross Reference - Find information about Google application control in the [Sophos Knowledge Base](#).

Quotas

Enter or change the time of the **Allowed minutes for all categories and tags included in quota** option.

Note - All site categories and tags that have been set to **Quota** will count towards available quota time. Available quota time resets at midnight, or can be reset manually on the **Web Protection > Policy Helpdesk > Quota Status** page.

Network Configuration

You can configure parent proxies, both globally and profile-based (see **Web Protection > Filtering Options > Parent Proxies**).

Note - With parent proxies enabled, HTTPS requests are *not* possible in Transparent mode when SSL scanning is enabled.

To configure a parent proxy, do the following:

1. Click the Plus icon at the top of the parent proxies list.

The **Add Parent Proxy** dialog box opens.

2. Make the following settings:

Name: Enter a descriptive name for the parent proxy.

Comment (optional): Add a description or other information.

Use Proxy for These Hosts: Add hosts to this box for which the parent proxy is to be used, e.g. `*.wikipedia.org`. Note that you can use pattern matching here. Regular expressions, however, are not allowed. If you leave the box empty, an asterisk (*) is automatically added when clicking **Save**, which matches all hosts. Such a proxy definition can therefore be regarded as a fallback proxy which matches when none of the other proxies, if existent, do.

Parent proxy: Select or add the network definition of the parent proxy.

Port: The default port for the connection to the parent proxy is 8080. If your parent proxy requires a different port, you can change it here.

Proxy requires authentication: If the parent proxy requires authentication, select the checkbox and enter username and password in the appearing textboxes.

3. Click **Save**.

The new parent proxy appears in the **Parent Proxies** list and on the **Web Protection > Filtering Options > Parent Proxies** page.

To edit or delete a parent proxy, click the name of the proxy.

Activity Logging

You can select which activities will be logged:

- **Log accessed pages:** This feature will log information about all pages that have been accessed through Sophos UTM.
- **Log blocked pages:** This feature will log information about pages that have been blocked from being accessed.

Click **Save** to save your configuration, or **Cancel** to discard all changes and close the configuration dialog.

9.2 Web Filter Profiles

Filter profiles can be used to create various content filtering policies, enabling you to apply different policies to different addresses of your network. If you wish to apply the same policies for every network in the company this can be done in **Web Protection > Web Filtering**. In addition, each filter profile can have its own user authentication method.

Multiple filter profiles allow you control authentication and web content for different networks. For example you can have a set of policies for your corporate computers using AD SSO, and a different authentication method and set of policies for a guest wireless network.

9.2.1 Filter Profiles

If you want to apply different policy or authentication modes to multiple networks you can create multiple filter profiles. For example on your wired network you may only have corporate computers that are integrated with AD, and therefore wish to use Standard mode with an explicit proxy and AD SSO. Your wireless network may have a browser login portal for employees to enter in their AD credentials, as well as a guest login that has limited access.

Profiles can be created on the **Web Filter Profiles > Filter Profiles** tab. When a web request is made, Sophos UTM will look at the source IP and apply the first profile that has a matching **Allowed Network** and **Operation Mode**. Traffic from transparent connections will only match if the operation mode is set to **Transparent**. Traffic redirected to the web filter with a client-side proxy configuration will match either **Transparent** or **Standard mode** profiles.

The **Default Web Filter Profile** is configured on the **Web Protection > Web Filtering** page. It is listed here to show that it is the last profile that will match. Once a profile is selected, Sophos UTM will perform authentication according to that profile and apply that profile's policy.

To create a filter profile:

1. Click the Plus icon on the upper right.

The **Add Profile** wizard opens.

2. Enter a **Name** and **Comment**.
3. Select the allowed networks.

Select the networks that should be allowed to use the Web Filter. By default, the Web Filter listens for client requests on TCP port 8080 and allows any client from the networks listed in the **Allowed Networks** box to connect.

4. Select the allowed endpoint groups.

If Endpoint Web Control is enabled, select the endpoint groups that should be allowed to use the Web Filter.

5. Select a mode of operation.

Note that when you select an operation mode that requires user authentication, you need to select the users and groups that shall be allowed to use the Web Filter. The following modes of operation are available:

- **Standard mode:** In standard mode, the Web Filter will listen for client requests on port 8080 by default and will allow any client from the networks listed in **Allowed Networks** box to connect. When used in this mode, clients must have specified the Web Filter as HTTP proxy in their browser configuration.

Select the default authentication mode.

- **None:** Select to not use any authentication.
- **Active Directory SSO:** This mode will attempt to authenticate the user who is currently logged in to the computer as the user of the proxy (single sign on). If the currently logged in user is a valid AD user with permission to use the proxy, the authentication should occur with no user interaction. You must have configured **Active Directory Single Sign-On (SSO)** on the **Definitions & Users > Authentication Services > Servers** tab. Clients can authenticate with NTLM or Kerberos.
- **Agent:** Select to use the Sophos Authentication Agent (SAA). Users need to start the agent and authenticate in order to be able to use the Web Filter. The agent can be downloaded from the User Portal. See: [User Portal](#).
- **Apple OpenDirectory SSO:** Select when you have configured **LDAP** on the **Definitions & Users > Authentication Services > Servers** tab and you are using Apple OpenDirectory. Additionally, you have to upload a MAC OS X Single Sign-On Kerberos keyfile on the **Web Protection > Filtering Options > Misc** tab for the proxy to work properly. When used in this mode, clients must have specified the Web Filter as HTTP proxy in their browser configuration. Note that the Safari browser does not support SSO.

- **Basic user authentication:** In this mode, each client must authenticate itself against the proxy before using it. For more information on which authentication methods are supported, see **Definitions & Users > [Authentication Services](#)**. When used in this mode, clients must have specified the Web Filter as HTTP proxy in their browser configuration.
- **Browser:** When selected the users will be presented a login dialog window in their browser to authenticate themselves with the Web Filter. This mode allows for username-based tracking, reporting, and surfing without client-side browser configuration. Moreover, you can enable a disclaimer that is additionally displayed on that dialog window and needs to be accepted by users to be able to go on. For more information on the disclaimer, see **Management > Customization > [Web Messages](#)**.

Note - When using browser authentication, a pop-up will be generated from **passthrough.fw-notify.net**. Users should ensure **passthrough.fw-notify.net** is exempt from their browser's pop-up blocker.

- **eDirectory SSO:** Select when you have configured **eDirectory** on the **Definitions & Users > Authentication Services > Servers** tab.

Note - For eDirectory Single-Sign-On (SSO) modes, the Web Filter caches accessing IP addresses and credentials for up to fifteen minutes, for Apple OpenDirectory and Active Directory SSO it caches only the group information. This is done to reduce the load on the authentication servers. However it also means that changes to users, groups, or the login status of accessing users may take up to fifteen minutes to be reflected by the Web Filter.

If you chose an authentication mode that requires user authentication, select **Block access on authentication failure** to deny access to users that fail authentication.

- **Transparent mode:** In transparent mode, all connections made by client browser applications on port 80 (and port 443 if SSL is used) are intercepted and redirected to the Web Filter without client-side configuration. The client is entirely unaware of the Web Filter server. The advantage of this mode is that for many installations no additional administration or client-side configuration is necessary. The disadvantage however is that only HTTP requests can be processed. Thus, when you select the transparent mode, the client's proxy settings will become ineffective.

Note - In transparent mode, the Web Filter will strip NTLM authentication headers from HTTP requests. Furthermore, the Web Filter cannot handle FTP requests in this mode. If your clients want to access such services, you must open port (21) in the firewall. Note further that some web servers transmit some data, in particular streaming video and audio, over a port different from port 80. These requests will

not be noticed when the Web Filter operates in transparent mode. To support such traffic, you must either use a different mode or enter an explicit firewall rule allowing them.

- **None:** Select to not use any authentication.
- **Active Directory SSO:** This mode will attempt to authenticate the user who is currently logged in to the computer as the user of the proxy (single sign on). If the currently logged in user is a valid AD user with permission to use the proxy, the authentication should occur with no user interaction. You must have configured **Active Directory Single Sign-On (SSO)** on the **Definitions & Users > Authentication Services > Servers** tab. Clients can authenticate with NTLM (or Kerberos if Mac). For some environments additional configuration is required on the endpoint. If you are having problems with SSO in transparent mode, please see the [Sophos Knowledge Base](#).

Note - When defining the Active Directory user group, we highly recommend to add the desired entries to the **Active Directory groups** box by manually entering the plain Active Directory group or user names instead of the LDAP strings. Example: Instead of an LDAP string `CN=ads_group1,CN=Users,DC=example,DC=com`, just enter the name `ads_group1`.

Note - When using Kerberos, only add groups to the **Active Directory groups** box, as entries for users are not be accepted by the Web Filter.

- **Agent:** Select to use the Sophos Authentication Agent (SAA). Users need to start the agent and authenticate in order to be able to use the Web Filter.
- **Browser:** When selected the users will be presented a login dialog window in their browser to authenticate themselves with the Web Filter. This mode allows for username-based tracking, reporting, and surfing without client-side browser configuration. Moreover, you can enable a disclaimer that is additionally displayed on that dialog window and needs to be accepted by users to be able to go on. For more information on the disclaimer, see **Management > Customization > Web Messages**.

Note - When using browser authentication, a pop-up will be generated from `passthrough.fw-notify.net`. Users should ensure `passthrough.fw-notify.net` is exempt from their browser's pop-up blocker.

- **Full transparent (optional):** Select to preserve the client source IP instead of replacing it by the gateway's IP. This is useful if your clients use public IP addresses that should not be disguised by the Web Filter. The option is only available when

running in bridged mode.

The available authentication modes for **Full transparent** are the same as **Transparent**. See above.

Cross Reference - For more information on configuring browser authentication in standard mode, see the [Sophos Knowledge Base](#).

When configured to use authentication, you have the option to **Block access on authentication failure**. If you are using AD SSO and do not block access on failure, an SSO authentication failure will allow unauthenticated access without prompting the user. If you are using Browser authentication and do not block access on authentication failure, there will be an additional **Guest login** link on the login page to allow unauthenticated access.

6. Enable device-specific authentication.

To configure authentication modes for specific devices, select the **Enable device-specific authentication** checkbox. Once enabled you can click the green Plus icon to add device types and associated authentication modes.

7. Click **Next**, or select **Policies** from the top of the wizard.

8. Review and create policies for your filter profile.

To create a new policy, proceed as follows:

1. Click the Plus icon on the upper right.

The **Add Policy** dialog is displayed.

2. Make the following settings:

Name: Enter a descriptive name for this policy.

Users/Groups: Select the users or user groups that this policy will apply to. You can also create new users or groups. How to add users is explained on the **Definitions & Users > Users & Groups > Users** page.

Time event: The policy will be active for the time period you select. Choose **Always** to enable the policy at all times. You can also click the green Plus icon to create a new time event. Time period definitions are managed on the **Definitions & Users > Time Period Definitions** tab.

Filter action: Select an existing filter action, which defines the types of web protection you want to apply in a policy. You can also click the green Plus icon to create a new filter action using the **Filter Action Wizard**. Filter actions can also be managed on the **Web Filter Profiles > Filter Actions** tab.

Comment (optional): Add a description or other information.

Advanced Settings:

- **Apply this policy to requests that have skipped authentication due to an exception:** You can create exceptions on the **Filtering Options > Exceptions** tab to e.g. skip authentication for automatic updates that cannot use authentication. Select this checkbox to apply this policy to web requests that have skipped authentication.

3. Click **Save**.

The new policy appears at the top of the **Policies** list.

4. Enable the policy.

The new policy is disabled by default (toggle switch is gray). Click the toggle switch to enable the policy. The policy is now enabled (toggle switch is green).

9. Click **Save**.

The new profile appears on the **Filter Profiles** list.

Important Note - When SSL scanning is enabled in combination with the transparent mode, certain SSL connections are destined to fail, e.g. SSL VPN tunnels. To enable SSL VPN connections, add the respective target host to the **Transparent Mode Skiplist** (see **Web Protection > Filtering Options > Misc**). Furthermore, to access hosts with a self-signed certificate you need to create an exception for those hosts, selecting the option **Certificate Trust Check**. The proxy will then not check their certificates.

To either edit or delete a filter profile, click the name of the profile in the list.

9.2.2 Filter Actions

On the **Web Filter Profiles > Filter Actions** tab you can create and edit a set of web protection configuration settings that can be used to customize different types and levels of protection. Filter actions can be assigned to different users and user groups, providing a flexible way to control web access.

You can create a new filter action by clicking the **New Filter Action** button, or edit an existing filter action by clicking the corresponding **Edit** button. Either of these actions will launch the Filter Action Wizard. For more information, see **Web Filtering > Policies > Filter Action Wizard**.

On the **Filter Actions** page you can also search, clone, delete or browse the list of existing filter actions.

9.2.3 Parent Proxies

Some network topologies require an upstream web proxy server. On the **Web Protection > Web Filter Profiles > Parent Proxies** page you can configure a parent proxy.

To configure a parent proxy, do the following:

1. Click **New Parent Proxy**.

The **Add Parent Proxy** dialog box opens.

2. Make the following settings:

Name: Enter a descriptive name for this parent proxy.

Comment (optional): Add a description or other information.

Use Proxy for These Hosts: Add hosts to this box for which the parent proxy is to be used, e.g. `*.wikipedia.org`. Note that you can use pattern matching here. Regular expressions, however, are not allowed. If you leave the box empty, an asterisk (*) is automatically added when clicking **Save**, which matches all hosts. Such a proxy definition can therefore be regarded as a fallback proxy which matches when none of the other proxies, if existent, do.

Parent proxy: Select or add the network definition of the parent proxy.

Port: The default port for the connection to the parent proxy is 8080. If your parent proxy requires a different port, you can change it here.

Proxy requires authentication: If the parent proxy requires authentication, select the checkbox and enter username and password in the appearing textboxes.

3. Click **Save**.

The new parent proxy appears on the **Parent Proxies** list.

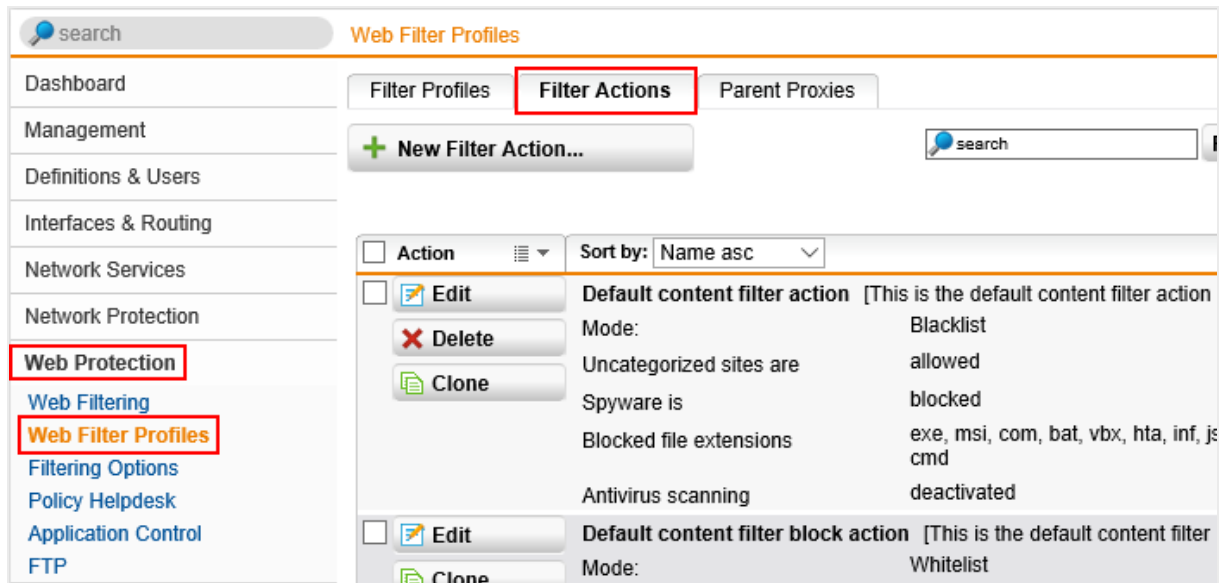
The proxy can now be used in filter actions or globally.

To either edit or delete a parent proxy, click the corresponding buttons.

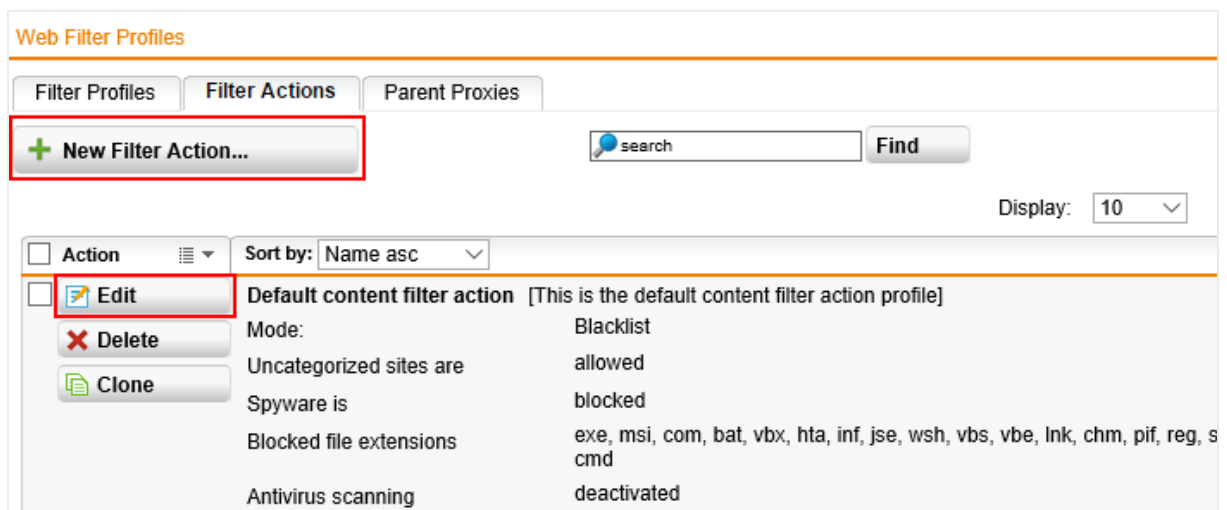
9.2.4 How to configure Sophos Sandstorm for Web Protection

For Sandstorm to inspect files transmitted with HTTPs, turn on the **Decrypt and Scan** option and install the web proxy's signing CA on the clients. Then the UTM can inspect the HTTPS traffic and send files to Sandstorm.

- Find information about the use of HTTPS **Decrypt and Scan** in this [support article](#).
 - Find information about how to deploy the web proxy CA in this [support article](#).
1. To configure Sophos Sandstorm for Web Protection, go to **Web Protection > Web Filter Profiles > Filter Actions**.



2. Either create a new filter action or edit an existing filter action.
 - To create a new filter action, click the **New Filter Action** button.
 - To edit an existing filter action, click the **Edit** button next to the filter action.



The screen that appears is almost the same for both options.

3. Click **Antivirus**, select the following options and then click **Save**:
 - Use antivirus scanning
 - Dual scan (maximum security)
 - Refer suspicious items to Sophos Sandstorm

Note: If you're creating a new filter action, complete the configuration and then click **Save**.

You have now configured Sophos Sandstorm for Web Protection.

9.2.4.1 Where to see Sophos Sandstorm statistics

To see statistics about Sophos Sandstorm usage, click **Advanced Protection**.

This page shows the **Advanced Protection Statistics**, where you can see a summary of all Sophos Sandstorm activity.

search Advanced Protection Statistics - Today

Dashboard

Management

Definitions & Users

Interfaces & Routing

Network Services

Network Protection

Web Protection

Email Protection

Advanced Protection

Sophos Sandstorm

Advanced Threat Protection

Endpoint Protection

Wireless Protection

Webserver Protection

Sophos Sandstorm Activity

| | Web | Email | Total |
|-----------------------|-----|-------|-------|
| Suspicious files | 0 | 0 | 0 |
| Excluded by policy | 0 | 0 | 0 |
| Awaiting result | 0 | 0 | 0 |
| Malicious | 0 | 0 | 0 |
| Clean | 0 | 0 | 0 |
| Sent for analysis | 0 | 0 | 0 |
| Average analysis time | - | - | - |

Showing events since: March 31, 2016 00:00

Advanced Threat Protection

No data is available for this report

Showing events since: March 28, 2016 10:26 **reset**

9.2.4.2 How to release files from Sophos Sandstorm

The **Sandbox Activity** page shows the suspicious files that are quarantined in the sandbox for further investigation. You can manually release these files.

1. To release a file, go to **Advanced Protection > Sophos Sandstorm > Sandbox Activity**.

search Sophos Sandstorm

Dashboard

Management

Definitions & Users

Interfaces & Routing

Network Services

Network Protection

Web Protection

Email Protection

Advanced Protection

Sophos Sandstorm

Advanced Threat Protection

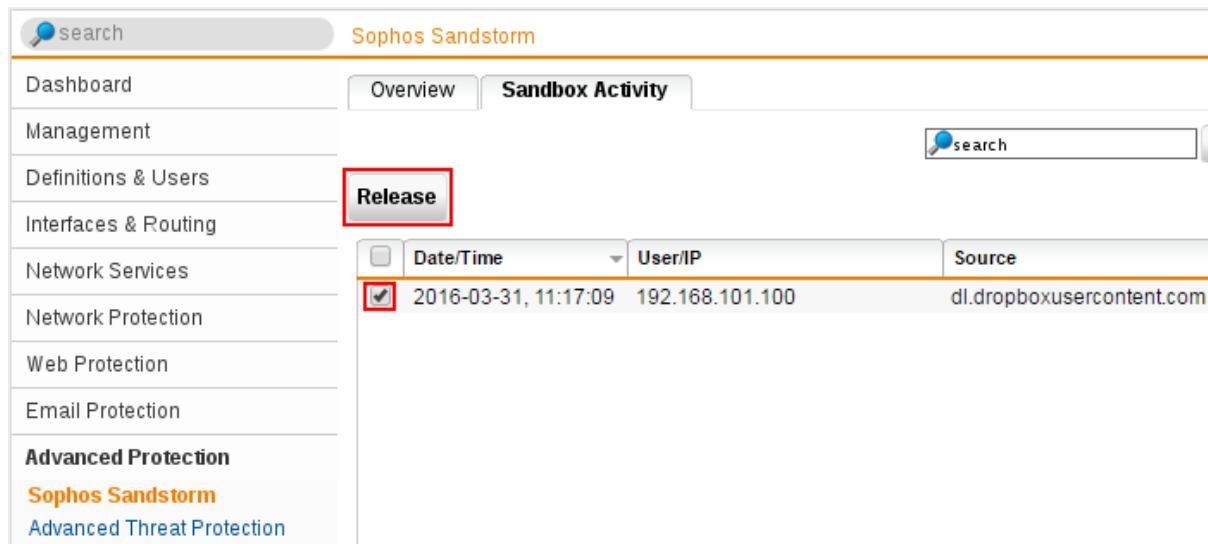
Sandbox Activity

Release

| Date/Time | User/IP |
|-----------|---------|
|-----------|---------|

Showing events since: March 31, 2016 00:00

2. To release a file, select the check box next to the file and then click **Release**.



9.3 Filtering Options

On the **Web Protection > Filtering Options** page you can configure various options to web filtering. The tabs accessible from this page allow you to configure exceptions to filtering, users that can bypass filtering, filtering categories, HTTPS certificates and authorities, and various other options.

9.3.1 Exceptions

On the **Web Protection > Filtering Options > Exceptions** tab you can define whitelist client networks, users/groups, and domains. All entries contained in these lists can be excluded from certain web protection services.

To create an exception, proceed as follows:

1. On the **Exceptions** tab, click **New Exception List**.

The **Add Exception List** dialog box opens.

2. Make the following settings:

Name: Enter a descriptive name for this exception.

Comment (optional): Add a description or other information.

Skip These Checks: Select the security checks that should be skipped:

- **Authentication:** If the Web Filter runs in **Authentication** mode, you can skip authentication for the source hosts/networks or target domains.
- **Caching:** Select to disable caching for specific domains or source hosts/networks.

- **Block by download size:** Select to disable blocking content according to the size of the download.
- **Antivirus:** Select to disable virus scanning, which checks messages for unwanted content such as viruses, trojan horses and the like.
- **Refer to Sandstorm:** Select to disable sending files to the Sophos Sandstorm service for analysis.
- **Extension blocking:** Select to disable the file extension filter, which can be used to block content that contains certain types of files based on their extensions.
- **MIME type blocking:** Select to disable the MIME type filter, which can be used to block content that has a certain MIME type.
- **URL filter:** Select to disable the URL filter, which controls the access to certain kinds of websites.
- **Content removal:** Select to bypass the removal of special content in webpages such as embedded objects (e.g., multimedia files) or JavaScript.
- **SSL scanning:** Select to skip SSL scanning for the webpage in request. This is useful with online banking websites or with websites that do not play well with SSL interception. Note that for technical reasons this option does not work for any transparent Web Filter mode. With transparent mode, use the **Transparent Mode Skiplist** instead (see [Filtering Options > Misc](#) tab). In standard mode, exceptions can only be made based on the destination host or IP address depending on what the client sends. With exceptions based on categories, instead of the whole URL, only the hostname will be classified.
- **Certificate trust check:** Select to skip the trust check of the HTTPS server certificate. Note that, when the Web Filter works in transparent mode with authentication, skipping the certificate trust check based on a users/groups match (**For all requests Coming from these users/groups**) is technically impossible.
- **Certificate date check:** Select to skip the check of whether the HTTPS certificate's date is valid.

The following two options are useful if there are persons whose activities must not be logged at all:

- **Accessed pages:** Select to not log pages that have been accessed. Those page requests will also be excluded from reporting.
- **Blocked pages:** Select to not log pages that have been blocked. Those page requests will also be excluded from reporting.

Some software updates, and similar types of downloads, can be interrupted if a progress page is displayed. If you are having problems with software updates, or if some downloads never finish, select the following option.

- **Do not display Download/Scan progress page:** Select to disable downloading and scanning progress pages.

For all requests: Select at least one condition for which the security checks are to be skipped. You can logically combine several conditions by selecting either **And** or **Or** from the drop-down list in front of a condition. The following conditions can be set:

- **Coming from these source networks:** Select to add source hosts/networks that should be exempt from the security checks of this exception rule. Enter the respective hosts or networks in the **Hosts/Networks** box that opens after selecting the condition.
- **Coming from these source endpoint groups:** Select to add computer groups (see **Endpoint Protection > Computer Management > Manage Groups** tab) that should be exempt from the security checks of this exception rule. Enter the respective groups in the **Source Endpoint Groups** box that opens after selecting the condition.
- **Matching these URLs:** Select to add target domains that should be exempt from the security checks of this exception rule. Add the respective domains to the **Target Domains** box that opens after selecting the condition. Regular expressions are allowed here. Example: `^https?://[^\.]*\.domain\.com` matches HTTP(S) connections to all subdomains of the domain.

Cross Reference - For detailed information on using regular expressions for web filtering, see the [Sophos Knowledge Base](#).

Note - When using **Transparent** mode with SSL scanning enabled, you need to enter the target domain(s) as IP addresses. Otherwise the exception will fail for technical reasons.

- **Coming from these users/groups:** Select to add users or user groups that should be exempt from the security checks of this exception rule. Enter the respective users or groups in the **Users/Groups** box that opens after selecting the condition. Also, in Standard mode, matching for certain users/groups does not work due to the missing authentication.
- **Going to these categories of websites:** Select to skip security checks for certain categories. Select then the categories from the list that opens after selecting the condition.
- **Coming from these user agents:** Select to skip security checks for requests by user agent strings. Regular expressions are allowed.
- **Going to websites tagged as:** Select to skip security checks for associated tags. Click on the Plus icon to create a new tag or click on the Folder icon to choose from existing tags.

3. Click **Save**.

The new exception appears on the **Exceptions** list.

To either edit or delete an exception, click the corresponding buttons.

9.3.2 Websites

On the **Web Protection > Filtering Options > Websites** tab you can maintain lists of sites for which you want to override the default category, reputation, or associate a tag with the site.

To add an entry to the **Local Site List**:

1. Click the **Add Site** button.

2. Enter the sites you wish to override or tag.

The text box in the **Add Local Site(s)** dialog will accept URLs, domains, IP addresses, or CIDR ranges.

3. Optionally, select the **Include subdomains** checkbox.

Selecting this checkbox will apply the overrides to all subdomains. For instance, if you add example.com and select the **Include subdomains** checkbox, mail.example.com will be included in the override.

4. Select a **Category** or **Reputation** to override.

You can override either **Category**, **Reputation**, or both. Sites defined in the **Local Site List** are processed by filter actions using these overridden values.

5. Select a **Tag** to associate with the sites.

You can click on the **Plus** icon to create a new tag or click on the **Folder** icon to choose from existing tags. Sites tagged here can be controlled by creating a Filter Action that references the tag.

6. Optionally, add a comment.

For large lists of sites you can page through entries by using the **Next** and **Previous** icons at the top of the tab, or search for items using the search text box. To delete entries click the Delete icon next to the entry, or select multiple items and click the **Delete** icon at the top of the list.

Sites which have an associated tag can be controlled for blocked or allowed websites on the **Web Protection > Web Filter Profiles > Filter Action > Websites** tab, section **Control sites tagged in the Website List**.

Cross Reference - Find information about HTTP proxy site reclassification on Sophos UTM in the [Sophos Knowledge Base](#).

9.3.3 Bypass Users

On the **Web Protection > Filtering Options > Bypass Users** tab you can specify which users are allowed to bypass block pages.

To add an existing group or user:

1. Click the Folder icon next to **Users/Groups Allowed to Bypass Blocking**.

The list of existing users and groups appears in the left navigation pane.

2. Select and drag the user or group to the **Users/Groups Allowed to Bypass Blocking** box.

The item will now be listed on the **Bypass Users** tab.

To add a new user:

1. Click the green Plus icon next to **Users/Groups Allowed to Bypass Blocking**.

The **Add User** dialog window appears.

2. Enter user information into the **Add User** dialog window.

How to add users is explained on the **Definitions & Users > Users & Groups > Users** page.

3. Click **Apply**.

Your settings will be saved.

9.3.4 Potentially Unwanted Applications

On the **Web Protection > Filtering Options > PUAs** tab you can maintain lists of authorized Potentially Unwanted Applications (PUAs). Your Sophos UTM can identify applications that are potentially unwanted in a business environment and block them. To allow specific PUAs when blocking is enabled, add the name as reported in the block page or the logs.

To add an entry to the **Local Site List**:

1. Click the Plus icon on the **Authorized PUAs** list.
2. Enter the PUA definition.

To find PUA definitions, go to **Logging & Reporting > Web Protection > Web Usage Report** and select **PUA Downloaders** from the **Available Reports** drop-down list.

3. Click **Apply**.

By clicking the **Open Actions menu** icon, next to the green Plus icon, you can import or export a text list of PUAs and clear the **Authorized PUAs** list.

Cross Reference - Find information about configuring PUA blocking on Sophos UTM in the [Sophos Knowledge Base](#).

9.3.5 Categories

On the **Web Protection > Filtering Options > Categories** tab you can customize the mapping of website categories to category groups, which can be selected on the **Filter Action** tab or on the **Website Filtering** page. Sophos UTM can identify and block access to different categories of websites. Sophisticated URL classification methods ensure accuracy and completeness in identifying questionable websites. If users request a webpage that is

not included in the database, the URL is sent to the web crawlers and classified automatically.

Note - If you are of the opinion that a website is wrongly categorized, you can use the following [URL report form](#) to suggest new categories.

To assign website categories to a category group, proceed as follows:

1. Click **Edit** in the category group you want to edit.

The **Edit Filter Category** dialog box opens.

2. Select the subcategories.

Select or clear the checkboxes of the subcategories you want to add to or remove from the group.

3. Click **Save**.

The group will be updated with your settings.

Alternatively, you can also create a new filter category. Proceed as follows:

1. Click the **New Filter Category** button on the top of the page.

The **Add Filter Category** dialog box opens.

2. Enter a name.

Enter a descriptive name for the new filter category.

3. Select the subcategories.

Select the checkboxes of the subcategories you want to add to the group.

4. Click **Save**.

The group will be updated with your settings.

To either edit or delete a category, click the corresponding buttons.

9.3.6 HTTPS CAs

On the **Web Protection > Filtering Options > HTTPS CAs** tab you can manage signing and verification certificate authorities (CAs) for HTTPS connections.

When you use an intermediate CA as signing CA, the UTM tries to retrieve the parents of that CA and displays the parts of the certificate chain it could retrieve, apart from the root CA.

Signing CA

In this area you can upload your Signing CA certificate, regenerate the Signing CA certificate, or download the existing Signing CA certificate. By default, the Signing CA certificate is created according to the information provided during setup, i.e. it is consistent with

the information on the **Management > System Settings > Organizational** tab—unless there have been any changes applied since.

To upload a new Signing CA certificate, proceed as follows:

1. Click the button **Upload**.

The **Upload PKCS#12 Certificate File** dialog window opens.

2. Browse for the certificate to upload.

Click the Folder icon next to the **File** box, click **Browse** in the opening **Upload File** dialog window, select the certificate to upload and click **Start Upload**.

You can only upload certificates in PKCS#12 format which are password protected.

Note - Sophos UTM only supports certificates using RSA encryption. Certificates with EC encryption are not supported.

3. Enter the password.

Enter the password twice into the corresponding fields and click **Save**.

The new Signing CA certificate will be installed.

To regenerate your Signing CA certificate, proceed as follows:

1. Click the button **Regenerate**.

The **Create New Signing CA** dialog box opens.

2. Change the information.

Change the given information according to your needs and click **Save**.

The new Signing CA certificate will be generated. The Signing CA information in the **Signing CA** area will change accordingly.

To download the Signing CA certificate, proceed as follows:

1. Click the button **Download**.

The **Download Certificate File** dialog window opens.

2. Select the file format to download.

You can choose between two different formats:

- **PKCS#12:** This format will be encrypted, so enter an export password.
- **PEM:** Unencrypted format.

3. Click **Download**.

The file will be downloaded.

If you use certificates for your internal web servers signed by a custom CA, it is advisable to upload this CA certificate to WebAdmin as Trusted Certificate Authority. Otherwise users will be prompted with an error message by the Web Filter claiming to be confronted with an untrustworthy server certificate.

To facilitate supplying client PCs with the proxy CA certificate, users can download the certificate themselves via <http://passthrough.fw-notify.net> and install it in their browser. The website request is directly accepted and processed by the proxy. It is therefore necessary to enable the Web Filter on the **Web Protection > Web Filtering > Global** tab first.

Note - In case the proxy's operation mode is not **Transparent Mode** the proxy has to be enabled in the users' browser. Otherwise the certificate download link will not be accessible.

Alternatively, if the User Portal is enabled, users can download the proxy CA certificate from the User Portal, tab **HTTPS Proxy**.

Preventing HTTPS Problems

When using HTTPS, Windows system programs like Windows Update and Windows Defender will not be able to establish connections because they are run with `system user` rights. However, this user, by default, does not trust the proxy CA. It is therefore necessary to import the HTTPS proxy CA certificate for the system user. Do the following:

1. In Windows, open the **Microsoft Management Console** (mmc).

2. Click on the **File** menu and then **Add/Remove Snap-in**.

The **Add or Remove Snap-ins** dialog window opens.

3. Click **Add** at the bottom of the window.

The dialog window **Add Standalone Snap-In** opens.

4. Select **Certificates** from the list and click **Add**.

A wizard appears.

5. Select **Computer account** and click **Next**.

6. Make sure that **Local computer** is selected and click **Finish** and then **Close**.

The first dialog window now contains the item **Certificates (Local Computer)**.

7. Click **OK**.

The dialog window closes and the Console Root now contains the item **Certificates (Local Computer)**.

8. In the **Console Root** window on the left open **Certificates > Trusted Root Certification Authorities**, right-click **Certificates** and select **All Tasks > Import** from the context menu.

The import dialog wizard opens.

9. Click **Next**.

The next wizard step is displayed.

10. Browse to the previously downloaded HTTPS proxy CA certificate, click **Open** and then **Next**.

The next wizard step is displayed.

11. Make sure that **Place all certificates in the following store** is selected and click **Next** and **Close**.

The wizard reports the import success.

12. Confirm the wizard's message.

The proxy CA certificate is now displayed among the trusted certificates.

13. Save the changes.

Click on the **File** menu and then **Save** to save the changes on the Console Root.

After importing, the CA is system-widely accepted and connection problems resulting from the HTTPS proxy should not occur.

Verification CAs

This area allows you to manage Verifications CAs. Those are Certificate Authorities you trust in the first place, i.e. websites presenting valid certificates signed by these CAs are regarded trustworthy by the HTTPS proxy.

Local Verification CAs: You can upload Verification CAs additionally to the CA list below. Proceed as follows:

1. Click the Folder icon next to the **Upload local CA** field.

The **Upload File** dialog window opens.

2. Select the certificate to upload.

Click **Browse** and select the CA certificate to upload. Only PEM certificate extensions are supported.

3. Upload the certificate.

Click **Start Upload** to upload the selected CA certificate.

The certificate will be installed and displayed in the **Local Verification CAs** area.

Global verification CAs: The list of Verification CAs shown here is identical to the Verification CAs pre-installed by Mozilla Firefox. However, you can disable one or all Verification CAs of the list if you do not regard them as trustworthy. To revoke a CA's certificate click its toggle switch. The toggle switch turns gray and the HTTPS proxy will no longer accept websites signed by this CA.

Tip - Click the blue Info icon to see the fingerprint of a CA.

The HTTPS proxy will present a "Blocked Content" error page to a client if the CA is unknown or disabled. However, you can create an exception for such pages: either via the

Create **Exception** link on the error page of the Web Filter or via the **Web Protection > Filtering Options > Exceptions** tab.

Note - When clicking the **Create Exception** link on the Web Filter error page a login dialog window is presented. Only users with admin rights are allowed to create exceptions.

9.3.7 Misc

The **Web Protection > Filtering Options > Misc** tab contains various other configuration options of the Web Filter such as caching, streaming, or port settings.

Misc Settings

Web filtering port: Here you can define the port number that the Web Filter will use for client requests. The default is 8080.

Note - This only applies if you do not operate the proxy in transparent mode.

Detect HTTP loopback: This option is enabled by default. Only disable HTTP Loopback detection if you have a DNAT rule where Sophos UTM is the original destination and the port is 80.

MIME blocking inspects HTTP body: Not only the HTTP header but also the HTTP body is checked for blocked MIME types. Note that turning on this feature may have a negative impact on performance.

Block unscannable and encrypted files: Select this option to block files that could not be scanned. The reason for that may be, among other things, that files are encrypted or corrupt. Files larger than 2 GB are unscannable.

Allowed target services: In the **Allowed target services** box you can select the target services the Web Filter should be allowed to access. The default setting consists of target services (ports) that are usually safe to connect to and which are typically used by browsers, namely **HTTP** (port 80), **HTTPS** (port 443), **FTP** (port 21), **LDAP** (port 389), **LDAP-SSL** (port 636), **Web Filter** (port 8080), **UTM Spam Release** (ports 3840–4840), and **UTM WebAdmin** (port 4444).

Default charset: This option affects how the proxy displays file names in the **Download Manager** window. URLs (and file names that they may reference) that are encoded in foreign charsets will be converted to UTF-8 from the charset specified here unless the server sends a different charset. If you are in a country or region that uses a double-byte charset, you should set this option to the "native" charset for that country or region.

Search domain: You can add an additional domain here, which will be searched when the first DNS lookup returns no result ("NXDOMAIN"). Then, a second DNS request is initiated which appends the domain given here to the original hostname. Example: A user enters `http://wiki`, meaning to address `wiki.intranet.example.com`. However, the URL can only be resolved when you enter `intranet.example.com` into the **Search domain** field.

Authentication timeout: This setting allows you to set the length of time (in seconds) that users can browse after logging in with browser mode authentication. If the users have a logout tab open, they can continue to browse without re-authenticating until that tab is closed, plus the authentication timeout.

This setting also allows you to set the length of time (in seconds) that a **Block Override** or a **Warning Proceed** lasts.

Authentication realm: The authentication realm is the name of the source which a browser displays along with the authentication request when the proxy works in **Basic User**

Authentication mode. It defines the protection space according to [RFC 2617](#). You can give any string here.

Transparent Mode Skiplist

Using this option is only meaningful if the Web Filter runs in transparent mode. Hosts and networks listed in the **Skip transparent mode hosts/nets** boxes will not be subject to the transparent interception of HTTP traffic. There is one box for source and one for destination hosts/networks. To allow HTTP traffic (without proxy) for these hosts and networks, select the **Allow HTTP/S traffic for listed hosts/nets** checkbox. If you do not select this checkbox, you must define specific firewall rules for the hosts and networks listed here.

Proxy Auto Configuration

The proxy auto configuration is a feature that enables you to centrally provide a proxy auto configuration file (PAC file) which can be fetched by browsers. The browsers will in turn configure their proxy settings according to the details outlined in the PAC file.

The PAC file is named **wpad.dat**, has the MIME type `application/x-ns-proxy-autoconfig` and will be provided by the UTM. It contains the information you enter into the text box, for example:

```
function FindProxyForURL(url, host)
{ return "PROXY proxy.example.com:8080; DIRECT"; }
```

The function above instructs the browser to redirect all page requests to the proxy of the server `proxy.example.com` on port 8080. If the proxy is not reachable, a direct connection to the Internet will be established.

The hostname can also be written as a variable called `${asg_hostname}`. This is especially useful when you want to deploy the same PAC file to several Sophos UTM appliances using Sophos UTM Manager. The variable will then be instantiated with the hostname of the respective UTM. Using the variable in the example above would look like the following:

```
function FindProxyForURL(url, host)
{ return "PROXY ${asg_hostname}:8080; DIRECT"; }
```

To provide the PAC file for your network, you have the following possibilities:

- Providing via browser configuration: If you select the option **Enable Proxy Auto Configuration**, the PAC file will be available via Sophos UTM Web Filter under the URL of the following type: `http://IP-of-UTM:8080/wpad.dat`. To use this file, enter its URL in the automatic proxy configuration setting of those browsers which are to use the proxy.
- Providing via DHCP: You can have your DHCP server(s) hand out the URL of the PAC file together with the client IP address. To do that, select the option **Enable HTTP Proxy Auto Configuration** in your DHCP server configuration (see chapter **Network Services > DHCP**). A browser will then automatically fetch the PAC file and configure its settings accordingly.

Note - Providing via DHCP works with Microsoft's Internet Explorer only. Regarding all other browsers you need to provide the PAC file manually.

URL Categorization Parent Proxy

Enter a proxy server for URL categorization lookups if you do not have direct internet access. This option is only available if you have endpoint protection enabled, or if you are doing local lookups. For local lookups, this option sets the proxy that will be used to download categorization updates to Sophos UTM.

Web Caching

Enable caching: When this option is enabled, the Web Filter keeps an on-disk object cache to speed up requests to frequently visited webpages.

- **Cache SSL content:** With this option enabled, SSL-encrypted data will be stored unencrypted on disk as well.
- **Cache content that contains cookies:** Cookies are often used for authentication purposes. With this option enabled, HTTP answers containing cookies will be cached as well. This may be critical, as users requesting the same page are likely to get the cached page, containing the cookie of another user.

Important Note - Caching SSL and/or cookie content is an important security issue as the content is readable by every user with SuperAdmin rights.

- **Force caching for Sophos Endpoint updates:** If enabled, certain data related to Sophos Auto Update (SAU) requests from endpoints will be cached. We recommend to enable this feature when using endpoint protection. If disabled, this type of data will not be cached. This can lead to uplink saturation when many endpoints simultaneously try to download data from the update servers in the Internet.

Clear Cache: You can delete all cached pages by clicking **Clear Cache**.

Streaming Settings

Bypass content scanning for streaming content: When this option is active, typical audio and video streaming content (including range requests for that content) is not subject to content scanning. Disabling this option will effectively disable most media streams, since they cannot be scanned in a reasonable timeframe. It is therefore recommended to leave this option turned on.

Apple OpenDirectory Single Sign-On

When you are using **Apple OpenDirectory SSO** as authentication method, you need to upload a MAC OS X Single Sign-On Kerberos keyfile for authentication to work properly. Generate that keyfile and upload it by clicking the Folder icon. For more information on how to generate that keyfile, see the **Kerberos documentation**.

Certificate for End-User Pages

Sophos UTM uses HTTPS to provide user notification, perform browser authentication and secure other user interactions. By default, Sophos UTM uses an automatically generated certificate for these HTTPS connections. You can use this option to use a custom certificate for HTTPS pages that are presented to end users. To use your own custom certificate for these HTTPS connections, first upload it using **Remote Access > Certificate Management > Certificates**, then select it and update the settings here.

Note -The **Hostname** specified is the base domain for the certificate you are using. Sophos UTM will then prepend `passthrough.` or `passthrough6.` to that domain. The certificate must be valid for `passthrough` (and `passthrough6`) as a Common Name, Subject Alternate Name, or most commonly as a wildcard certificate, so you can prepend any host at the domain. In addition, you must set up DNS for `passthrough` and `passthrough6` to external IP addresses. If you use Sophos UTM as your DNS server this is done automatically. By default, Sophos UTM uses the IP address 213.144.15.19. If you are using an alternate DNS server you must create those entries there.

9.4 Policy Helpdesk

On the **Web Protection > Policy Helpdesk** page you can test URLs against your existing policy, and assess or reset the quota status for your users. Use the **Policy Test** tab to test URLs, and the **Quota Status** tab to see the current quota status of your users.

9.4.1 Policy Test

Use the **Web Protection > Policy Helpdesk > Policy Test** page to test URLs against your existing Web Filter Profiles. To test a URL against your current policy, proceed as follows:

1. Enter the URL you want to test.
2. Set the source IP address.

Different source networks may have different Web Filter Profiles. If a network is included in more than one profile, the profile with the highest priority will be used by the policy tester.

3. Optionally, enter a user to test the request as.

Users can fall under different Web Filter Profiles.

4. Optionally, enter a time for the request.

Web Filter Profiles can be configured to have rules based on the time of day.

5. Click **Test**.

The results of your test parameters will be displayed in the **Policy Test Results** box.

Note - When you test a URL against your Web Filter Profiles, the **Web Protection > Policy Test** page does not download content, or check for malware, MIME types, or file extensions. The actual filtering behavior may be different depending on what content the URL is hosting.

Note - The correct Authentication Server must be added on the **Definitions & Users > Authentication Services > Servers** page for the test to work properly.

Cross Reference - For more information on the Policy Test, see the [Sophos Knowledge Base](#).

9.4.2 Quota Status

Use the **Web Protection > Policy Helpdesk > Quota Status** page to review the minutes of quota remaining for users, and to optionally reset the quota for users who are out of time.

To review quota for a user or set of users:

1. On the **Quota Status** tab find users you wish to review.

All users who have used some quota time are listed. Use the search text box to search for specific users or Filter Actions to limit results. The minutes remaining for specific users quota are shown.

2. Select users to reset their quota time.

Select the checkbox next to the users you want to reset, or click the checkbox at the top to select all users that are currently displayed.

3. Click **Reset**.

Quota time for selected users will be reset so the full quota time is available. Normally quota time for all users resets at midnight.

9.5 Application Control

The Application Control functionality of Sophos UTM allows you to shape and block network traffic based on the type of traffic. In contrast to the Web Filtering functionality of Sophos UTM (see chapter [Web Filtering](#)), the application control classification engine distinguishes network traffic not only by protocol or by URL but more fine-grained. This is especially useful regarding web traffic: traffic to websites normally uses the HTTP protocol on port 80 or the HTTPS protocol on port 443. When you want to block traffic to a certain website, e.g. facebook.com, you can do that either based on that website's URL (Web Filtering). Or you can block facebook traffic independent from any URL by relying on network traffic classification.

The classification engine of Sophos UTM uses layer 7 packet inspection to classify network traffic.

Application control can be used in two ways. In a first step, you need to generally enable application control on the **Network Visibility** page which makes applications "visible" in a way. Now you can leave it that way (or for a certain time) to see which applications are used by your users (e.g. in Flow Monitor, logging, reporting). In a second step, you can block certain applications and allow others. This is achieved by rules which can be created on the **Application Control Rules** page. Additionally, you can use traffic shaping to privilege traffic of defined applications which can be configured via the Quality of Service function of Sophos.

9.5.1 Network Visibility

On the **Web Protection > Application Control > Network Visibility** page, you can enable and disable application control.

When application control is enabled all network traffic is classified and logged according to its classification. Current network traffic can be viewed via the Flow Monitor with in-depth information about its type (see chapter **Flow Monitor**). For example, information on HTTP traffic is drilled down to the underlying applications, for example "Twitter", "Facebook", and so on. To open the Flow Monitor, select the desired interface in the **Flow Monitor** section and click the **Open Flow Monitor** button.

Regarding logging and reporting, there is extensive information available on network traffic and its classification, as well as clients and servers that use those applications. For more information on logging and reporting, see chapter **Logging & Reporting**, section **View Log Files** for logging, and section **Network Usage > Bandwidth Usage** and **Web Protection > Application Control** for reporting.

9.5.2 Application Control Rules

On the **Web Protection > Application Control > Application Control Rules** page you can create rules based on network traffic classification which define applications whose traffic should be blocked or explicitly allowed for your network.

By default, all network traffic is allowed when application control is enabled.

Application control rules can be created either via this page or via the Flow Monitor. The latter method may be more convenient, however you can only create rules for traffic currently monitored in your network.

To create an application control rule, proceed as follows:

1. On the **Application Control Rules** tab, click **New Rule**.

The **Add Rule** dialog box opens.

2. Make the following settings:

Name (optional): You can enter a name for the rule. If you leave the field empty the system is going to generate a name for the rule.

Group: The **Group** option is useful to group rules logically. With the drop-down list on top of the list you can filter the rules by their group. Grouping is only used for display purposes, it does not affect rule matching. To create a new group select the **<< New group >>** entry and enter a descriptive name in the **Name** field.

Position: The position that defines the priority of the rule. Lower numbers have higher priority. Rules are matched in ascending order. Once a rule has matched, rules with a higher number will not be evaluated anymore.

Action: Select whether the traffic is to be blocked or allowed.

Control by: Select whether to control traffic based on its application type or by a dynamic filter based on categories.

- **Applications**: The traffic is controlled application-based. Select one or more applications in the box **Control These Applications**.
- **Dynamic filter**: The traffic is controlled category-based. Select one or more categories in the box **Control These Categories**.

Control these applications/categories: Click the Folder icon to select applications/categories. A dialog window opens, which is described in detail in the next section.

Note - Some applications cannot be blocked. This is necessary to ensure a flawless operation of Sophos UTM. Such applications miss a checkbox in the application table of the **Select Application** dialog window, e.g. **WebAdmin**, **Teredo** and **SixXs** (for IPv6 traffic), **Portal** (for User Portal traffic), and some more. When using dynamic filters, blocking of those applications is also prevented automatically.

Productivity (only with **Dynamic filter**): Reflects the productivity score you have chosen.

Risk (only with **Dynamic filter**): Reflects the risk score you have chosen.

For: Select or add networks or hosts to this box whose network traffic is to be controlled by this rule. This applies only to source hosts/networks. How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.

Log: This option is selected by default and enables logging of traffic which matches the rule.

Comment (optional): Add a description or other information.

3. Click **Save**.

The new rule appears on the **Application Control Rules** list.

The Select Application or Category Dialog Window

When creating application control rules you need to choose applications or application categories from a dialog window called **Select one or more applications/categories to control**.

The table in the lower part of the dialog window displays the applications you can choose from or which belong to a defined category. By default, all applications are displayed.

The upper part of the dialog window provides three configuration options to limit the number of applications in the table:

- **Category:** Applications are grouped by category. This list contains all available categories. By default, all categories are selected, which means that the table below displays all applications available. If you want to limit the displayed applications to certain categories, click into the category list and select only one or more categories relevant to you.
- **Productivity:** Applications are also classified by their productivity impact which means how much they influence productivity. Example: Salesforce, a typical business software, has the score 5 which means its usage adds to productivity. On the contrary, Farmville, an online game, has the score 1 which means its usage is counterproductive. The network service DNS has the score 3 which means its productivity impact is neutral.
- **Risk:** Applications are also classified by the risk they carry when used with regard to malware, virus infections, or attacks. A higher number means a higher risk.

Tip - Each application has an Info icon which, when clicked, displays a description of the respective application. You can search the table by using the filter field in the table header.

Now, depending on the type of control you selected in the **Create New Rule** dialog box, do the following:

- **Control by dynamic filter:** Select the categories from the **Category** box and click **Apply** to adopt the selected categories to your rule.

- Control by application: From the table, select the applications you want to control by clicking the checkbox in front. Click **Apply** to adopt the selected applications to your rule.

After clicking **Apply**, the dialog window closes and you can continue to edit the settings of your application rule.

9.5.3 Advanced

On the **Web Protection > Application Control > Advanced** page you can configure advanced options for application control.

Application Control Skiplist

Hosts and networks listed in this box will not be monitored by application control and can therefore neither be controlled by application control nor by the application selector of Quality of Service. This applies both to source and destination hosts and networks.

Sub-application Detection

Starting with UTM 9.6, traffic from a single application can be distinguished into substreams, for example, Facebook traffic can be categorized into “Facebook Video”, “Facebook Messenger”, and so on. This allows you to apply more granular policies to application traffic.

Note - With new installations of UTM 9.6, sub-application detection will be enabled. As traffic is detected differently with sub-application detection enabled, when updating to UTM 9.6, you have to enable sub-application detection manually and check your policies apply correctly.

9.6 FTP

On the **Web Protection > FTP** tab you can configure the FTP proxy. The **File Transfer Protocol** (FTP) is a widely used protocol for exchanging files over the Internet. Sophos UTM presents a proxy service acting as a go-between for all FTP traffic passing your network. The FTP proxy provides such useful features as virus scanning of FTP traffic or blocking of certain file types that are transferred via the FTP protocol.

The FTP proxy can work transparently, that is, all FTP clients within your network would establish a connection to the proxy instead of their ultimate destination. The proxy would then initiate a new network connection on behalf of the request, invisible to the client. The advantage of this mode is that no additional administration or client-side configuration is necessary.

9.6.1 Global

On the **Web Protection > FTP > Global** tab you can configure the basic settings of the FTP proxy.

To configure the FTP proxy, proceed as follows:

1. On the **Global** tab, enable the FTP proxy.

Click the toggle switch.

The toggle switch turns amber and the **FTP Settings** area becomes editable.

2. Select the allowed networks.

Select the networks that are allowed to use the FTP proxy.

3. Select an operation mode.

Select an operation mode for the FTP proxy. The following modes are available:

- **Transparent:** The proxy forwards the client request to the target server and scans the content. No configuration on client side is necessary.
- **Non-transparent:** Using this mode you need to configure the FTP clients. Use the gateway's IP address and port 2121.
- **Both:** This mode allows you to use transparent mode for some clients and non-transparent mode for others. Configure FTP clients that are to work in non-transparent mode to use a proxy with the gateway's IP address and port 2121.

4. Click **Apply**.

Your settings will be saved.

The toggle switch turns green.

Note - The FTP proxy is unable to communicate with FTP servers that use Active Directory authentication. To enable FTP clients to connect to an FTP server of that kind, add the server to the FTP proxy skiplist, which is configured on the [Advanced](#) tab.

9.6.2 Antivirus

The **Web Protection > FTP > Antivirus** tab contains all measures that can be taken against FTP traffic that carries harmful and dangerous content such as viruses, worms, or other malware.

Use antivirus scanning: When selecting this option, FTP traffic will be scanned. Sophos UTM features several antivirus engines for best security.

- **Single scan:** Default setting; provides maximum performance using the engine defined on the **System Settings > Scan Settings** tab.

- **Dual scan:** Provides maximum recognition rate by scanning the respective traffic twice using different virus scanners. Note that dual scan is not available with BasicGuard subscription.

Max scanning size: Specify the maximum size of files to be scanned by the antivirus engine (s). Files exceeding this size will be exempt from scanning.

Click **Apply** to save your settings.

Note - Files within archives (e.g. zip files) will not be scanned for blocked file types or blocked extensions. To protect your network from these within archived files, consider blocking archive file types such as zip, rar, etc. MIME types within archives will be blocked if **MIME Blocking Inspects HTTP Body** is enabled in **Web Protection > Filtering Options > Misc**.

File Extension Filter

This feature filters FTP transfers that transmit certain types of files based on their extensions (e.g., executable binaries) from web traffic that have a file extension listed in the **Blocked File Extensions** box. You can add additional file extensions or delete file extensions that are not to be blocked. To add a file extension, click the Plus icon in the **Blocked File Extensions** box and enter the file extension you want to block, for example `exe` (without the delimiting dot). Click **Apply** to save your settings.

9.6.3 Exceptions

On the **FTP > Exceptions** tab you can define whitelist hosts/networks that should be excluded from selectable security options offered by the FTP proxy.

To create an exception, proceed as follows:

1. On the **Exceptions** tab, click **New Exception List**.

The **Add Exception List** dialog box opens.

2. Make the following settings:

Name: Enter a descriptive name for this exception.

Skip these checks: Select the security checks that should be skipped:

- **Antivirus checking:** Select to disable virus scanning, which checks traffic for unwanted content such as viruses, trojan horses, and the like.
- **Extension blocking:** Select to disable the file extension filter, which can be used to block file transfers based on file extensions.
- **Allowed servers:** Select to disable checks for allowed servers which can be set on the **Advanced** tab. If selected, the selected client hosts/networks will have access to any FTP server, whereas the selected server hosts/networks will be allowed for any client.

For these client hosts/networks: When selecting this option, the **Client Hosts/Networks** box opens. Select the client hosts/networks that should be exempt from the security checks of this exception rule.

OR for these server hosts/networks: When selecting this option, the **Server Hosts/Networks** box opens. Select the server hosts/networks that should be exempt from the security checks of this exception rule.

Comment (optional): Add a description or other information.

3. Click **Save**.

The new exception appears on the **Exceptions** list.

To either edit or delete an exception, click the corresponding buttons.

9.6.4 Advanced

On the **FTP > Advanced** tab you can specify hosts and networks that can skip the transparent mode of the FTP proxy. Additionally, you can define which FTP servers are allowed to be accessed.

FTP Proxy Skiplist

Hosts and networks (FTP clients as well as FTP servers) listed here are excluded from the transparent interception of FTP traffic. However, to allow FTP traffic for these hosts and networks, select the **Allow FTP traffic for listed hosts/nets** checkbox. If you do not select this checkbox, you must define specific firewall rules for the hosts and networks listed here.

Note - The FTP proxy is unable to communicate with FTP servers that use Active Directory authentication. To enable FTP clients to connect to an FTP server of that kind, add the server to the FTP proxy skiplist.

FTP Servers

Select or add FTP servers or networks that are allowed to be accessed from your host-s/networks. You can create exceptions for some FTP clients or FTP servers to bypass this list on the **Exceptions** tab.

10 Email Protection

This chapter describes how to configure basic email protection features of Sophos UTM. The **Email Protection Statistics** page in WebAdmin shows an overview of today's top ten email senders, email recipients, spammers (by country), recognized malware, and concurrent connections. Each of the sections contains a **Details** link. Clicking the link redirects you to the respective reporting section of WebAdmin, where you can find more statistical information.

The following topics are included in this chapter:

- [SMTP](#)
- [SMTP Profiles](#)
- [POP3](#)
- [Encryption](#)
- [SPX Encryption](#)
- [Quarantine Report](#)
- [Mail Manager](#)

10.1 SMTP

The menu **Email Protection > SMTP** allows you to configure the SMTP proxy. SMTP is the abbreviation of **Simple Mail Transfer Protocol**, a protocol used to deliver emails to a mail server. Sophos UTM includes an application level gateway for SMTP, which can be used to protect your internal mail server from remote attacks and additionally provides powerful virus scanning and email filtering services.

Note - To use the SMTP proxy correctly, a valid name server (DNS) must be configured.

10.1.1 Global

On the **Email Protection > SMTP > Global** tab you can decide whether to use **Simple mode** for SMTP configuration or **Profile mode**.

1. Enable SMTP.

Click the toggle switch.

The toggle switch turns green and the **Configuration Mode** area becomes editable.

2. Select a configuration mode.

Simple mode: Use this mode if all domains share the same settings. However, you can still define exceptions based on domain name, email addresses, and hosts. There is no functionality restriction compared with **Profile mode**.

Profile mode: (Not available with BasicGuard subscription.) In this mode you can override or extend global settings e.g., of antispam and malware, for individual domains or domain groups by creating profiles for them in the menu **SMTP Profiles**. Settings made in the **SMTP** menu still apply to their assigned domains and, moreover, serve as defaults for profiles. In **Profile mode**, you will find additional notes with some of the settings regarding recommendations for profile mode and behavior of Sophos UTM.

3. Click **Apply**.

The selected mode will be enabled.

Listen Interfaces

By default, the SMTP proxy listens on all interfaces on ports 25, 465, and 587 for incoming email traffic.

To listen only on particular interfaces, select the option **Custom Interfaces** and add interfaces to the **Allowed Interfaces** box. Click **Apply**.

SPX Global Template

If SPX Encryption is enabled, this section is available. From the drop-down list, select the SPX template that will be globally used. If using SMTP simple mode, this template will be used for all SMTP users. If using SMTP profile mode, this template will be used for all SMTP profiles that do not have an individual SPX template selected.

Live Log

The **SMTP Live Log** logs the SMTP proxy activities, showing all incoming emails. Click the button to open the live log in a new window.

10.1.2 Routing

On the **Routing** tab you can configure domain and routing targets for the SMTP proxy and define how recipients are to be verified.

To configure the SMTP proxy routing, proceed as follows:

1. Enter your internal domain(s).

To enter your email domains, click the Plus icon in the **Domains** box.

In the appearing text box, enter the domain in the form `example.com` and click **Apply**. Repeat this step until all domains are listed. You can also use wildcards in different ways. For example `*.me.mycompany.de`, `*.mycompany.de`, `*.me*.mycompany.*e`, `**.*.mycompany.*`. It is not allowed to use only `'*'`.

In **Profile Mode**: Enter only domains that use global settings. All other domains should be listed in their respective profiles.

2. Specify the internal server.

From the drop-down list **Route by**, select the host to which emails for the domains listed above should be forwarded to. A typical target host would be the Microsoft Exchange Server on your local network. You can choose between different server types:

- **Static host list:** Select a host definition of the target route in the **Host list** box. Note that you can select several host definitions for basic failover purposes. If delivery to the first host fails, mail will be routed to the next one. However, the (static) order of hosts cannot be determined with the current version of Sophos UTM and is somewhat accidental. To randomize delivery to a group of hosts so as to additionally achieve basic load balancing capability, use the **DNS hostname** route type and specify a hostname that has multiple A records (an **A record** or **address record** maps a hostname to an IP address).
- **DNS hostname:** Specify the **fully qualified domain name** (FQDN) of your target route (e.g., `exchange.example.com`). Note that when you select a DNS name having multiple A records, mail to each server will be delivered randomly. In addition, if one server fails, all mail destined for it will automatically be routed to the remaining servers.
- **MX records:** You can also route mail to your domain(s) by means of MX record(s). If you select this route type, the mail transfer agent of Sophos UTM makes a DNS query requesting the MX record for the recipient's domain name, which is the portion of the email address following the "@" character. Make sure that the gateway is not the primary MX for the domain(s) specified above, since it will not deliver mail to itself.

3. Click **Apply**.

Your settings will be saved.

Recipient Verification

Verify Recipients: Here you can specify whether and how email recipients are to be verified.

- **With callout:** A request is sent to the server to verify the recipient.
- **In Active Directory:** A request is sent to the Active Directory server to verify the recipient. To be able to use Active Directory you must have an Active Directory server specified in **Definitions & Users > Authentication Services > Servers**. Enter a base DN into the **Alternative Base DN** field and select the Active Directory server.

Note - The use of Active Directory recipient verification may lead to bounced messages in case the server does not respond.

- **Off:** You can turn off recipient verification completely but this is not recommended for it will lead to higher spam traffic volume and dictionary attacks. Thus your quarantine is likely to be flooded with unsolicited messages.

Click **Apply** to save your settings.

10.1.3 Malware

The **Malware** tab contains various measures against emails that carry harmful and dangerous content such as viruses, worms, or other malware.

Note - Outgoing emails will be scanned if the checkbox **Scan relayed (outgoing) messages** on the **Relaying** tab is selected.

Scan During SMTP Transaction

Select the checkbox **Reject malware during SMTP transaction** if you want to have messages scanned already during SMTP transaction and to have them rejected in case they contain malware.

In **Profile mode**: This setting cannot be changed per profile. Messages with more than one recipient will skip this feature if one of the recipient profiles has **Malware Scanning** turned off. This means it is advisable to leave the regular malware setting below set to either **Blackhole** or **Quarantine**.

Click **Apply** to save your settings.

Malware Scanning

When using this option, emails will be scanned for unwanted content such as viruses, trojan horses, or suspicious file types. Messages containing malicious content will be blocked and stored in the email quarantine. Users can review and release their quarantined messages either through the Sophos [User Portal](#) or the daily [Quarantine Report](#). However, messages containing malicious content can only be released from the quarantine by an administrator in the [Mail Manager](#).

Malware: You can configure how to proceed with messages that contain malicious content. The following actions are available:

- **Off:** There are no malware scans.
- **Blackhole:** Incoming messages are accepted and instantly removed. Outgoing messages are never blackholed to avoid unintended mail loss. They are quarantined instead.
- **Quarantine:** Default. Messages are blocked and stored in the email quarantine. Quarantined messages can be reviewed either through the User Portal or the daily Quarantine Report. Note that messages containing malicious content can be released from the quarantine only by an administrator.

Sophos UTM features several malware engines for best security:

- **Single scan:** Default setting; provides maximum performance using the engine defined on the **System Settings > Scan Settings** tab.

- **Dual scan:** Provides maximum recognition rate by scanning the respective traffic twice using different virus scanners. Note that dual scan is not available with BasicGuard subscription.

Enable Sandstorm: Select this option to activate Sandstorm and send suspicious attachments for sandboxing to have enhanced protection and better visibility into the likely behaviors of malware.

Note - This feature is only available to licensed users of **Sophos Sandstorm**.

Quarantine unscannable and encrypted content: Quarantines emails whose content could not be scanned. Unscannable content may be encrypted or corrupt archives or oversized content, or there may be a technical reason like a scanner failure.

Click **Apply** to save your settings.

MIME Type Filter

The MIME type filter reads the MIME type of email contents. You can define how the different MIME types are to be dealt with.

- **Quarantine audio content:** When you select this checkbox audio content like e.g., mp3 or wav files, will be quarantined.
- **Quarantine video content:** When you select this checkbox video content like e.g., mpg or mov files, will be quarantined.
- **Quarantine executable content:** When you select this checkbox executable content like e.g., exe files, will be quarantined.

Additional types to quarantine: To add a MIME type other than above that shall be quarantined, click the Plus icon in the **Additional Types To Quarantine** box and enter the MIME type (e.g., image/gif). You can use wildcards (*) on the right side of the slash, e.g., application/*.

Whitelisted content types: You can use this box to allow generally certain MIME types. To add a MIME type click the Plus icon in the **Whitelisted content types** box and enter the MIME type. Click **Apply** to save your settings.

| MIME type | MIME type class |
|-----------|-----------------|
| audio/* | audio files |
| video/* | video files |

| MIME type | MIME type class |
|-----------------------------|-----------------|
| application/x-dosexec | applications |
| application/x-msdownload | |
| application/exe | |
| application/x-exe | |
| application/dos-exe | |
| vms/exe | |
| application/x-winexe | |
| application/msdos-windows | |
| application/x-msdos-program | |

Table 2: MIME types known by the MIME Type Filter

File Extension Filter

This feature filters and quarantines emails (with warnings) that contain certain types of files based on their extensions (e.g. executables). To add file extensions, click the Plus icon in the **Blocked file extensions** box and enter a critical file extension you want to be restricted, e.g., `exe` or `jar` (without the dot delimiter). Click **Apply** to save your settings.

Malware Check Footer

For each outgoing and incoming email, you can add and customize a special footer informing users that the email has been scanned for malicious content. However, the footer will only be added if the checkbox **Scan relayed (outgoing) messages** on the **Relaying** tab is selected. In addition, the malware check footer will not be appended to the email if the email is a reply (i.e. having **In-Reply-To** header) or if the content type of the email could not be determined. Select the checkbox **Use the Text Below as a Footer** and enter the footer text. Click **Apply** to save your settings.

Note - Adding a footer to messages already signed or encrypted by an email client (e.g., Microsoft's Outlook or Mozilla's Thunderbird) will break their signature and render them invalid. If you want to create digital signatures on the client side, disable the antivirus check footer option. However, if you do not wish to forgo the privacy and authentication of your email communication and still want to apply a general antivirus check footer, consider using the built-in [email encryption](#) feature of Sophos UTM. Email encryption done on the gateway means that the footer is added to the message prior to creating the digital signature, thus leaving the signature intact.

10.1.3.1 How to configure Sophos Sandstorm for Email Protection

For Sandstorm to inspect files transmitted with emails, turn on Sandstorm in the malware settings of email protection.

1. To configure Sophos Sandstorm for Email Protection, go to **Email Protection > SMTP > Malware**.

search SMTP

Dashboard

Management

Definitions & Users

Interfaces & Routing

Network Services

Network Protection

Web Protection

Email Protection

SMTP

SMTP Profiles

POP3

Encryption

SPX Encryption

Quarantine Report

Mail Manager

Global Routing **Malware** Antispam Data Protection Exceptions

Scan During SMTP Transaction

☒ Reject malware during SMTP transaction

When this option is messages during t contain malware. T

Malware scanning

Malware action: Quarantine

☒ Single scan (maximum performance)

☐ Dual scan (maximum security)

Malware scanning other malware. Sin Dual Scan uses tw security. You can s [Management > Sys](#)

If Quarantine unsc e-mails will be quai

2. In the **Malware scanning** section, select the following options and then click **Apply**:
 - Quarantine (from the **Malware action** drop-down menu)
 - Dual scan (maximum security)
 - Enable Sandstorm

Malware scanning

Malware action: Quarantine

☐ Single scan (maximum performance)

☒ Dual scan (maximum security)

☒ Enable Sandstorm

☐ Quarantine unscannable and encrypted content

Malware scanning checks every message for viruses, worms and other malware. **Single Scan** provides maximum performance. **Dual Scan** uses two different scan engines for an extra level of security. You can select your preferred single scan engine on the [Management > System Settings > Scan Settings](#) tab.

Enabling the **Sophos Sandstorm** feature will add an additional layer of protection by transferring suspicious email attachments to the Sophos sandbox environment in order to protect against advanced malicious attacks. This protection requires additional scanning time for files (approximately 5-10 minutes) while providing a maximum possible safety.

If Quarantine unscannable and encrypted content is selected, e-mails will be quarantined if they cannot be scanned due to encrypted archives, oversized content or scanner failure.

☒ Apply

You have now configured Sophos Sandstorm for Email Protection.

Where to see Sophos Sandstorm statistics

To see statistics about Sophos Sandstorm usage, click **Advanced Protection**.

This page shows the **Advanced Protection Statistics**, where you can see a summary of all Sophos Sandstorm activity.

| | Web | Email | Total |
|-----------------------|-----|-------|-------|
| Suspicious files | 0 | 0 | 0 |
| Excluded by policy | 0 | 0 | 0 |
| Awaiting result | 0 | 0 | 0 |
| Malicious | 0 | 0 | 0 |
| Clean | 0 | 0 | 0 |
| Sent for analysis | 0 | 0 | 0 |
| Average analysis time | - | - | - |

Showing events since: March 31, 2016 00:00

Advanced Threat Protection

No data is available for this report

Showing events since: March 28, 2016 10:26 [reset](#)

How to release files from Sophos Sandstorm

The **Sandbox Activity** page shows the suspicious files that are quarantined in the sandbox for further investigation. You can manually release these files.

1. To release a file, go to **Advanced Protection > Sophos Sandstorm > Sandbox Activity**.

Sophos Sandstorm

Overview **Sandbox Activity**

Release

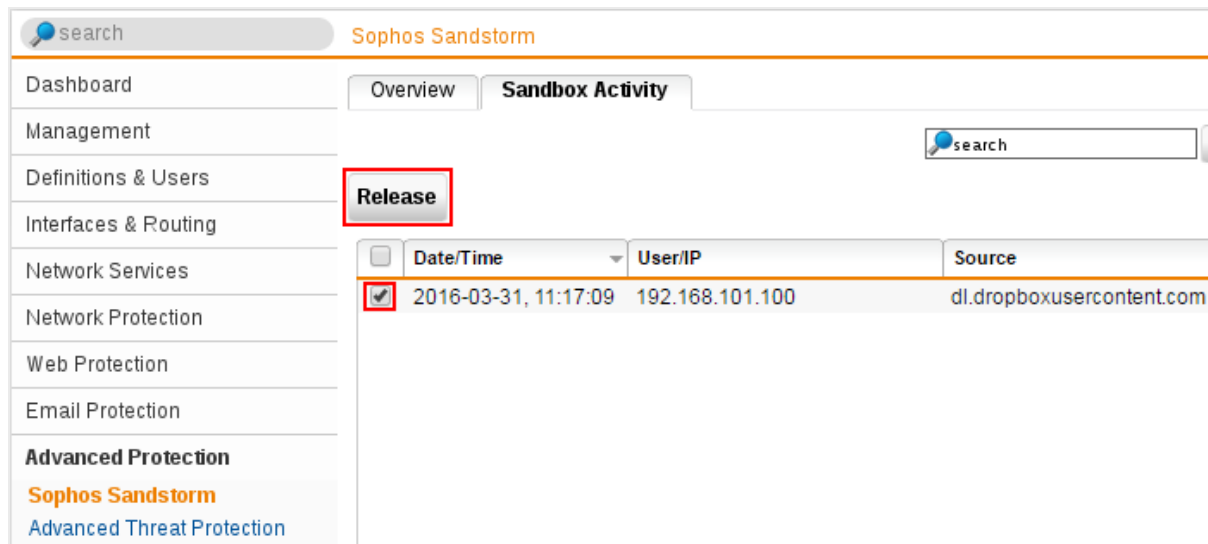
| <input type="checkbox"/> | Date/Time | User/IP |
|--------------------------|-----------|---------|
| | | |

Advanced Protection

Sophos Sandstorm

Advanced Threat Protection

2. To release a file, select the check box next to the file and then click **Release**.



10.1.4 Antispam

Sophos UTM can be configured to detect unsolicited spam emails and to identify spam transmissions from known or suspected spam purveyors. Configuration options located on the **Antispam** tab let you configure SMTP security features aimed at preventing your network from receiving unsolicited commercial emails.

Note - Outgoing emails will be scanned if the checkbox **Scan relayed (outgoing) messages** on the **Relaying** tab is selected.

Note - Some of the features on this tab are not available with BasicGuard subscription.

Spam Detection During SMTP Transaction

You have the possibility to reject spam already during SMTP transaction. Select one of the following settings for the option **Reject at SMTP Time**:

- **Off:** Spam detection is disabled and no email is going to be rejected for spam reasons.
- **Confirmed spam:** Only confirmed spam is rejected.
- **Spam:** All emails that the system regards as spam are rejected. Note that there may be a higher false positive rate because emails regarded as probable spam may be rejected such as newsletters.

Emails which are not rejected during SMTP transaction will be treated according to your settings in the **Spam Filter** section below.

In **Profile Mode**: This setting cannot be changed per profile. Messages with more than one recipient will skip this feature if one of the recipient profiles has spam scanning completely

turned off. This means it is advisable to leave the regular spam scanning setting set to either **Spam** or **Confirmed spam**.

RBLs (Realtime Blackhole Lists)

A **Realtime Blackhole List** (RBL) is a means by which an Internet site may publish a list of IP addresses linked to spamming.

Use recommended RBLs: Selecting this option causes the mail transfer agent to query external databases of known spam senders (so-called **Realtime Blackhole Lists**). Messages sent from a site included in one or more of such lists can easily be rejected. Several services of this type are available on the Internet. This function massively helps to reduce the amount of spam.

By default, the following RBLs are queried:

- Sophos SXL
- cbl.abuseat.org

Note - The list of RBLs queried by Sophos UTM is subject to change without notice. Sophos does not warrant for the contents of these databases.

You can also add further RBL sites to enhance the antispam capability of Sophos UTM. To do so, click the Plus icon in the **Extra RBL zones** box. In the appearing textbox, enter the RBL zone.

Click **Apply** to save your settings.

Spam Filter

Sophos UTM includes a heuristic check of emails for characteristics suggestive of spam. It uses SMTP envelope information and an internal database of heuristic tests and characteristics. This spam filtering option scores messages based on their content and SMTP envelope information. Higher scores indicate a higher spam probability.

With the following two options you can specify what to do with messages that have been assigned a certain spam score. This ensures that potential spam emails are treated differently by the gateway.

- **Spam action:** Here you can define what to do with messages that are classified as probable spam. Note that there may be false positives, such as newsletters, thus blackholing may lead to email loss.
- **Confirmed spam action:** Here you can define what to do with confirmed spam messages.

You can choose between different actions for those two types of spam:

- **Off:** No messages will be marked as spam or filtered out.
- **Warn:** No messages will be filtered out. Instead, for incoming messages, a spam flag will be added to the message's header and a spam marker will be added to the message's subject. Outgoing messages will be sent without action.
- **Quarantine:** Messages will be blocked and stored in the email quarantine. Quarantined messages can be reviewed either through the User Portal or the daily Quarantine Report.
- **Blackhole:** Incoming messages will be accepted and instantly removed. Outgoing messages will never be blackholed to avoid unintended mail loss. They will be quarantined instead.

Spam marker: With this option you can specify a spam marker, that is, a string that will be added to the message's subject line making it easy to identify spam messages quickly. By default, the string `*SPAM*` is used to tag messages as spam.

Sender Blacklist

The envelope sender of incoming SMTP sessions will be matched against the addresses on this blacklist. If the envelope sender is found on the blacklist the message will be rejected during SMTP time. Settings in the **Reject at SMTP time** field do not affect this function. Mails blocked due to the personal sender blacklist (User Portal) will be quarantined. To add a new address pattern to the blacklist click the Plus icon in the **Blacklisted Address Patterns** box, enter (a part of) an address, and click **Apply**. You can use an asterisk (*) as a wildcard, e.g., `*@abbeybnknational.com`. A wildcard does not work in the domain or TLD part of an address.

Tip - End-users can create their personal blacklist and whitelist in the User Portal.

Expression Filter

The expression filter scans messages' content passing through the SMTP proxy for specific expressions. Suspicious emails will be blocked. Expressions can be entered as **Perl Compatible Regular Expressions** (with max. 128 characters). Simple strings such as "online dating" are interpreted in a case-insensitive manner. Click **Apply** to save your settings.

Cross Reference - For detailed information on using regular expressions in the expression filter, see the [Sophos Knowledge Base](#).

Advanced Antispam Features

This area gathers various other advanced options increasing the antispam capability of Sophos UTM.

Reject invalid HELO/missing RDNS: Select this option if you want to reject hosts that send invalid HELO entries or lack RDNS entries. If you want to exempt hosts from this check, please refer to the **Exceptions** tab.

Do strict RDNS checks: Select this option if you want to additionally reject mail from hosts with invalid RDNS records. An RDNS record is invalid if the found hostname does not resolve back to the original IP address.

Use greylisting: Greylisting basically means the temporary rejection of emails for a certain amount of time. Typically, a mail server using greylisting will record the following pieces of information for all incoming messages:

- The sender address
- The IP address of the host the message is sent from
- The recipient address
- The message subject

This data set is checked against the SMTP proxy's internal database; if the data set has not been seen before, a record is created in the database along with a special time stamp describing it. This data set causes the email to be rejected for a period of five minutes. After that time the data set is known to the proxy and the message will be accepted when it is sent again. Note that the data set will expire after 30 days if it is not updated within this period. Greylisting uses the fact that most senders of spam messages use software based on the "fire-and-forget" method: Try to deliver the mail and if it doesn't work, forget it! This means that senders of spam mail do not try to send emails again when there is a temporary failure, contrary to RFC-conform mail servers. The assumption is that since temporary failures are built into the RFC specifications for email delivery, a legitimate server will try again to send the email later, at which time the destination will accept it.

Use BATV: BATV is a draft of the IETF, facing the challenge to distinguish legitimate uses from unauthorized uses of email addresses. BATV provides a method to sign the envelope sender of outgoing mail by adding a simple shared key to encode a hash of the address and time-varying information as well as some random data proving that the email was really sent by you. It is basically used to reject bounce messages not sent by you. By using BATV, you can now check if bounces you receive are really caused by your initial email, and not from a spammer forging an email with your address. If a bounce returns and the email address is not signed according to BATV, the SMTP proxy will not accept the message. Note that the signature provided by BATV expires after seven days. To change the key (also known as **BATV secret**) that is used to encode the hash of an email's envelope MAIL FROM address, go to the **Email Protection > SMTP > Advanced** tab.

Note - Some mail transfer agents may reject a message whose envelope sender address was modified using BATV. In this case, you need to create an exception rule for the senders, recipients, or domains affected.

Perform SPF check: SPF (**Sender Policy Framework**) is a framework where domain owners can publish information about their outgoing email servers. Domains use public records to direct requests for different services (web, email, etc.) to the machines that perform those services. All domains already publish MX records for email related services to let others know what machines receive mail for the domain. SPF works by domains publishing some

sort of "reverse MX" records to tell the world what machines send mail from the domain. When receiving a message from a certain domain, the recipient can check those records to make sure that mail is coming from where it should be coming from.

Cross Reference - Further information is available at the [Sender Policy Framework](#) website.

As an additional antispam feature, the SMTP proxy tacitly checks each recipient address it receives with your backend mail server(s) before accepting mail for this address. Emails for invalid recipient addresses will not be accepted. In order for this function to work, your backend mail server(s) must reject mails for unknown recipients at the SMTP stage. The general rule is that if your backend server rejects a message, the SMTP proxy will reject it, too.

Note, however, that recipient verification is *not* done for trusted (authenticated) or relay hosts, because some user agents may encounter problems when recipients get rejected in the SMTP transaction. In the usual scenario (backend mail server rejects unknown recipients in the SMTP transaction), Sophos UTM will only generate bounces in the following cases:

- When a trusted or relay source sends a message to an undeliverable recipient.
- When the backend mail server has been down so that Sophos UTM was not able to verify the recipient.

However, Sophos UTM does not prevent your backend mail server(s) from sending non-delivery reports (NDRs) or bounces. In addition, Sophos UTM caches positive callout replies from the mail server for 24 hours, and negative ones for two hours.

10.1.5 Data Protection

On the **SMTP > Data Protection** tab, the Data Protection feature allows you to reduce accidental data loss from workstations by monitoring and restricting the transfer of files containing sensitive data. Accidental data loss is commonly caused by employees mishandling sensitive data. For example, a user sends a file containing sensitive data home via email (SMTP). Data Protection scans outgoing emails including subject line, message body and attachments for sensitive or confidential information. Based on the outcome, the email can be encrypted using SPX encryption, or the email can be rejected or sent.

To configure Data Protection, define the settings in the following sections. As long as no Sophos content control rule is selected, and no custom rule is defined, the feature is disabled.

Data Protection Policy

Scan within attachments: If selected, attachments will be scanned for sensitive data, additionally to the message itself. The SAVI engine, which is used for this scan, scans a large variety of files types dependent on the current database.

Action on rule match: Select how to handle an email if the policy is triggered:

Blackhole: An email that matches the policy will not be sent.

Send with SPX encryption: An email that triggers the policy will automatically be sent SPX encrypted (see **Email Protection > SPX Encryption** tab). If SMTP is used in Simple Mode, the SPX Template selected on the **SMTP > Global** tab will be used for SPX encryption. If SMTP is used in Profile Mode, the SPX template used depends on the SMTP profile the sender's domain is assigned to (see **SMTP Profiles** tab). If the sender's domain is not assigned to any profile, the default template selected on the **SMTP > Global** tab will be used.

Allow: An email that triggers the policy will be sent nevertheless.

On match, notify: Select one or more of the following recipients who should be notified in case the policy matches:

- **Sender:** The sender of the email that matched the policy.
- **Administrator:** The administrator which is configured.
- **Other:** If you select this option, you will need to enter an email address.

The notification email can be customized on the **Management > Customization > Email Messages** tab.

Click **Apply** to save your settings.

Sophos Content Control Lists Rules

A Content Control List (CCL) is a set of conditions that describe structured file content. CCLs help identifying confidential, malicious or inappropriate email content sent or received by your organization. A CCL may describe a single type of data (for example, a postal address or social security number), or a combination of data types (for example, a project name near the term "confidential"). Based on the policy and the selected Content Control Lists rule you can notify someone if a rule matches.

SophosLabs CCLs provide expert definitions for common financial and personally identifiable data types, for example, credit card numbers, social security numbers, postal addresses, or email addresses. Advanced techniques, such as checksums, are used in SophosLabs Content Control Lists to increase the accuracy of sensitive data detection.

Type: Select an entry from the drop-down list to reduce the number of displayed rules accordingly.

Region: Select an entry from the drop-down list to reduce the number of displayed rules accordingly.

Show selected only: If enabled, only selected rules will be displayed in the list.

Rules: Select the rules you want to use for the Data Protection feature. Hovering the cursor on an entry, a tool-tip with additional information concerning the rule appears.

Click **Apply** to save your settings.

Custom Rules

Custom expression: Enter expressions that you want to use for the Data Protection feature, in addition to the rules selected above. You can add regular expressions.

Cross Reference - For detailed information on using regular expressions here, see the [Sophos Knowledge Base](#).

Click **Apply** to save your settings.

10.1.6 Exceptions

On the **SMTP > Exceptions** tab you can define whitelist hosts, networks, senders, and recipients that can be excluded from antispam, malware, or other security checks.

Note - Since emails can have many recipients, and Sophos UTM implements inline scanning for the SMTP protocol, scanning of an email is skipped for all recipients if one of the email's recipients is listed in the **Recipients** box.

To create an exception, proceed as follows:

1. On the **Exceptions** tab, click **New Exception List**.

The **Add Exception List** dialog box opens.

2. Make the following settings:

Name: Enter a descriptive name for this exception.

Skip these checks: Select the security checks that should be skipped. For more information, see **Email Protection > SMTP > [Malware](#), [Antispam](#), and [Data Protection](#)**.

For these source hosts/networks: Select or add the source hosts/networks (i.e., the host or network messages originate from) that should skip the security checks defined by this exception rule. How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.

Note - No exception needs to be created for localhost because local messages will not be scanned by default.

When selecting this option, the **Hosts/Networks** box opens. You can add a host or network by either clicking the Plus icon or the Folder icon.

OR these sender addresses: Select the senders' email addresses that should skip the defined security checks.

When selecting this option, the **Senders** box opens. You can either enter a complete valid email address (e.g., `jdoe@example.com`) or all email addresses of a specific domain using an asterisk as wildcard (e.g., `*@example.com`).

Note - Use the **Senders** option with caution, as sender addresses can easily be forged.

OR these recipient addresses: Select the recipients' email addresses that should skip the defined security checks.

When selecting this option, the **Recipients** box opens. You can either enter a complete valid email address (e.g., `jdoe@example.com`) or all email addresses of a specific domain using an asterisk as wildcard (e.g., `*@example.com`).

Comment (optional): Add a description or other information.

3. Click **Save**.

The new exception appears on the **Exceptions** list.

To either edit or delete an exception, click the corresponding buttons.

10.1.7 Relaying

The SMTP proxy can be used as a mail relay. A mail relay is an SMTP server configured in such a way that it allows specific users, user groups, or hosts to relay (i.e., send) emails through it to domains that are not local.

Note - Some of the features on this tab are not available with BasicGuard subscription.

Upstream Host List

An upstream host is a host that forwards email to you, e.g., your ISP or external MX. If you get inbound email from static upstream hosts, it is necessary that you enter the hosts here. Otherwise spam protection will not work properly.

To add an upstream host either click the Plus icon or the Folder icon for drag-and-drop from the **Networks** object list. How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page. If you would like to only allow upstream hosts select the checkbox **Allow upstream/relay hosts only**. SMTP access will then be limited to the defined upstream hosts. Upstream hosts can authenticate to get relaying rights. Click **Apply** to save your settings.

Authenticated Relay

SMTP clients can authenticate to get relaying privileges. Select the checkbox **Allow authenticated relaying** and specify the users and user groups that should be able to use this feature. How to add users is explained on the **Definitions & Users > Users & Groups > Users** page. Click **Apply** to save your settings.

Note - If the checkbox **Allow upstream/relay hosts only** is enabled then **Authenticated Relay** does only work when the sending host is configured as upstream/relay host.

Host-based Relay

Mail relaying can also be enabled host-based. If your local mail server or mail clients should be able to use the SMTP proxy as a mail relay, you need to add the networks and hosts which should be able to send mail through the relay to the **Allowed hosts/networks** box. The networks and hosts listed are allowed to send messages to any addresses. How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.

Caution - It is extremely important not to select **Any** in the **Allowed hosts/networks** box, because this would result in an open relay, allowing anyone on the Internet to send messages through the SMTP proxy. Spammers will quickly recognize this, leading to massive email traffic. In the worst case, you will be listed on 3rd party spammer blacklists. In most configurations, the only hosts that should be allowed to relay mail are the mail servers in your network.

Click **Apply** to save your settings.

Host/Network Blacklist

Here you can define hosts and networks that shall be blocked by the SMTP proxy. Click **Apply** to save your settings.

Content Scan for Relayed Messages

When this option is enabled, also messages sent by either authenticated or host-based relays will be scanned for malicious content. If there are many outgoing mails, turning this option off can improve your performance. Click **Apply** to save your settings.

Note that your global malware and antispam settings also apply to outgoing messages.

10.1.8 Advanced

On the **SMTP > Advanced** tab you can configure additional security options of the SMTP proxy such as smarthost settings or transparent mode skiplist, among others.

Header Modifications

SMTP header content of emails passing through Sophos UTM can be changed and/or deleted in **Header Modifications**.

Add/delete a header:

1. Click on the Plus icon.
The **Add Header Modification rule** dialog opens.
2. Select the requested **Operation**.

3. Enter the **Header name** you want to change/delete.
1-255 ASCII characters are allowed.
4. If you add a header, enter the **Value** the new header should have.
0-255 characters are allowed.
5. On demand add a **Comment**.
6. Click **Save**.
7. Click **Apply**.
Your settings will be saved.

To edit or delete a header rule click on the concerning icons next to the rule.

Transparent Mode

In transparent mode, the SMTP proxy intercepts email traffic transparently.

To enable transparent mode for SMTP, select the checkbox, select one or more ports to listen for SMTP traffic, and click **Apply**.

Additionally, you can add hosts and networks to the **Skip Transparent Mode Hosts/Nets** box that should not be subject to the transparent interception of SMTP traffic. To still allow SMTP traffic for these hosts and networks, select the **Allow SMTP traffic for listed host-s/nets** checkbox. If you do not select this checkbox, you must define specific firewall rules for the hosts and networks listed here to allow SMTP traffic for them. Click **Apply** to save your settings.

TLS Settings

TLS certificate: Select a certificate from the drop-down list which will be used to negotiate TLS encryption with all remote hosts supporting it. You can create or upload certificates on the **Site-to-site VPN > Certificate Management > Certificates** tab.

TLS version: Select a TLS version to accept for SMTP connections. We recommend to use only the latest version for security reasons.

Require TLS negotiation host/nets: Add or select hosts or nets here which always require TLS encryption for email communication. Sophos UTM will then hold back emails if TLS encryption is not available for those hosts/nets for some reason, that means messages will stay in the mail queue until TLS becomes available again. In case TLS is not available within a reasonable period of time, sending attempts will be stopped and users will get a notification that their email could not be sent.

Require TLS negotiation sender domains: If you want to enforce TLS encryption for incoming emails for certain domains, enter those domains here. Emails sent from those domains without TLS will be rejected immediately.

Skip TLS negotiation host/nets: If a particular host or network should encounter problems with TLS encryption, you can enter it in the box and select the appropriate TLS certificate

from the drop-down menu. This will cause Sophos UTM to skip TLS negotiation for this host or network. Click **Apply** to save your settings.

DomainKeys Identified Mail (DKIM)

DKIM is a method to cryptographically sign outgoing messages. To use DKIM signing, enter your private RSA key (512-2048 bits) and the corresponding key selector into the respective fields and add the domains you want to sign emails for to the **DKIM Domains** box. Click **Apply** to save your settings.

Confidentiality Footer

For each outgoing email, you can add and customize a confidentiality footer informing users, for example, that the email may contain confidential or privileged information. However, the confidentiality footer will not be appended to the email if the email is a reply (i.e. having an **In-Reply-To** header) or if the content type of the email could not be determined.

Note - Adding a footer to messages already signed or encrypted by an email client (e.g., Microsoft's Outlook or Mozilla's Thunderbird) will break their signature and render them invalid. If you want to create digital signatures on the client side, disable the antivirus check footer option. However, if you do not wish to forgo the privacy and authentication of your email communication and still want to apply a general antivirus check footer, consider using the built-in [email encryption](#) feature of Sophos UTM. Email encryption done on the gateway means that the footer is added to the message prior to creating the digital signature, thus leaving the signature intact.

Advanced Settings

Here you can configure the SMTP hostname and the postmaster address, among other things.

SMTP hostname: Setting the SMTP hostname will cause the proxy to use the specified name in HELO and SMTP banner messages. By default, the normal system hostname is selected.

Postmaster address: Specify the email address of the postmaster of Sophos UTM to whom messages are to be forwarded that are sent in the form of `postmaster@[192.168.16.8]`, where the IP literal address is one of the IP addresses of Sophos UTM. Accepting such messages is an RFC requirement.

BATV secret: Here you can change the automatically generated BATV secret used by the SMTP proxy. The BATV secret is a shared key used to sign an email's envelope `MailFrom` address, thus enabling detection of invalid bounce addresses. If you are using several MXs for your domains, you can change the BATV secret to be the same on all systems.

Max message size: The maximum message size that is accepted by the proxy. This setting applies to both incoming and outgoing emails. If your backend server has a limitation with

regard to message sizes, you should set the same or a lower value here. Default is 50 megabytes.

Note - The maximum message size limit is 250 megabytes.

Max connections: The maximum number of concurrent connections the proxy allows. Default is 20.

Max connections/host: The maximum number of connections per host the proxy allows. Default is 10.

Note - If the value is 0 the connection number per host is unlimited.

Max mails/connection: The maximum number of mails per connection the proxy allows. Default is 1000.

Max rcpt/mail: The maximum number of recipients per mail the proxy allows. Default is 100.

Footers mode: Here you can define how footers will be added to mails. **MIME part** will add the footer as extra MIME part. Existing part encodings are not changed and national language characters are preserved. The other method is **Inline** which means that the footer is separated from the main mail by the -- separator. With this mode you can choose whether the footer should be Unicode (UTF-8) converted or not. Unicode conversion upgrades the message to preserve national language characters in the footer.

Smarthost Settings

A smarthost is a type of mail relay server which allows an SMTP server to route mail to an upstream mail server rather than directly to the recipient's server. Often this smarthost requires authentication from the sender to verify that the sender has privileges to have mail forwarded through the smarthost.

Use a smarthost: If you want to use a smarthost to send mail, select the checkbox. In that case, the proxy will never deliver mail itself, but rather send anything to the smarthost.

- **Smarthost:** Select or add a smarthost object. How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.
- **Smarthost port:** The default port for the smarthost connection is 25. You can change it if required.
- **This smarthost requires authentication:** Select this checkbox if the smarthost requires authentication. Both **Plain** and **Login** authentication types are supported. Enter a username and password into the respective fields.

10.2 SMTP Profiles

The SMTP proxy of Sophos UTM lets you create alternative SMTP profiles, which can then be associated with different domains. That way you can specify domains that should use a

different profile other than the default profile configured in **Email Protection > SMTP**. The order of the functions, structured as tabs, reflects how each step gets processed one after the other during SMTP time.

To create an SMTP profile, proceed as follows:

1. Enable the SMTP profile mode.

On the **Email Protection > SMTP > Global** tab select **Profile Mode** and click **Apply**.

The SMTP profiles creation in the **Email Protection > SMTP Profiles** menu is enabled.

2. On the **SMTP Profiles** tab, click **New Profile**.

A dialog box opens.

3. Enter a descriptive name for the profile.

4. Add one or more domains.

Add one or more domains to the **Domains** box.

Settings of this profile will be applied for those domains.

5. Make the following settings:

You only need to make settings for functions you want to use. For each of the following functions you can decide whether to use individual settings defined here or global settings defined under **Email Protection > SMTP**. By default, the global settings option is selected. The individual settings for each function are described below.

Note - Encrypted emails whose sender address includes a domain name configured here cannot be decrypted when using the email encryption/decryption engine of Sophos UTM. Therefore, no profile should be added for external email domains.

All settings that you can define here can also be set globally in **Email Protection > SMTP**. Therefore only a list of settings and the differences from the global settings are given here, along with cross-references to the respective global setting where detailed information can be found.

The following settings can be made:

- **Routing:** On the **Routing** tab you can configure domain and routing targets for the SMTP proxy and define how recipients shall be verified.
 - Static Host List
 - DNS Hostname
 - MX Records

For detailed information please refer to **Email Protection > SMTP > Routing**.

- **Recipient Verification**

Verify Recipients: Here you can specify whether and how email recipients are to be verified.

- **With callout:** A request is sent to the server to verify the recipient.
- **In Active Directory:** A request is sent to the Active Directory server to verify the recipient. To be able to use Active Directory you must have an Active Directory server specified in **Definitions & Users > Authentication Services > Servers**. Enter a base DN into the **Alternative Base DN** field and select the Active Directory server.

Note - The use of Active Directory recipient verification may lead to bounced messages in case the server does not respond.

- **Off:** You can turn off recipient verification completely but this is not recommended for it will lead to higher spam traffic volume and dictionary attacks. Thus your quarantine is likely to be flooded with unsolicited messages.

For detailed information please refer to **Email Protection > SMTP > Routing**.

- **Sophos UTM RBLs:** Here you can block IP addresses linked to spamming.
 - Use recommended RBLs

For detailed information please refer to **Email Protection > SMTP > Antispam**.

- **Extra RBLs:** You can add further RBL sites to enhance the antispam capability of Sophos UTM. For detailed information please refer to **Email Protection > SMTP > Antispam**. Note that, as a third option, you can add the global settings to your individual settings here.
- **BATV/RDNS/HELO/SPF/Greylisting:** This tab gathers various other advanced options increasing the antispam capability of Sophos UTM.
 - Reject invalid HELO/missing RDNS
 - Use greylisting
 - Use BATV
 - Perform SPF check

For detailed information please refer to **Email Protection > SMTP > Antispam**.

- **Malware Scanning:** You can configure how to proceed with messages that contain malicious content. The following actions are available:
 - Off
 - Quarantine
 - Blackhole

You can choose between the following malware scan options:

- **Single scan:** Default setting; provides maximum performance using the engine defined on the **System Settings > Scan Settings** tab.
- **Dual scan:** Provides maximum recognition rate by scanning the respective traffic twice using different virus scanners. Note that dual scan is not available with BasicGuard subscription.

Quarantine unscannable and encrypted content: Quarantines emails whose content could not be scanned. Unscannable content may be encrypted or corrupt archives or oversized content, or there may be a technical reason like a scanner failure.

For detailed information please refer to **Email Protection > SMTP > Malware**.

- **Antispam Scanning:** Here you can decide how to deal with unsolicited commercial emails. Both for spam and confirmed spam you can choose between the following actions:
 - Off
 - Warn
 - Quarantine
 - Blackhole

For detailed information please refer to **Email Protection > SMTP > Antispam**.

- **Sender Blacklist:** The envelope sender of incoming SMTP sessions will be matched against the addresses on this blacklist. If the envelope sender is found on the blacklist the message will be blackholed. For detailed information please refer to **Email Protection > SMTP > Antispam**. Note that, as a third option, you can add the global settings to your individual settings here.
- **MIME Audio/Video/Executables blocking:** The MIME type filter reads the MIME type of email contents. You can select which content types you would like to quarantine:
 - Audio content
 - Video content
 - Executable content

For detailed information please refer to **Email Protection > SMTP > Malware**.

- **MIME Type Blacklist:** Here you can add additional MIME types to quarantine. For detailed information please refer to **Email Protection > SMTP > Malware**. Note that, as a third option, you can add the global settings to your individual settings here.
- **MIME Type Whitelist:** Here you can add MIME types not to quarantine. For detailed information please refer to **Email Protection > SMTP > Malware**. Note that, as a third option, you can add the global settings to your individual settings here.

- **Blocked File Extensions:** Using the **File extension filter** you can quarantine emails (with warnings) that contain certain types of files based on their extensions (e.g., executables). For detailed information please refer to **Email Protection > SMTP > [Malware](#)**. Note that, as a third option, you can add the global settings to your individual settings here.
- **Blocked Expressions:** The expression filter scans messages' content passing through the SMTP proxy for specific expressions. Suspicious emails will be blocked. For detailed information please refer to **Email Protection > SMTP > [Anti-spam](#)**. Note that, as a third option, you can add the global settings to your individual settings here.
- **Confidentiality Footer:** For each outgoing email, you can add and customize a confidentiality footer informing users, for example, that the email may contain confidential or privileged information. However, the confidentiality footer will not be appended to the email if the email is a reply (i.e. having an **In-Reply-To** header) or if the content type of the email could not be determined. Note that the footer is appended depending on the sender domain. To use a footer, select the checkbox and enter the footer text.
- **SPX Template Selection:** The SPX template is used for SPX Encryption. It defines how encrypted emails will be sent to the recipients. For detailed information please refer to **Email Protection > SPX Encryption > [SPX Templates](#)**.
- **Data Protection Configuration:** Here you can add attachments to the scan list, set notifications and select items from the **SophosLabs Content Control List**.

For detailed information please refer to **SMTP > [Data Protection](#)**.

6. Click **Apply**.

Your settings will be saved. The new profile appears on the **SMTP Profiles** list.

Note - When you select **Use global settings** for a topic and click **Apply**, the icon of the function changes to the global settings icon. By this, you can easily get an overview on which functions global settings or individual settings are applied.

To either disable, rename or delete a profile click the corresponding buttons at the top below the profile drop-down list.

10.3 POP3

The menu **Email Protection > POP3** lets you configure the POP3 proxy for incoming emails. The **Post Office Protocol 3** (POP3) is an application-layer Internet standard protocol that allows the retrieval of emails from a remote mail server. The POP3 proxy works transparently, meaning that all POP3 requests coming from the internal network on port 110 (and 995 if scanning of TLS encrypted traffic is enabled) are intercepted and redirected through the proxy invisible to the client. The advantage of this mode is that no additional administration or client-side configuration is necessary.

Note - It might be necessary to increase the server timeout settings in the email clients' configuration. Usual default settings of about one minute or less might be too low, especially when fetching large emails.

The POP3 protocol does not have server-side tracking of which mails have already been retrieved. Generally, a mail client retrieves a mail and deletes it on the server afterwards. However, if the client is configured to not delete mails, then server-side deleting is omitted and the client keeps track of which mail has already been fetched.

10.3.1 Global

On the **Email Protection > POP3 > Global** tab you can configure basic settings for the POP3 proxy.

To configure the POP3 proxy, proceed as follows:

1. Enable the POP3 proxy.

Click the toggle switch.

The toggle switch turns amber and the **POP3 Settings** area becomes editable.

2. Select the allowed networks.

Add or select the networks that should be allowed to proxy POP3 traffic. Typically, this is the internal network. How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.

Caution - It is extremely important not to select an **Any** network object, because this introduces a serious security risk and opens your appliance up to abuse from the Internet.

3. Click **Apply**.

Your settings will be saved.

The toggle switch turns green.

To cancel the configuration, click the amber colored toggle switch.

Live Log

The **POP3 Live Log** logs the POP3 proxy activities, showing all incoming emails. Click the button to open the live log in a new window.

Note - In the log, you can see the public source IP address (scrip) from all incoming emails. If an incoming mail was sent from a private IP address range, that IP address cannot be displayed and the log shows **srcip=0.0.0.0**. Typical private IP address ranges are for example 127.0.0.0/8, 10.0.0.0/8, 172.16.0.0/12 or 192.168.0.0/16.

10.3.2 Malware

The **Malware** tab contains various measures against emails that carry harmful and dangerous content such as viruses, worms, or other malware.

Malware Scanning

When using this option, emails will be scanned for unwanted content such as viruses, trojan horses, or suspicious file types. Messages containing malicious content will be blocked and stored in the email quarantine. Users can review and release their quarantined messages either through the Sophos [User Portal](#) or the daily [Quarantine Report](#). However, messages containing malicious content can only be released from the quarantine by an administrator in the [Mail Manager](#).

Sophos UTM features several malware engines for best security.

- **Single scan:** Default setting; provides maximum performance using the engine defined on the **System Settings > Scan Settings** tab.
- **Dual scan:** Provides maximum recognition rate by scanning the respective traffic twice using different virus scanners. Note that dual scan is not available with BasicGuard subscription.

Quarantine unscannable and encrypted content: Quarantines emails whose content could not be scanned. Unscannable content may be encrypted or corrupt archives or oversized content, or there may be a technical reason like a scanner failure.

Max scanning size: Specify the maximum size of files to be scanned by the antivirus engine (s). Files exceeding this size will be exempt from scanning.

Click **Apply** to save your settings.

File Extension Filter

This feature filters and quarantines emails (with warnings) that contain certain types of files based on their extensions (e.g., executables). To add file extensions, click the Plus icon in the **Blocked File Extensions** box and enter a critical file extension you want to be scanned, e.g., `exe` or `jar` (without the dot delimiter). Click **Apply** to save your settings.

Note - Archives cannot be scanned for forbidden file extensions. To protect your network from malware included in archives you might want to consider blocking the respective archive file extensions altogether.

10.3.3 Antispam

Sophos UTM can be configured to detect unsolicited spam emails and to identify spam transmissions from known or suspected spam purveyors. Configuration options located on

the **Antispam** tab let you configure POP3 security features aimed at preventing your network from receiving unsolicited commercial emails.

Spam Filter

Sophos UTM includes a heuristic check of incoming emails for characteristics suggestive of spam. It uses SMTP envelope information and an internal database of heuristic tests and characteristics. This spam filtering option scores messages based on their content and SMTP envelope information. Higher scores indicate a higher spam probability.

With the following two options you can specify what to do with messages that have been assigned a certain spam score. This ensures that potential spam emails are treated differently by the gateway.

- **Spam action:** Here you can define what to do with messages that are classified as probable spam.
- **Confirmed spam action:** Here you can define what to do with confirmed spam messages.

You can choose between different actions for those two types of spam:

- **Off:** No messages will be marked as spam or filtered out.
- **Warn:** No messages will be filtered out. Instead, a spam flag will be added to the message's header and a spam marker will be added to the message's subject.
- **Quarantine:** The message will be blocked and stored in the email quarantine. Quarantined messages can be reviewed either through the User Portal or the daily Quarantine Report.

Spam marker: With this option you can specify a spam marker, that is, a string that will be added to the message's subject line making it easy to identify spam messages quickly. By default, the string `*SPAM*` is used to tag messages as spam.

Expression Filter

The expression filter scans the message's subject and body for specific expressions. Emails that contain an expression listed here will be blocked. However, if the prefetch option is enabled on the **Email Protection > POP3 > Advanced** tab, the email will be sent to the quarantine. Expressions can be entered as **Perl Compatible Regular Expressions**. Simple strings such as "online dating" are interpreted in a case-insensitive manner.

Cross Reference - For detailed information on using regular expressions in the expression filter, see the [Sophos Knowledge Base](#).

Click **Apply** to save your settings.

Sender Blacklist

The envelope sender of incoming POP3 sessions will be matched against the addresses on this blacklist. If the envelope sender is found on the blacklist the message will be quarantined and marked as **Other** in the subject line.

To add a new address pattern to the blacklist click the Plus icon in the **Blacklisted Address Patterns** box, enter (a part of) an address, and click **Apply**. You can use an asterisk (*) as a wildcard, e.g., `*@abbeybnknational.com`. A wildcard does not work in the domain or TLD part of an address.

Tip - End-users can create their personal blacklist and whitelist in the User Portal.

10.3.4 Exceptions

On the **POP3 > Exceptions** tab you can define client hosts/networks and sender addresses that shall be excluded from various security features.

To create an exception, proceed as follows:

1. On the **Exceptions** tab, click **New Exception List**.

The **Add Exception List** dialog box opens.

2. Make the following settings:

Name: Enter a descriptive name for this exception.

Skip these checks: Select the security checks that should be skipped. For more information, see **Email Protection > POP3 > [Malware](#)** and **[Antispam](#)**.

For these client hosts/networks: Add or select the source hosts/networks (i.e., the hosts or networks messages originate from) that should skip the security checks. How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.

Note - No exception needs to be created for localhost because local messages will not be scanned by default.

When selecting this option, the **Client hosts/networks** dialog box opens. You can add a host or network by either clicking the plus symbol or the folder symbol.

OR these sender addresses: Select the senders' email addresses that should skip the defined security checks.

When selecting this option, the **Senders** box opens. You can either enter a complete valid email address (e.g., `jdoe@example.com`) or all email addresses of a specific domain using an asterisk as wildcard (e.g., `*@example.com`).

Note - Use the **Senders** option with caution, as sender addresses can easily be forged.

Comment (optional): Add a description or other information.

3. Click **Save**.

The new exception appears on the **Exceptions** list.

To either edit or delete an exception, click the corresponding buttons.

10.3.5 Advanced

On the **POP3 > Advanced** tab you can specify those hosts and networks that can skip the transparent mode of the POP3 proxy. In addition, it contains the POP3 proxy's prefetch option, which allows the prefetching of messages from a POP3 server and storing them in a database.

Transparent Mode Skiplist

Hosts and networks listed in the **Skip transparent mode hosts/nets** box will not be subject to the transparent interception of POP3 traffic. However, to allow POP3 traffic for these hosts and networks, select the **Allow POP3 traffic for listed hosts/nets** checkbox. If you do not select this checkbox, you must define specific firewall rules for the hosts and networks listed here.

POP3 Servers and Prefetch Settings

You can enter one or more POP3 servers here that are used in your network or by your end users, so that the servers are known to the proxy. Additionally, you can turn on prefetching.

To define a POP3 server, do the following:

1. Add the DNS name of the POP3 server(s).

In the **POP3 servers** box, click the Plus icon. In the **Add Server** dialog window, enter the DNS name and click **Save**.

A new entry with the entered DNS name and the suffix **Servers** is displayed in the box. Sophos UTM automatically creates a DNS group with the specified DNS name and associates it with the new POP3 server entry.

2. Specify the POP3 server's properties.

In the **POP3 servers** box, click the Edit icon in front of the POP3 server. The **Edit Server** dialog window opens. Make the following settings:

Name: If you want, modify the POP3 server's name.

Hosts: The box automatically contains a DNS group with the DNS name specified above. Add or select additional hosts or DNS groups. Make sure to add only such hosts or DNS groups that serve the same POP3 accounts. How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.

TLS certificate: Select a certificate from the drop-down list which will be used to negotiate TLS encryption with all remote hosts supporting it. You can create or upload certificates on the **Site-to-site VPN > Certificate Management > Certificates** tab.

Note - For TLS encryption to work, the **Scan TLS encrypted POP3 traffic** checkbox in the **TLS Settings** section has to be enabled. For POP3 servers not defined here or not having a TLS certificate, you can select a default TLS certificate in the **TLS Settings** section.

Comment (optional): Add a description or other information.

3. Click **Save**.

The POP3 server is defined.

If no POP3 server is specified and a mail gets caught by the proxy, the proxy replaces the mail with a notification to the recipient right away in the same connection stating that the mail has been quarantined. The quarantined mail can be viewed in **Mail Manager**, but is not associated to a server or account and therefore cannot be released in a later connection. Generally, releasing of emails from quarantine does only work for prefetched messages.

There are two scenarios:

- If POP3 server(s) are given and prefetching is disabled, the proxy keeps track which quarantined mails belong to which server/account. Thus, quarantined mail can be released when the client polls the mailbox next time. For this to work, the proxy has to safely identify which IP addresses belong to which server (by their FQDN which you have entered in your mail client).
- If POP3 server(s) are given and prefetching is enabled, the POP3 proxy periodically checks the POP3 server(s) for new messages. If a new message has arrived, it will be copied to the POP3 proxy, scanned and stored into a database on Sophos UTM. The message remains on the POP3 server. When a client tries to fetch new messages, it communicates with the POP3 proxy instead and only retrieves messages from this database.

A POP3 proxy supporting prefetching has a variety of benefits, among others:

- No timeout problems between client and proxy or vice versa.
- Delivery of messages is much faster because emails have been scanned in advance.
- Blocked messages can be released from the User Portal—they will then be included in the next fetch.

If a message was blocked because it contained malicious content or because it was identified as spam, it will not be delivered to the client. Instead, such a message will be sent to the quarantine. A message held in quarantine is stored in the **Mail Manager** section of the User Portal, from where it can be deleted or released.

Use prefetch mode: To enable prefetch mode, select the checkbox and add one or more POP3 servers to the **POP3 Servers** box.

Prefetch interval: Select the time interval at which the POP3 proxy contacts the POP3 server to prefetch messages.

Note - The interval at which mail clients are allowed to connect to the POP3 server may vary from server to server. The prefetch interval should therefore not be set to a shorter interval than allowed by the POP3 server, because otherwise the download of POP3 messages would fail as long as the access to the POP3 server is blocked. Note further that several mail clients may query the same POP3 account. Whenever messages were successfully fetched from a POP3 server, this will restart the timer until the server can be accessed for the next time. If for that reason the POP3 proxy cannot access a POP3 server four times in a row (default is every 15 minutes), the account password will be deleted from the proxy's mail database and no emails will be fetched until a mail client sends the password to the POP3 server again and successfully logs in.

Delete quarantined mails from server: When you select this option, quarantined messages will be deleted from the POP3 server immediately. This is useful to prevent that users get spam or virus messages when they connect to the POP3 server not via Sophos UTM, but for example via the POP3 server's web portal.

If the email client is configured to delete messages from the server after retrieving them, this information will be stored in the database, too. The next time the proxy is going to prefetch messages for this POP3 account, it will delete the messages from the server. This means, as long as no client fetches the messages from Sophos UTM *and* no delete command is configured, no message will be deleted from the POP3 server. Therefore, they can still be read, for example, via the web portal of the email provider.

Quarantined messages are deleted from the POP3 server in the following cases:

- Messages are manually deleted via the [Mail Manager](#).
- Messages are manually deleted by users via the [User Portal](#).
- The message was released (either through the [Quarantine Report](#) or the [User Portal](#)) and the user's email client is configured to delete messages upon delivery.
- The notification message has been deleted.
- After the storage period has expired (see section [Configuration](#) in chapter **Mail Manager**).

In prefetch mode however, spam messages in quarantine cannot be deleted from the POP3 server directly by means of a client command.

Note - The email client must successfully connect to the POP3 server at least once for the prefetch function to operate properly. This is because Sophos UTM needs to store the name of the POP3 server, the username, and the user's password in a database in order to fetch POP3 messages on behalf of this user. This, however, *cannot* be achieved by configuring POP3 account credentials in the Sophos User Portal. The POP3 account credentials in the User Portal are needed for prefetched messages to appear in this user's portal and daily Quarantine Report.

Note for fetchmail users: The `TOP` method is not supported to download emails from the mail server for security reasons—messages that are received through `TOP` cannot be scanned. It will work if you specify the `fetchall` option (`-a` on command line). For more information, see "RETR or TOP" in the **fetchmail manual**.

Preferred Charset

In this section you can select a charset different than UTF-8 that will be used for those mail headers, which have been in some way changed by Sophos UTM (e.g. BATV). This is useful if your users who use mail clients which do not understand UTF-8. Generally the default charset for mail headers works fine for every region. Therefore only change this setting if you are sure this is what you want. If in doubt keep the default **UTF-8**.

TLS Settings

Scan TLS encrypted POP3 traffic: If enabled, Sophos UTM will scan TLS encrypted POP3 traffic. For this to work, TLS certificates have to be defined for the POP3 servers accessed by the POP3 clients (see **POP3 Servers and Prefetch Settings** section above and **TLS certificate** checkbox below).

If disabled, and a POP3 client tries to access a POP3 server via TLS, the connection will not be established.

TLS certificate: Select a certificate from the drop-down list which will be used for TLS encryption with all POP3 clients supporting TLS and trying to access a POP3 server that either is not listed in the **POP3 servers** box above or does not have a matching TLS certificate associated. The selected certificate will be presented to the POP3 client. POP3 clients usually verify that the TLS certificate presented by the POP3 server matches the configured POP3 server name. For this reason, most POP3 clients will display a warning that the certificate's hostname does not match the expected configured POP3 server's name. However, users can dismiss the warning and connect nevertheless. If you want to avoid this warning, add all used POP3 servers to the **POP3 servers** box above and configure matching TLS certificates for each of them.

If no certificate is selected here, and a POP3 client tries to access a POP3 server via TLS that is not listed in the **POP3 servers** box or does not have a matching TLS certificate associated, the connection will not be established.

Tip - You can create or upload certificates on the **Site-to-site VPN > Certificate Management > Certificates** tab.

10.4 Encryption

Ever since email became the primary electronic communication medium for personal and business purposes, a legitimate concern over privacy and authentication has arisen. In general terms, the email format is transmitted in clear text, similar to a postcard which anyone could read. Moreover, as assimilating false identities is an easy process, it is important for the recipient to be able to tell if the sender is who they claim to be.

Solutions to these issues are typically accomplished with email encryption and digital certificates, where an email message is electronically signed and cryptographically encoded. This assures that the message recipient exclusively can open and view the contents of the email (privacy), verifying the identity of the sender (authentication). In other words, this process negates the idea of being sent an "e-postcard", and introduces a process much like registered or certified mail.

Modern cryptography has two methods to encrypt email: symmetric and asymmetric. Both have become standard methods and are utilized in several types of applications. Symmetric key cryptography refers to encryption methods in which both, the sender and receiver, share the same key.

On the other hand, asymmetric key cryptography (also known as public key cryptography) is a form of cryptography in which each user has a pair of cryptographic keys; a public key, which encrypts data, and a corresponding private or secret key for decryption. Whereas the public key is freely published, the private key will be securely kept by the user.

One drawback with symmetric encryption is that for a sender and recipient to communicate securely, they must agree upon a key and keep it secret between themselves. If they are in different physical locations, they must prevent the disclosure of the secret key during transmission. Therefore, the persistent problem with symmetric encryption is key distribution: how do I get the key to the recipient without someone intercepting it? Public key cryptography was invented to exactly address this problem. With public key cryptography, users can securely communicate over an insecure channel without having to agree upon a shared key beforehand.

The need for email encryption has produced a variety of public key cryptography standards, most notably S/MIME and OpenPGP, both of which are supported by Sophos UTM. S/MIME (**Secure Multipurpose Internet Mail Extensions**) is a standard for asymmetric encryption and the signing of emails encapsulated in MIME. It is typically used within a public key infrastructure (PKI) and is based on a hierarchical structure of digital certificates, requiring a trusted instance as Certificate Authority (CA). The CA issues a digital certificate by binding an identity to a pair of electronic keys; this can be seen as a digital counterpart to a traditional identity document such as a passport. Technically speaking, the CA issues a certificate bind-

ing a public key to a particular **Distinguished Name** in the X.500 standard, or to an **Alternative Name** such as an email address.

A digital certificate makes it possible to verify someone's claim that they have the right to use a given key. The idea is that if someone trusts a CA and can verify that a public key is signed by this CA, then one can also be assured that the public key in question really does belong to the purported owner.

OpenPGP (**Pretty Good Privacy**), on the other hand, uses asymmetric encryption typically employed in a **web of trust** (WOT). This means that public keys are digitally signed by other users who, by that act, endorse the association of that public key with the person.

Note - Although both standards offer similar services, S/MIME and OpenPGP have very different formats. This means that users of one protocol cannot communicate with the users of the other. Furthermore, authentication certificates also cannot be shared.

The entire email encryption is transparent to users, that is, no additional encryption software is required on the client side. Generally speaking, encryption requires having the destination party's certificate or public key on store. For incoming and outgoing messages, email encryption functions as follows:

- By default, outgoing messages from internal users will be scanned, automatically signed, and encrypted using the recipient's certificate (S/MIME) or public key (OpenPGP), provided the S/MIME certificate or OpenPGP public key of the recipient is existent on Sophos UTM.
- Encrypted incoming messages from external users whose S/MIME certificate or OpenPGP public key are known to Sophos UTM will automatically be decrypted and scanned for malicious content. To decrypt the message, the S/MIME key or OpenPGP private key of the internal user must be existent on Sophos UTM.
- Encrypted incoming messages from external users or for internal users unknown to Sophos UTM will be delivered, although they cannot be decrypted and therefore not scanned for viruses or spam. It is then the responsibility of the recipient (internal user) to ensure that the email does not contain any malware, for example, by using a personal firewall.
- Outgoing messages already encrypted on the client side will directly be sent to the recipient if the recipient's S/MIME certificate or OpenPGP public key are unknown. However, if the recipient's S/MIME certificate or OpenPGP public key are available, the message will be encrypted a second time. Note that pre-encrypted messages cannot be scanned for malicious content.
- Decryption is only possible for incoming emails, where "incoming" means that the domain name of the sender's email address must not be part of any SMTP profile. For example, to decrypt a message sent by `jdoe@example.com`, the domain `example.com` must *not* be configured in either the routing settings or any SMTP profile.

- A summary of the signing/encryption result is written into the subject line of each email. For example, an email that was correctly signed and encrypted with S/MIME, has '(S/MIME: Signed and encrypted)' appended to the subject line.

Note - Adding a footer to messages already signed or encrypted by an email client (e.g., Microsoft's Outlook or Mozilla's Thunderbird) will break their signature and render them invalid. If you want to create digital signatures on the client side, disable the antivirus check footer option. However, if you do not wish to forgo the privacy and authentication of your email communication and still want to apply a general antivirus check footer, consider using the built-in [email encryption](#) feature of Sophos UTM. Email encryption done on the gateway means that the footer is added to the message prior to creating the digital signature, thus leaving the signature intact.

10.4.1 Global

On the **Email Protection > Encryption > Global** tab you can configure the basic settings of the email encryption functionality.

Note - Encryption works only for SMTP, not for POP3.

Before you can use email encryption, you must first create a **Certificate Authority (CA)** consisting of a CA certificate and a CA key. The CA certificate can be downloaded and stored locally. In addition, it can be installed as an external CA (S/MIME Authority) in other units as illustrated in the diagram to enable transparent email encryption between two Sophos UTM units.

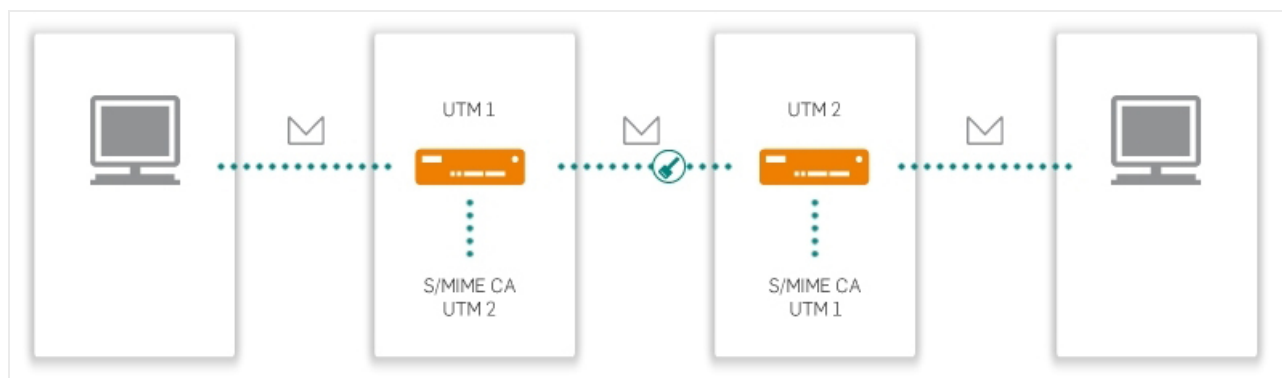


Figure 19 Encryption: Using Two Sophos UTM Units

To configure email encryption, proceed as follows:

1. On the **Global** tab, enable email encryption.

Click the toggle switch.

The toggle switch turns amber and the **Email Encryption Certificate Authority (CA)** area becomes editable.

2. Create a certificate authority (CA).

Fill out the form in the **Email Encryption Certificate Authority (CA)** area. By default, the form is filled out with the values of the **Management > System Settings > Organizational** tab.

3. Click **Save**.

The toggle switch turns green and the following certificates and keys are being created:

- S/MIME CA Certificate
- Open PGP Postmaster Key

Note that this may take several minutes to complete. If you do not see the fingerprints of the S/MIME CA certificate or the OpenPGP Postmaster key, click the **Reload** button in the upper right corner of WebAdmin. The certificate and the key can be downloaded and locally stored.

Use the **Reset Email Encryption System Now** button to reset all settings in the **Encryption** menu to the factory default configuration. This will delete the CA as well as all users.

10.4.2 Options

On the **Encryption > Options** tab you can define the default policy to be used within the public key cryptography framework of Sophos UTM.

Default Policy: Specify your default policy for emails in terms of cryptography. These settings can, however, be overwritten by customized settings.

The following actions are available:

- Sign outgoing email
- Encrypt outgoing email
- Verify incoming email
- Decrypt incoming email

Click **Apply** to save your settings.

Note - For encryption to work, the sender must be within the **Internal Users** list. Outgoing emails for recipients whose S/MIME certificate or OpenPGP public key are existent on the gateway will be encrypted by default. If you want to disable encryption for these recipients, delete their S/MIME certificates or OpenPGP public keys. If certificates or public keys are unknown to Sophos UTM, emails will be sent unencrypted.

Automatic Extraction of S/MIME Certificates

When this option is selected, S/MIME certificates will automatically be extracted from incoming emails provided the certificate that is appended to the email is signed by a trusted certificate authority, that is, a CA present on the unit as shown on the **Email Protection > Encryption > S/MIME Authorities** tab. In addition, the time and date of Sophos UTM must be within the certificate's validity period for the automatic extraction of certificates to work.

Once a certificate has been successfully extracted, it will appear on the **Email Protection > Encryption > S/MIME Certificates** tab. Note that this may take five to ten minutes to complete. Click **Apply** to save your settings.

OpenPGP Keyserver

OpenPGP keyserver host public PGP keys. You can add an OpenPGP keyserver here. For signed incoming emails and for outgoing emails that shall be encrypted, Sophos UTM will try to retrieve the public key from the given server if the respective public key is yet unknown to Sophos UTM.

10.4.3 Internal Users

For signing and decrypting messages, either the S/MIME key or the OpenPGP private key must be existent on Sophos UTM. On the **Encryption > Internal Users** tab you can create both an individual S/MIME key/certificate and/or OpenPGP key pair for those users for whom email encryption should be enabled.

Important - Starting with version 9.508, the UTM uses new algorithms and engines for S/MIME. Find detailed information on the changes in the [Sophos Knowledge Base](#).

To create an internal email user, proceed as follows:

1. On the **Internal Users** tab, click **New Email Encryption User**.

The **Add User** dialog box opens.

2. Make the following settings:

Email address: Enter the email address of the user.

Full name: Enter the name of the user.

Signing: The following signing options are available:

- Use default policy: The policy from the **Options** tab will be used.
- On: Emails will be signed using the certificate of the user.
- Off: Emails will not be signed.

Encryption: The following encryption options are available:

- Use default policy: The policy from the **Options** tab will be used.
- On: Emails will be encrypted using the public key of the recipient.
- Off: Emails will not be encrypted.

Verifying: The following verification options are available:

- Use default policy: The policy from the **Options** tab will be used.
- On: Emails will be verified using the public key of the sender.

- Off: Emails will not be verified.

Decryption: The following decryption options are available:

- Use default policy: The policy from the **Options** tab will be used.
- On: Emails will be decrypted using the certificate of the user.
- Off: Emails will not be decrypted.

S/MIME: Select whether you want to have the S/MIME certificate and key automatically generated by the system or whether you want to upload a certificate in `PKCS#12` format. When uploading the certificate, you must know the passphrase the `PKCS#12` file was protected with. Note that the `PKCS#12` file must both contain the S/MIME key and certificate. Any CA certificate that may be included in this `PKCS#12` file will be ignored.

OpenPGP: Select whether you want to have the OpenPGP key pair consisting of a private key and the public key automatically generated by the system or whether you want to upload the key pair in `ASCII` format. Note that both private and public key must be included in one single file and that the file must not contain a passphrase.

Note - If you configure both S/MIME and OpenPGP for an individual user, emails sent by this user will be signed using S/MIME.

Comment (optional): Add a description or other information.

3. Click **Save**.

The new user appears on the **Internal Users** list.

Use the toggle switch to turn the usage of one or both keys off without having to delete the key(s).

Note - The files offered for download contain the S/MIME certificate. The OpenPGP certificate offers the public key. For security reasons it is not possible to download the OpenPGP private key or the S/MIME key.

10.4.4 S/MIME Authorities

On the **Encryption > S/MIME Authorities** tab you can manage certificate authorities (CA) for email encryption. In addition to pre-installed CAs, you can upload certificates of external certificate authorities. All incoming emails whose certificates are signed by one of the CAs listed and enabled here will be trusted automatically.

Note - If you have selected the **Enable automatic S/MIME certificate extraction** option on the **Email Protection > Encryption > Options** tab, certificates signed by a CA listed and enabled here will be extracted automatically and placed on the **Email Protection > Encryption > S/MIME Certificates** tab.

Local S/MIME Authorities

You can import the certificate (i.e., the public key) of an external certification authority you trust. That way, all incoming emails whose certificates were signed by this CA will be trusted, too. For example, you can install the CA of another Sophos UTM unit, thus enabling transparent email encryption between two Sophos UTM units.

To import an external S/MIME authority certificate, proceed as follows:

1. Click the Folder icon next to the **Upload local authority** field.

The **Upload File** dialog window opens.

2. Select the certificate to upload.

Click **Browse** and select the CA certificate to upload. The following certificate extensions are supported:

- `cer`, `crt`, or `der`: These certificate types are binary and basically the same.
- `pem`: Base64 encoded DER certificates.

3. Upload the certificate.

Click **Start Upload** to upload the selected CA certificate.

The certificate will be installed and displayed in the **Local S/MIME Authorities** area.

You can delete or disable an S/MIME authority certificate if you do not regard the CA as trustworthy. To revoke an S/MIME authority's certificate click its toggle switch. The toggle switch turns gray and the SMTP proxy will no longer accept mails signed by this S/MIME authority. To delete a certificate, click the Empty icon.

Tip - Click the blue Info icon to see the fingerprint of a CA.

Global S/MIME Authorities

The list of S/MIME CAs shown here is identical to the S/MIME CAs pre-installed by Mozilla Firefox. This facilitates email encryption between your company and your communication partners who maintain a PKI based on those CAs. However, you can disable an S/MIME authority certificate if you do not regard the CA as trustworthy. To revoke an S/MIME authority's certificate click its toggle switch. The toggle switch turns gray and the SMTP proxy will no longer accept mails signed by this S/MIME authority.

The following links point to URLs of notable root certificates:

- [Trustcenter](#)
- [S-TRUST](#)
- [Thawte](#)
- [VeriSign](#)
- [GeoTrust](#)

10.4.5 S/MIME Certificates

On the **Encryption > S/MIME Certificates** tab, you can import external S/MIME certificates. Emails for recipients whose certificates are listed here will automatically be encrypted. If you want to disable encryption for a particular recipient, simply delete its certificate from the list.

Note - If for a recipient an OpenPGP public key is imported additionally to an S/MIME certificate, emails will be encrypted using OpenPGP.

Note - When you upload an S/MIME certificate manually, messages from the email address associated with the certificate are always trusted, although no CA certificate is available that may identify the person noted in the certificate. That is to say, manually uploading an S/MIME certificate labels the source as trusted.

To import an external S/MIME certificate, proceed as follows:

1. On the **S/MIME Certificates** tab, click **New External S/MIME Certificate**.

The **Add S/MIME Certificate** dialog box opens.

2. Make the following settings:

Format: Select the format of the certificate. You can choose between the following formats:

- `der` (binary)
- `pem` (ASCII)

Note - Microsoft Windows operating systems use the `cer` file extension for both `der` and `pem` formats. You must therefore determine in advance whether the certificate you are about to upload is in binary or ASCII format. Then select the format from the drop-down list accordingly.

Certificate: Click the Folder icon to open the **Upload File** dialog window. Select the file and click **Start Upload**.

Comment (optional): Add a description or other information.

3. Click **Save**.

The new S/MIME certificate appears on the **S/MIME Certificates** list.

10.4.6 OpenPGP Public Keys

On the **Encryption > OpenPGP Public Keys** tab you can install OpenPGP public keys. Files must be provided in `.asc` format. The upload of entire keyrings is supported.

Note - Do not upload a keyring that is protected by a passphrase.

All public keys included in the keyring will be imported and can be used to encrypt messages. Emails for recipients whose public keys are listed here will automatically be encrypted. If you want to disable encryption for a particular recipient, simply delete its public key from the list.

Note - Only one email address per key is supported. If there are multiple addresses attached to a key, only the "first" one will be used (the order may depend on how OpenPGP sorts addresses). If the key you want to import has several addresses attached, you must remove the unneeded addresses with OpenPGP or other tools prior to importing the key into Sophos UTM.

To import an OpenPGP public key, proceed as follows:

1. On the **OpenPGP Public Keys** tab, click **New Public OpenPGP Key(s)**.

The **Add Keyring File** dialog box opens.

2. Upload the OpenPGP key(s).

Click the Folder icon to open the **Upload File** dialog window. Select the file and click **Start Upload**.

The key or, if the file contains several keys, a list of keys is displayed.

3. Select one or more keys and click **Import Selected Keys**.

The key(s) appear(s) on the **OpenPGP Public Keys** list.

Note - An email address must be attached to the key. Otherwise the installation will fail.

10.5 SPX Encryption

SPX (Secure PDF Exchange) encryption is a next-generation version of email encryption. It is clientless and extremely easy to set up and customize in any environment. Using SPX encryption, unencrypted email messages and any attachments sent to Sophos UTM are converted to a PDF document, which is then encrypted with a password. You can configure Sophos UTM to allow senders to select passwords for the recipients, or the server can generate the password for the recipient and store it for that recipient, or the server can generate one-time passwords for recipients.

When SPX encryption is enabled, there are two ways how emails can be SPX-encrypted:

- You can download a Microsoft Outlook plugin (see chapter **Email Protection > SPX Encryption > Sophos Outlook Add-in**). After installation, an **Encrypt** button is displayed in the Microsoft Outlook user interface. To encrypt a single message, users need to activate the **Encrypt** button and then write and send the message. If something goes wrong, for example the sender does not enter a valid password, a notification will be sent, if configured.

Note - If you are not using Outlook you can still trigger SPX encryption by setting the header field X-Sophos-SPX-Encrypt to **yes**.

- In the Data Protection feature, you can specify to automatically SPX-encrypt emails containing sensitive data (see **SMTP > Data Protection** tab).

At the email recipient's side, the recipient can decrypt the message by means of Adobe Reader with the password that was used to encrypt the PDF. SPX-encrypted email messages are accessible on all popular smartphone platforms that have native or third-party PDF file support, including Blackberry and Windows Mobile devices.

Using the SPX reply portal, the recipient is able to answer the email in a secure way. It is possible to set expiry times for secure reply and unused passwords (see chapter **Email Protection > SPX Encryption > SPX Configuration**).

SPX encryption can be activated in both SMTP configuration modes, Simple mode and Profile mode. In Simple mode, a global SPX template can be chosen that defines the layout of the PDF file, password settings, recipient instructions, and SPX reply portal settings. In Profile mode, you can define different SPX templates for different SMTP profiles. So, if you are managing various customer domains, you can assign customized SPX templates containing for example different company logos and texts.

Cross Reference - Find information about configuring email encryption with SPX on Sophos UTM in the [Sophos Knowledge Base](#).

10.5.1 SPX Configuration

On the **SPX Encryption > SPX Configuration** tab you can enable SPX encryption and configure general settings for all SMTP users.

To configure SPX encryption, proceed as follows:

1. Enable SPX encryption.

Click the toggle switch.

The toggle switch turns green.

2. In the sections of this tab, make the required global settings.
3. On the **SPX Templates** tab, modify the existing **Sophos Default Template** and/or add new SPX templates.
4. On the **SMTP > Global** tab, select the **Global SPX Template**.
5. Optionally, if using SMTP Profile mode, select the desired SPX templates for the respective SMTP profiles.

Note - If you want users to SPX-encrypt email messages via the Microsoft Outlook plugin, make sure they have access to the **Sophos Outlook Add-in** tab in the User Portal to be

able to download the add-in themselves. If you use another email messenger you need to set the header manually by yourself.

SPX Encryption Precedence

Prefer SPX Encryption: If enabled and S/MIME and/or OpenPGP are activated, SPX encryption has precedence over S/MIME and OpenPGP.

Click **Apply** to save your settings.

SPX Password Settings

Minimum length: The minimum number of characters allowed for a password specified by the sender.

Require special characters: If enabled, the password specified by the sender must contain at least one special character (non-alphanumeric characters and whitespace are treated like special characters).

Click **Apply** to save your settings.

SPX Password Reset

Reset password for: Here you can delete the password of a recipient. Enter the recipient's email address.

Click **Apply** to save your settings.

SPX Portal Settings

Hostname: Enter the hostname or your SPX portal.

Listen address: Select your listen address for your SPX portal.

Port: Enter the port on which the SPX reply portal should listen.

Allowed Networks: Add or select the networks that should be allowed to access the SPX portal. This should be set to **Any** so that anyone users send an SPX-encrypted message can access it.

Click **Apply** to save your settings.

SPX Expiry Settings

Allow secure reply for: Specify for how long the recipient of an SPX encrypted message is allowed to send a reply over the SPX reply portal.

Keep unused password for: Specify the expiry time of a password that was not used meanwhile. For example, if **Keep unused password for** is set to 3 days, the password will expire at 0 o'clock if there was no SPX-encrypted message sent for a specific recipient.

Note - If **Keep Unused Password for** is set to 0 days, the password will be saved and expires at 0 o'clock.

Allow password registration for: Specify for how long the recipient is able to register a password for the SPX portal to view the current encrypted mails. Only for password type **Specified by recipient**. After the expiry time the mails will be dropped.

Registration reminder frequency: Specify in which frequency the recipient should get a reminder to register a password.

Click **Apply** to save your settings.

SPX Notification Settings

Send notification on error to: Specify whom to send a notification when an SPX error occurs. You can send the notification to the administrator, to the sender, or to both, or you can send no notification at all. Error messages will always be listed in the SMTP log.

Tip - SPX error messages can be customized on the **Management > Customization > Email Messages** tab.

Click **Apply** to save your settings.

10.5.2 SPX Templates

On the **SPX Encryption > SPX Templates** tab you can modify the existing Default Sophos Template, and you can define new SPX templates. If using SMTP Simple mode, a global SPX template can be selected for all SMTP users on the **SMTP > Global** tab. If using SMTP Profile mode, you can assign different SPX templates to different SMTP profiles on the **SMTP Profiles** tab.

To configure SPX encryption, proceed as follows:

1. Click **New SPX Template**.

The **Add SPX Template** dialog box opens.

Tip - The Sophos Default Template contains useful settings and example texts. Therefore you should consider to clone the existing template using its **Clone** button instead of creating a new template from scratch.

Note - The notification sender is the mail address which is configured in **Management > Notifications > Sender**.

2. Make the following settings:

Template name: Enter a descriptive name for the template.

3. Make the following basic settings:

Comment (optional): Add a description or other information.

Organization name: The organization name will be displayed on notifications concerning SPX, sent to the administrator or the email sender, depending on your settings.

PDF cover page: Select if you want the encrypted PDF file to have an additional first page. You can use the default page or a custom page. In case of the custom page, upload a one page PDF file via the Folder icon.

PDF encryption: Select the encryption mode of the PDF file. Note that some PDF viewers cannot read AES / 256 encrypted PDF files.

Label languages: Select the display language of the labels in the email forwarded to the recipient. The email contains fields such as **From**, **To**, **Sender**, or **Subject**, for example.

Page size: Select the page size of the PDF file.

Remove Sophos logos: Enable this option to replace the default Sophos logo with your company logo specified on the **Management > Customization > General** tab. The logo will be displayed in two places: on the footer of the encryption email sent to the recipient and in the footer of the reply message generated via the **Reply** button in the PDF file.

4. Make the following password settings:

Password type: Select how you want to generate the password for accessing the encrypted email message. Dependent on which type you select, the sender always has to take care of transferring the password in a safe way to the recipient, except for **Specified by recipient**.

- **Generated one-time password for every email:** Sophos UTM automatically creates a new password for each affected email. This password will be sent to the sender.
- **Generated and stored for recipient:** Sophos UTM automatically creates a recipient-specific password when the first email is sent to a recipient. This password will be sent to the sender. With the next email, the same password is used automatically. The password will expire when it is not used for a certain time, and you can reset it, see the **SPX Configuration** tab.
- **Specified by sender:** Select if the email sender should provide the password himself. In this case, the sender has to enter the password into the **Subject** field, using the following format: `[secure:<password>]<subject text> where <password> is the password to open the encrypted PDF file and <subject text> is the random subject.` Of course, the password will be removed by Sophos UTM before the email is sent to the recipient.

Note - A template with this option should not be used in combination with Data Protection. With Data Protection, the sender does not know beforehand that an email

will be encrypted and thus will not enter the password into the **Subject** field. When Sophos UTM tries to SPX encrypt an email with no password specified, the sender will receive an error message with the information that the password is missing.

- **Specified by recipient:** Select if the email recipient should provide the password by himself. In this case, the recipient receives a link leading to Sophos UTM Portal to register with a password. After registration the recipient is able to view the current encrypted mail and any future encrypted mails using the same password from this or other senders from the same organization. In case the recipient did not provide a password, the mail is displayed on the **Email Protection > Mail Manager > Global** tab.

Note - The password type **Specified by recipient** does not work after the **Generated and stored for recipient** type was used in the same template before. The sent email will still use the generated password. In this case, you need to reset the password for the given users on the **Email Protection > SPX Encryption > SPX Configuration** tab.

Notification Subject (not with the **Specified by sender** option): The subject of the email that is sent from Sophos UTM to the email sender containing the password. Here you can use variables, e.g. `%%ENVELOPE_TO%%`, for the recipient's name.

Notification Body (not with the **Specified by sender** option): The body of the email that is sent from Sophos UTM to the email sender containing the password. Here you can use variables, e.g., `%%GENERATED_PASSWORD%%`, for the password.

Tip - The Sophos Default SPX Template on this tab contains all available variables and gives a useful example of a notification.

5. Make the following recipient instructions settings:

Instructions for recipient: The body of the email that is sent from Sophos UTM to the email recipient containing instructions concerning the encrypted email. Simple HTML markup and hyperlinks are allowed. You can also use variables, e.g., `%%ORGANIZATION_NAME%%`.

Tip - The Sophos Default SPX Template on this tab contains possible variables which gives a useful example of recipient instructions.

Header image/Footer image: Select if the email from Sophos UTM to the email recipient should have a header and/or a footer image. You can use the default image, which is an orange envelope with an appropriate text, or a custom image. In case of the custom image, upload a JPG, GIF, or PNG file via the Folder icon. The recommended size is 752 x 69 pixels.

6. Make the following SPX portal settings:

Enable SPX reply portal: If enabled, the encrypted PDF file sent to the recipient will contain a **Reply** button. With this button the recipient can access the SPX reply portal to send an encrypted email reply to the sender.

Include original body into reply: If enabled, the reply from the recipient will automatically contain the body of the original email.

Portal header image/Portal footer image: Select if the SPX reply portal should have a header and/or a footer image. You can use the default image, which is an orange envelope with an appropriate text, or a custom image. In case of the custom image, upload a JPG, GIF, or PNG file via the Folder icon. The recommended size is 752 x 69 pixels.

7. Click **Save**.

The SPX template will be created and appears on the **SPX Templates** list.

To either edit or delete an SPX template, click the corresponding buttons.

10.5.2.1 Variables for SPX Templates

You can use the following variables in SPX templates for **Password Settings** and **Recipient Instructions**.

Password notification for options **Generated one-time password for every email** and **Generated and stored for recipient**:

- %%ENVELOPE_TO%: Email address of recipient
- %%GENERATED_PASSWORD%: Password which was generated

Password notification for option **Specified by recipient**:

- %%ORGANIZATION_NAME%: Organization name from template
- %%HEADER_FROM_SANITIZED%: Original sender display name (or if not present, envelope sender)
- %%REGISTRATION_URL%: URL address which should be used to register the password.

Recipient instructions:

- %%ORGANIZATION_NAME%: Organization name from template
- %%HEADER_FROM_SANITIZED%: Original sender display name (or if not present, envelope sender)

10.5.3 Sophos Outlook Add-in

On the **Email Protection > SPX Encryption > Sophos Outlook Add-in** tab you can download the Sophos Outlook Add-in in different languages. If required, log in with your MySophos account.

The Outlook Add-in simplifies the encryption of messages which contain sensitive or confidential information leaving your organization. For downloading and for documentation of the installation process read the [Sophos Outlook Add-in Deployment Guide](#).

You can run the installer either interactively or unattended. For an unattended installation make sure that the following requirements are met:

- Windows XP, Windows Vista, Windows 7, Windows 8 (both 32 and 64-bit) versions are supported
- Microsoft Outlook 2007 SP3, 2010/2013/2016 (both 32 and 64-bit) versions are supported
- Microsoft .NET Framework 4 Client Profile
- Microsoft Visual Studio 2010 Tools for Office Runtime 4.0

Run the following command for unattended installation:

```
msiexec /qr /i SophosOutlookAddInSetup.msi T=1 EC=3 C=1 I=1
```

10.6 Quarantine Report

Sophos UTM features an email quarantine containing all messages (SMTP and POP3) that have been blocked and redirected to the quarantine for various reasons. This includes messages waiting for delivery as well as messages that are infected by malicious software, contain suspicious attachments, are identified as spam, or simply contain unwanted expressions.

To minimize the risk of messages being withheld that were quarantined mistakenly (so-called **false positives**), Sophos UTM sends a daily Quarantine Report to the users informing them of messages in their quarantine. If users have several email addresses configured, they will get an Quarantine Report to the primary email address. This also applies if a user has additional POP3 accounts configured in his User Portal, provided the POP3 proxy of Sophos UTM is in **prefetch** mode, which allows the prefetching of messages from a POP3 server and storing them in a local database. In a Quarantine Report users can click on any spam entry to release the message from the quarantine or to whitelist the sender for the future.

The following list contains some more information about the Quarantine Report:

- Quarantine Reports are only sent to those users whose email address is part of a domain contained in any SMTP profile. This includes the specification in the **Domains** box on the **SMTP > Routing** tab as well as the specifications in the **Domains** box of any SMTP Profile.
- If the POP3 **prefetch** option is disabled, quarantined messages sent to this account will not appear in the Quarantine Report. Instead, users will find the typical Sophos POP3 blocked message in their inbox. It is therefore not possible to release the message by means of the Quarantine Report or the User Portal. The only way to deliver such an email is to download it in `zip` format from the [Mail Manager](#) by an administrator.

- On the **Advanced** tab, you define which types of quarantined mail can be released by users. By default, only spam emails can be released from the quarantine. Messages quarantined for other reasons, for example because they contain viruses or suspicious file attachments, can only be released from the quarantine by an administrator in the Mail Manager of Sophos UTM. In addition, users can also review all of their messages currently held in quarantine in the Sophos User Portal.
- If a spam email has multiple recipients, as is the case with mailing lists, when any one recipient releases the email, it is released for that recipient only, provided the email address of the mailing list is configured on the system. Otherwise the email will be sent to all recipients simultaneously. For more information, see the **Define internal mailing lists** option on **Email Protection > Quarantine Report > Exceptions**.
- Emails sent to an SMTP email address for which no user is configured in Sophos UTM can be released (but not whitelisted) from the Quarantine Report or in the Mail Manager by an administrator. However, as this user is not configured, no access to the User Portal is possible.
- Spam emails sent to mailing lists cannot be whitelisted.
- Some email clients do not encode the header of an email correctly, which may result in an awkward representation of the email in the daily Quarantine Report.

10.6.1 Global

On the **Quarantine Report > Global** tab you can define at what time the daily Quarantine Report shall be sent and write a message text that will appear in the Quarantine Reports.

To edit the Quarantine Report settings, enable the Quarantine Report: Click the toggle switch.

The toggle switch turns green.

Time to Send Report

Here you can define when the daily Quarantine Report will be sent. Select the time using the drop-down lists and click **Apply**.

You can also send an additional report. For this, select the checkbox **Send Additional Report**, set the time, and click **Apply**.

Customizable Message Text

Here you can customize the text which forms the introduction of the Quarantine Report. Change the message text according to your needs and click **Apply**.

Note - It is not possible to use HTML tags in the customizable message text box.

Note - Customization is not possible when using a home use license.

Note - The notification sender is the mail address which is configured on the **Management > Notifications > Global** tab.

10.6.2 Exceptions

On the **Quarantine Report > Exceptions** tab you can define a skiplist of email addresses that should be exempt from receiving daily Quarantine Reports.

Skipping Quarantine Reports

Here you can configure internal email addresses for which no quarantine notifications should be sent. Users whose email addresses are listed here will not receive daily Quarantine Reports. You can enter full email addresses or use an asterisk (*) as wildcard, for example `*@example.com`.

Note - The skiplist only applies for the SMTP Quarantine Report. If there is a POP3 account specified for the respective user, the POP3 Quarantine Report will be sent nonetheless.

Define Internal Mailing Lists

If the email address of a mailing list is configured in the **Mailing list address patterns** box (e.g., `newsletter@example.com`) and a spam message sent to this mailing list was detected and redirected to the email quarantine, the Quarantine Report of all recipients included in this mailing list will contain a link to this spam message. Thus, each recipient can release this spam message individually by entering his email address in a user prompt that appears once the recipient has clicked the **Release** link in the Quarantine Report.

Note - Mailing lists cannot be whitelisted in the Quarantine Report or the User Portal.

Alternatively, you could enter the email address of that particular mailing list as an additional email address in a local user's profile; this user becoming some sort of a mail manager. Then only this user's Quarantine Report will contain a link to the spam message that was sent to the mailing list. Clicking the **Release** link will deliver the spam message to all recipients of that mailing list at once.

Note - If the email address of a mailing list is configured as an additional email address in a user's profile, no recipient included in that mailing list gets displayed the links to spam messages that were sent to this mailing list.

However, if the email address of a mailing list is both configured as an additional email address in a user's profile and in the **Mailing list address patterns** box, then the **Release** link in that user's Quarantine Report will open a user prompt. The user is then to decide who is going to receive the spam mail by manually entering the respective email address(es) to forward the spam message to.

Finally, if the email address of a mailing list is neither configured as an additional email address in a user's profile nor as a mailing list address pattern, a spam message sent to the mailing list is handled like a normal email, meaning that if any one recipient releases the spam mail, it will be sent to all recipients of the mailing list.

To sum up, whenever the email address of a mailing list is configured as a mailing list address pattern, users having a link to the spam message in their Quarantine Report are prompted to enter an email address to release the spam message to.

10.6.3 Advanced

On the **Quarantine Report > Advanced** tab you can configure an alternative hostname and port number for the **Release** links contained in daily Quarantine Reports. Additionally, you can change the release options for spam emails.

Advanced Quarantine Report Options

Hostname: By default, this is the gateway's hostname as given on the **Management > System Settings > Hostname** tab. The quarantine report, for example, which is sent by the gateway, contains hyperlinks users can click to release messages from the email quarantine. By default, these links point to the hostname specified here. If you want to enable users to release their emails from across the Internet, it might be necessary to enter an alternative hostname here that can be publicly resolved.

Port: By default, port 3840 is configured. You can change the port to any value in the range from 1024 to 65535.

Allowed networks: You can also specify the networks that should be allowed to connect to the email release service. By default, only the internal network is selected.

Click **Apply** to save your settings.

Release Options

Here you can select which types of quarantined messages shall be releasable by users. You can choose between the following options:

- Malware
- Spam
- Expression
- File extension
- Unscannable
- MIME type
- Other

Click **Apply** to save your settings.

10.7 Mail Manager

The Mail Manager is an administrative tool to manage and organize all email messages currently stored on the unit. This includes messages waiting for delivery as well as quarantined messages that are infected by malicious software, contain suspicious attachments, are identified as spam, or contain unwanted expressions. You can use the Mail Manager to review all messages before downloading, releasing, or deleting them. The Mail Manager is fully UTF-8 capable.

10.7.1 Mail Manager Window

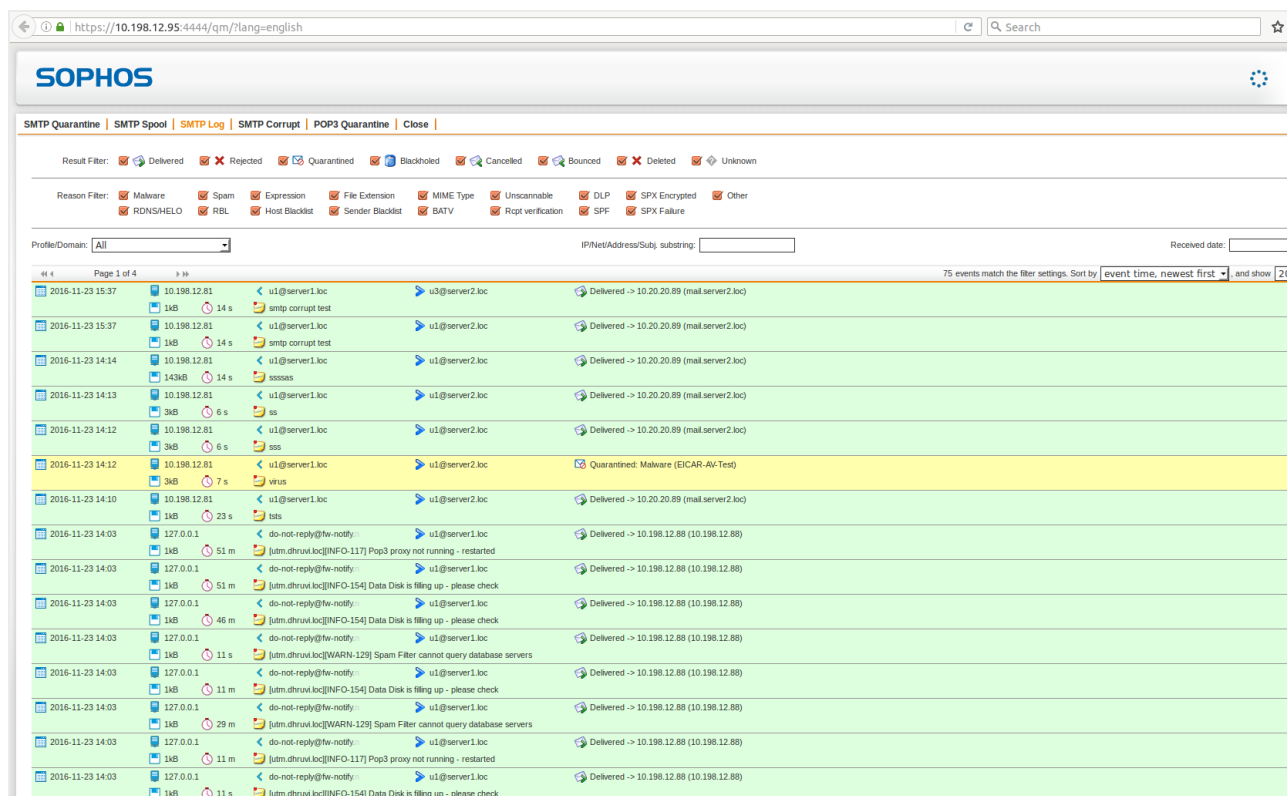


Figure 20 Mail Manager of Sophos UTM

To open the Mail Manager window click the button **Open Mail Manager in New Window** on the **Email Protection > Mail Manager > Global** tab. The Mail Manager is divided into five different tabs:

- **SMTP Quarantine:** Displays all messages that are currently quarantined.
- **SMTP Spool:** Displays all messages currently in `/var/spool`. This may be due to them waiting for delivery or because of an error.
- **SMTP Log:** Displays the delivery log for all messages processed via SMTP.
- **SMTP Corrupt:** Displays messages with invalid or missing information.

- **POP3 Quarantine:** Displays all messages fetched via POP3 that are currently quarantined.
- **Close:** Click here to close the Mail Manager window.

10.7.1.1 SMTP/POP3 Quarantine

Messages in SMTP and POP3 Quarantine can be displayed according to their respective quarantine cause:

- Malware
- Spam
- Expression
- File Extension
- MIME Type (SMTP only)
- Unscannable
- Other

Use the checkboxes to select/unselect quarantine causes. Double-click the checkbox of a cause to solely select this cause.

Tip - Double-click a message to view it.

Profile/Domain: Select a profile/domain to show its messages only.

Sender/Rcpt/Subject substring: Here you can enter a sender, recipient, or subject to search for in the messages.

Received date: To only show messages processed during a certain time frame, enter a date, or select a date from the calendar icon.

Sort by: By default, the list is sorted by time of arrival. Messages can be sorted by date, subject line, sender address, and message size.

and show: The checkbox allows to display 20, 50, 100, 250, 500, 1000, or all messages per page. Note that showing all messages may take a lot of time.

Use the checkbox in front of each message or click a message to select it to apply actions on the selected messages. The following actions are available:

- **View** (only available for an individual message): Opens a window with the contents of the email.
- **Download:** Selected messages will be downloaded.
- **Delete:** Selected messages will be deleted irrevocably.
- **Release:** Selected messages will be released from quarantine.
- **Release and report as false positive:** Selected messages will be released from quarantine and reported as false positive to the spam scan engine.

Note that only an administrator can release *all* messages held in quarantine. Users reviewing their messages in the Sophos User Portal can only release messages they are explicitly allowed to. The authorization settings for this can be found on the **Email Protection > Quarantine Report > Advanced** tab.

Select global cleanup action: Here you find several deletion options that will be applied on messages globally, that is, regardless whether they are selected and/or displayed or not.

Caution - Deleted messages are irrevocable.

10.7.1.2 SMTP Spool

Here you see messages that are either waiting for delivery or have produced an error. The delivery log is also part of the message header. Use the following checkboxes to select only one type of messages for display:

- **Waiting:** Messages waiting for delivery.
- **AV Scan pending:** Messages that cannot be scanned due to AV Scanner being unreachable during pattern update. Messages that fall into this category are automatically retried every 15 minutes.
- **Error:** Messages that caused an error. If a messages produces an error more than once, please report the case to your Sophos Partner or the Sophos Support Team.

Hint - Double-click a message to view it.

Profile/Domain: Select a profile/domain to show its messages only.

Sender/Rcpt/Subject substring: Here you can enter a sender, recipient, or subject to search for in the messages.

Received date: To only show messages processed during a certain time frame, enter a date, or select a date from the calendar icon.

Sort by: By default, the list is sorted by time of arrival. Messages can be sorted by date, subject line, sender address, and message size.

and show: The checkbox allows to display 20, 50, 100, 250, 500, 1000, or all messages per page. Note that showing all messages may take a lot of time.

Use the checkbox in front of each message or click a message to select it to apply actions on the selected messages. The following actions are available:

- **Download:** Selected messages will be downloaded.
- **Retry:** For selected messages delivery will be retried immediately.
- **Delete:** Selected messages will be deleted irrevocably.
- **Bounce:** Selected messages will be bounced, that is the sender will receive a message that the delivery of their message has been canceled.

Select global cleanup action: Here you find a retry option and several deletion options that will be applied on messages globally, that is, regardless whether they are selected and/or displayed or not.

Caution - Deleted messages are irrevocable.

10.7.1.3 SMTP Log

The **SMTP Log** displays the log messages for all messages processed via SMTP.

Result Filter: Select which type of message will be displayed by selecting the corresponding checkboxes.

- **Delivered:** Successfully delivered messages.
- **Rejected:** Messages rejected by Sophos UTM.
- **Quarantined:** Quarantined messages.
- **Blackholed:** Messages that have been deleted without notification.
- **Canceled:** Messages that have been manually bounced in **SMTP Spool**.
- **Bounced:** Messages that could not be delivered, for example because of false routing settings.
- **Deleted:** Messages that have been manually deleted.
- **Unknown:** Messages whose status is unknown.

Use the checkboxes to select/unselect **Result Filter** items. Double-click an item to solely select this item.

Reason Filter: Use the checkboxes to further filter the message log display.

Note - Double-click a message log to view it. Click on the server icon of a message to resolve the IP address. An asterisk (*) denotes a successful reverse DNS lookup.

Profile/Domain: Select a profile/domain to show its messages only.

IP/Net/Address/Subj. substring: Here you can enter an IP address, network address, or subject to search for in the SMTP log messages.

Received date: To only show messages processed during a certain time frame, enter a date, or select a date from the calendar icon.

Sort by: By default, the list is sorted by event time. Messages can be sorted by event time, sender address, and message size.

and show: The checkbox allows to display 20, 50, 100, 250, 500, 1000, or all messages per page. Note that showing all messages may take a lot of time.

10.7.1.4 SMTP Corrupt

Here you see messages that contain invalid or missing information regarding for example time stamp, recipient or source address.

Hint - Double-click a message to view it.

Profile/Domain: Select a profile/domain to show its messages only.

Sender/Rcpt/Subject substring: Here you can enter a sender, recipient, or subject to search for in the messages.

Received date: To only show messages processed during a certain time frame, enter a date, or select a date from the calendar icon.

Sort by: By default, the list is sorted by time of arrival. Messages can be sorted by date, subject line, sender address, and message size.

and show: The checkbox allows to display 20, 50, 100, 250, 500, 1000, or all messages per page. Note that showing all messages may take a lot of time.

Use the checkbox in front of each message or click a message to select it to apply actions on the selected messages. The following actions are available:

- **Download:** Selected messages will be downloaded.
- **Delete:** Selected messages will be deleted irrevocably.

Select global cleanup action: Here you find a retry option and several deletion options that will be applied on messages globally, that is, regardless whether they are selected and/or displayed or not.

Caution - Deleted messages are irrevocable.

10.7.2 Global

In the upper part of the **Mail Manager > Global** tab you can open the Mail Manager by clicking the **Open Mail Manager in New Window** button.

In the lower part, the **Statistics Overview** area provides an overview of all messages currently stored on the unit. Data is divided into messages that were delivered via the SMTP or POP3 protocol. For both types, the following information is displayed:

- **Waiting for delivery (spooled) (SMTP only):** Mails that are currently in spool, for example because they were being scanned and could not be delivered yet.
- **Clean total (POP3 only):** Mails that have been prefetched by the unit and have not yet been collected by a client/user.
- **Quarantined malware:** The total of messages that contain malware, such as viruses or other harmful content.

- **Quarantined spam:** The total of messages that were identified as spam.
- **Quarantined expression:** The total of messages that were diverted to the quarantine because they contain forbidden expressions.
- **Quarantined file extension:** The total of messages held in quarantine because they contain suspicious attachments (identified by their file extension).
- **Quarantined unscannable:** The total of messages held in quarantine because it could not be scanned.
- **Quarantined MIME type (SMTP only):** The total of messages held in quarantine because they contain MIME types that are to be filtered according to the SMTP settings.
- **Quarantined total:** The total of messages that are held in quarantine.

Note - The numbers for **Waiting for delivery** represent a real-time snapshot for SMTP messages. However, for POP3 messages, the numbers presented are the accumulation of data since the last time [prefetching](#) was enabled.

Below you see a short statistic for SMTP quarantining and rejections of the last 24 hours:

- **Malware quarantined/rejected:** Messages quarantined/rejected because they contain harmful content.
- **Spam quarantined/rejected:** Messages quarantined/rejected because they have been identified as spam.
- **Blacklist rejects:** Messages rejected because the sender is on a blacklist.
- **Address verification rejects:** Messages rejected because the sender address could not be verified.
- **SPF rejects:** Messages rejected because sending host is not allowed.
- **RBL rejects:** Messages rejected because the sender is on a real time blackhole list.
- **BATV rejects:** Messages rejected because BATV tag could not be validated.
- **RDNS/HELO rejects:** Messages rejected due to invalid HELO or missing RDNS entries.

Whether there are any rejects depends on your settings in **Email Protection > SMTP**.

10.7.3 Configuration

On the **Mail Manager > Configuration** tab you can configure how long the database log will be kept and after how many days quarantined messages are to be deleted from the quarantine. Any logs and messages that are older than the number of days in the expiration settings will be deleted automatically.

The default settings are as follows:

- Database log will be deleted after three days. Maximum number permitted: 30 days.
- Quarantined messages will be deleted after 14 days. Maximum number permitted: 999 days.

The minimum number of days permitted for both database log and quarantine is one day.

Flush Database Log

This option is useful if your database log has accumulated an immense amount of data to clear the log immediately. That way you do not have to wait for the normal cleanup action to apply.

11 Advanced Protection

This chapter describes how to configure the advanced protection features of Sophos UTM. The **Advanced Protection Statistics** page shows an overview of Sophos Sandstorm and Advanced Threat Protection events.

The following topics are included in this chapter:

- [Sophos Sandstorm](#)
- [Advanced Threat Protection](#)

Advanced Threat Protection

This section displays information on the number of machines on your network that are potentially infected.

- Click the **Details** link of the **Advanced Threat Protection** section to get to its reporting section, where you can find more statistical information.
- Click the **Reset** button, to restart the counter for detected threats for this report.

Sophos Sandstorm Activity

Get an overview of all incidents where a file was flagged for further analysis using the Sophos Active Sandbox component of Sophos Sandstorm. The table is updated on page load and shows processes currently in progress for the present day. Data accumulation starts at midnight. The table shows web and email activity, not manually submitted files.

Table data is broken down by email and web files as well as the following categories or statuses:

- **Suspicious files:** Number of files that have been flagged as suspicious and could potentially be sent to Sophos Sandstorm. This counter is used even if there is no Sandstorm subscription. Depending on your configuration, not all suspicious files are sent to Sophos Sandstorm.
- **Excluded by policy:** The number of suspicious files that are not sent to Sophos Sandstorm due to policy configuration.
- **Awaiting result:** Number of files that have been sent to Sophos Sandstorm for analysis, and are currently waiting for a result. These files appear on the **Sandbox Activity** page.
- **Malicious:** Number of suspicious files that exhibited unwanted or risky behavior when tested. This includes files that are previously known to be malicious (cached) and those that were sent to be analyzed. Only ones that had new analysis performed appear on the **Sandbox Activity** page.
- **Clean:** Number of suspicious files that did not pose a threat. This includes files that are previously known to be clean (cached) and those that were sent to be analyzed. Only ones that had new analysis performed appear on the **Sandbox Activity** page.

- **Sent for analysis:** The number of suspicious files that were sent to Sophos Sandstorm but did not have a previously known result (cached) and therefore were sent for analysis. These files appear on the **Sandbox Activity** page.
- **Average analysis time:** Average amount of time it takes to process a file submitted for analysis.

Sophos Sandstorm Activity Report

Get an overview of Sandstorm activity on a daily, weekly, monthly, or yearly basis. By default, both email and web file activity is displayed. Manually submitted files are not part of the report.

- To display either web or email traffic, use the drop-down **Traffic source**.

The reporting graphs have the following display properties:

Daily: Displays the last 24 hours of data. Each bar represents an hour. The graph is updated on the hour and only shows completed hours. Therefore it might not include up to the last hour's worth of data.

Weekly: Displays the last seven days of data. Each bar represents six hours. The graph is updated on the hour and only shows completed six hours.

Monthly: Displays the last 30 days of data. Each bar represents a day. The graph is updated on the hour and only shows completed days.

Yearly: Displays the last 12 months of data. Each bar represents a week. The graph is updated on the hour and only shows completed weeks.

Note - The weekly, monthly, and yearly graphs are broken down by UTC time, not your local time. This may lead to data from a single day at your site being distributed to two different bars. Example: Your local time is UTC+12 (Asian Pacific region) where your local noon is midnight in UTC. Therefore the first half of your day will be part of another bar than the second half.

The graphs display the following data:

- **Analyzed Malicious:** Number of files that have been analyzed by Sophos Sandstorm and exhibited unwanted or risky behavior when tested.
- **Cache Malicious:** Number of files that are previously known to be malicious and where the result was returned by the Sophos Sandstorm cache.
- **Analyzed Clean:** Number of suspicious files that have been analyzed by Sophos Sandstorm and did not pose a threat.
- **Cache clean:** Number of suspicious files that are previously known to not pose a threat and where the result was returned by the Sophos Sandstorm cache.
- **Excluded:** The number of suspicious files that are not sent to Sophos Sandstorm due to policy configuration.

11.1 Sophos Sandstorm

As a licensed user, you can use Sophos Sandstorm, a cloud service that executes and analyzes suspicious downloads. You can turn on Sandstorm protection for web security as well as email security, and you can send files manually.

11.1.1 Overview

Get general information on what Sophos Sandstorm is and how it works.

Sample File Analysis with Sandstorm

To have Sandstorm analyze a particular file, upload it here. Once you click **Submit** it will be sent to Sandstorm. If the file has been analyzed by Sandstorm before, the result will be immediately delivered in a pop-up window. In case the file needs to be sent for analysis, the result will be displayed on the **Sandbox Activity** page as soon as analysis is complete.

11.1.2 Sandbox Activity

Get an overview of all incidents where a file was sent for further analysis using the **Sophos Active Sandbox** component of **Sophos Sandstorm**. If the analysis is still in progress or indicates an error, the **Release** button allows immediate access to the downloaded file.

The following options are available:

- If you want to release a downloaded item, and its status is **In Progress** or **Error**, select the checkbox next to it, then click the **Release** button.

Note - If you release a file before analysis has been completed, potentially malicious content may be downloaded.

- To view details about a specific downloaded item, click its status. A detailed report will be displayed with download information, file information, and results of the **Sophos Active Sandbox** analysis. The exact content of the report will vary for each download.

11.1.3 Configuration

On the **Configuration** tab you can specify the Sandstorm data center location and exclude files from Sandstorm analysis.

11.1.3.1 Sandstorm Data Center Location

Files to be analyzed by Sandstorm are transmitted using a SSL connection to a data center. By default, Sandstorm selects the closest data center according to the location of the device to give you the highest performance.

Note - Changing data centers may affect any analysis that is currently in progress.

11.1.3.2 Sandstorm File Type Exclusions

A file type is a classification that is determined by file extension and MIME header. Add a file type that you do not want to send to Sandstorm for analysis. Exclusions apply to web and email traffic.

Note - Any archive that includes a file of the selected type will also be excluded, regardless of what other types of files are in that archive.

Note - Many file types that are considered safe will never be sent to Sandstorm, e.g. images. Only risky file types that Sandstorm can detonate and analyze will be sent, e.g. executable files.

11.2 Advanced Threat Protection

On the menu **Advanced Protection > Advanced Threat Protection** you can enable and configure the Advanced Threat Protection feature to rapidly detect infected or compromised clients inside your network, and raise an alert or drop the respective traffic. An alert will be automatically deleted after 72 hours. If you want to delete all alerts immediately, click the **Reset** button.

Advanced Threat Protection aims at typical challenges in current corporate networks: on the one hand management of a mobile workforce with an increasing number of different mobile devices (BYOD), and on the other hand malware evolution and distribution methods getting faster and faster. The Advanced Threat Protection analyzes network traffic, e.g., DNS requests, HTTP requests, or IP packets in general, coming from and going to all networks. It also incorporates Intrusion Prevention and Antivirus data if the respective features are activated. The database used to identify threats is updated constantly by a CnC/Botnet data feed from Sophos Labs through pattern updates. Based on this data, infected hosts and their communication with command-and-control (CnC) servers can quickly be identified and dealt with.

11.2.1 Global

On the **Advanced Threat Protection > Global** tab, you can activate the **Advanced Threat Protection System** of Sophos UTM.

To enable Advanced Threat Protection, proceed as follows:

1. Enable the Advanced Threat Protection system.

Click the toggle switch.

The toggle switch turns amber and the **Global Settings** area becomes editable.

2. Make the following settings:

Policy: Select the security policy that the Advanced Threat Protection system should use if a threat has been detected.

- **Drop:** The data packet will be logged and dropped.
- **Alert:** The data packet will be logged.

Network/host exceptions: Add or select the source networks or hosts that should be exempt from being scanned for threats by Advanced Threat Protection. How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.

Threat exceptions: Add destination IP addresses or domain names that you want to skip from being scanned for threats by Advanced Threat Protection. This is the place where you would add false positives to prevent them from being detected as threat. Examples: `8.8.8.8` or `google.com`. Add exact strings for ATP to match. Example: `example.com` will allow `example.com` while `subdomain.example.com` will still be blocked.

Caution - Be careful with specifying exceptions. By excluding sources or destinations you may expose your network to severe risks.

3. Click **Apply**.

Your settings will be saved.

The toggle switch turns green.

If enabled, and a threat is detected, it will be listed on the Network Protection page. A notification will be sent to the administrator if enabled on the **Management > Notifications > Notifications** page. The notification is set by default for drop and alert.

Cross Reference - Find information about configuring Advanced Threat Protection in the [Sophos Knowledge Base](#).

Live Log

The Advanced Threat Protection live log can be used to monitor the detected threats. Click the button to open the live log in a new window.

Note - IPS and Web Proxy threats will not be displayed in the **Live Log**.

12 Endpoint Protection

Note: We have stopped selling Sophos UTM Endpoint Protection subscriptions as of December 31st, 2018 and will retire support at the end of 2019.

Endpoint devices managed by Sophos Enterprise Console can still connect with this UTM to receive Web Control policies and record web log reports.

Customers should upgrade – for free – to Sophos Central-managed Endpoint Protection which delivers enhanced protection and management capabilities. Learn more in this knowledge base article: <https://community.sophos.com/kb/en-us/122865>.

Endpoint devices managed by Sophos Enterprise Console can still connect with this UTM to receive Web Control policies and record web log reports.

Tamper Protection

Devices previously managed by the UTM may require a tamper protection password to uninstall Sophos Endpoint Protection. This section shows the last tamper protection password configured on this UTM.

12.1 Endpoint Web Control

While Sophos UTM provides security and productivity protection for systems browsing the web from within your corporate network, Endpoint Web Control extends this protection to users' machines. This provides protection, control, and reporting for endpoint machines that are located, or roam, outside your corporate network. Sophos UTM and Sophos endpoints communicate through LiveConnect, a cloud service that enables instant policy and reporting updates by seamlessly connecting Sophos UTM and roaming Sophos endpoints. For instance, a roaming laptop at home or in a coffee shop would still enforce Web Control policy, and Sophos UTM will receive logging information from the roaming laptop.

12.1.1 Global

On the **Endpoint Protection > Web Control > Global** tab you can enable or disable endpoint web control if it was enabled before the upgrade to version 9.7. All configurations have been kept but you can't change most of the settings anymore.

Parent Proxy

If your Sophos UTM does not have direct HTTP internet access, Endpoint Protection can use a proxy server to reach Sophos LiveConnect. Select **Use a parent proxy** and enter the host and port if necessary.

12.1.2 Advanced

On the **Endpoint Protection > Web Control > Advanced** tab you can select **Scan traffic on both gateway and endpoint**. You can also configure what action Endpoint Web Control should take when it encounters a site with an associated quota.

Endpoint Traffic Setting

By default, Sophos UTM does not scan web traffic for endpoints that have Web Control enabled. If this option is selected, both the endpoint and Sophos UTM will filter web traffic.

Endpoint Quota Action

Sophos Endpoint Web Control cannot enforce time quotas. Select an alternate action for the endpoint for sites that have an associated quota.

Note - The endpoint setting gets precedence. For instance, if a user has Endpoint Web Control enabled, **Scan traffic on both gateway and endpoint** is selected, and you have configured the **Endpoint quota action** to **Warn**, the user would first get a warning. If they proceed to the site, quota time usage for that site would then be in effect. If the Endpoint quota action is set to **Block**, the user will be blocked, even if they have available quota time for that site.

12.1.3 Features not Supported

While there are many benefits to extending Web Control to the endpoint, some features are only available from within a Sophos UTM network. The following features are supported on Sophos UTM, but not supported by Endpoint Web Control:

- **Scan HTTPS (SSL) traffic:** HTTPS traffic cannot be scanned by the endpoint. If the endpoint is proxying through Sophos UTM and this feature is turned on, the traffic will be scanned by Sophos UTM.
- **Authentication mode:** The endpoint will always use the currently logged on user (SSO). The endpoint cannot perform authentication because if the endpoint is roaming it will not be able to talk to Sophos UTM to authenticate.
- **Antivirus/malware:** Sophos endpoint antivirus settings are configured on the **Endpoint Protection > Web Control > Advanced** page. If Web Protection (download scanning) is turned on it will always perform a virus single scan for all web content. Dual scan and max scanning size are not supported.
- **Active content removal**
- **Streaming settings:** The Sophos endpoint will always scan streaming content for viruses.
- **Block unscannable and encrypted files**

- **Block by download size**
- **Allowed target services:** This feature applies only to Sophos UTM.
- **Web caching:** This feature applies only to Sophos UTM.

13 Wireless Protection

The **Wireless Protection** menu allows you to configure and manage wireless access points for your Sophos UTM, the corresponding wireless networks, and the clients which use wireless access. The access points are automatically configured on your Sophos UTM, so there is no need to configure them individually. The communication between Sophos UTM and the access point, which is used to exchange the access point configuration and status information, is encrypted using AES.

Important Note - When the lights of your access point blink furiously, do not disconnect it from power! Furiously blinking lights mean that a firmware flash is currently in progress. A firmware flash takes place for example after an Sophos UTM system update that comes with a Wireless Protection update.

The following topics are included in this chapter:

- [Global Settings](#)
- [Wireless Networks](#)
- [Mesh Networks](#)
- [Access Points](#)
- [Wireless Clients](#)
- [Hotspots](#)

The Wireless Protection overview page gives you general information on connected access points, their status, connected clients, wireless networks, mesh networks, and mesh peer links.

In the **Currently Connected** section, you can sort the entries by SSID or by access point, and you can expand and collapse the individual entries by clicking the Collapse icon on the left.

Live Log

You can click the **Open Wireless Protection Live Log** button to see detailed connection and debug information for the access points and clients trying to connect.

13.1 Global Settings

On the **Wireless Protection > Global Settings** pages you can enable Wireless Protection, configure network interfaces for Wireless Protection and WPA/WPA2 enterprise authentication.

13.1.1 Global Settings

On the **Wireless Protection > Global Settings > Global Settings** tab you can enable or disable Wireless Protection.

To enable Wireless Protection do the following:

1. On the **Global Settings** tab, enable Wireless Protection.

Click the toggle switch.

The toggle switch turns amber and the **Access Control** area becomes editable.

When enabling Wireless Protection for the first time, the **Initial Setup** section appears. It shows the configuration which will be created: A separate wireless "Guest" network using WPA2 personal encryption with DHCP for wireless clients, which will be allowed to use DNS on Sophos UTM and the **Web Surfing** service. The pre-shared key is auto-generated and will only be shown in this section. This initial configuration is intended as a template. You can edit the settings at any time on the **Wireless Protection > Wireless Networks** page.

Skip automatic configuration: You can also skip the initial setup by selecting this option. You will then need to configure the wireless settings manually.

2. Select a network interface for the access point.

Click the Folder icon in the **Allowed Interfaces** section to select a configured interface where the access point is going to be plugged in. Make sure that a DHCP server is associated to this interface.

Note - Sophos UTM appliances marked with "w", for example SG 105-125w, do not need to have a network selected. Since these appliances have a Wifi card onboard they do not need a dedicated WiFi interface.

3. Click **Apply**.

Your settings will be saved. The toggle switch turns green to indicate that Wireless Protection is active.

You can now continue by plugging the access point into the configured network interface. If you decided to skip the automatic configuration, proceed the configuration on the **Wireless Networks** page.

To cancel the configuration, click the amber colored toggle switch.

As soon as you plug in an access point it will automatically connect to the system. Newly connected, unconfigured access points are listed as **Pending Access Points** on the **Access Points > Overview** page.

13.1.2 Advanced

On the **Wireless Protection > Global Settings > Advanced** tab you can configure your access points to use WPA/WPA2 enterprise authentication and to specify the notification delay of offline access points.

Enterprise Authentication

For enterprise authentication, you need to provide some information of your RADIUS server. Note that the APs do not communicate with the RADIUS server for authentication but only Sophos UTM. Port 4114 is used for the RADIUS communication between Sophos UTM and the APs.

Select the requested RADIUS server from the drop-down list. Servers can be added and configured on **Definitions & Users > Authentication Services > Servers**.

Note - When your RADIUS server is connected to Sophos UTM via an IPsec tunnel, you have to configure an additional SNAT rule to ensure that the communication works correctly. On the **Network Protection > NAT > NAT** tab, add the following SNAT rule: For traffic from the APs' network(s), using service RADIUS, and going to the RADIUS server, replace the source address with the IP address of Sophos UTM used to reach the RADIUS server.

Click **Apply** to save your settings.

Notification Timeout

If an access point is offline you get a notification. With the notification timeout you can configure a timeout for the notification. This means, if you set the delay for example to 2 minutes the notification will be sent if the access point is offline for at least 2 minutes. The notification timeout requires an integer. The default timeout is 5 minutes.

To set the notification timeout, proceed as follows:

1. Enter the timeout in minutes.
2. Click **Apply**.

Your settings will be saved.

13.2 Wireless Networks

On the **Wireless Protection > Wireless Networks** page you can define your wireless networks, such as their SSID and encryption method. Moreover, you can define whether the wireless network should have a separate IP address range or be bridged into the LAN of the access point.

To define a new wireless network, do the following:

1. On the **Wireless Networks** page, click **Add Wireless Network**.

The **Add Wireless Network** dialog box opens.

2. Make the following settings:

Network name: Enter a descriptive name for the network.

Network SSID: Enter the Service Set Identifier (SSID) for the network which will be seen by clients to identify the wireless network. The SSID may consist of 1-32 ASCII printable characters¹. It must not contain a comma and must not begin or end with a space.

Encryption mode: Select an encryption mode from the drop-down list. Default is **WPA 2 Personal**. We recommend to prefer **WPA2** over **WPA**, if possible. For security reasons, it is recommended to not use WEP unless there are clients using your wireless network that do not support one of the other methods. When using an enterprise authentication method, you also need to configure a RADIUS server on the **Global Settings > Advanced** tab. As NAS ID of the RADIUS server enter the wireless network name.

Note - Sophos UTM supports the IEEE 802.11r standard in WPA2 (PSK/Enterprise) networks to reduce roaming times. Clients also need to support the IEEE 802.11r standard.

Passphrase/PSK: Only available with **WPA/WPA2 Personal** encryption mode. Enter the passphrase to protect the wireless network from unauthorized access and repeat it in the next field. The passphrase may consist of 8-63 ASCII printable characters.

128-bit WEP key: Only available with **WEP** encryption mode. Enter a WEP key here that exactly consists of 26 hexadecimal characters.

Client traffic: Select a method how the wireless network is to be integrated into your local network.

Note - If you use RED 15w as access point please see chapter **Wireless Protection > Access Points > RED 15w** for extensive information on configuration.

- **Separate zone** (default): The wireless network is handled as a separate network with the specified IP address range.

When you create a network as a separate zone, Sophos UTM creates a corresponding VXLAN tunnel. All traffic from the separate zone network is sent to Sophos UTM using the Virtual Extensible LAN (VXLAN) protocol. VXLAN is a virtual tunnel that encapsulates layer 2 Ethernet frames within layer 3 IP packets. Encapsulation lowers the available MTU size. Lower MTU results in higher frag-

¹http://en.wikipedia.org/wiki/ASCII#ASCII_printable_characters

mentation and may slow the traffic at times. To prevent this issue, you can do one of the following:

- Use Bridge to AP LAN or Bridge to VLAN.
- If you must use a separate zone, lower the MTU value on users' endpoint devices.

If you select **Separate zone**, after adding the wireless network, continue your setup as described in the section below ([Next Steps for Separate Zone Network](#)).

Note - When switching an existing **Separate Zone** network to **Bridge to AP LAN** or **Bridge to VLAN**, already configured WLAN interfaces on Sophos UTM will be disabled and the interface object will become **unassigned**. However, you can assign a new hardware interface to the interface object by editing it and thus re-enable it.

- **Bridge to AP LAN:** You can bridge a wireless network into the network of an access point, that means that wireless clients share the same IP address range.

For Local WiFi Device: To create a **Bridge to AP LAN** you need to edit the Local WiFi Device on the **Wireless Protection > Access Points > Overview** tab and enable **bridged to AP LAN**. In addition, you need to create a new interface on the **Interfaces & Routing > Interfaces > Interfaces** tab and select the bridge. You also need to have a DHCP server on the **Network Services > DHCP > Servers** tab so that the client can receive an IP.

Note - If VLAN is enabled, the wireless clients will be bridged into the VLAN network of the access point.

- **Bridge to VLAN** (not available for Local WiFi Devices): You can decide to have this wireless network's traffic bridged to a VLAN of your choice. This is useful when you want the access points to be in a common network separate from the wireless clients.

Bridge to VLAN ID: Enter the VLAN ID of the network that the wireless clients should be part of.

Client VLAN ID (only available with an **Enterprise** encryption mode): Select how the VLAN ID is defined:

- **Static:** Uses the VLAN ID defined in the **Bridge to VLAN ID** field.
- **RADIUS & Static:** Uses the VLAN ID delivered by your RADIUS server: When users connect to one of your wireless networks and authenticate at your RADIUS server, the RADIUS server tells the access point what VLAN ID to use for each user. Thus, when using multiple wireless networks, you can define per user who has access to which internal networks. For users who have not a

VLAN ID attribute assigned, the VLAN ID defined in the **Bridge to VLAN ID** field will be used.

Comment (optional): Add a description or other information.

3. Optionally, make the following advanced settings:

Algorithm (only available with WPA/WPA2 encryption mode): Select an encryption algorithm which can be either **AES** or **TKIP**. For security reasons, it is recommended to use **AES**.

Frequency band: The access points assigned to this wireless network will transmit on the selected frequency band(s). The 5 GHz band generally has higher performance, lower latency, and is typically less disturbed. Hence it should be preferred for e.g. VoIP communication. For more information on which AP types support the 5 GHz band, see **Wireless Protection > Access Points**.

Time-based access: Select this option if you want to automatically enable and disable the wireless network according to a time schedule.

Select active time: Select a time period definition which determines when the wireless network is enabled. You can add a new time period definition by clicking the Plus icon.

Client isolation: Prevent traffic among wireless clients that connect to the same SSID on the same radio. This setting is typically used on guest networks.

Hide SSID: If you want to hide your SSID, select **Yes** from the drop-down list. Please note that this is no security feature.

Fast Transition (only available with WPA2 Personal/Enterprise encryption mode): Force wireless networks to use the IEEE 802.11r standard.

Note - This feature doesn't work between Sophos legacy access points and Sophos APX series access points.

MAC filtering type: To restrict the MAC addresses allowed to connect to this wireless network, select **Blacklist** or **Whitelist**. With **Blacklist**, all MAC addresses are allowed except those listed on the MAC address list selected below. With **Whitelist**, all MAC addresses are prohibited except those listed on the MAC address list selected below.

MAC addresses: The list of MAC addresses used to restrict access to the wireless network. MAC address lists can be created on the **Definitions & Users > Network Definitions > MAC Address Definitions** tab. Note that it is not recommended to have more than 5000 MAC addresses.

4. Click **Save**.

Your settings will be saved. The wireless network appears on the **Wireless Networks** list.

Next Steps for Separate Zone Networks

When you created a wireless network with the option **Separate Zone**, a new corresponding virtual hardware interface will be created automatically, e.g., **wlan0**. To be able to use the wireless network, some further manual configuration steps are required. Proceed as follows:

1. Configure a new network interface.

On the **Interfaces & Routing > Interfaces > Interfaces** tab create a new interface and select your wireless interface (e.g., wlan0) as hardware. Make sure that type is “Ethernet” and specify the IP address and netmask of your wireless network.

2. Enable DHCP for the wireless clients.

For your clients to be able to connect to Sophos UTM, they need to be assigned an IP address and a default gateway. Therefore, on the **Network Services > DHCP > Servers** tab, set up a DHCP server for the interface.

3. Enable DNS for the wireless clients.

For your clients to be able to resolve DNS names they have to get access to DNS servers. On the **Network Services > DNS > Global** tab, add the interface to the list of allowed networks.

4. Create a NAT rule to mask the wireless network.

As with any other network you have to translate the wireless network's addresses into the address of the uplink interface. You create the NAT rule on the **Network Protection > NAT > Masquerading** tab.

5. Create one or more packet filter rules to allow traffic from and to the wireless network.

As with any other network you have to create one or more packet filter rules to allow the traffic to pass Sophos UTM, e.g., web surfing traffic. You create packet filter rules on the **Network Protection > Firewall > Rules** tab.

13.3 Access Points

The **Wireless Protection > Access Points** pages provide an overview of the access points (AP) known to the system. You can edit AP attributes, delete or group APs and assign wireless networks to APs or AP groups.

Technical information:

- With BasicGuard subscription, you can connect a single access point to Sophos UTM.
- Due to the bandwidth on APs with ac standard, there may be an automatic channel change in some cases. For example, although you defined channel 36, an AP could choose channel 40 because that channel provides a better connection. The displayed channel on the **Overview** tab always represents the primary channel. This behavior

applies to all AP 100 appliances (AP 100, AP 100C, and AP 100X) and all SG appliances with integrated access (SG 105w/115w and SG 125w/135w).

- The country setting of an AP regulates the available channels to be compliant with local law.

13.3.1 Dedicated access points

| Name | Standards | Band | Band for mesh networks | FCC regulatory domain (mainly US) | ETSI regulatory domain (mainly Europe) |
|---------|------------------|-------------------------------------|------------------------|--|--|
| AP 15 | 802.11b/g/n | 2.4 GHz | 2.4 GHz | Channels 1-11 | Channels 1-13 |
| AP 15C | 802.11b/g/n | 2.4/5 GHz dual-band or single-radio | 2.4 GHz | Channels 1-11, 36-48, 149-165 | Channels 1-13, 36-48 |
| AP 55 | 802.11a/b/g/n/ac | 2.4/5 GHz dual-band or dual-radio | 2.4 GHz and 5 GHz | Channels 1-11, 36-64, 100-140, 149-165 | Channels 1-13, 36-64, 100-116, 132-140 |
| AP 55C | 802.11a/b/g/n/ac | 2.4/5 GHz dual-band or dual-radio | 2.4 GHz and 5 GHz | Channels 1-11, 36-64, 100-140, 149-165 | Channels 1-13, 36-64, 100-116, 132-140 |
| AP 100 | 802.11a/b/g/n/ac | 2.4/5 GHz dual-band or dual-radio | 2.4 GHz and 5 GHz | Channels 1-11, 36-64, 100-140, 149-165 | Channels 1-13, 36-64, 100-116, 132-140 |
| AP 100C | 802.11a/b/g/n/ac | 2.4/5 GHz dual-band or dual-radio | 2.4 GHz and 5 GHz | Channels 1-11, 36-64, 100-140, 149-165 | Channels 1-13, 36-64, 100-116, 132-140 |
| APX 120 | 802.11a/b/g/n/ac | 2.4/5 GHz dual-band or dual-radio | 2.4 GHz and 5 GHz | Channels 1-11, 36-64, 100-140, 149-165 | Channels 1-13, 36-64, 100-116, 132-140 |

| | | | | | |
|---------|------------------------|--|-------------------|--|--|
| APX 320 | 802.11a/b/g/n/ac-wave2 | 2.4/5 GHz dual-band or dual-radio (2.4 GHz & 5 GHz lower band (CH36-CH-64)) or (5 GHz lower band (CH36-CH-64) & 5 GHz upper band (CH100-CH165)) | 2.4 GHz and 5 GHz | Channels 1-11, 36-64, 100-140, 149-165 | Channels 1-13, 36-64, 100-116, 132-140 |
| APX 530 | 802.11a/b/g/n/ac-wave2 | 2.4/5 GHz dual-band or dual-radio | 2.4 GHz and 5 GHz | Channels 1-11, 36-64, 100-140, 149-165 | Channels 1-13, 36-64, 100-116, 132-140 |
| APX 740 | 802.11a/b/g/n/ac-wave2 | 2.4/5 GHz dual-band or dual-radio | 2.4 GHz and 5 GHz | Channels 1-11, 36-64, 100-140, 149-165 | Channels 1-13, 36-64, 100-116, 132-140 |

13.3.2 Outdoor access points

| Name | Standards | Band | Band for mesh networks | FCC regulatory domain (mainly US) | ETSI regulatory domain (mainly Europe) |
|---------|------------------|---------------------------------|------------------------|--|--|
| AP 100X | 802.11a/b/g/n/ac | 2.4/5 GHz dual-band/-dual-radio | 2.4 GHz | Channels 1-11, 36-64, 100-116, 132-140 | Channels 1-13, 100-116, 132-140 |

Cross Reference - For information about supported Sophos access point models go to the [Sophos website for AP models](#) and to the [Sophos website for APX models](#).

13.3.3 Overview

The **Wireless Protection > Access Points > Overview** page provides an overview of access points (AP) known to the system. Sophos UTM distinguishes between active, inactive and pending APs. To make sure that only genuine APs connect to your network, APs need to be authorized first.

Access points can be temporarily disabled on the **Grouping** tab. When an AP is physically removed from your network, you can delete it here by clicking the **Delete** button. As long as

Pending state after deletion. SG "w" appliances with on-board WiFi cannot be deleted from the AP list.

Tip - Each section of this page can be collapsed and expanded by clicking the Collapse icon on the right of the section header.

Active Access Points

Here, APs are listed that are connected, configured, and running. To edit an AP, click the **Edit** button (see **Editing an Access Point** below).

Inactive Access Points

Here, APs are listed that have been configured in the past but are currently not connected to Sophos UTM. If an AP remains in this state for more than five minutes, please check the network connectivity of the AP and the configuration of your system. A restart of the Wireless Protection service will erase **Last Seen** timestamps. To edit an AP, click the **Edit** button (see **Editing an Access Point** below).

Pending Access Points

Here, APs are listed that are connected to the system but not yet authorized. To authorize an access point, click the **Accept** button (see **Editing an Access Point** below).

After receiving its configuration, the now authorized access point will be immediately displayed in one of the above sections, depending on whether it is currently active or not.

Editing an Access Point

1. Click the **Edit** or **Accept** button of the respective access point.

The **Edit Access Point** dialog window opens.

2. Make the following settings:

Label (optional): Enter a label to easily identify the AP in your network.

Country: For dedicated APs select the country where the AP is located. For a Local WiFi Device the country is derived from the global country setting on the **Management > System Settings > Organizational** tab.

Important Note - The country setting regulates which channels are available for transmission. To comply with local law, always select the correct country of operation.

Note -In the Sophos APX series access point, when you change the country, the channel list shows only the **Auto** option until you save the settings. Also, until the Sophos

APX series access point reboots and is up, it retains the previously configured country's channel list.

Group (optional): You can organize APs in groups. If a group has been created before, you can select it from the drop-down list. Otherwise select **<< New group >>** and enter a name for the group into the appearing **Name** text box. Groups can be organized on the **Grouping** tab.

3. In the **Wireless Networks** section, make the following settings:

Wireless network selection (only if no group or a new group is selected): Select the wireless networks the access point should broadcast. This is useful if you have, for example, a company wireless network that should only be broadcasted in your offices, and a guest wireless network that should only be broadcasted in public parts of your building. You can search the wireless network list by using the filter field in the list header.

Note - It is possible to assign 8 wireless networks to the access point. Each wireless network can be broadcasted on 2.4 GHz and 5 GHz, which results in 16 SSIDs (8 per radio). For more information on access points bands, see chapter [Access Point](#).

Note - For an access point to broadcast a wireless network some conditions have to be fulfilled. They are explained in section [Rules for Assigning Networks to APs](#) below.

4. Optionally, in the **Mesh Networks** section, make the following settings (only available with AP 50 and only if a mesh network is defined on the **Mesh Networks** tab):

Mesh roles: Click the Plus icon to select mesh networks that should be broadcasted by the access point. A dialog window opens.

- **Mesh:** Select the mesh network.
- **Role:** Define the access point's role for the selected mesh network. You must designate at least one access point as root. You can select either Sophos access points or Sophos APX series access points. A root access point is directly connected to Sophos UTM. A mesh access point, after having received its initial configuration, once unplugged from Sophos UTM will connect to a root access point via the mesh network. Note that an access point can be mesh access point only for one single mesh network.

After saving, the access point icon in the **Mesh roles** list designates the access point's role. Via the functional icons you can edit a mesh role or delete it from the list.

Important Note - If you delete a mesh role from the **Mesh roles** list, you have to plug the access point into your Ethernet again to get its initial configuration. To change the mesh network without having to plug the access point into your Ethernet again, do not

delete the mesh role but instead click the Edit icon of the mesh role, and select the desired mesh network.

5. Optionally, make the following advanced settings:

Band (only available for Local WiFi Devices): The Local WiFi Device allows one band only. Select **5 GHz** or **2.4 GHz** from the drop-down list.

Channel (only available for Local WiFi Devices): Either keep the default setting **Auto** which automatically selects the last used channel for transmit or select a fix channel.

TX Power (only available for Local WiFi Devices): Either keep the default setting **100 %** for the access point to send with maximum power or down-regulate the power to reduce the operating distance, e.g., to minimize interference.

Channel 2.4 GHz: Either keep the default setting **Auto** which will automatically select the least used channel for transmit or select a fix channel.

Dyn Chan: If selected, the AP scans all available channels and connects to the channel with the best signal.

Time-based scan: If selected, the AP checks for the best signal channel on a regular time base. To add a time event, click the Plus icon and enter the time data. You can also select a predefined time event which is listed on the **Definitions & Users > Time Period Definitions** tab.

Channel 5 GHz (only available if supported by access point): You can keep the default setting **Auto** which will automatically select the least used channel for transmit. Or you can select a fix channel.

Tip - When you select **Auto**, the currently used channel will be announced in the access point entry.

Note - For APX 320, both radios must be on 5 GHz to enlist all available channels.

TX power 2.4 GHz: You can keep the default setting **100 %** for the access point to send with maximum power. Or you can down-regulate the power to reduce the operating distance, e.g., to minimize interference.

TX power 5 GHz (only available with AP 50, AP 55, AP 55C, AP 100, AP 100C and AP 100X): You can down-regulate the power output for the 5 GHz band separately.

STP: To enable Spanning Tree Protocol, select **Enabled** from the drop-down list. This network protocol detects and prevents bridge loops. STP is mandatory if the access point broadcasts a mesh network.

VLAN tagging: VLAN tagging is disabled by default. If you want to connect the AP with an existing VLAN Ethernet interface, you need to enable VLAN tagging by selecting the

checkbox. Make sure that the VLAN Ethernet interface is added to the **Allowed interfaces** box on the **Global Settings > Global Settings** page.

Note - To introduce the usage of VLAN for your access points in your network, take the following steps: Connect the AP to Sophos UTM using standard LAN for at least a minute. This is necessary for the AP to get its configuration. Connecting it via VLAN from the beginning, the AP would not know of being in a VLAN and therefore would not be able to connect to Sophos UTM to get its configuration. When the AP is displayed, enable VLAN tagging and enter the VLAN ID. Then connect the AP to its intended VLAN, e.g., a switch.

Note - When using VLAN tagging for RED 15w, ensure that a VLAN interface exists on the RED tunnel endpoint interface.

AP VLAN ID: When **VLAN tagging** is enabled, enter the VLAN tag of the VLAN the access point should use to connect to Sophos UTM. Do not use the VLAN tags 0 and 1 as they usually have a special meaning on networking hardware like switches, and 4095 is reserved by convention.

Note - When VLAN tagging is configured, the AP will try DHCP on the configured VLAN for 60 seconds. If no IP address is received during that time, the AP will try DHCP on the regular LAN as a fallback.

6. Click **Save**.

The access point receives its configuration or configuration update, respectively.

Note - A configuration change needs approximately 15 seconds until all interfaces are reconfigured.

If VLAN tagging is configured but the AP cannot contact Sophos UTM via VLAN, the AP will reboot itself and try again after receiving the configuration.

Cross Reference - Find information about configuring auto channel assignment for Sophos Wireless Access Points in the [Sophos Knowledge Base](#).

Rules for Assigning Networks to APs

An access point can only be assigned to a wireless network if the **Client traffic** option of the wireless network and the **VLAN tagging** option of the access point fit together. The following rules apply:

- Wireless network with client traffic **Separate Zone**: VLAN tagging of the access point can be enabled or disabled.

- Wireless network with client traffic **Bridge to AP LAN**: VLAN tagging of the access point has to be disabled.
- Wireless network with client traffic **Bridge to VLAN**: VLAN tagging of the access point has to be enabled. The respective wireless clients will use the **Bridge to VLAN ID** specified for the wireless network, or they will receive their VLAN ID from the RADIUS server, if specified.

Reflash Bricked APs

The main reason for returned Access Points are bricked devices with a broken firmware. Therefore you can download a tool to reflash Sophos Access Points. The tool is available [here](#).

If you are running the tool on Windows 8, you may have to disable the Windows Firewall first.

To reflash a Sophos Access Point, proceed as follows:

1. Download the AP reflash utility.
2. Extract the downloaded files.
3. Run the EXE file as Administrator to start the reflash utility.
4. Follow the instructions to flash the AP device.

The power-LED will flash very fast.

The process is completed if the power-LED flashes every second.

Reflash Bricked RED Devices

You can download a tool to reflash Sophos RED 10 devices. The tool is available [here](#).

If you are running the tool on Windows 8, you may have to disable the Windows Firewall first.

To reflash a Sophos RED, proceed as follows:

1. Download the reflash utility.
2. Extract the downloaded files.
3. Run the EXE file as Administrator to start the reflash utility.
4. Follow the instructions to reflash the RED device.

Flashing will take about two minutes.

13.3.4 Grouping

On the **Wireless Protection > Access Points > Grouping** page you can organize access points in groups. The list provides an overview of all access point groups and ungrouped access points. Access points and groups can be distinguished by their respective icon.

To create an access point group, proceed as follows:

1. On the **Grouping** page, click **New Group**.

The **Add Access Point Group** dialog box opens.

2. Make the following settings:

Name: Enter a descriptive name for the access point group.

VLAN tagging: VLAN tagging is disabled by default. If you want to connect the AP with an existing VLAN Ethernet interface, you need to enable VLAN tagging by selecting the checkbox. Make sure that the VLAN Ethernet interface is added to the **Allowed interfaces** box on the **Global Settings > Global Settings** page.

AP VLAN ID: Enter the VLAN tag that should be used by this group of APs to connect to Sophos UTM. Do not use the VLAN tags 0 and 1 as they usually have a special meaning on networking hardware like switches, and 4095 is reserved by convention.

Access point selection: Select the access points that should become members of the group. Only access points that are not assigned to any other group are displayed.

Note - Local WiFi Devices cannot be grouped and do not appear in the access point selection. Local WiFi Devices appear in the **Grouping** list.

Wireless network selection: Select the wireless networks that should be broadcasted by the access points of this group.

Note - For an access point to broadcast a wireless network some conditions have to be fulfilled. They are explained in chapter **Access Points > Overview**, section [Rules for Assigning Networks to APs](#).

3. Click **Save**.

The new access point group appears on the **Grouping** list.

To either edit or delete a group, click the corresponding buttons of a group.

To either edit or delete an access point, click the corresponding buttons of an access point. For more information on editing and deleting access points, see **Access Points > Overview**.

13.3.5 RED 15w

In general all wireless modes (Separate Zone, Bridge to AP LAN and Bridge to VLAN) are supported by RED 15w. The actual meaning of the modes can vary depending on the mode that is actually selected.

Standard/Unified and Standard/Split

In Standard/Unified mode, all traffic of the RED is sent to Sophos UTM.

In Standard/Split mode, all traffic of the RED that is part of networks listed in the **Split Networks** is sent to Sophos UTM. All other traffic is sent to the default gateway specified by the remote DHCP server. Normally, this would be the Internet router where the RED is connected to at the remote site.

The following preconditions must be met for wireless:

- RED tunnel interface on the Sophos UTM site is up and has an IP address
- DHCP server is running on the RED tunnel interface
- DNS can be resolved on this RED interface
- Firewall allows traffic from the RED interface to Sophos UTM for AWE client and VXLAN ([RFC 7348](#)) (only for **Separate Zone**).
- RED interface is added to the **Allowed Interfaces** section under **Wireless Protection > Global Settings**

Separate Zone: All traffic from a separate zone network is sent to Sophos UTM using VXLAN protocol. The VXLAN packets are not encrypted but will be encrypted on the way to Sophos UTM while crossing the RED tunnel. The separate zone networks are connected to each other on the Sophos UTM site as usual. The firewall has to allow this type of traffic.

Bridge to AP LAN: The RED will bridge the SSID in the LAN network behind the RED. This includes LAN ports 1-4. Clients connected to this SSID are able to reach the RED tunnel endpoint interface on the Sophos UTM site if the firewall is configured to allow traffic from the RED network to this interface (enabled by default).

Bridge to VLAN (Standard/Unified): The RED will tag all traffic from clients that are connected to this SSID using the configured VLAN tag. Clients are able to reach all network devices with the same VLAN tag that are connected to LAN port 1-4 as well as a VLAN tagged interface on top of the tunnel endpoint interface on the Sophos UTM site.

Bridge to VLAN (Standard/Split): The clients are able to reach all hosts behind the RED that own the same VLAN tag. Also the tunnel endpoint is reachable if a VLAN interface is configured on top of the RED interface on the Sophos UTM site. The split networks cannot be reached as these are routed for untagged packets only.

Transparent/Split

In this mode, only networks listed in the **Split Networks** list are reachable through Sophos UTM. All other networks are routed through the Internet-providing router at the remote site. The remote network also provides DHCP and DNS. That means the RED tunnel endpoint interface on the Sophos UTM site has to obtain an IP address by the remote DHCP server. The following preconditions must be met for wireless:

- RED tunnel interface on the Sophos UTM site is up and has an IP address
- DNS can be resolved on this RED interface
- Firewall allows traffic from the RED interface to Sophos UTM for AWE client and VXLAN ([RFC 7348](#)) (only for **Separate Zone**).

- RED interface is added to the **Allowed Interfaces** section under **Wireless Protection > Global Settings**
- The remote DHCP server has to provide the DHCP option 234 which must contain the IP address of the RED interface on the Sophos UTM site. Otherwise the fallback IP 1.2.3.4 is used.

Separate Zone is the same as for Standard/Unified and Standard/Split.

Bridge to AP LAN is the same as for Standard/Unified and Standard/Split.

Bridge to VLAN: The clients are able to reach all hosts behind the RED that own the same VLAN tag on LAN ports 1-4 as well as on the WAN port. The split networks cannot be reached as these are routed for untagged packets only.

13.4 Mesh Networks

On the **Wireless Protection > Mesh Networks** page you can define mesh networks, and associate access points that should broadcast them. In general, in a mesh network multiple access points communicate with each other and broadcast a common wireless network. On the one hand, access points connected via a mesh network can broadcast the same wireless network to clients, thus working as a single access point, while covering a wider area. On the other hand, a mesh network can be used to bridge Ethernet networks without laying cables.

Access points associated with a mesh network can play one of two roles: root access point or mesh access point. Both broadcast the mesh network, thus the amount of other wireless networks they can broadcast is reduced by one.

You cannot create a mesh network between Sophos AP series and Sophos APX series access points. Also, you cannot create a mesh network in Sophos APX series access points if both radios are using the 5 GHz band.

- **Root access point:** It has a wired connection to Sophos UTM and provides a mesh network. An access point can be root access point for multiple mesh networks.
- **Mesh access point:** It needs a mesh network to connect to Sophos UTM via a root access point. An access point can be mesh access point for only one single mesh network at a time.

A mesh network can be used for two main use cases: you can implement a wireless bridge or a wireless repeater:

- **Wireless bridge:** Using two access points, you can establish a wireless connection between two Ethernet segments. A wireless bridge is useful when you cannot lay a cable to connect those Ethernet segments. While the first Ethernet segment with your Sophos UTM is connected to the Ethernet interface of the root access point, the second Ethernet segment has to be connected to the Ethernet interface of the mesh access point. Using multiple mesh access points, you can connect more Ethernet segments.

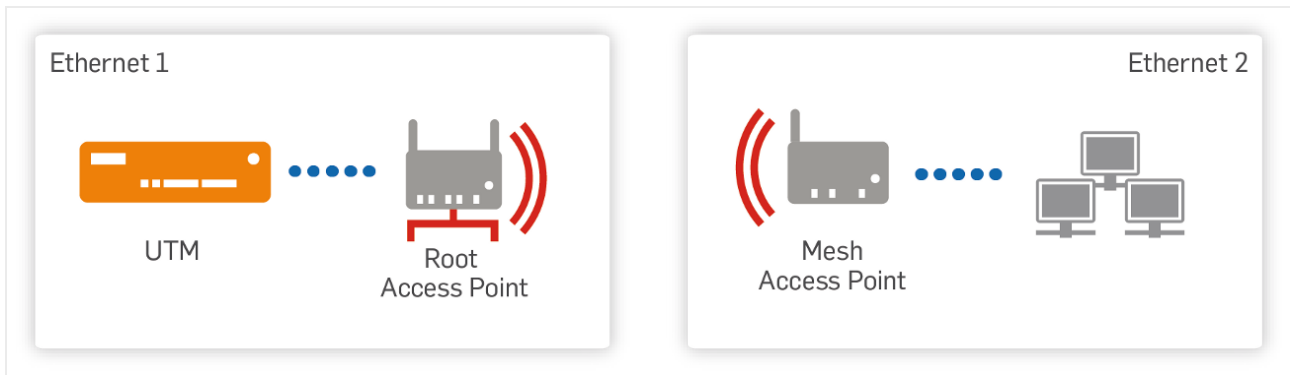


Figure 21 Mesh Network Use Case Wireless Bridge

- **Wireless repeater:** Your Ethernet with your Sophos UTM is connected to the Ethernet interface of a root access point. The root access point has a wireless connection via the mesh network to a mesh access point, which broadcasts wireless networks to wireless clients.

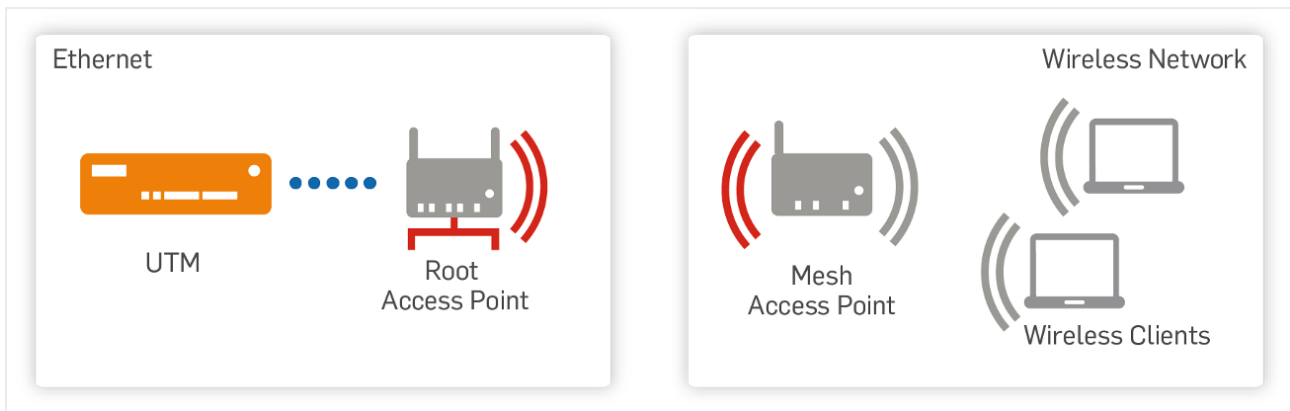


Figure 22 Mesh Network Use Case Wireless Repeater

To define a new mesh network, do the following:

1. On the **Mesh Networks** page, click **Add Mesh Network**.

The **Add Mesh Network** dialog box opens.

2. Make the following settings:

Mesh-ID: Enter a unique ID for the mesh network.

Frequency band: Access points assigned to this network will transmit the mesh network on the selected frequency band. Generally, it is a good idea to use a different frequency band for the mesh network than for the broadcasted wireless networks.

Note - Except for AP 50, all mesh network-capable APs transmit the mesh network on 2.4 GHz only. If an AP 50 transmits on 5 GHz, it is not compatible to other APs which transmit on 2.4 GHz.

Comment (optional): Add a description or other information.

Access points: Click the Plus icon to select access points that should broadcast the mesh network. A dialog window **Add Mesh Role** opens:

- **AP:** Select an access point. All APs which can be used for broadcasting mesh networks are listed under **Wireless Protection > "Access Points" on page 386**.
- **Role:** Define the access point's role for the selected mesh network. You must designate at least one access point as root. You can select either Sophos access points or Sophos APX series access points. A root access point is directly connected to Sophos UTM. A mesh access point, after having received its initial configuration, once unplugged from Sophos UTM will connect to a root access point via the mesh network. Note that an access point can be mesh access point only for one single mesh network.

Note - You don't need to specify a mesh network role for Sophos APX series access points.

Note - It is crucial for the initial configuration to plug the mesh access point like every other access point into one of the Ethernet segments selected in the **Allowed interfaces** box on the **Global Settings** tab.

Use the Delete icon in the **Access Points** list to delete an access point from the list.

Important Note - If you delete a mesh access point from the **Access Points** list, you have to plug the access point into your Ethernet again to get its initial configuration. To change the mesh network without having to plug the access point into your Ethernet again, do not delete the access point but instead click the access point's **Edit** button on the **Access Points > Overview** tab, click the Edit icon in the **Mesh Networks** section, and select the desired mesh network.

The access point icon designates an access point's role. You can search the access point list by using the filter field in the list header.

3. Click **Save**.

Your settings will be saved. The mesh network appears on the **Mesh Networks** list.

13.5 Wireless Clients

The **Wireless Protection > Wireless Clients** page gives you an overview of clients that are currently connected to an access point or have been connected in the past.

As not all clients transmit their name you can give them a name here to ease distinguishing known clients in the overview. If clients transmit their NetBIOS name during the DHCP request, their name is displayed in the table. Otherwise they will be listed as **[unknown]**. You can change the name of (unknown) clients by clicking the **Plus** icon in front of the

name. Then enter a name and click **Save**. It takes a few seconds for the change to take effect. Click the **Reload** button in the upper right corner of WebAdmin to see the name of the client. If you want to change the name, click the **Edit** button.

Note - Adding a name to a client can have a short effect on the performance.

You can also delete clients from the table by clicking the **Delete** icon.

A restart of the Wireless Protection service will erase **Last seen** timestamps.

13.6 Hotspots

On the **Wireless Protection > Hotspots** pages you can manage access with the captive portal system. The Hotspot feature allows cafés, hotels, companies, etc. to provide time- and traffic-restricted Internet access to guests. The feature is available within the wireless subscription, but also works with wired networks.

Note - Technically, the Hotspot feature serves to restrict traffic which is basically allowed by the firewall. Therefore you have to ensure that a firewall rule exists which allows the traffic to be managed via the hotspots. It is recommended to test the traffic with the hotspot feature disabled before enabling the hotspots.

Sophos UTM intercepts HTTP traffic and redirects users to a predefined page, the so-called hotspot or captive portal. There, users have to use one of the configured authentication methods before they can access the allowed networks, e.g. the Internet. HTTPS and other traffic is not intercepted and redirected to the hotspot.

Before a device in a hotspot network can receive or send traffic to other devices, it has to authenticate. Otherwise the UTM will drop the traffic.

Note - If the Hotspot feature is used in combination with an active-active cluster setup, the respective traffic cannot be distributed between master and workers. All traffic from and to the hotspot interfaces will be directed through the master.

Hotspot Generation

In a first step, you create and enable a hotspot with a specific type of access. The following types are available:

- **Terms of use acceptance:** The guest is presented a terms of use, which you can define, and has to select a checkbox to get access.
- **Password of the day:** The guest has to enter a password to get access. The password changes on a daily basis.
- **Voucher:** The guest gets a voucher and has to enter the voucher code to get access. The voucher can be limited in the number of devices, in time, and traffic.

Distribution of Access Information to Guests

With the types **Password of the day** and **Voucher**, the access information has to be handed out to the guests. Therefore you can define users who are allowed to manage and distribute access information. Those users receive and distribute the access information via the **Hot-spot** tab of the User Portal:

- **Password of the day:** The current password can be sent via email and the users find the password in the User Portal. The users forward the password to the guests. They can generate or enter a new password. Hereby, the former password automatically becomes invalid and active sessions will be terminated. Potential other users will be informed of the new password, either by email or via the User Portal, depending on what is configured for them.
- **Voucher:** In the User Portal, users have the possibility to create vouchers, each with a unique code. Different types of vouchers can be available if specified by an administrator. The vouchers can be printed or exported and given to the guests. A list of created vouchers gives an overview about their usage and helps to manage them.

Legal Information

In many countries, operating a public wireless LAN is subject to specific national laws, restricting access to websites of legally questionable content (e.g., file sharing sites, extremist websites, etc.). To meet this requirement, you can combine the hotspot with the web protection capabilities of Sophos UTM, which allow you to control web access by blocking and allowing everything from an entire website category type to a single URL. Sophos UTM gives you complete control over what is allowed to be accessed, by whom, and when. That way you can put the hotspot under heavy restrictions, if national or corporate policies require you to do so.

Using the built-in HTTP proxy of Sophos UTM also gives you advanced logging and reporting capabilities. The reporting will show who visited what site, when, and how many times, allowing you to identify inappropriate usage in case you want to operate a hotspot without any access restrictions.

In addition to that, legal regulations may require you to register your hotspot at the national's regulatory body.

13.6.1 Global

On the **Wireless Protection > Hotspots > Global** tab you can enable the Hotspots feature and define users who are allowed to view and distribute hotspot access information.

To configure hotspots, proceed as follows:

1. On the **Global** tab, enable hotspots.
Click the toggle switch.

The toggle switch turns green and the **Global Hotspot Settings** area becomes editable.

2. Select the allowed users.

Select the users or groups or add new users that should be able to provide hotspot access information via the User Portal. Users selected here can change the password of the day and are able to create hotspot vouchers. How to add users is explained on the **Definitions & Users > Users & Groups > Users** page.

3. Click **Apply**.

Your settings will be saved.

Live Log

The Hotspots live log gives you information on the usage of the hotspots. Click the **Open Live Log** button to open the Hotspots live log in a new window.

Download Templates

Here you can download the hotspot login template and the voucher template that are used by default when adding a new hotspot. You can modify the default templates to customize your hotspot login page or the voucher design without the need to create them from scratch. You can upload the customized HTML and PDF template on the **Wireless Protection > Hotspots > [Hotspots](#)** tab.

Note - We support the use of PDF version 1.4.

1. Click the respective download button.

A download dialog window opens.

2. Save the file.

The file will be downloaded.

13.6.2 Hotspots

On the **Wireless Protection > Hotspots > Hotspots** tab you can manage different hotspots.

Note - A hotspot has to be assigned to an existing interface, typically a WLAN interface. All hosts using this interface will automatically be restricted by the hotspot. Therefore, before you create a hotspot you would typically create a wireless network with client traffic **Separate Zone**, then create an interface for the respective WLAN interface hardware. For more information, see **Wireless Protection > [Wireless Networks](#)**.

To create a hotspot, proceed as follows:

1. Click **Add Hotspot**.

The **Add Hotspot** dialog box opens.

2. Make the following settings:

Name: Enter a descriptive name for this hotspot.

Interfaces: Add the interfaces which are to be restricted by the hotspot. Please ensure that for the selected interfaces a firewall rule exists which allows the desired traffic. An interface can only be used by one hotspot.

Caution - You should not select an uplink interface here because traffic to the Internet will completely be blocked afterwards. Additionally, we strongly advise against using interfaces used by servers which provide essential services like authentication. You may irreversibly lock yourself out of WebAdmin!

Administrative Users: Add or select users for administrative settings. Administrative users are allowed to create vouchers or change the password of the day in the User Portal. By default nobody is allowed to make administrative settings.

Redirect to HTTPS: If enabled, users will be redirected to HTTPS.

- **Hostname type:** Select if you want to redirect to an **IP address** or to a **custom hostname (DNS)**.
- **Hostname** (only available with custom hostname): Select or add the hostname for the redirect.

Hotspot type: Select the hotspot type for the selected interfaces.

- **Password of the day:** A new password will be created automatically once a day. This password will be available in the User Portal on the **Hotspots** tab which is available to all users specified on the **Global** tab. Additionally it will be sent to the specified email addresses.
- **Voucher** (not available with BasicGuard subscription): With this hotspot type, in the User Portal tokens with different limitations and properties can be generated, printed and given to customers. After entering the code, the customers can then directly access the Internet.

Note - If only a normal Ethernet interface is configured for this hotspot, SSID and PSK will not be displayed. If you use a normal interface and a WLAN interface, it will be displayed.

- **Terms of use acceptance:** Customers can access the Internet after accepting the Terms of Use.
- **Backend authentication:** With this hotspot type, users can authenticate via any supported backend mechanism (see **Definitions & Users > Authentication Services**). With this type, the user credentials are stored to periodically check if the users are still authorized.

Note - If you select **Backend authentication** a new entry field for OTP token appears on the login form if Hotspot is configured as an OTP facility.

Note - Every hotspot type drops the packets if the conditions are not fulfilled. ICMP packets types 8 and 0 (Echo Request and Echo Reply) will not be dropped.

Password creation time (only with Hotspot type **Password of the day**): The assigned time of the day at which the new password will be created. At this time the former password will immediately get invalid and current sessions will be cut off.

Send password by email to (only with Hotspot type **Password of the day**): Add email addresses to which the password shall be sent.

Voucher definitions (only with Hotspot type **Voucher**): Add or select the voucher definitions you want to use for the hotspot. How to add a voucher definition is explained on the **Voucher Definitions** page.

Devices per voucher (only with Hotspot type **Voucher**): Enter the number of devices which are allowed to log in with one voucher during its lifetime. It is not recommended to use the **unlimited** entry.

Hotspot users (only with Hotspot type **Backend Authentication**): Select the users or user groups or add the users that should be able to access the hotspot via backend authentication. Typically, this is a backend user group.

Session expires (only with Hotspot type **Terms of Use Acceptance** or **Backend Authentication**): Select the time span after which the access will expire. After that, with the hotspot type **Terms of Use Acceptance**, the users have to accept the terms of use again to log in. With the hotspot type **Backend Authentication**, the users have to authenticate again.

Synchronize password with PSK of wireless networks (only with Hotspot type **Password of the day**): Select this option to synchronize the new generated/saved password with wireless PSK for separate zone networks.

Note - With the new PSK all APs that are configured with a separate zone wireless network that is also used as a hotspot interface will be reconfigured and restarted. This means all connections will be dropped.

Users have to accept terms of use (not with Hotspot type **Terms of Use Acceptance**): Select this option if you want the hotspot users to accept your terms of use before accessing the Internet.

- **Terms of use:** Add the text to be displayed as terms of use. Simple HTML markup and hyperlinks are allowed.

Redirect to URL after login: If selected, after entering the password or the voucher data, the users will be redirected automatically to a particular URL, e.g., your hotel's website or a webpage stating your portal system policies.

- **URL:** URL to which users are redirected.

Note - When you select hotspot type **Voucher** the **Redirect to URL after login** does not automatically redirect to the configured URL. Users will be redirected to a statistics page which contains important information about the voucher, e.g. period of validity. Users will be able to continue to the configured URL when they click on the link: **You will be redirected to [URL]**.

Comment (optional): Add a description or other information.

3. Optionally, make the following hotspot customization settings:

By default, users will be presented a login page with the Sophos logo. You can use a customized HTML file with your own images and stylesheets. Additionally, you can customize the voucher layout.

Customization type: Select the customization type. The following types are available:

- **Basic:** Use the default login page template. If required, change logo, title, and text.

Logo: Upload a logo for the login page. Supported image file types are jpg, png and gif. A maximum image width of 300 px and height of 100 px is recommended (depending on the title length). Use the **Restore Default** button to select the default Sophos logo again.

Scale logo to recommended size: If selected, a logo exceeding the recommended width or height will be scaled down and displayed in the recommended size. If not selected, the logo will be displayed in the original size.

Title: Add a title for the login page. Simple HTML markup and hyperlinks are allowed.

Custom text: Add an additional text for the login page. You can for example enter the SSID of the wireless network to be used. Simple HTML markup and hyperlinks are allowed.

- **Full:** Select an individual login HTML page.

Login page template: Select the HTML template you want to use for your individual login page. Clicking the Folder icon opens a window where you can select and upload the file. Use the **Restore Default** button to select the default Sophos HTML template again. In this template, you can use variables that can dynamically insert information for each hotspot. For example, you can add the company name and administrator information, the terms of use and the login form. See detailed information below, in [Using Variables in Login Page Template](#). You can download the default HTML template on the **Wireless Protection > Hotspots > Global** tab.

Images/Stylesheets: Add files that are referenced in your login page template, e.g., images, stylesheets, or JavaScript files. Clicking the Folder icon opens a window where you can select and upload the files.

Voucher template (only with hotspot type **Voucher**): Clicking the Folder icon opens a window where you can select and upload the PDF file with the voucher layout. By default, a default template is used. You can restore the default clicking the **Restore Default** button. The voucher PDF file has to have a PDF version PDF 1.5 or lower. It may have any page size and format—both size and format will be adjust during voucher creation in the User Portal, depending on page size and number of vouchers per page specified there. You can download the default PDF template on the **Wireless Protection > Hotspots > Global** tab.

The PDF file may contain the following variables that will be replaced with the respective values during voucher generation in the User Portal:

- Wireless network name (SSID): `<?ssid0?>` (and `<?ssid1?>`, `<?ssid2?>` and so on, if the WLAN has more than one SSIDs)
- Wireless network password: `<?psk0?>` (and `<?psk1?>`, `<?psk2?>` and so on, if the WLAN has more than one SSIDs)
- Voucher code: `<?code?>`
- Voucher validity time: `<?validity?>`
- Voucher data limit: `<?datalimit?>`
- Voucher time limit: `<?timelimit?>`
- Comment: `<?comment?>`
- QR code with the hotspot access data encoded: `<?qrX?>`. The upper left corner of the QR code will be placed on the lower left corner of the variable.

Note - When using variables, the PDF file must include the entire character sets of the fonts used. When a variable is replaced by its value, and one of the substitute characters is not available, it will be displayed incorrectly. We recommend to add the string `<?abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789?>` (for English usage) to your PDF file, which will automatically be removed during voucher generation. If you use another language, you can include any other character set you want. Additionally, it is recommended to use a separate line for the variables as the layout could get corrupted if the substituted text is too long.

4. Click **Save**.

The hotspot will be created and appears on the **Hotspots** list.

Tip - You can open a preview of the login page after saving the hotspot. In the **Hotspots** list just click the button **Preview Login Page** of the respective hotspot.

To either edit or delete a hotspot, click the corresponding buttons.

Cross Reference - Find information about enabling backend authentication for hotspots in the [Sophos Knowledge Base](#).

Using Variables in Login Page Template

The HTML template for the login page may contain various variables that can dynamically insert information for the hotspot login page. When Sophos UTM processes a template in order to display a login page, it replaces any template variables with the relevant value.

Valid variables are:

- General variables

`<?company_text?>`: Custom company text as defined on **Management > Customization > Global**

`<?company_logo?>`: Company logo as defined on **Management > Customization > Global**. The variable will be replaced by the path of the logo file, usage e.g., ``

`<?admin_contact?>`: Administrator name or address as defined on **Management > Customization > Web Messages**

`<?admin_message?>`: Administrator information label as defined on **Management > Customization > Web Messages** (default: **Your cache administrator is:**)

`<?error?>`: Error message that arose while trying to log in.

- Variables used for all hotspot types

`<?terms?>`: Terms of use (as defined on **Hotspots** page)

`<?redirect_host?>`: Redirect URL that is specified for the hotspot (as defined on **Hotspots** page)

`<?location?>`: URL the user requested

`<?location_host?>`: Hostname of the URL the user requested

`<?login_form?>`: Login form suitable for the respective hotspot type: **Password** text box, **Token** text box, **Username** and **Password** text boxes, or **Accept** checkbox, and **Login** button. For creating customized login forms, see [User Specific Login Form](#) below.

`<?asset_path?>` (only important for customization mode **Full**): Hotspot-specific directory for storage of images or stylesheets (example usage: ``)

- Variables only used for Voucher type hotspots

`<?maclimit?>` Number of allowed devices per voucher of this hotspot (as defined on **Hotspots** page)

`<?numdevices?>`: Number of devices used for this voucher

`<?timeend?>`: End of validity period (can be defined on **Voucher Definitions** page)

`<?time_total?>`: Total time quota allowed (can be defined on **Voucher Definitions** page)

<?time_used?>: Time quota used up (can be defined on **Voucher Definitions** page)

<?traffic_total?>: Total data volume allowed (can be defined on **Voucher Definitions** page)

<?traffic_used?>: Data volume used up (can be defined on **Voucher Definitions** page)

Templates can contain `if` variables that make up sections like the ones shown below. Each section has an opening and a closing variable. The contents of an `if` section is only displayed on a specific condition.

| If Section | Meaning |
|--|--|
| <?if_loggedin?> <?if_loggedin_end?> | Section is displayed when the user has successfully logged in. |
| <?if_notloggedin?> <?if_notloggedin_end?> | Section is displayed when the user has not yet logged in, e.g., because terms of use have to be accepted or because an error occurred. |
| <?if_authtype_password?> <?if_authtype_password_end?> | Section is displayed when hotspot type is Password of the day . |
| <?if_authtype_disclaimer?> <?if_authtype_disclaimer_end?> | Section is displayed when hotspot type is Terms of Use Acceptance . |
| <?if_authtype_token?> <?if_authtype_token_end?> | Section is displayed when hotspot type is Voucher . |
| <?if_authtype_backend?> <?if_authtype_backendtoken_end?> | Section is displayed when hotspot type is Backend Authentication . |
| <?if_location?> <?if_location_end?> | Section is displayed when the user has been redirected. |
| <?if_redirect_url?> <?if_redirect_url_end?> | Section is displayed when the checkbox Redirect to URL after login is enabled. |
| <?if_not_redirect_url?> <?if_not_redirect_url_end?> | Section is displayed when the checkbox Redirect to URL after login is disabled. |
| <?if_timelimit?> <?if_timelimit_end?> | Section is displayed when a validity period is set for a voucher. |

| If Section | Meaning |
|--|--|
| <?if_trafficlimit?> <?if_trafficlimit_end?> | Section is displayed when a data volume is set for a voucher. |
| <?if_timequota?> <?if_timequota_end?> | Section is displayed when a time quota is set for a voucher. |
| <?if_maclimit?> <?if_maclimit_end?> | Section is displayed when a Devices per voucher value is specified. |
| <?if_terms?> <?if_terms_end?> | Section is displayed when Terms of Use are defined and enabled. |
| <?if_error?> <?if_error_end?> | Section is displayed when an error occurred while trying to log in. |

User-Specific Login Form

If you want to create your own login form instead of using the pre-defined <?login_form?> variable, consider the following:

- Enclose the form in the following tags:

```
<form action="?action=login" method="POST"> ... </form>
```

- For a Terms of Use Acceptance hotspot, add a checkbox named "accept":

```
<input type="checkbox" name="accept" value="true">
```

- For Password of the Day or Voucher hotspots, add a text box named "token":

```
<input type="text" name="token">
```

- For a Backend Authentication hotspot, add the two text boxes named "username" and "password":

```
<input type="text" name="username">
```

```
<input type="password" name="password">
```

- Add a means to submit the form, e.g., a Login button:

```
<input type="submit" name="login" value="Login">
```

Cross Reference - Find information about customizing the login page for Sophos UTM hotspots in the [Sophos Knowledge Base](#).

13.6.3 Voucher Definitions

On the **Wireless Protection > Hotspots > Voucher Definitions** tab you can manage different voucher definitions for voucher type hotspots.

To create a voucher definition, proceed as follows:

1. Click **Add Voucher Definition**.

The **Add Voucher Definition** dialog box opens.

2. Make the following settings:

Name: Enter a descriptive name for this voucher definition.

Validity period: Enter the time span for which a voucher with this definition will be valid. Counting is started at the first login. It is highly recommended to enter a time period.

Note - The maximum time for the **Validity Period** is two years.

Time quota: Here you can restrict the allowed online time. Enter the maximum online time after which a voucher of this definition expires. Counting is started at login and is stopped at logout. Additionally, counting is stopped after 5 minutes of inactivity.

Note - The maximum time for the **Time Quota** is two years.

Data volume: Here you can restrict the allowed data volume. Enter the maximum data volume to be transmitted with this voucher definition.

Note - The maximum **Data Volume** is 100 GB.

Comment (optional): Add a description or other information.

3. Click **Save**.

The voucher definition will be created. It can now be selected when creating a voucher-type hotspot.

To either edit or delete a voucher definition, click the corresponding buttons.

Cross Reference - Find information about customizing hotspot vouchers in the [Sophos Knowledge Base](#).

13.6.4 Advanced

General Voucher Options

Here you can decide if and after which time interval you want to delete expired vouchers from the database. In the hotspot log you will still find information about the deleted vouchers.

Login Page Certificate

To ensure login over HTTPS you can select certificates for the page login. You can generate and upload new certificates with on the **Webserver Protection > Certificate Management**

> **Certificates** page. Select the requested certificate from the drop-down list and click **Apply** to activate it.

Walled Garden

Add or select specific hosts or networks to be always accessible by all users, without entering a password or a voucher code. How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.

14 Webserver Protection

This chapter describes how to configure the web application firewall of Sophos UTM which protects your webserver against attacks and malicious behavior.

The following topics are included in this chapter:

- [Web Application Firewall](#)
- [Reverse Authentication](#)
- [Certificate Management](#)

14.1 Web Application Firewall

Using the Web Application Firewall (WAF), also known as reverse proxy, Sophos UTM lets you protect your webserver from attacks and malicious behavior like cross-site scripting (XSS), SQL injection, directory traversal, and other potent attacks against your servers. You can define external addresses (virtual webserver) which should be translated into the "real" machines in place of using the DNAT rule(s). From there, servers can be protected using a variety of patterns and detection methods. In simpler terms, this area of Sophos UTM allows the application of terms and conditions to requests which are received and sent from the webserver. It also offers load balancing across multiple targets.

14.1.1 Virtual Webservers

On the **Web Application Firewall > Virtual Webservers** tab you can create virtual webserver. Those webserver, as part of Sophos UTM, build the firewall between the Internet and your webserver. That is why this kind of intervention is also known as reverse proxy. Sophos UTM picks up the requests for the webserver and protects the real webserver from various attacks. Each virtual webserver maps to a real webserver and determines what level of protection is applied. You can also use more than one real webserver in one virtual webserver definition. That way you get load balancing for your real webserver.

To add a virtual webserver, do the following:

1. Click the **New Virtual Webserver** button.

The **Add Virtual Webserver** dialog box opens.

2. Make the following settings:

Name: Enter a descriptive name for the virtual webserver.

Interface: Select an interface from the drop-down list over which the webserver can be reached.

Note - If there is an interface with an IPv4 address and an IPv6 link local address defined as frontend interface, the virtual webserver is only reachable at the IPv4 address. Interfaces for which only an IPv6 link local address is defined cannot be selected as frontend interface for a virtual webserver.

Type: Determine whether you want the communication between the client and the virtual webserver to be **Plaintext (HTTP)**, **Encrypted (HTTPS)** or **Encrypted (HTTPS) & Redirect**. When you want to use reverse authentication, we highly recommend to select **Encrypted (HTTPS)** for security reasons. If enabled **Encrypted (HTTPS) & Redirect**, users entering the URL without `https://` will be redirected automatically to the virtual webserver.

Note - A HTTP request requires a host header if **Encrypted (HTTPS) & Redirect** is enabled.

Port: Enter a port number on which the virtual webserver can be reached from external. Default is port 80 with **Plaintext (HTTP)** and port 443 with **Encrypted (HTTPS)**.

Certificate (not with **Plaintext (HTTP)**): Select the webserver's certificate from the drop-down list. The certificate needs to be created beforehand on the webserver, and be uploaded on the **Certificate Management > Certificates** tab. Alternatively, you can create a certificate through Let's Encrypt on that tab which will then be instantly available here.

Domain: This field displays the hostname for which the certificate had been created.

Domains (only with SAN certificates): The WAF supports Subject Alternative Name (SAN) certificates. All hostnames covered by a certificate will be listed in this box. You can then select one or more hostnames by selecting the checkbox in front of a hostname.

Domains (only with **Plaintext (HTTP)** or **Encrypted (HTTPS)** with wildcard certificate): Enter the domains the webserver is responsible for as FQDN, e.g. `shop.example.com`, or use the Action icon to import a list of domain names. You can use an asterisk (*) as a wildcard for the prefix of the domain, e.g., `*.mydomain.com`. Domains with wildcards are considered as fallback settings: The virtual webserver with the wildcard domain entry is only used when no other virtual webserver with a more specific domain name is configured. Example: A client request to `a.b.c` will match `a.b.c` before `*.b.c` before `*.c`.

Real Webservers: Create a new real webserver or select the checkbox in front of the webserver you want to apply the firewall profile to. If you have mirroring webservers you can also select more than one webserver. By default, traffic will be load-balanced between the selected webservers. The implemented request counting algorithm automatically assigns each new request to the webserver with the lowest number of active requests at present. On the **Site Path Routing** tab you can specify detailed balancing rules.

Firewall profile: Select a firewall profile from the drop-down list. This profile is applied to protect the selected webserver. You can also select **No Profile** to not use any firewall profile.

Theme: Select a theme from the drop-down list. This theme is applied to error responses, which means the configured templates will get rendered and delivered in response to a blocked request. You can also select **No Customization** to not use any theme. The WAF will then present the system default pages.

Comment (optional): Add a description or other information.

3. Optionally, make the following advanced settings:

Disable compression support (optional): By default, this checkbox is disabled and the content is sent compressed when the client requests compressed data. Compression increases transmission speed and reduces page load time. However, in case of websites being displayed incorrectly or when users experience content-encoding errors accessing your webserver, it can be necessary to disable compression support. When the checkbox is enabled, the WAF will request uncompressed data from the real webserver of this virtual webserver and will send it on uncompressed to the client, independent of the HTTP request's encoding parameter.

Rewrite HTML (optional): Select this option to have Sophos UTM rewrite links of the returned webpages in order for the links to stay valid. Example: One of your real webserver instances has the hostname `yourcompany.local` but the virtual webserver's hostname on Sophos UTM is `yourcompany.com`. Thus, absolute links like `` will be broken if the link is not rewritten to `` before delivery to the client. However, you do not need to enable this option if either `yourcompany.com` is configured on your webserver or if internal links on your webpages are always realized as relative links. It is recommended to use the option with Microsoft's Outlook Web Access and/or SharePoint Portal Server.

Note - It is likely that some links cannot be rewritten correctly and are therefore rendered invalid. Ask your website author(s) to format links consistently.

Apart from URL rewriting, the HTML rewriting feature also fixes malformed HTML, for example:

- `<title>` tags are moved in DOM tree from node `html > title` to correct `html > head > title`
- Quotes around HTML attribute values are fixed (e.g., `name="value` becomes `name="value"`)

Note - HTML rewriting affects all files with a HTTP content type of `text/*` or `*.xml*`, where `*` is a wildcard. Make sure that other file types, e.g. binary files, have the correct HTTP content type, otherwise they may get corrupted by the HTML rewriting feature.

Cross Reference - Please see the libxml documentation for further information (<http://xmlsoft.org/html/libxml-HTMLparser.html>).

Rewrite cookie (optional, only visible if **Rewrite HTML** is enabled): Select this option to have Sophos UTM rewrite cookies of the returned webpages.

Note - If **Rewrite HTML** is disabled the **Rewrite cookie** option will be also disabled.

Pass host header (optional): When you select this option, the host header as requested by the client will be preserved and forwarded along with the web request to the web-server. Whether passing the host header is necessary in your environment however depends on the configuration of your webserver.

4. Click **Save**.

The server is added to the **Virtual Webservers** list.

5. Enable the virtual webserver.

The new virtual webserver is disabled by default (toggle switch is gray). Click the toggle switch to enable the virtual webserver.

The virtual webserver is now enabled (toggle switch is green).

Note - The virtual webserver cannot be enabled if the corresponding interface is disabled. The interface can be enabled on **Interfaces & Routing > Interfaces > Inter-faces**.

The **Virtual Webservers** list displays a status icon for each real webserver assigned to a virtual webserver. The status icon of a real webserver is red when the real webserver has not been enabled. It is amber when the real webserver is down or unavailable and green if everything is working.

14.1.2 Real Webservers

On the **Web Application Firewall > Real Webservers** tab you can add webservers that should be protected by the WAF.

To add a webserver, do the following:

1. Click the **New Real Webserver** button.

The **Add Real Webserver** dialog box opens.

2. Make the following settings:

Name: Enter a descriptive name for the webserver.

Host: Add or select a host, which can either be of the type **Host** or **DNS Host**. We highly recommend to use the DNS hostname here because otherwise the host header contains the IP address of the **Host** which may lead to problems with some browsers. How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.

To transmit the host header of the original HTTP request, enable **Pass Host Header** in the corresponding virtual webserver definition.

Type: Determine whether you want the communication between Sophos UTM and the webserver to be **Encrypted (HTTPS)** or **Plaintext (HTTP)**.

Port: Enter a port number for the communication between Sophos UTM and the webserver. Default is port 80 with **Plaintext (HTTP)** and port 443 with **Encrypted (HTTPS)**.

Comment (optional): Add a description or other information.

3. Optionally, make the following advanced settings:

Enable HTTP keepalive: By default, the WAF uses HTTP keepalive, i.e., HTTP persistent connections, which helps to reduce CPU and memory usage. In rare cases where the real webserver does not support HTTP keepalive properly, this feature can provoke reading errors or timeouts and should then be disabled for the affected webserver. When a virtual webserver is assigned at least one real webserver with HTTP keepalive disabled, the feature will automatically be disabled for all real webserver assigned to this virtual webserver.

Timeout: Define a connection timeout value, that is the number of seconds the WAF waits for data sent by or sent to the real webserver. Values between 1 and 65535 seconds are allowed. Data can be received as long as the web server sends data before the timeout expires. After expiring, the WAF sends an HTTP 502 message to clients. The default timeout is 300 seconds.

Disable backend connection pooling: If enabled, the WAF creates a new connection to the backend server every time it is used, instead of reusing an old connection from the connection pool. This option is disabled by default. Only use it if you face connection problems because it may decrease system performance.

4. Click **Save**.

The server is added to the **Real Webserver** list.

The webserver present can now be assigned firewall profiles on the **Virtual Webserver** tab.

14.1.3 Site Path Routing

On the **Web Application Firewall > Site Path Routing** tab you can define to which real webserver incoming requests are forwarded. You can for example define that all URLs with a specific path, e.g., `/products/`, are sent to a specific webserver. On the other hand you

can allow more than one webserver for a specific request but add rules how to distribute the requests among the servers. You can for example define that each session is bound to one webserver throughout its lifetime (sticky session). This may for example be necessary if you host an online shop and want to make sure that users stick to one server during their shopping session. You can also configure to send all requests to one webserver and use the others only as a backup.

For each virtual webserver, one default site path route (with path /) is created automatically. Sophos UTM automatically applies the site path routes in the most reasonable way: starting with the strictest, i.e., longest paths and ending with the default path route which is only used if no other more specific site path route matches the incoming request. The order of the site path route list is not relevant. If no route matches an incoming request, e.g., because the default route was deleted, the request will be denied.

Note - The **Site Path Routing** tab can only be accessed after at least one virtual webserver has been created.

To create a site path route, proceed as follows:

1. Click the **New Site Path Route** button.

The **Add Site Path Route** dialog box opens.

2. Make the following settings:

Name: Enter a descriptive name for the site path route.

Virtual webserver: Select the original target host of the incoming traffic.

Path: Enter the path for which you want to create the site path route, e.g., `/products/`. Regular expressions or wildcards are not supported.

Reverse authentication: Select the authentication profile with the users or groups that should have access to this site path route. When no profile is selected, no authentication is required.

Caution - Using a reverse authentication profile on a Virtual Webserver running in plain text mode will expose user credentials. Continuing will cause the Web Application Firewall to send user credentials in an unsafe manner.

Caution - An authentication profile with frontend mode **Form** can only be deployed once on any one virtual webserver.

Real Webservers: Select the checkboxes in front of the real webserver which are to be used for the specified path. The order of the selected webserver is only relevant for the **Enable hot-standby mode** option. With the sort icons you can change the order.

Access control: If selected, you can allow or block specific client networks for the **Virtual webserver**. Clients only get access when their IPs are listed in the **Allowed**

networks list. IPs in the **Denied networks** list will be blocked. If both lists are empty no one will be able to connect to the **Virtual webserver**. If you want to block only specific networks, allow **Any** and select or add **Denied networks**. If you want to allow specific networks only, you need to select or add **Allowed networks** and leave **Denied networks** empty.

Allowed networks: Select or add the allowed networks that should be able to connect to the **Virtual webserver**.

Denied networks: Select or add the denied networks that should be blocked to your **Virtual webserver**.

Comment (optional): Add a description or other information.

3. Optionally, make the following advanced settings:

Enable sticky session cookie: Select this option to ensure that each session will be bound to one real webserver. If enabled, a cookie is passed to the users' browser, which provokes Sophos UTM to route all requests from this browser to the same real webserver. If the server is not available, the cookie will be updated, and the session will switch to another webserver.

Enable hot-standby mode: Select this option if you want to send all requests to the first selected real webserver, and use the other webserver only as a backup. The backup servers are only used in case the main server fails. As soon as the main server is back working, the sessions will switch back—unless you selected the **Enable sticky session cookie** option.

Enable WebSocket passthrough: Select this option if you want to allow WebSocket communication. That way WebSocket traffic is not controlled by the WAF at all and any other option you may have enabled in the WAF will not apply to WebSocket traffic.

4. Click **Save**.

The site path route is added to the **Site Path Routing** list.

5. Enable the site path route.

The new site path route is disabled by default (toggle switch is gray). Click the toggle switch to enable the site path route.

The site path route is now enabled (toggle switch is green).

To either edit or delete a site path route, click the corresponding buttons.

14.1.4 Request Redirection

On the **Web Application Firewall > Request Redirection** tab you can define to which URL incoming requests are redirected. This allows you to have websites with multiple domain names, shorten URLs and prevent broken links after a website was moved. For example, if your company changes the name and has a new URL, visitors can reach the new website via the old URL which gets redirected.

Note - The **Request Redirection** tab can only be accessed after at least one virtual webserver has been created.

To create a request redirection, proceed as follows:

1. Click the **New Request Redirection** button.

The **Add Request Redirection** dialog box opens.

2. Make the following settings:

Name: Enter a descriptive name for the request redirection.

Virtual webserver: Select the original target host of the incoming traffic.

Path: Enter the path for which you want to create the request redirection, e.g., `/home`.

Host: Enter the URL where the path should lead to, e.g., `www.sophos.com`.

Protocol: Select if the connection to the host should be established using **Plaintext (HTTP)** or **Encrypted (HTTPS)**.

Port: Enter a port number where the host can be reached from outside your network. Default is port 80 with **Plaintext (HTTP)** and port 443 with **Encrypted (HTTPS)**.

Response Code: Select the response code for the request redirection. Every HTTP or HTTPS request needs a response code. Sophos UTM offers the following options:

- **Move Permanently (301):** This and all future requests should be directed to the given URL.
- **Found (302):** The request resides temporarily under a different URL.
- **See Other (303):** The request should be redirected to another URL (GET method).
- **Temporary Redirect (307):** The request should be repeated with another URL. Future requests should still use the original URL.
- **Permanent Redirect (308):** The request and all future requests should be repeated using another URL.

Note - For more information about response codes, please visit the [HTTP Status Codes](#) website.

Comment (optional): Add a description or other information.

3. Click **Save**.

The request redirection is added to the **Request Redirection** list.

4. Enable the request redirection.

The new request redirection is disabled by default (toggle switch is gray). Click the toggle switch to enable the request redirection.

The request redirection is now enabled (toggle switch is green).

To either edit or delete a request redirection, click the corresponding buttons.

14.1.5 Advanced

On the **Web Application Firewall > Advanced** tab you can activate SlowHTTP protection and define the keys used for cookie signing and URL hardening.

14.1.5.1 SlowHTTP Protection

Here you can enable SlowHTTP protection and set a timeout for request headers. You can determine the minimum and maximum time limit for request headers and extend the minimal timeout according to the data volume. For example, the soft limit allows at least 10 seconds to receive request headers. The extension rate is 500, the hard limit is set to 30. If the client now sends data, the soft limit timeout increases 1 second for every 500 bytes received. After 30 seconds the client will be disconnected. Please specify the values for your scenario.

Use timeout for request headers: If enabled, the SlowHTTP Protection is activated.

Soft limit: Enter the minimum amount of time to receive the request header.

Hard limit: Enter the maximum amount of time to receive the request header.

Extension rate: Enter the amount of data volume which extends the timeout.

Skipped Networks/Host: Select or add networks/hosts that should not be affected by SlowHTTP Protection.

14.1.5.2 TLS Version

Select the minimal TLS version that is allowed to connect to the WAF.

Note - If you select **TLS version 1.2**, clients using old versions of Microsoft Internet Explorer (6, 7 or 8) or Microsoft Windows XP will not be able to connect to the WAF.

Proxy Protocol

If enabled, the proxy protocol is supported. Proxy Protocol is an Internet protocol which carries connection information from the source requesting the connection to the destination for which the connection was requested.

You need to ensure that there is a trusted source of Proxy Protocol information in front of WAF and that all traffic passes through this source. This means, that your WAF should not be connected directly with the Internet. This must be ensured within your network topology.

Session Storage

Here you can enter a limit for user sessions on Web Application Firewall. If the limit is reached, once a day Sophos UTM closes sessions to create capacity. The default value is 25000 sessions.

Cookie Signing

Here you can enter a custom secret that is used as signing key for cookie signing.

Static URL Hardening

Here you can enter a custom secret that is used as signing key for URL hardening.

Form Hardening

Here you can enter a custom secret that is used as encryption key for the form hardening token. The secret must consist of at least eight characters.

14.2 Firewall Profiles

This chapter describes how to create WAF profiles that define the modes and levels of protection for your webserver. Firewall profiles give you different filtering and scanning options to optimize the level of protection for your webserver. Exceptions allow you to exempt web requests or source networks from certain checks for specified virtual webserver.

14.2.1 Firewall Profiles

On the **Firewall Profiles** tab you can create WAF profiles that define the modes and levels of protection for your webserver.

To create a WAF profile, do the following:

1. Click the **New Firewall Profile** button.

The **Add Firewall Profile** dialog box opens.

2. Make the following settings:

Name: Enter a descriptive name for the profile.

Mode: Select a mode from the drop-down list:

- **Monitor:** HTTP requests are monitored and logged.
- **Reject:** HTTP requests are rejected.

The selected mode is applied when an HTTP request meets any one of the conditions selected below.

3. Make the following Hardening & Signing settings:

Static URL hardening: Protects against URL rewriting. For that, when a client requests a website, all static URLs of the website are signed. The signing uses a similar procedure as with cookie signing. Additionally, the response from the webserver is analyzed with regard to which links can be validly be requested next. URLs with static

hardening can furthermore be bookmarked and visited later. Select one of the following methods to define entry URLs:

- **Entry URLs specified manually:** Enter URLs that serve as kind of entry URLs of a website and therefore do not need to be signed. They need to comply with the syntax of the following examples: `http://shop.example.com/products/`, `https://shop.example.com/products/` or `/products/`.
- **Entry URLs from uploaded Google sitemap file:** You can upload a sitemap file here which contains information on your website structure. Sitemap files can be uploaded in XML or in plain text format, the latter simply containing a list of URLs. As soon as the profile is saved, the sitemap file is going to be parsed by the WAF.
- **Entry URLs from Google sitemap URL:** You can have Sophos UTM download a sitemap file from a defined URL which contains information on your website structure. This file can be checked for updates at a regular interval. As soon as the profile is saved, the sitemap file is going to be downloaded and parsed by the WAF.

URL: Enter the path to the sitemap as absolute URL.

Update: Select an update interval from this drop-down list. When you select **Manual** the sitemap is going to be updated only when you save this profile anew.

Note - When using Reverse Authentication with frontend mode **Form** on a designated path, it is not necessary to specify entry URLs for the login form and for this path. How to configure the path is described on the **Webserver Protection > Web Application Firewall > Site Path Routing** page.

Note - Static URL hardening affects all files with a HTTP content type of `text/*` or `*xml*`, where `*` is a wildcard. Make sure that other file types, e.g. binary files, have the correct HTTP content type, otherwise they may get corrupted by the URL hardening feature. It does not work for dynamic URLs created by a client, for example: JavaScript.

Form hardening: Protects against web form rewriting. Form hardening saves the original structure of a web form and signs it. Therefore, if the structure of a form has changed the WAF rejects the request when it is submitted.

Note - Form hardening affects all files with a HTTP content type of `text/*` or `*xml*`, where `*` is a wildcard. Make sure that other file types, e.g. binary files, have the correct HTTP content type, otherwise they may get corrupted by the form hardening feature.

Cookie signing: Protects a webserver against manipulated cookies. When the webserver sets a cookie, a second cookie is added to the first cookie containing a hash built of the primary cookie's name, its value and a secret, where the secret is only known by the WAF. Thus, if a request cannot provide a correct cookie pair, some sort of manipulation has occurred and the cookie will be dropped.

4. Make the following Filtering settings:

Block clients with bad reputation: Based on GeoIP and RBL information you can block clients which have a bad reputation according to their classification. Sophos uses the following classification providers:

RBL sources:

- Sophos SXL
- [http.dnsbl.sorbs.net](http://dnsbl.sorbs.net)

The GeoIP source is [Maxmind](#). The WAF blocks clients that belong to one of the following Maxmind categories:

- A1: Anonymous proxies or VPN services used by clients to hide their IP address or their original geographical location.
- A2: Satellite providers are ISPs that use satellites to provide Internet access to users all over the world, often from high risk countries.

Skip remote lookups for clients with bad reputation: As reputation lookups include sending requests to remote classification providers, using reputation-based blocking may slow down your system. Select this checkbox to only use GeoIP-based classification which uses cached information and is therefore much faster.

Common Threats filter: If enabled, you can protect your web servers from several threats. You can specify the threat filter categories you want to use in the **Threat Filter Categories** section below. All requests will be checked against the rule sets of the selected categories. Depending on the results, a notice or a warning will be shown in the live log or the request will be blocked directly.

Rigid filtering: If enabled, several of the selected rules will be tightened. This may lead to false positives.

Skip Filter Rules: Some of the selected threat categories may contain rules that lead to false positives. To avoid false positives induced by a specific rule, add the rule number that you want to skip to this box. WAF rule numbers can for example be retrieved on the **Logging & Reporting > Webserver Protection > Details** page, via the **Top rules** filter. There are basic rules for WAF, so called infrastructure rules. Infrastructure rules affect rules which are built upon these rules.

Caution - Do not disable required infrastructure rules because this could affect other rules and lead to security issues. For detailed information on infrastructure rules, see the [Sophos Knowledge Base](#).

Note - Starting with version 9.7 MR1, with the common threat filter turned on, responses from the WAF are sent uncompressed to the client, even if the client requested the response to be compressed.

5. Optionally, select the following threat filter categories (only available when **Common Threats filter** is enabled):

Protocol violations: Enforces adherence to the RFC standard specification of the HTTP protocol. Violating these standards usually indicates malicious intent.

Protocol anomalies: Searches for common usage patterns. Lack of such patterns often indicates malicious requests. These patterns include, among other things, HTTP headers like 'Host' and 'User-Agent'.

Request limits: Enforces reasonable limits on the amount and ranges of request arguments. Overloading request arguments is a typical attack vector.

HTTP policy: Narrows down the allowed usage of the HTTP protocol. Web browsers typically use only a limited subset of all possible HTTP options. Disallowing the rarely used options protects against attackers aiming at these often less well supported options.

Bad robots: Checks for usage patterns characteristic of bots and crawlers. By denying them access, possible vulnerabilities on your webserver are less likely to be discovered.

Generic attacks: Searches for attempted command executions common to most attacks. After having breached a webserver, an attacker usually tries to execute commands on the server like expanding privileges or manipulating data stores. By searching for these post-breach execution attempts, attacks can be detected that might otherwise have gone unnoticed, for example because they targeted a vulnerable service by the means of legitimate access.

SQL injection attacks: Checks for embedded SQL commands and escape characters in request arguments. Most attacks on webserver target input fields that can be used to direct embedded SQL commands to the database.

(XSS) attacks: Checks for embedded script tags and code in request arguments. Typical cross-site scripting attacks aim at injecting script code into input fields on a target webserver, often in a legitimate way.

Tight security: Performs tight security checks on requests, like checking for prohibited path traversal attempts.

Trojans: Checks for usage patterns characteristic of trojans, thus searching for requests indicating trojan activity. It does not, however, prevent the installation of such trojans as this is covered by the antivirus scanners.

Outbound: Prevents webserver from leaking information to the client. This includes, among other things, error messages sent by servers which attackers can use to gather sensitive information or detect specific vulnerabilities.

Comment (optional): Add a description or other information.

6. Make the following Scanning settings:

Enable antivirus scanning: Select this option to protect a webserver against viruses.

Mode: Sophos UTM features several antivirus engines for highest possible security.

- **Single scan:** Default setting; provides maximum performance using the engine defined on the **System Settings > Scan Settings** tab.
- **Dual scan:** Provides maximum recognition rate by scanning the respective traffic twice using different virus scanners. Note that dual scan is not available with BasicGuard subscription.

Direction: Select from the drop-down list whether to scan only up- or downloads or both.

Block unscannable content: Enable this option to block files that cannot be scanned. The reason for this may be, among other things, that files are encrypted or corrupted.

Note - Please note that the scan size limit refers to an upload, not to single files. This means, if you set for example a limit of 50 MB and upload multiple files (45 MB, 5 MB and 10 MB), the last file will not be scanned and a virus might not be detected due to the limitation.

Note - If you do not enter a limitation value, limitation will be saved with '0' megabytes which means the limitation is not active.

Block uploads by MIME type: Select this option to scan and block uploads defined on the MIME type ([RFC 2045](#), [RFC 2046](#)).

Blocked MIME Types: Enter the MIME types you want to block for uploading files.

Block unscannable content: Enable this option to block files that cannot be scanned. The reason for this may be, among other things, that files are encrypted or corrupted.

Scan timeout: Enter the timeout limit for antivirus and MIME type scanning. After the timeout the file will be blocked. Default is 90 seconds.

Limit scan size: Enable this option to enter a scan size limit for antivirus and MIME type scanning. Provide the limitation in megabytes.

7. Make the following Application Customization settings:

Pass Outlook Anywhere: Allows external Microsoft Outlook clients to access the Microsoft Exchange Server via the WAF. Microsoft Outlook traffic will not be checked or protected by the WAF.

8. Click **Save**.

The WAF profile is added to the **Firewall Profiles** list.

Additional Information on Static URL Hardening and Form Hardening

It would be best practice to always enable both URL hardening and form hardening because those two functions are complementary, especially in the way that they prevent issues you may have when enabling just one of them:

- Only form hardening is activated: When a webpage contains hyperlinks with appended queries (which is the case with certain CMSs), e.g. `http://example.com/?view=article&id=1`, such page requests are blocked by form hardening because it expects a signature which is missing.
- Only URL hardening is activated: When a web browser appends form data to the action URL of the `form` tag of a web form (which is the case with GET requests), the form data becomes part of the request URL sent to the webserver, by that rendering the URL signature invalid.

The reason why activating both functions solves those issues is that in case either form hardening or URL hardening find that a request is valid, the WAF accepts the request.

Outlook Web Access

The configuration of the WAF for Outlook Web Access (OWA) is a bit tricky since OWA handles requests from a public IP differently than internal requests from an internal LAN IP to the OWA website. There are redirects attached in the URLs of OWA, where for external access the external FQDN is used, whereas for internal requests the internal server's IP address is used.

The solution is to set the OWA directory as **Entry URL** in the WAF profile of your OWA webserver (e.g. `http://webserver/owa/`). Additionally, you need to create an exception which skips URL hardening for the pathes `/owa/*`, `/OWA/*` and to disable cookie signing completely for the virtual webserver.

To display the notifications, you need to make the following settings:

Create a second exception which skips Antivirus checks, skip all categories for path `/owa/ev.owa*` and activate the advanced function **Never change HTML during Static URL Hardening or Form Hardening**.

14.2.2 Exceptions

On the **Firewall Profiles > Exceptions** tab you can define web requests or source networks that are to be exempt from certain checks.

1. On the **Exceptions** tab, click **New Exception List**.

The **Add Exception List** dialog box opens.

2. Make the following settings:

Name: Enter a descriptive name for the exception.

Skip these checks: Select the security check(s) that should be skipped. See **Firewall Profiles** for descriptions.

Skip these categories: Select the threat filter categories that should be skipped. See **Firewall Profiles** for descriptions.

Virtual Webservers: Select the virtual webserver(s) that are to be exempt from the selected check(s).

For all requests: Select a request definition from the drop-down list. Note that you can logically combine two request definitions by either AND or OR.

Networks: Add or select the source networks where the client request comes from and which are to be exempt from the selected check(s). How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.

Paths: Add the paths that are to be exempt from the selected check(s). You can either enter a complete path (e.g., `/products/machines/images/machine1.jpg`) or use asterisks as wildcards (e.g., `/products/*/images/*`).

Comment (optional): Add a description or other information.

3. Optionally, make the following advanced settings:

Never change HTML during static URL hardening or form hardening: If selected, no data matching the defined exception settings will be modified by the WAF engine. With this option, e.g., binary data wrongly supplied with a text/html content type by the real webserver will not be corrupted. On the other hand, web requests may be blocked due to activated URL hardening, HTML rewriting, or form hardening. Those three features use an HTML parser and therefore to some extent depend on the modification of webpage content. To prevent undesired blocking, skip URL hardening and/or form hardening for requests affected by blocking; you might need to do this in another/new exception to reflect dependencies between webserver(s) and/or webpages.

Accept unhardened form data: Even though having an exception for **Form Hardening**, it is possible that form data will not be accepted if the Form Hardening signature is missing. With this option unhardened form data will be accepted anyway.

4. Click **Save**.

The new exception appears on the **Exceptions** list.

5. Enable the exception.

The new exception is disabled by default (toggle switch is gray). Click the toggle switch to enable the exception.

The exception is now enabled (toggle switch is green).

To either edit or delete an exception, click the corresponding buttons.

14.3 Reverse Authentication

On the **Webserver Protection > Reverse Authentication** pages, you can define how to use the Web Application Firewall to authenticate users directly instead of leaving the authen-

tication to the real webserver. Via authentication profiles, the reverse authentication can be used to assign specific authentication settings to each site path route.

An authentication profile is basically defined by two authentication modes: the authentication mode used between users and the WAF and the authentication mode used between the WAF and the real webserver. Thus, even if a real webserver does not support authentication, the WAF can enforce authentication of the users. On the other hand, reverse authentication ensures that users only have to authenticate once, even if more than one real webserver is assigned to the respective virtual webserver.

Using forms for user authentication, you can specify company-specific form templates.

14.3.1 Profiles

On the **Webserver Protection > Reverse Authentication > Profiles** tab, you specify authentication profiles for the web application firewall. With profiles you can assign different authentication settings to different users or user groups. After specifying the authentication profiles, you can assign them to site path routes on the **Web Application Firewall > Site Path Routing** tab.

To add an authentication profile, do the following:

1. On the **Profiles** tab, click **New Authentication Profile**.

The **Add Authentication Profile** dialog box opens.

2. Make the following settings:

Name: Enter a descriptive name for the profile.

Virtual Webserver: Here you can configure the profile settings for the virtual webserver.

Mode: Select how the users should authenticate at the Web Application Firewall.

Basic: Users authenticate with HTTP basic authentication, entering username and password. As the credentials are sent unencrypted with this mode, it should be used over HTTPS. With this mode, no session cookies will be generated and a dedicated logout is not possible.

Form: Users will be presented a form where they have to enter their credentials. With this mode, session cookies will be generated and a dedicated logout is possible.

Form template: Select the form template that will be presented to the users for authentication. There is a default form template available. New form templates can be created on the **Customization > Form Templates** page.

Basic prompt: The realm is a unique string that provides additional information on the login page and is used for user orientation.

Note - These characters are allowed for the **Basic prompt**: A-Z a-z 0-9 , ; . : - _ ' + =) (& % \$! ^ < > | @

Users/Groups: Select the users or user groups or add new users or user groups that should be assigned to this authentication profile. After assigning this profile to a site path route, these users will have access to the site path with the authentication settings defined in this profile. Typically, this would be a backend user group. How to add users is explained on the **Definitions & Users > Users & Groups > Users** page. How to add a user group is explained on the **Definitions & Users > Users & Groups > Groups** page.

Note - Sometimes users should be required to use the User Principal Name notation 'user@domain' when entering their credentials, for example when using Exchange servers in combination with Active Directory servers. How to use User Principal Name notation is explained on the **Definitions & Users > Authentication Services > Servers > Active Directory** page.

Redirect to requested URL (only for virtual webserver mode **Form**): Redirects the user to the path defined in the corresponding site path routing profile.

Real Webserver: Here you can configure the profile settings for the real webserver.

Mode: Select how the Web Application Firewall authenticates against the real web-servers. The mode has to match the real webserver's authentication settings.

Basic: Authentication works with HTTP basic authentication, providing user-name and password.

None: There is no authentication between WAF and the real webserver. Note that even if your real webserver does not support authentication, users will be authenticated via the frontend mode.

Username affix: Select an affix for the username. You can select **Prefix**, **Suffix** or both. Affixes are useful when working with domains and email addresses.

Prefix: Enter a Prefix for **Username**.

Suffix: Enter a Suffix for **Username**.

Note - Prefix and suffix will be added automatically if users enter their username. Prefix and suffix will not be added if the user enters it. Example: If the suffix is `@testdomain.de` and a user enters their username `test.user` the suffix will be added. If they enter `test.user@testdomain.de` the suffix will be ignored.

Remove Basic Header: If you select this option the basic header will not be sent from Sophos UTM to the real webserver.

User Session (only for virtual webserver mode **Form**): Here you can configure the timeout settings for user sessions.

Session timeout: Select this option to enable a timeout for the user session which will confirm user credentials by having them log in again if they do not perform any action on the Virtual Webserver.

Limit to: Set an interval for the session timeout.

Session timeout scope: Set the scope to **day(s)**, **hour(s)** or **minute(s)**.

Session lifetime: Select this option to enable a hard limit for how long users may remain logged in, regardless of activity in the mean time.

Limit to: Set an interval for the session lifetime value.

Session lifetime scope: Set the scope to **day(s)**, **hour(s)** or **minute(s)**.

Allow persistent sessions: If enabled, WAF authentication uses cookies for a persistent session. A checkbox is visible for end users on the login form to enable persistent session cookies. If the end users enable the checkbox on the login form, a persistent session cookie is created for the users upon login. WAF authentication uses session cookies for a short-lived session if **Allow persistent sessions** is disabled or the end users do not enable the checkbox on the login form.

Logout (only for virtual webserver mode **Form**): Here you can provide a logout function for the user session.

Mode: Select how users can log out from the session.

None: Users have no option to log out.

Delegation: Users log out by predefined URLs. For example, `/logout`. Add URLs that the users need to log out.

Comment (optional): Add a description or other information.

3. Click **Save**.

The new profile appears on the **Profiles** list.

Caution - When using Reverse Authentication in combination with OTP the OTP tokens will only be checked once when a user session is set up. Once a session is set up, any subsequent request by the same user will not have their OTP tokens evaluated. This is because malicious users might exploit the OTP configuration by sending an overwhelming amount of requests to authentication protected paths, thereby invoking OTP checks and effectively running a DoS attack on the authentication daemon. Passwords and all other request aspects will still be checked to match the configuration.

To either edit or delete a profile, click the corresponding buttons.

Cross Reference - Find information about configuring Reverse Authentication and differences between the versions in the [Sophos Knowledge Base](#).

Reverse Authentication: Users/Groups

Sometimes it is necessary for users to use the format `user@domain` when entering their credentials, e.g. when using an Exchange server in combination with Active Directory servers. In this case there are additional steps to take:

1. From the WebAdmin menu, open the **Definition & Users > Authentication Services > Servers** tab.

The **Servers** tab is displayed.

2. On the **Servers** tab, click the **Clone** button of the desired Active Directory server.
A new server will be created.
3. Change the field **Backend** to **LDAP**.
4. Change the **User attribute** field to **>**.
5. In the **Custom** field enter `userPrincipalname`.

If not present already, this will set up an **LDAP Users** group which you will need to use instead of the **Active Directory Users** group.

Note - The format `domain\user` is not supported. Use the format `user@domain` instead.

14.3.2 Form Templates

On the **Webserver Protection > Reverse Authentication > Form Templates** tab, you can upload HTML forms for Reverse Authentication. A form template can be assigned to an authentication profile with frontend mode **Form**. The respective form will be presented when users try to access a site path to which the authentication profile is assigned.

To add a form template, do the following:

1. On the **Form Templates** tab, click **New Form Template**.

The **Add Form Template** dialog box opens up.

2. Make the following settings:

Name: Enter a descriptive name for the form template.

Filename: Click the folder icon to upload an HTML template.

Images/Stylesheets: Select and upload the images, stylesheets, or JavaScript files that are used by the form template.

Comment (optional): Add a description or other information.

3. Click **Save**.

The new form template appears on the **Form Templates** list.

You can now use it in your reverse authentication profiles.

To either edit or delete a form template, click the corresponding buttons.

Using Variables in Login Form Template

- Required:

A `<form>` element with its method set to **Post** and its action set to `<?login_path?>`, e.g. `<form action="<?login_path?>" method="POST"> ... </form>`

An `<input>` element inside the above mentioned form with its name set to `httpd_username`, e.g. `<input name="httpd_username" type="text">`

An `<input>` element inside the above mentioned form with it's name set to `httpd_password`, e.g. `<input name="httpd_password" type="password">`

Note - It is essential that any form template meets these three conditions so it can be parsed correctly (only `<?login_path?>` will actually be substituted).

- Optional:

All occurrences of `<?assets_path?>` will be replaced by the path containing all assets which have been uploaded alongside the form template. This allows for cleaner form templates by placing style sheets, images, etc. outside the actual form template, e.g. `<link rel="stylesheet" type="text/css" href="<?assets_path?>/stylesheet.css">`

All occurrences of `<?company_text?>` and `<?admin_contact?>` will be replaced by the messages defined in **Management > Customization**, e.g. `<p>If you encounter any problems or questions, please contact <?admin_contact?>.</p>`

All occurrences of `<?company_logo?>` will be replaced by the path leading to the image uploaded in **Management > Customization**, e.g. ``

Sophos UTM includes a default form template to ease initial reverse authentication configuration and deployment. This is the form contained in the default form template object:

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01//EN"
"http://www.w3.org/TR/html4/strict.dtd">
<html>
  <head>
    <link rel="stylesheet" type="text/css" href="<?assets_path?>/default_stylesheet.css">
    <meta http-equiv="content-type" content="text/html; charset=UTF-8">
    <title>Login</title>
  </head>
  <body>
    <div id="container">
      <div class="info">
        
        <p><?company_text?></p>
      </div>
      <form action="<?login_path?>" method="POST">
        <p><label for="httpd_username">Username:</label>
```

```

<input name="httpd_username" type="text"></p>

<p><label for="httpd_password">Password:</label>
<input name="httpd_password" type="password"></p>

<p style="visibility:<?persistency?>">
<label for="httpd_persistency">Keep me logged in</label>
<input name="httpd_persistency" type="checkbox"></p>

<p><input type="submit" value="Login"></p>
</form>

<div class="note">If you encounter any problems or questions,
please contact <b><?admin_contact?></b>.</div>
</div>
</body>
</html>

```

14.4 Customization

Each time the web application firewall doesn't allow a user to access a particular web page, the user sees a default block page. You can customize the look of each type of block page by creating form templates and themes. Themes can then be used in virtual web servers.

14.4.1 Themes

Customize the web pages users see when a page is blocked or intercepted by the WAF. You can create themes for every type of error page individually or for more than one type. The templates configured in a theme will be rendered and delivered in response to requests that are blocked by the WAF. You can either use the default theme or edit it. If you want to create a new theme, you have to provide a template HTML page and CSS files, JavaScript files, or images if required.

To create a theme, proceed as follows:

1. Click the **New Theme** button.
The **Add Theme** dialog box opens.
2. Make the following settings:
Name: Enter a descriptive name for the theme.

Default Page: Upload an HTML file which will be presented to the user if no page is defined for that particular event under **Customized Error Pages**.

Customized Error Pages: Upload an HTML file for each error page where you want to replace the default page configured above.

Authorization: This template will be presented when a request is blocked by authentication or access control.

URL hardening: This template will be presented when a request is blocked by URL hardening.

Form hardening: This template will be presented when a request is blocked by form hardening.

Bad reputation: This template will be presented when a request is blocked by bad reputation.

Antivirus: This template will be presented when a request is blocked by antivirus.

True file type control: This template will be presented when a request is blocked by true file type control.

Common threats filter: This template will be presented when a request is blocked by common threats filter.

Common resources: Upload images, JavaScript, or CSS files which are used by an error page or the default page.

Comment (optional): Add a description or other information.

3. Click **Save**.

The theme is added to the **Themes** list.

You can now use it in your virtual webserver.

To either edit or delete a theme, click the corresponding buttons.

14.4.1.1 Using Variables in Themes

All occurrences of `<?assets_path?>` will be replaced by the path containing all assets which have been uploaded alongside the theme. This allows for cleaner templates by placing stylesheets, images, etc. outside the actual template, e.g. `<link rel="stylesheet" type="text/css" href="<?assets_path?>/stylesheet.css">`.

All occurrences of `<?company_text?>`, `<?admin_message?>` and `<?admin_contact?>` will be replaced by the defined messages, e.g. `<p>If you encounter any problems or questions, please contact <?admin_contact?>.</p>`.

All occurrences of `<?company_logo?>` will be replaced by the path leading to the uploaded image, e.g. ``.

All occurrences of `<?reason?>` will be replaced by the name of the feature that caused the request to get blocked, e.g. `<p>Your request was blocked: <?reason?></p>`.

All occurrences of `<?reason_extra?>` will be replaced by a short explanation what exactly caused the request to get blocked, e.g. `<p>Details: <?reason_extra?></p>`.

All occurrences of `<?uid?>` will be replaced by unique identifier of the request, e.g. `<p>Request ID: <?uid?></p>`. This identifier is also used in the log files.

All occurrences of `<?av_direction?>` will be replaced by “upload” or “download” depending on the scanning direction. It can be used only in antivirus templates, e.g. `<p>Your file <?av_direction?> got blocked by antivirus</p>`.

All occurrences of `<?path?>` will be replaced by the blocked request’s path including its query string, e.g. `<p>Your request to <?path?> got blocked</p>`. Please note that using this variable is not recommended because it could make your web server vulnerable to reflected content spoofing attacks.

Exposing the requested path via the `<?path?>` variable is considered to be a security risk.

14.4.2 Form Templates

On the **Webserver Protection > Reverse Authentication > Form Templates** tab, you can upload HTML forms for Reverse Authentication. A form template can be assigned to an authentication profile with frontend mode **Form**. The respective form will be presented when users try to access a site path to which the authentication profile is assigned.

To add a form template, do the following:

1. On the **Form Templates** tab, click **New Form Template**.

The **Add Form Template** dialog box opens up.

2. Make the following settings:

Name: Enter a descriptive name for the form template.

Filename: Click the folder icon to upload an HTML template.

Images/Stylesheets: Select and upload the images, stylesheets, or JavaScript files that are used by the form template.

Comment (optional): Add a description or other information.

3. Click **Save**.

The new form template appears on the **Form Templates** list.

You can now use it in your reverse authentication profiles.

To either edit or delete a form template, click the corresponding buttons.

Using Variables in Login Form Template

- **Required:**

A `<form>` element with its method set to Post and its action set to `<?login_path?>`, e.g. `<form action="<?login_path?>" method="POST"> ... </form>`

An `<input>` element inside the above mentioned form with it's name set to `httpd_username`, e.g. `<input name="httpd_username" type="text">`

An `<input>` element inside the above mentioned form with it's name set to `httpd_password`, e.g. `<input name="httpd_password" type="password">`

Note - It is essential that any form template meets these three conditions so it can be parsed correctly (only `<?login_path?>` will actually be substituted).

- Optional:

All occurrences of `<?assets_path?>` will be replaced by the path containing all assets which have been uploaded alongside the form template. This allows for cleaner form templates by placing style sheets, images, etc. outside the actual form template, e.g. `<link rel="stylesheet" type="text/css" href="<?assets_path?>/stylesheet.css">`

All occurrences of `<?company_text?>` and `<?admin_contact?>` will be replaced by the messages defined in **Management > Customization**, e.g. `<p>If you encounter any problems or questions, please contact <?admin_contact?>.</p>`

All occurrences of `<?company_logo?>` will be replaced by the path leading to the image uploaded in **Management > Customization**, e.g. ``

Sophos UTM includes a default form template to ease initial reverse authentication configuration and deployment. This is the form contained in the default form template object:

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01//EN"
"http://www.w3.org/TR/html4/strict.dtd">
<html>
  <head>
    <link rel="stylesheet" type="text/css" href="<?assets_path?>/default_stylesheet.css">
    <meta http-equiv="content-type" content="text/html; charset=UTF-8">
    <title>Login</title>
  </head>
  <body>
    <div id="container">
      <div class="info">
        
        <p><?company_text?></p>
      </div>
```

```

<form action="<?login_path?>" method="POST">
  <p><label for="httpd_username">Username:</label>
  <input name="httpd_username" type="text"></p>

  <p><label for="httpd_password">Password:</label>
  <input name="httpd_password" type="password"></p>

  <p style="visibility:<?persistency?>">
  <label for="httpd_persistency">Keep me logged in</label>
  <input name="httpd_persistency" type="checkbox"></p>

  <p><input type="submit" value="Login"></p>
</form>

<div class="note">If you encounter any problems or questions,
please contact <b><?admin_contact?></b>.</div>
</div>
</body>
</html>

```

14.5 Certificate Management

Manage all certificate-related operations of Sophos UTM. This includes creating or importing X.509 certificates as well as uploading so-called **Certificate Revocation Lists** (CRLs), among other things.

14.5.1 Certificates

Create or import public key certificates in the X.509 standard format. Such certificates are digitally signed statements usually issued by a **Certificate Authority** (CA) binding together a public key with a particular **Distinguished Name** (DN) in X.500 notation. Using Let's Encrypt™ to create certificates is also supported.

You can choose among the following options:

- [Generate a new certificate](#) using the self-signed CA of the UTM.
- [Upload an existing certificate](#).
- [Create a new certificate with Let's Encrypt](#).

You can download certificates either in `PKCS#12` or `PEM` format. The `PEM` file only contains the certificate itself, while the `PKCS#12` file also contains the private key as well as the CA certificate with which it was signed.

Note - Certificates have a validity period. 30 days before a certificate expires, a flag will be added in WebAdmin and you will receive an email notification.

14.5.1.1 Generate a Certificate

All certificates you generate contain an RSA key. They are signed by the self-signed certificate authority (CA) **VPN Signing CA** that was created automatically using the information you provided during the initial login to the WebAdmin interface.

To generate a certificate, proceed as follows:

1. On the **Certificates** tab, click **New Certificate**.

The **Add Certificate** dialog box opens.

2. Make the following settings:

Name: Enter a descriptive name for this certificate.

Method: To create a certificate, select **Generate**.

Key size: The length of the RSA key. The longer the key, the more secure it is. You can choose among key sizes of 1024, 2048, or 4096 bits. Select the maximum key size compatible with the application programs and hardware devices you intend to use. Unless longer keys cause critical performance issues for your specific purposes, do not reduce the key size in order to optimize performance.

VPN ID type: You have to define a unique identifier for the certificate. The following types of identifiers are available:

- Email address
- Hostname
- IP address
- Distinguished name

VPN ID: Depending on the selected VPNID type, enter the appropriate value into this text box. For example, if you selected **IP address** from the **VPN ID type** list, enter an IP address into this text box. Note that this text box will be hidden when you select **Distinguished Name** from the **VPN ID type** list.

Use the drop-down lists and text boxes from **Country** to **Email** to enter identifying information about the certificate holder. This information is used to build the **Distinguished Name**, that is, the name of the entity whose public key the certificate identifies. This name contains a lot of personal information in the X.500 standard and is supposed to be unique across the Internet. If the certificate is for a road warrior connection, enter

the name of the user in the **Common name** box. If the certificate is for a host, enter a hostname.

Comment (optional): Add a description or other information.

3. Click **Save**.

The certificate appears on the **Certificates** list.

14.5.1.2 Upload a Certificate

To upload a certificate, proceed as follows:

1. On the **Certificates** tab, click **New Certificate**.

The **Add Certificate** dialog box opens.

2. Make the following settings:

Name: Enter a descriptive name for this certificate.

Method: Select **Upload**.

File type: Select the file type of the certificate. You can upload certificates being one of the following types:

- **PKCS#12 (Cert+CA):** PKCS refers to a group of **Public Key Cryptography Standards** (PKCS) devised and published by RSA laboratories. The **PKCS#12** file format is commonly used to store private keys with accompanying public key certificates protected with a container passphrase. You must know this container passphrase to upload files in this format.
- **PEM (Cert only):** A Base64 encoded **Privacy Enhanced Mail** (**PEM**) file format with no password required.

File: Click the Folder icon next to the **File** box and select the certificate you want to upload.

Comment (optional): Add a description or other information.

3. Click **Save**.

The certificate appears on the **Certificates** list.

14.5.1.3 Create a Let's Encrypt Certificate

Create a Let's Encrypt certificate to be able to present web browsers an officially signed certificate for the domains associated with the certificate. Let's Encrypt will create a signed certificate as well as an intermediate CA thus allowing for a chain of trust.

1. On the **Certificates** tab, click **New Certificate**.

The **Add Certificate** dialog box opens.

2. Make the following settings:

Name: Enter a descriptive name for this certificate.

Method: Select **Let's Encrypt**.

Interface: Select an interface through which the Let's Encrypt servers can contact the domains configured below.

Domains: Add one or more domains for which the certificate should be valid.

Comment (optional): Add a description or other information.

3. Click **Save**.

The certificate appears on the **Certificates** list.

Initially, newly created Let's Encrypt certificates are signed by the self-signed certificate authority VPN Signing CA that was created automatically using the information you provided during the initial login to the WebAdmin interface. This makes the certificate immediately usable right after their creation.

In the background, the certificate domains are validated by Let's Encrypt.

Note - This requires HTTP traffic for the certificate domains to reach the UTM.

As soon as Let's Encrypt issued the certificate, the certificate object is updated automatically. This process is repeated whenever the certificate is due for renewal.

14.5.2 Certificate Authority

You can add new certificate authorities to the unit. Generally speaking, a certificate authority or **Certification Authority** (CA) is an entity which issues digital certificates for use by other parties. A CA attests that the public key contained in the certificate belongs to the person, organization, host, or other entity noted in the certificate by signing the certificate signing request with the private key of the CA's own certificate. Such a CA is therefore called a signing CA.

On Sophos UTM, the signing CA was created automatically using the information you provided during the initial login to Sophos UTM. Thus, all certificates you create on the **Certificates** tab are self-signed certificates, meaning that the issuer and the subject are identical. However, you can alternatively import a signing CA by third-party vendors. In addition, to verify the authenticity of hosts or users requesting an IPsec connection, you can also use alternative CA certificates whose private keys are unknown. Those CA certificates are called verification CAs and can be added on this tab as well.

Important Note - You can have multiple verification CAs on your system, but only one signing CA. So if you upload a new signing CA, the previously installed signing CA automatically becomes a verification CA.

To add a CA, proceed as follows:

1. On the **Certificate Authority** tab, click **New CA**.

The **Add CA** dialog box opens.

2. Make the following settings:

Name: Enter a descriptive name for this CA.

Type: Select the type of CA you are going to import. You can choose between verification CAs or signing CAs. A verification CA must be available in the `PEM` format, while a signing CA must be available in the `PKCS#12` format.

CA certificate: Click the Folder icon next to the **CA certificate** box and select the certificate you want to import. Note that if you are to upload a new signing CA, you must enter the password with which the `PKCS#12` container was secured.

Comment (optional): Add a description or other information.

3. Click **Save**.

The new CA certificate appears on the **Certificate Authority** list.

To delete a CA click the button **Delete** of the respective CA.

The signing CA can be downloaded in `PKCS#12` format. You will then be prompted to enter a password, which will be used to secure the `PKCS#12` container. In addition, verification CAs can be downloaded in `PEM` format.

14.5.3 Revocation Lists (CRLs)

A CRL is a list of certificates (more precisely, their serial numbers) which have been revoked, that is, are no longer valid, and should therefore not be relied upon. You can upload the CRL that is deployed within your PKI.

To add a CRL, proceed as follows:

1. On the **Revocation Lists (CRLs)** tab, click **New CRL**.

The **Add CRL** dialog box opens.

2. Make the following settings:

Name: Enter a descriptive name for this CRL.

CRL file: Click the Folder icon next to the **CRL file** box and select the CRL you want to upload.

Comment (optional): Add a description or other information.

3. Click **Save**.

The new CRL appears on the list of revocation lists.

To delete a CRL click the button **Delete** of the respective CRL.

14.5.4 Advanced

You can re-generate the VPN Signing CA that was created during the initial setup of the unit and enable the use of Let's Encrypt certificates. The VPN Signing CA is the certificate authority with which digital certificates are signed that are used for remote access and site-to-site VPN connections. The old VPN signing CA will be kept as verification CA.

Re-generate Signing CA

You can renew all user certificates using the current signing CA. This becomes relevant once you have installed an alternative VPN Signing CA on the **Certificate Authority** tab.

Caution -Sophos UTM and all user certificates will be re-generated using the new signing CA. This will break certificate-based site-to-site and remote access VPN connections.

Let's Encrypt™ Certificates

Let's Encrypt is a certificate authority that provides free X.509 certificates for Transport Layer Security encryption via an automated process designed to eliminate the hitherto complex process of manual creation, validation, signing, installation, and renewal of certificates for secure websites. (Source: Wikipedia)

Sophos UTM provides Let's Encrypt integration to make managing certificates easier for you. You can use Let's Encrypt certificates anywhere in the UTM, for example with VPN connections, as WebAdmin or User Portal certificate, or with the web application firewall. To be able to use Let's Encrypt, the domain names used in Let's Encrypt must be publicly accessible. Let's Encrypt certificates are checked once per day by a Cron job and are automatically renewed if they expire in less than 30 days.

Allow Let's Encrypt certificates: To use Let's Encrypt, activate the checkbox and click **Apply**. By that you agree to the Let's Encrypt terms of service. The UTM will contact the Let's Encrypt server and create a Let's Encrypt account for use with the UTM. You can click the Refresh button to see when the process is finished.

When you turn off the Let's Encrypt feature, there will be a warning. If you proceed, all data related to Let's Encrypt will be deleted.

Notifications: You will receive a notification in the following circumstances.

- In case the renewal of a Let's Encrypt signed certificate failed.
- In case the Let's Encrypt terms of service change at some point. You will then have to go back to the **Certificate Management > Advanced** page and re-enable the Let's Encrypt feature. By that you agree to the new terms of service. Until you have done that, no new Let's Encrypt certificates can be created and existing ones cannot be renewed.

You can find logging information at any time in the Let's Encrypt log on the **Logging & Reporting > View Log Files** page of WebAdmin.

15 RED Management

This chapter describes how to configure Sophos RED. RED is short for **Remote Ethernet Device** and is a means to connect remote branch offices and the like to your main office as if the branch office is part of your local network.

The setup consists of Sophos UTM in your main office and a Remote Ethernet Device (RED) in your remote office. Establishing a connection between the two is utmost easy as the RED appliance itself does not need to be configured at all. As soon as the RED appliance is connected to your Sophos UTM it behaves like any other Ethernet device on your Sophos UTM. All traffic of your branch office is safely routed via your Sophos UTM which means that your branch office is as secure as your local network.

These types of RED appliances are available:

- RED 10: RED solution for small remote offices
- RED 15: RED solution for small remote offices (successor of RED 10)
- RED 15w: RED solution for small remote offices, including WiFi. RED 15w will be listed as an access point under **Wireless Protection > Access Points > Overview**. For extensive information on configuration, see chapter [RED 15w](#).
- RED 20: Successor of RED 15 with a module bay for a Wi-Fi, 3G or LTE module and SFP support for WAN 1.
- RED 50: RED solution for bigger remote offices which comes with two uplink interfaces. For extensive information on configuration, see chapter [Uplink Balancing](#).
- RED 60: Successor of RED 50 with PoE capability and a module bay for a Wi-Fi, 3G or LTE module and SFP support for WAN 1.

The following topics are included in this chapter:

- [Overview](#)
- [Global Settings](#)
- [Client Management](#)
- [Deployment Helper](#)
- [Tunnel Management](#)
- [RED 15w](#)
- [Uplink Balancing](#)

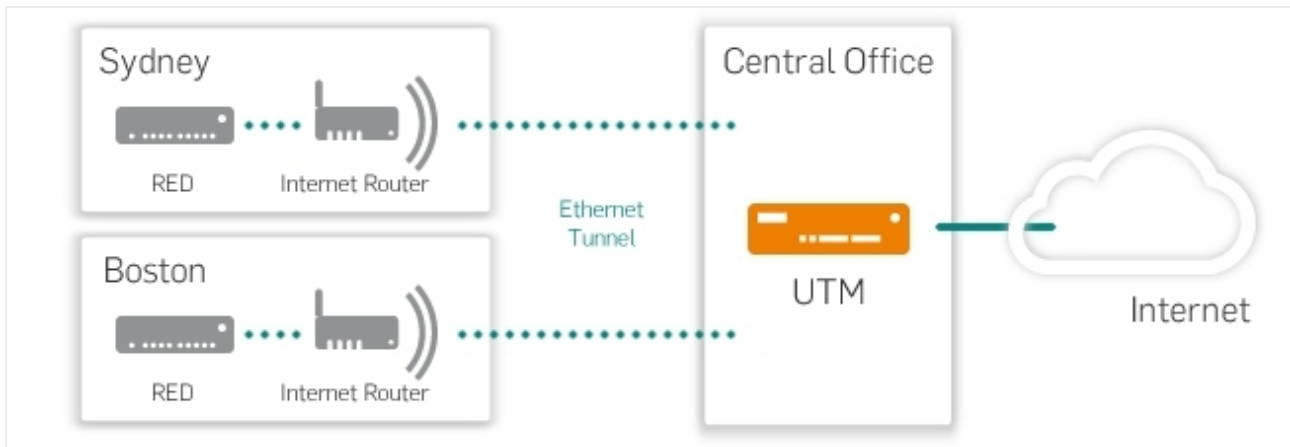


Figure 23 RED: Setup Sketch

Setting up a RED environment involves the following steps:

1. Activation of RED support.
2. Configuration of the RED appliance on your Sophos UTM.
3. Connecting the RED appliance to the Internet on the remote site.

Note - The overview page of RED displays general information on the RED architecture as long as no RED appliance is configured. When a RED appliance has been configured, the page will display information on the RED status.

15.1 Overview

The page **Overview** provides general information on what RED is meant for, how it works, and how a typical RED setup looks like.

Cross Reference - For detailed information about RED devices see the **Quick Start Guides** and **Operating Instructions** on the [Sophos UTM documentation page](#). The LED blink codes of the RED 10 and RED 15 appliances are described in the [Sophos Knowledge Base](#). The LCD messages of RED 50 are also described in the [Sophos Knowledge Base](#).

Open RED Live Log

You can use the live log to monitor the connection between your Sophos UTM and the RED appliance. Click the **Open RED Live Log** button to open the live log in a new window.

15.2 Global Settings

On the **Global Settings** tab you can enable or disable the support for RED which means that your Sophos UTM acts as a RED hub. You need to enable the RED support before any RED appliances can connect to Sophos UTM.

RED Configuration

To enable RED support, do the following:

1. On the **Global Settings** tab, enable RED.

Click the toggle switch.

The toggle switch turns amber and the **RED Configuration** area becomes editable.

2. Enter your organization details.

By default the settings from the **Management > System Settings > Organizational** tab is used.

3. Click **Activate RED**.

The toggle switch turns green and RED support is activated. Your Sophos UTM is now registered at the RED Provisioning Service (RPS) of Sophos to act as a RED hub.

You can now continue by adding one or more RED appliances on the [Client Management](#) page, or use the wizard on the [Deployment Helper](#) page.

To cancel the configuration, click the amber colored toggle switch.

Automatic Device Deauthorization

When RED support is enabled, you can specify if disconnected RED appliances should automatically be deauthorized after a certain time span. With this feature, you can prevent stolen RED appliances from connecting to Sophos UTM.

Note -The **Automatic Device Deauthorization** does not work for RED Tunnel between 2 Sophos UTM units.

1. Enable automatic deauthorization.

Select the **Enable automatic device deauthorization** checkbox.

2. Specify a time span after which the RED appliance should be deauthorized.

Enter the desired value into the **Deauthorize after** text box. The minimum time span is 5 minutes.

3. Click **Apply**.

The automatic device deauthorization is now activated.

When a RED appliance reconnects after being disconnected for a time span longer than the defined time span, it will automatically be disabled. This is indicated by the toggle switches on the **Client Management** page. A respective warning will be displayed on the **Overview** page as well. To permit a deauthorized RED appliance to connect again, enable that RED appliance on the **Client Management** page.

Disable RED

Disabling RED will not cause the deletion of the REDs. If you disable the RED functionality the RED devices will be deactivated and lose their connection. If you re-enable the RED functionality of Sophos UTM the REDs will be activated again.

To disable RED click the toggle switch on the **Global Settings** page and confirm by clicking the **Confirm removal of RED configuration** button.

15.3 Client Management

On the **RED Management > Client Management** page you can enable remote Sophos UTM units to connect to your Sophos UTM using a Remote Ethernet Device (RED) tunnel. The remote Sophos UTM units then simply act like RED appliances. Furthermore you can configure RED appliances manually (expert mode) instead of using the deployment helper. The deployment helper is a more convenient way to configure RED appliances and can be found on the next WebAdmin page.

Each RED appliance or Sophos UTM that is configured here is able to establish a connection to your Sophos UTM.

The **[Server]** tag in front of the page name indicates that this page only needs configuration if Sophos UTM should act as server (RED hub).

Note - For RED appliances to be able to connect, you need to enable RED support on the **Global Settings** page first.

Setting up a RED tunnel between two Sophos UTM units

To enable another Sophos UTM to connect to your local Sophos UTM using a RED tunnel, do the following:

1. On the **Client Management** tab, click **Add RED**.

The **Add RED** dialog box opens.

2. Make the following settings:

Branch name: Enter a name for the branch where the client Sophos UTM is located, e.g. "Office Munich".

Client type: Use **RED Firewall Server** to establish a connection using the RED protocol version 2. Select **RED Firewall Legacy** only if the remote UTM doesn't have version 9.7 or newer.

Tunnel ID: By default, **Automatic** is selected. Tunnels will be numbered consecutively. You need to make sure that the tunnel ID is unique for both Sophos UTM units. In this case you might need to select another ID from the drop-down list.

Comment (optional): Add a description or other information.

3. Click **Save**.

Sophos UTM object is being created.

4. Download the provisioning file.

To provide the remote (client) Sophos UTM with the configuration data download the provisioning file using the **Download** button and transfer the file to the remote Sophos UTM in a secure way.

Configuring a RED appliance

To enable a RED appliance to connect to your local Sophos UTM, do the following:

1. On the **Client Management** tab, click **Add RED**.

The **Add RED** dialog box opens.

2. Make the following settings:

Branch name: Enter a name for the branch where the RED appliance is located, e.g. "Office Munich".

Client type: Select a RED client type from the drop-down list, depending on the type of RED appliance you want to connect.

Note - The RED 50 appliance has an LCD display. It can be used to show you important information about the device. With the Left button you can enter the menu. Navigate with the Up and Down button and enter with the Right button. Please see the [Operating Instructions](#) for further information.

RED ID: Enter the ID of the RED appliance you are configuring. This ID can be found on the back of the RED appliance and on its packaging.

Tunnel ID: By default, **Automatic** is selected. Tunnels will be numbered consecutively. In case you have conflicting IDs, select another ID from the drop-down list.

Unlock code (optional): For the first deployment of a RED appliance, leave this box empty. In case the RED appliance you are configuring has been deployed before, you need to provide its unlock code. The unlock code is generated during the deployment of a RED appliance, and is emailed instantly to the address provided on the **Global Settings** tab. This is a security feature, which ensures that a RED appliance cannot simply be removed and installed elsewhere.

Note - For manual deployment via USB stick and automatic deployment via RED Provisioning Service (see below), two separate unlock codes are generated. If you switch a RED device from one deployment method to the other, make sure to use the corresponding unlock code: For manual deployment, provide the unlock code of the last

manual deployment; for automatic deployment, provide the unlock code of the last automatic deployment.

If you are not in the possession of the unlock code, the only way to unlock the RED appliance is to contact the Sophos Support. The Support however can only help you if you deployed the configuration automatically, via the Sophos RED Provisioning Service.

Tip - The unlock code can also be found in the backup file of Sophos UTM the RED was connected to in case that the backup contains host-specific data.

UTM hostname: You need to enter a public IP address or hostname where Sophos UTM is accessible.

2nd UTM hostname (with RED 15(w), 20, 50, and 60): You can enter another public IP address or hostname of the same Sophos UTM. Note that you cannot enter the IP or hostname of a different Sophos UTM.

Use 2nd hostname for: You can configure what the second hostname should be used for.

- **Failover:** Select to only use the second hostname in case the first hostname fails.
- **Balancing:** Select to activate active load balancing between both hostnames. This makes sense if both uplinks the first and the second hostname correlate to, are equal in latency and throughput.

Uplink mode/2nd uplink mode: You can define how the RED appliance receives an IP address, which can be either via DHCP or by directly assigning a static IP address. For RED 50 and 60 you define the uplink mode for each RED uplink Ethernet port separately.

- **DHCP client:** The RED pulls an IP address from a DHCP server.
- **Static address:** Enter an IPv4 address, a corresponding netmask, a default gateway and a DNS server.

Note - There is no one-to-one association between Sophos UTM hostname and RED uplink Ethernet port. Each RED port will try to connect to each defined Sophos UTM hostname.

Use 2nd uplink for (with RED 50 and 60, see images below): You can configure what the second uplink should be used for.

- **Failover:** Select to only use the second uplink in case the first uplink fails.
- **Balancing:** Select to activate active load balancing between both uplinks. This makes sense if both uplinks on the RED are equal in latency and throughput.

Operation mode: You can define how the remote network will be integrated into your local network.

Note - If you use RED 15w as access point it is recommended that you read the chapter **RED Management** > **RED 15w** especially if you are facing any configuration issues.

- **Standard/Unified:** Sophos UTM completely controls the network traffic of the remote network. Additionally, it serves as DHCP server and as default gateway. All remote network traffic will be routed through Sophos UTM.
- **Standard/Split:** Sophos UTM completely controls the network traffic of the remote network. Additionally, it serves as DHCP server and as default gateway. In contrast to the Unified mode, only certain traffic will be routed through Sophos UTM. Define local networks in the **Split Networks** box below which can be accessed by remote clients.

Note - VLAN tagged frames cannot be handled with this operation mode.

- **Transparent/Split:** Sophos UTM does not control the network traffic of the remote network, it does neither serve as DHCP server nor as default gateway. On the contrary, it pulls an IP address from the DHCP server of the remote network to become a part of that network. However, you can enable access for remote clients to your local network. For that you need to define **Split Networks** that are allowed to be accessed by the remote network. Additionally, you can define one or more **Split Domains** to be accessible. If your local domains are not publicly resolvable, you need to define a **Split DNS Server**, which can be queried by remote clients.

Note - VLAN tagged frames cannot be handled with this operation mode.

You can find examples for all the operation modes on the **Deployment Helper** tab.

3. For RED 50 or 60, optionally make the following switch port configuration settings:

LAN port mode: RED 50 and 60 offer four LAN ports that can be configured either as simple switches or for intelligent VLAN usage. When set to **Switch**, all traffic will basically be sent to all ports. When set to **VLAN**, traffic can be filtered according to the Ethernet frames' VLAN tag, thus allowing to tunnel more than one network into the RED tunnel.

LAN modes: When using the VLAN switch port configuration, you can configure each LAN port separately. For each LAN port, the following options are available:

Untagged: Ethernet frames with the VLAN IDs specified in the **LAN VID(s)** field below will be sent to this port. The frames are sent without tags, thus the end devices do not have to support VLAN. This port allows just one VLAN ID.

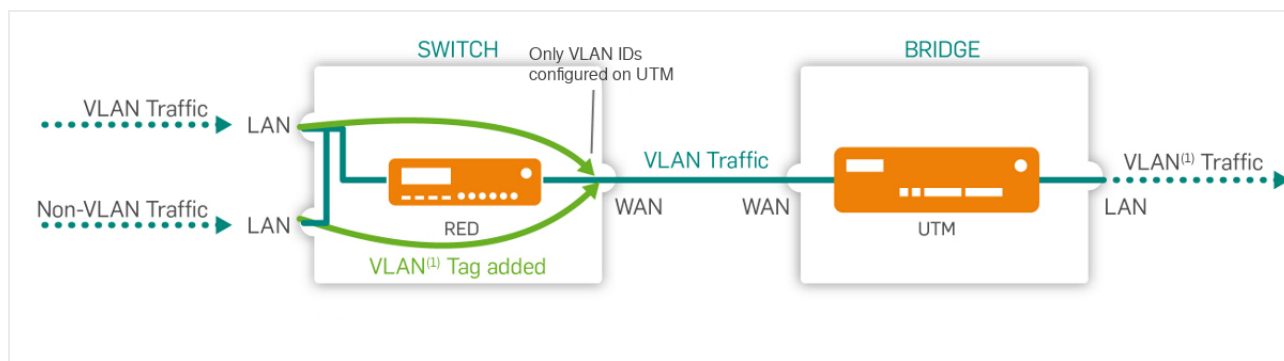


Figure 24 LAN mode: Untagged

Untagged, drop tagged: Ethernet frames with the VLAN IDs specified in the **LAN VID(s)** field below will not be sent to this port. The frames are sent without tags, thus the end devices do not have to support VLAN.

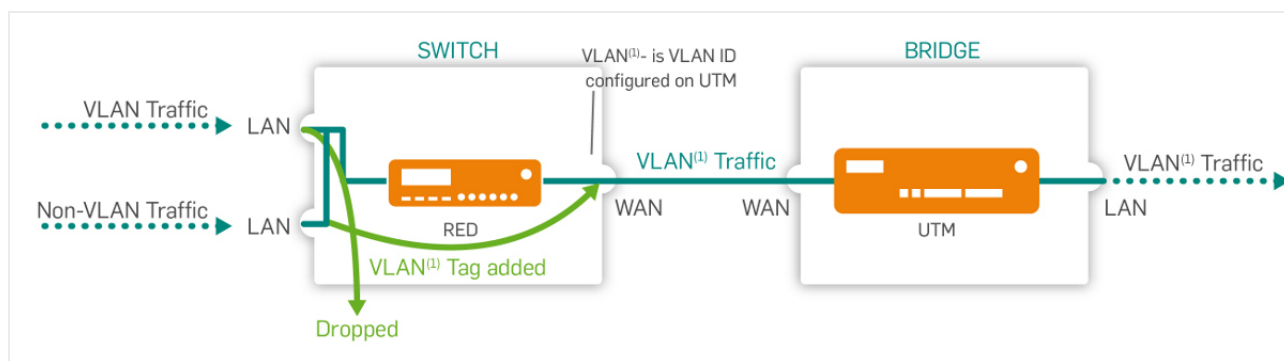


Figure 25 LAN mode: Untagged, drop tagged

Tagged: Ethernet frames with the VLAN IDs specified in the **LAN VID(s)** field below will be sent to this port. The frames are sent with tags, and the end devices have to support VLAN. Frames without VLAN IDs will not be sent to this port. This port allows up to 64 different VLAN ID(s) separated by comma.

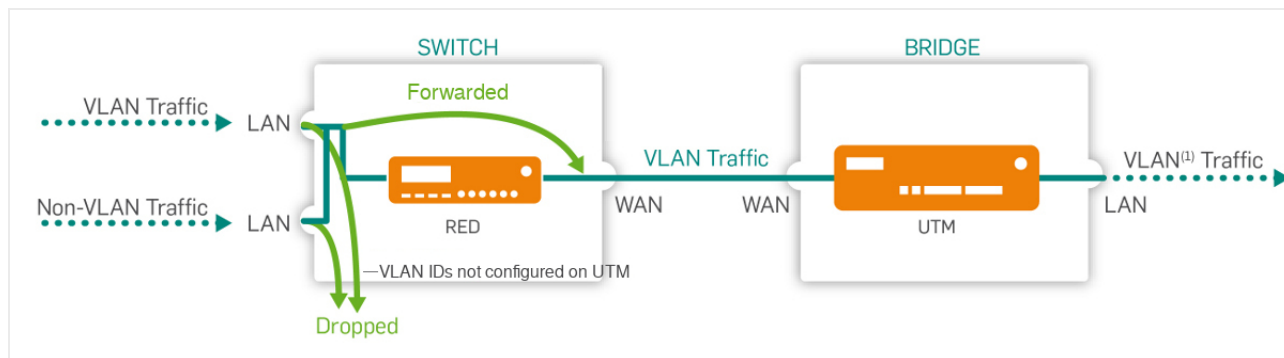


Figure 26 LAN mode: Tagged

Disabled: This Port is closed. No frames with or without VLAN IDs specified in the **LAN VID(s)** will be sent to this port.

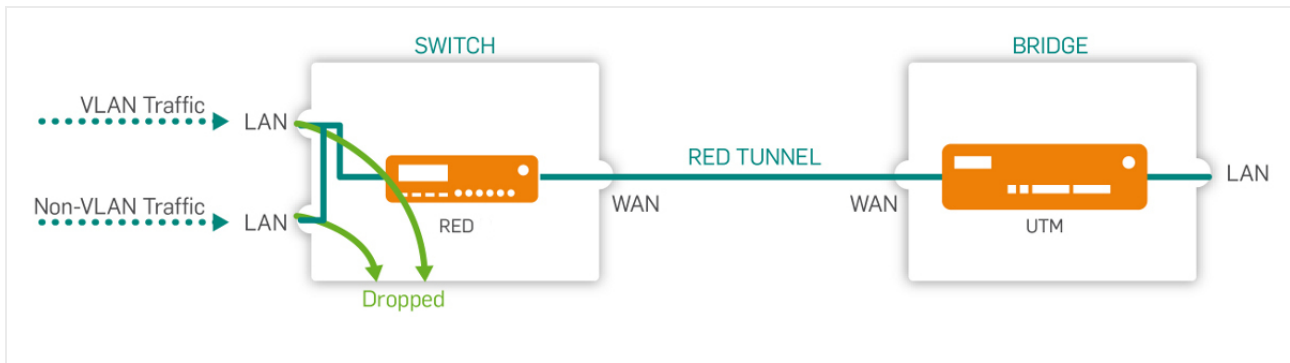


Figure 27 LAN mode: Disabled

Note - The **LAN modes** have different names in the Cisco/HP documentation. **Untagged** also known as 'Hybrid Port', **Untagged, drop tagged** also known as 'Access Port' and **Tagged** also known as 'Trunk Port'.

Comment (optional): Add a description or other information.

Cross Reference - For more information about VLAN tagging for RED 50 or 60, see the [Sophos Knowledge Base](#) and more information about tunnel compression, see also the [Sophos Knowledge Base](#).

4. For RED 60, you can turn on Power over Ethernet for one or both ports.
5. Optionally, make the following advanced settings:

MAC filtering type: To restrict the MAC addresses allowed to connect to this RED appliance, select **Blacklist** or **Whitelist**. With **Blacklist**, all MAC addresses are allowed except those listed on the MAC address list selected below. With **Whitelist**, all MAC addresses are prohibited except those listed on the MAC address list selected below.

MAC addresses: The list of MAC addresses used to restrict access to the RED appliance. MAC address lists can be created on the **Definitions & Users > Network Definitions > MAC Address Definitions** tab. To restrict access to a RED appliance, you can add a maximum of 200 MAC addresses for RED 10, 300 for RED 15 (w), and 400 for RED 20, 50, and 60.

Note - MAC filtering only works for RED rev. 2 or newer.

Device deployment: Select how you want to provide the necessary configuration settings for the RED appliance. By default, Sophos UTM provides the RED's configuration data automatically via the RED Provisioning Service of Sophos. In this case, the RED appliance receives its configuration via Internet. The RED appliance connects to a Sophos NTP server and receives the system time. If for example your RED does not have an Internet connection, you can provide the configuration manually, via USB stick. If you deploy a RED device manually, you have to ensure that Sophos UTM is acting as

NTP server. Therefore activate NTP on Sophos UTM and allow the correct network or at least the IP address of the RED.

Note - Sophos UTM version 9.2 or earlier: After you deployed a RED manually you need to deploy it once using the RED Provisioning Service (automatically) before you can deploy it manually again. Manual device deployment only works for RED appliances with firmware version 9.1 or later.

Caution - If you select manual deployment, it is extremely important to keep the unlock code, which is sent by email. If you lose the unlock code, you can never again connect the RED appliance to another Sophos UTM.

Tunnel compression: Enabling tunnel compression will compress all traffic that is sent through the RED tunnel. Tunnel compression might increase the throughput of the RED appliance in areas with a very slow Internet connection such as 1-2 Mbps. However, any performance increase mainly depends on the entropy of the data being sent (for example, already compressed data such as HTTPS or SSH cannot be compressed any further). In some circumstances it might therefore be possible that enabling tunnel compression could actually reduce the throughput of the RED appliance. In that case, please disable tunnel compression.

Note - Tunnel compression is not available for RED 10 rev.1.

3G/UMTS failover: Starting with RED rev. 2, the RED appliance offers a USB port, where you can plug in a 3G/UMTS USB stick. If selected, this stick can serve as Internet uplink failover in case of a WAN interface failure. For the necessary settings please refer to your Internet provider's data sheet.

- **Username/Password** (optional): If required, enter a username and password for the mobile network.
- **PIN** (optional): Enter the PIN of the SIM card if a PIN is configured.

Note - If you enter a wrong PIN, in case of a WAN interface failure, the connection via 3G/UMTS cannot be established. Instead, the **3G/UMTS failover** checkbox of the RED appliance will automatically be unselected. Thus, the wrong PIN will only be used once. When the WAN interface comes up again, a warning will be displayed for the RED appliance: **A wrong PIN was entered for 3G/UMTS failover uplink. Please change the login data.** When you open the **Edit RED** dialog box, a message is displayed which tells you that the **3G/UMTS failover** was automatically unselected. Correct the PIN before selecting the checkbox again. Please note that after three connection attempts with a wrong PIN, the SIM card will be locked. Unlocking cannot be done via the RED appliance or Sophos UTM. The sig-

nal strength for most supported **3G/UMTS** USB sticks is displayed in the live log and the RED 50 LCD display.

- **APN:** Enter your provider's Access Point Name information.
- **Dial string** (optional): If your provider uses a different dial string, enter it here. Default is *99#.

Note - You always have to make the following configurations manually: 1) Creating the necessary firewall rules (**Network Protection > Firewall > Rules**). 2) Creating the necessary masquerading rules (**Network Protection > NAT > Masquerading**).

6. Click **Save**.

The RED appliance is being created and appears on the **RED** list.

With automatic device deployment, as soon as the RED has booted, it will fetch its configuration at the Sophos RED Provisioning Service (RPS). After that the connection between your Sophos UTM and the RED appliance is going to be established.

With manual device deployment, the new entry in the **RED** list will have a **Download** button. Download the configuration file and save it to the root directory of a USB stick. Then plug the USB stick into the RED appliance before turning it on. The RED will fetch its configuration from the USB stick. After that the connection between your Sophos UTM and the RED appliance is going to be established.

Caution - It is crucial that you keep the unlock code, which is emailed instantly to the address provided on the **Global Settings** tab as soon as the RED appliance receives its configuration. (In case of switching between manual and automatic deployment, make sure to keep both unlock codes.) You need the unlock code when you want to use the RED appliance with another Sophos UTM. If you then do not have the unlock code ready, the only way to unlock the RED appliance is to contact the Sophos Support. The Support however can only help you if you deployed the configuration automatically, via the Sophos RED Provisioning Service.

To edit a RED appliance, click the corresponding button. You can see the appliance status of all configured RED appliances on the **RED** overview page of WebAdmin.

The following images give an overview of the four balancing and failover combinations RED 50 and 60 provide. Solid lines reflect balancing, dotted lines failover behavior:

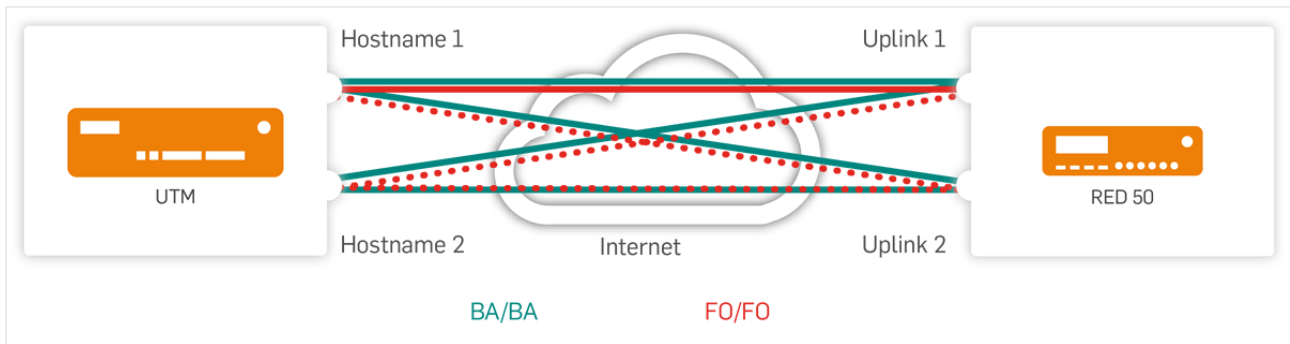


Figure 28 RED 50: Hostname and Uplink Balancing (turquoise) and Hostname and Uplink Failover (red)

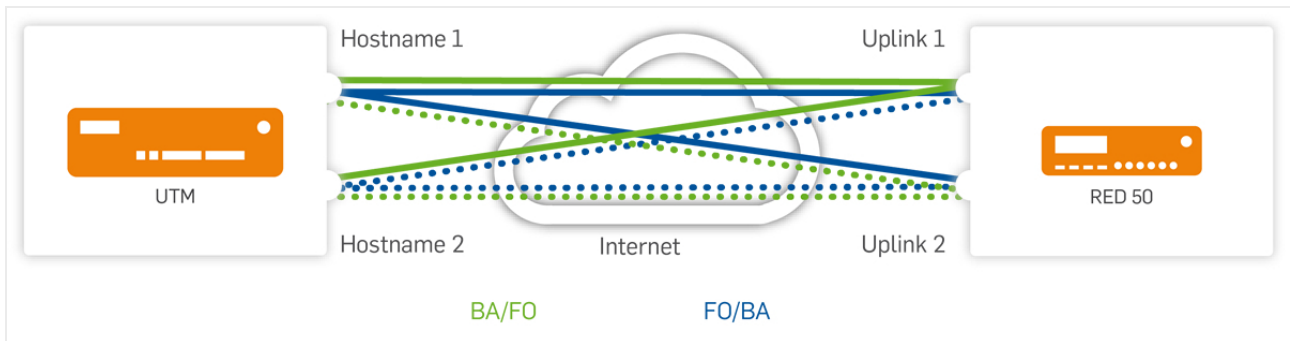


Figure 29 RED 50: Hostname Balancing and Uplink Failover (green) and Hostname Failover and Uplink Balancing (blue)

Deleting a RED appliance

To delete a RED appliance, click the **Delete** button next to the appliance name.

There will be a warning that the RED object has dependencies. Be aware that deleting a RED appliance will *not* delete associated interfaces and their dependencies. This is intentional, since it enables you to move an interface from one RED appliance to another.

If you want to remove a RED appliance setup completely, you need to delete potential interface and other definitions manually.

15.4 Deployment Helper

The **RED Management > Deployment Helper** tab provides a wizard that facilitates setting up and integrating a RED environment. The wizard is meant to be a simple alternative to the normal configuration on the **Client Management** tab. You only need to fill in the requested fields, if needed also fields marked **optional**, and to click **Deploy RED**.

The **[Server]** tag in front of the page name indicates that this page only needs configuration if Sophos UTM should act as server (RED hub).

Note - For your convenience, with **Standard** and **Standard/Split** mode, in contrast to the **Client Management** tab, the deployment helper automatically creates the following objects: a local interface with the specified IP address; a DHCP server for the remote network, covering half of the available IP address range; access to the local DNS resolver. In **Transparent/Split** mode, the deployment helper only creates a DHCP client (**Ethernet DHCP**) interface.

The deployment helper provides short descriptions for every option and a sketch for each of the three operation modes offered by the RED technology.

Below you find a description and use case examples for the three operation modes of RED.

Standard/Unified

Sophos UTM manages the whole remote network. It acts as DHCP server and as default gateway.

Example: You have a branch office and, for security reasons, you want all its traffic to be routed via your headquarter Sophos UTM. That way the remote site becomes a part of your local network as if it were connected via LAN.

Standard/Split

Note - VLAN tagged frames cannot be handled with this operation mode.

As with the **Standard** mode, Sophos UTM manages the whole remote network and acts as DHCP server. The difference is that only traffic targeted to networks listed in the **Split Networks** box is redirected to your local Sophos UTM. All traffic not targeted to the defined split networks is directly routed to the Internet.

Example: You have a branch office and you want it to have access to your local intranet or you want to route traffic of the remote network via your Sophos UTM for security reasons, e.g. to have the traffic checked for viruses or to use an HTTP proxy.

Transparent/Split

Note - VLAN tagged frames cannot be handled with this operation mode.

The remote network stays independent, Sophos UTM is a part of this network by getting an IP address from the remote DHCP server. Only certain traffic of the remote network is allowed to access certain networks or local domains of yours. Since Sophos UTM has no control of the remote network, local domains, which are not publicly resolvable, cannot be resolved by the remote router unless you define a **Split DNS Server**. This is a local DNS server of yours which can then be queried by remote clients.

Technically, the local interface of the RED appliance and its uplink interface to your local Sophos UTM as well as its link to the remote router are bridged. (For RED 20, 50, and 60, LAN ports are bridged only to WAN 1.) Since Sophos UTM is only a client of the remote network, routing traffic to the split networks the same way as with the other modes is not possible. Therefore, the RED appliance intercepts all traffic: Traffic targeting to a network listed in the **Split Networks** box or going to a domain listed in the **Split Domains** box is redirected to the Sophos UTM interface. This is accomplished by replacing the default gateway's MAC address in the respective data packets with the MAC address of Sophos UTM.

Example: There is a partner or a service provider who should have access to your intranet or a certain server in your local network. Using a RED appliance, that partner's network will stay completely independent of your network, but they can access a defined part of your network for certain purposes, as if they were connected via LAN.

Note - Using the deployment helper, the uplink mode of the RED appliance is **DHCP Client** in either operation mode. If you need to assign it a static IP address instead, you need to configure the RED appliance on the **Client Management** tab.

15.5 Tunnel Management

On the **RED Management > Tunnel Management** page you can configure your Sophos UTM to act as a RED appliance to be able to establish a RED tunnel to another Sophos UTM. The remote host Sophos UTM will then serve as RED hub for your Sophos UTM.

The **[Client]** tag in front of the page name indicates that this page only needs configuration if Sophos UTM should act as RED client.

To connect your Sophos UTM to the host Sophos UTM you need a provisioning file. This file needs to be generated on the host Sophos UTM (see [Client Management](#)).

To connect your Sophos UTM to the host Sophos UTM, proceed as follows:

1. On the host Sophos UTM, add your local Sophos UTM to the **Client Management** list.
2. On the host Sophos UTM, download the provisioning file for your Sophos UTM.
3. On your local Sophos UTM, click **Add Tunnel**.

The **Add Tunnel** dialog box opens.

4. Make the following settings:

Tunnel name: Enter a descriptive name for this tunnel.

UTM host: Select the remote Sophos UTM host.

Type: Select **Firewall RED client**. Only use the legacy option if the host Sophos UTM has a version earlier than 9.7.

Prov. file: Click the Folder icon, select the provisioning file you want to upload, and click **Start Upload**.

Comment (optional): Add a description or other information.

5. Click **Save**.

The RED tunnel will be established and displayed on the **Tunnel Management** list.

15.6 RED 15w

In general all wireless modes (Separate Zone, Bridge to AP LAN and Bridge to VLAN) are supported by RED 15w. The actual meaning of the modes can vary depending on the mode that is actually selected.

15.6.0.1 Standard/Unified and Standard/Split

In Standard/Unified mode, all traffic of the RED is sent to Sophos UTM.

In Standard/Split mode, all traffic of the RED that is part of networks listed in the **Split Networks** is sent to Sophos UTM. All other traffic is sent to the default gateway specified by the remote DHCP server. Normally, this would be the Internet router where the RED is connected to at the remote site.

The following preconditions must be met for wireless:

- RED tunnel interface on the Sophos UTM site is up and has an IP address
- DHCP server is running on the RED tunnel interface
- DNS can be resolved on this RED interface
- Firewall allows traffic from the RED interface to Sophos UTM for AWE client and VXLAN ([RFC 7348](#)) (only for **Separate Zone**).
- RED interface is added to the **Allowed Interfaces** section under **Wireless Protection > Global Settings**

Separate Zone: All traffic from a separate zone network is sent to Sophos UTM using VXLAN protocol. The VXLAN packets are not encrypted but will be encrypted on the way to Sophos UTM while crossing the RED tunnel. The separate zone networks are connected to each other on the Sophos UTM site as usual. The firewall has to allow this type of traffic.

Bridge to AP LAN: The RED will bridge the SSID in the LAN network behind the RED. This includes LAN ports 1-4. Clients connected to this SSID are able to reach the RED tunnel endpoint interface on the Sophos UTM site if the firewall is configured to allow traffic from the RED network to this interface (enabled by default).

Bridge to VLAN (Standard/Unified): The RED will tag all traffic from clients that are connected to this SSID using the configured VLAN tag. Clients are able to reach all network devices with the same VLAN tag that are connected to LAN port 1-4 as well as a VLAN tagged interface on top of the tunnel endpoint interface on the Sophos UTM site.

Bridge to VLAN (Standard/Split): The clients are able to reach all hosts behind the RED that own the same VLAN tag. Also the tunnel endpoint is reachable if a VLAN interface is

configured on top of the RED interface on the Sophos UTM site. The split networks cannot be reached as these are routed for untagged packets only.

15.6.0.2 Transparent/Split

In this mode, only networks listed in the **Split Networks** list are reachable through Sophos UTM. All other networks are routed through the Internet-providing router at the remote site. The remote network also provides DHCP and DNS. That means the RED tunnel endpoint interface on the Sophos UTM site has to obtain an IP address by the remote DHCP server. The following preconditions must be met for wireless:

- RED tunnel interface on the Sophos UTM site is up and has an IP address
- DNS can be resolved on this RED interface
- Firewall allows traffic from the RED interface to Sophos UTM for AWE client and VXLAN ([RFC 7348](#)) (only for **Separate Zone**).
- RED interface is added to the **Allowed Interfaces** section under **Wireless Protection > Global Settings**
- The remote DHCP server has to provide the DHCP option 234 which must contain the IP address of the RED interface on the Sophos UTM site. Otherwise the fallback IP 1.2.3.4 is used.

Separate Zone is the same as for Standard/Unified and Standard/Split.

Bridge to AP LAN is the same as for Standard/Unified and Standard/Split.

Bridge to VLAN: The clients are able to reach all hosts behind the RED that own the same VLAN tag on LAN ports 1-4 as well as on the WAN port. The split networks cannot be reached as these are routed for untagged packets only.

15.7 RED Uplink Balancing

The balancing algorithm selects an outgoing link based on source and destination IP address. It does not balance on a per packet basis. The reason is that TCP performance suffers severely when packets are reordered due to different paths in a single TCP connection. Uplink balancing is available with RED 50 and 60.

This means that any transmission with the same source and destination IP address will always take the same interface combination. For example, outgoing packets always on WAN 1 to uplink 1 on Sophos UTM, incoming packets always from uplink 2 on Sophos UTM to WAN 1. When a client behind a RED downloads a large file, all incoming packets will be transmitted via one interface only. When a client downloads simultaneous two files from two different servers the incoming packets will be transmitted via either one interface or both interfaces depending on the IP addresses.

Here are the balancing setups:

RED with balancing, Sophos UTM with one uplink

To configure RED balancing on Sophos UTM with one uplink, do the following:

1. Enter the **UTM hostname** (DNS name or IPv4 address).
2. Configure the first and the second uplink for balancing.

Note - Do not enter the same IP or name twice.

RED with balancing, Sophos UTM with two uplinks in balancing mode

To configure RED balancing on Sophos UTM with two uplinks in balancing mode, do the following:

1. Enter two different hostnames (DNS names or IPv4 addresses) for Sophos UTM.
2. Configure the first and the second uplink for balancing.
3. Make sure Sophos UTM uplink balancing is enabled for the two hostnames and IP addresses in **Interfaces & Routing > Interfaces > Uplink Balancing**.

RED with one uplink, Sophos UTM with two uplinks in balancing mode

To configure a RED with one uplink on Sophos UTM with two uplinks in balancing mode, do the following:

1. Enter two different hostnames (DNS names or IPv4 addresses) for Sophos UTM.
2. Make sure Sophos UTM uplink balancing is enabled for the two hostnames and IP addresses in **Interfaces & Routing > Interfaces > Uplink Balancing**.

Note - If uplink balancing is not enabled the dmesg error message '**IPv4: martian source...**' will be shown on Sophos UTM.

16 Site-to-site VPN

This chapter describes how to configure site-to-site VPN settings of Sophos UTM. Site-to-site VPNs in Sophos UTM are realized by means of **Virtual Private Networks** (VPNs), which are a cost effective and secure way for remote networks to communicate confidentially with each other over a public network such as the Internet. They use the cryptographic tunneling protocol IPsec to provide confidentiality and privacy of the data transmitted over them.

Cross Reference - More information on how to configure site-to-site VPN connections can be found in the [Sophos Knowledge Base](#).

The following topics are included in this chapter:

- [Amazon VPC](#)
- [IPsec](#)
- [SSL](#)
- [Certificate Management](#)

The **Site-to-site VPN** overview page in WebAdmin shows all configured Amazon VPC, IPsec, and SSL connections and their current status. The state of each connection is reported by the color of its status icons. There are two types of status icons. The larger ones next to the connection name inform about the overall status of a connection. The different colors mean:

- Green - All SAs (**Security Association**) have been established. Connection is fully functional.
- Yellow - Not all SAs have been established. Connection is partly functional.
- Red - No SAs have been established. Connection is not functional.

The smaller ones next to the tunnel information report the status for that tunnel. Here the colors mean:

- Green - All SAs have been established. Tunnel is fully functional.
- Yellow - IPsec SA has been established, ISAKMP SA (**Internet Security Association and Key Management Protocol**) is down. Tunnel is fully functional.
- Red - No SAs have been established. Connection is not functional.

16.1 Amazon VPC

Amazon Virtual Private Cloud (VPC) is a commercial cloud computing service. Users can create virtual private clouds, which can subsequently be connected to a local network and centrally managed over IPsec tunnels.

You can connect your Amazon VPC to your Sophos UTM if Sophos UTM has a static public IP address. The entire configuration of the VPN connections has to be done in the Amazon environment. Afterwards you just import the connection data using your Amazon access data or a configuration file.

16.1.1 Status

The **Site-to-site VPN > Amazon VPC > Status** page shows a list of all connections to your Amazon VPCs.

Here you can enable and disable the connections.

To enable connections to Amazon VPC, proceed as follows:

1. On the **Setup** page, import at least one VPC connection.
2. On the **Status** page, enable Amazon VPC.

Click the toggle switch.

The toggle switch turns green and the imported VPC connections are displayed.

3. Enable the desired connection.

Click the toggle switch of the connection you want to enable.

The toggle switch turns green and the two tunnels of the VPC connection are displayed.

Note - Each connection consists of two tunnels for redundancy reasons: an active and a backup tunnel. Active tunnels can be identified by having a netmask at the end of their BGP line. The status icons of the tunnels are displayed for control purposes only—you cannot enable or disable a single tunnel.

To disable all Amazon VPC connections click the topmost toggle switch. To disable a single connection click the toggle switch of the respective connection.

To close a connection and delete it from the list, click the red Delete icon of the respective connection.

Note - As the connections are configured on Amazon VPC's side, you can re-import a deleted connection into Sophos UTM with the same data as before.

More information about Amazon VPC can be found in the [Amazon VPC User Guide](#).

16.1.2 Setup

On the **Site-to-site VPN > Amazon VPC > Setup** page you add connections to your Amazon Virtual Private Cloud (VPC). You can either import all connections configured with one Amazon Web Service (AWS) account and using the IP address of your Sophos UTM as **Customer Gateway** (Amazon term for your endpoint of a VPC VPN connection). Or you add connections one by one using the configuration file which you can download from Amazon.

Import Via Amazon Credentials

You can import all connections configured within your VPC and use the IP address of your Sophos UTM as the Customer Gateway. You will need to create AWS access keys and secret keys to import the configuration.

Note - For more information, see the [AWS Documentation](#).

Note - All existing connections listed in the **Status** tab will be deleted during the import.

The key pair you are required to enter for the import must belong to an AWS user with sufficient privileges. You can use the predefined policy **AmazonVPCReadOnlyAccess**. Alternatively, create a policy with the following set of permissions:

- ec2:DescribeVpnConnections
- ec2:DescribeVpcs
- ec2:DescribeVpnGateways

To import connections, proceed as follows:

1. Make the following settings:

Access key: Enter the Amazon Access Key ID. It is a 20-character, alphanumeric sequence.

Secret key: Enter the Secret Access Key. It is a 40-character sequence.

2. Click **Apply**.

The connections are imported and subsequently displayed on the **Status** page.

Import Via Amazon Configuration

To add a single connection to the existing list of connections you have to upload the configuration file of the respective connection.

To import a single connection, proceed as follows:

1. Download the configuration file of your Amazon VPC connection.

In Amazon's download dialog make sure to select **Sophos** from the **Vendor** drop-down list.

2. Open the **Upload file** dialog window.

Click the Folder icon next to the **VPC config file** box.

3. Select the configuration file and upload it.

To upload the selected file click the button **Start Upload**.

The filename is displayed in the **VPC config file** field.

4. If you use static routing, enter the remote network.

The remote network is not part of the configuration file. Therefore you need to enter it separately into the **Remote network** field, e.g. 10.0.0.0/8. This field is only important if you have configured the use of static routing instead of dynamic routing in Amazon VPC.

5. Click **Apply**.

The connection is imported and subsequently displayed on the **Status** page.

Route Propagation

You can configure networks which are being pushed in route propagation enabled routing tables in the Amazon VPC.

To select local networks, proceed as follows:

1. Add local networks.

Add or select a local network that should be pushed in route propagation. How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.

2. Click **Apply**.

The route propagation networks are applied.

16.2 IPsec

IP Security (IPsec) is a standard for securing **Internet Protocol** (IP) communications by encrypting and/or authenticating all IP packets.

The IPsec standard defines two service modes and two protocols:

- Transport mode
- Tunnel mode
- **Authentication Header** (AH) authentication protocol
- **Encapsulated Security Payload** (ESP) encryption (and authentication) protocol

IPsec also offers methods for manual and automatic management of **Security Associations** (SAs) as well as key distribution. These characteristics are consolidated in a **Domain of Interpretation** (DOI).

IPsec Modes

IPsec can work in either transport mode or tunnel mode. In principle, a host-to-host connection can use either mode. If, however, one of the endpoints is a security gateway, the tunnel mode must be used. The IPsec VPN connections on this Sophos UTM always use the tunnel mode.

In transport mode, the original IP packet is not encapsulated in another packet. The original IP header is retained, and the rest of the packet is sent either in clear text (AH) or encrypted (ESP). Either the complete packet can be authenticated with AH, or the payload can be encrypted and authenticated using ESP. In both cases, the original header is sent over the WAN in clear text.

In tunnel mode, the complete packet—header and payload—is encapsulated in a new IP packet. An IP header is added to the IP packet, with the destination address set to the receiving tunnel endpoint. The IP addresses of the encapsulated packets remain unchanged. The original packet is then authenticated with AH or encrypted and authenticated using ESP.

IPsec Protocols

IPsec uses two protocols to communicate securely on the IP level.

- **Authentication Header (AH):** A protocol for the authentication of packet senders and for ensuring the integrity of packet data.
- **Encapsulating Security Payload (ESP):** A protocol for encrypting the entire packet and for the authentication of its contents.

The **Authentication Header** protocol (AH) checks the authenticity and integrity of packet data. In addition, it checks that the sender and receiver IP addresses have not been changed in transmission. Packets are authenticated using a checksum created using a **Hash-based Message Authentication Code** (HMAC) in connection with a key. One of the following hashing algorithms will be used:

- **Message Digest Version 5 (MD5):** This algorithm generates a 128-bit checksum from a message of any size. This checksum is like a fingerprint of the message, and will change if the message is altered. This hash value is sometimes also called a digital signature or a message digest.
- **The Secure Hash (SHA-1):** This algorithm generates a hash similar to that of MD5, though the SHA-1 hash is 160 bits long. SHA-1 is more secure than MD5, due to its longer key.

Compared to MD5, an SHA-1 hash is somewhat harder to compute, and requires more CPU time to generate. The computation speed depends, of course, on the processor speed and the number of IPsec VPN connections in use at Sophos UTM.

In addition to encryption, the **Encapsulated Security Payload** protocol (ESP) offers the ability to authenticate senders and verify packet contents. If ESP is used in tunnel mode, the complete IP packet (header and payload) is encrypted. New, unencrypted IP and ESP headers are added to the encapsulating packet: The new IP header contains the address of the receiving gateway and the address of the sending gateway. These IP addresses are those of the VPN tunnel.

For ESP with encryption normally the following algorithms are used:

- Triple Data Encryption Standard (3DES)
- Advanced Encryption Standard (AES)

Of these, AES offers the highest standard of security. The effective key lengths that can be used with AES are 128, 192 and 256 bits. Sophos UTM supports a number of encryption algorithms. Either the MD5 or SHA-1 algorithms can be used for authentication.

NAT Traversal (NAT-T)

NAT traversal is a technology for establishing connections between hosts in TCP/IP networks which use NAT devices. This is achieved by using UDP encapsulation of the ESP packets to establish IPsec tunnels through NAT devices. UDP encapsulation is only used if NAT is detected between the IPsec peers; otherwise normal ESP packets will be used.

With NAT traversal you are able to place the gateway or a road warrior behind a NAT router and still establish an IPsec tunnel. Both IPsec peers must support NAT traversal if you want to use this feature, which is automatically negotiated. Make sure that the NAT device has IPsec-passthrough turned off, because this could impair the use of NAT traversal.

If road warriors want to use NAT traversal, their corresponding user object in WebAdmin must have a static remote access IP address (RAS address) set (see also **Use Static Remote Access IP** on the [Users](#) page in WebAdmin).

By default, a NAT traversal keep-alive signal is sent at intervals of 60 seconds to prevent an established tunnel from expiring when no data is transmitted. The keep-alive messages are sent to ensure that the NAT router keeps the state information associated with the session so that the tunnel stays open.

TOS

Type of Service bits (TOS bits) are several four-bit flags in the IP header. These bits are referred to as **Type of Service** bits because they allow the transferring application to tell the network which type of service quality is necessary.

With the IPsec implementation of Sophos UTM the TOS value is always copied.

16.2.1 Connections

On the **Site-to-site VPN > IPsec > Connections** tab you can create and edit IPsec connections.

To create an IPsec connection, proceed as follows:

1. On the **Connections** tab, click **New IPsec Connection**.

The **Add IPsec Connection** dialog box opens.

2. Make the following settings:

Name: Enter a descriptive name for this connection.

Remote gateway: Select a remote gateway definition. Remote gateways are configured on the **Site-to-site VPN > IPsec > Remote Gateways** tab.

Local interface: Select the name of the interface which is used as the local endpoint of the IPsec tunnel.

Policy: Select the IPsec policy for this IPsec connection. IPsec policies can be defined on the **Site-to-site VPN > IPsec > Policies** tab.

Local networks: Select or add the local networks that should be reachable through the VPN tunnel. How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.

Automatic firewall rules: By selecting this option you can automatically add firewall rules that allow traffic for this connection. The rules are added as soon as the connection is enabled, and they are removed when the connection is disabled. If you want to use a stricter IPsec connection, disable **Automatic firewall rules** and use IPsec objects in the firewall rule set instead.

Strict routing: If strict routing is enabled, VPN routing is done according to source and destination IP address (instead of only destination IP address). In this case, only those packets exactly matching the VPN tunnel definition are routed into the VPN tunnel. As a consequence, you cannot use SNAT to add networks or hosts to the VPN tunnel, that are originally not part of the tunnel definition. On the other hand, without strict routing, you cannot have a mixed unencrypted/encrypted setup to the same network from different source addresses.

Bind tunnel to local interface: By default, the option is unselected and all traffic originating from the selected local networks and going to the defined remote networks will always be sent through this IPsec tunnel. It is not possible to have multiple identical tunnels on different interfaces because the selector would always be the same. However, if enabled, the defined IPsec selector will be bound to the selected local interface. Thus it is possible to either bypass IPsec policies with static routes or define redundant IPsec tunnels over different uplinks and use multipath rules to balance traffic over the available interfaces and their IPsec tunnels. Use cases for this setting are for example:

- Bypass IPsec policies for local hosts which belong to the remote network through static interface routes.
- Balance traffic based on layer 3 and layer 4 with multipath rules over multiple IPsec tunnels or MPLS links with automatic failover.

Note - This option cannot be used in combination with an interface group.

Comment (optional): Add a description or other information.

3. Click **Save**.

The new connection appears on the IPsec **Connections** list.

To either edit or delete a connection, click the corresponding buttons.

Open Live Log: The IPsec VPN live log displays monitoring information about established IPsec connection. Click the button to open the live log in a new window.

16.2.2 Remote Gateways

On the **Site-to-site VPN > IPsec > Remote Gateways** tab you can define the remote gateways for your site-to-site VPN tunnels. These remote network definitions will become available when creating IPsec connections on the **IPsec > Connections** tab.

To add a remote gateway, proceed as follows:

1. On the **Remote Gateways** tab, click **New Remote Gateway**.

The **Add Remote Gateway** dialog box opens.

2. Make the following settings:

Name: Enter a descriptive name for this remote gateway.

Gateway type: Select the type of the gateway. The following types are available:

- **Initiate connection:** Select if the remote endpoint has a static IP address so that a connection to the remote gateway can be initiated by the gateway. If selected, specify the remote gateway in the **Gateway** box. Note that you can also select this option if the remote gateway is resolved through DynDNS.
- **Respond only:** Select if the IP address of the remote endpoint is unknown or cannot be resolved through DynDNS. The gateway is not able to initiate a connection to the remote gateway but waits for incoming connections to which it only needs to respond.

Authentication type: Select the authentication type for this remote gateway definition. The following types are available:

- **Preshared key:** Authentication with **Preshared Keys** (PSK) uses secret passwords as keys. These passwords must be distributed to the endpoints before establishing the connection. When a new VPN tunnel is established, each side checks that the other knows the secret password. The security of PSKs depends on the quality of the passwords used: common words and phrases are subject to dictionary attacks. Permanent or long-term IPsec connections should use certificates instead.
- **RSA key:** Authentication using RSA keys is much more sophisticated. In this scheme, each side of the connection generates a key pair consisting of a public key and a private key. The private key is necessary for the encryption and authentication during the key exchange. Both endpoints of an IPsecVPN connection using this authentication method need their own key pair. Copy the public RSA key of the remote unit (**Site-to-site VPN > IPsec > Local RSA Key**) into the **Public Key** box of the local unit and vice versa. In addition, enter the VPN ID types and VPN identifiers that correspond to the respective RSA keys.

- **Local X.509 certificate:** Similarly, the X.509 certificate authentication scheme uses public keys and private keys. An X.509 certificate contains the public key together with information identifying the owner of the key. Such certificates are signed and issued by a trusted **Certificate Authority (CA)**. During the key exchange process, the certificates are exchanged and authenticated using a locally stored CA certificate. Select this authentication type if the X.509 certificate of the remote gateway is locally stored on the unit.
- **Remote X.509 certificate:** Select this authentication type if the X.509 certificate of the remote gateway is not locally stored on the unit. You must then select the VPN ID type and VPN identifier of the certificate being used on the remote unit, that is, the certificate which is selected in the **Local X.509 Certificate** area of the **Site-to-site VPN > IPsec > Advanced** tab.

VPN ID type: Depending on the authentication type you must select a VPN ID type and VPN identifier. The VPN identifier entered here must match the values configured on the remote site. Suppose you are using two Sophos UTM appliances for establishing a site-to-site VPN tunnel. If you select **RSA Key** as authentication type on the local unit, the VPN ID type and the VPN identifier must match what is configured on the **Site-to-site VPN > IPsec > Local RSA Key** tab on the remote unit. You can select among the following VPN ID types:

- **IP address**
- **Hostname**
- **Email address**
- **Distinguished name:** Only available with **Remote X.509 Certificate** authentication.
- **Any:** Default with **Respond Only** gateway type.

Remote networks: Select the remote networks that should be reachable via the remote gateway.

Comment (optional): Add a description or other information.

3. Make advanced settings if necessary.

The following advanced settings should only be made when you know what their impact is:

Support path MTU discovery: PMTU (Path Maximum Transmission Unit) refers to the size of data packets transmitted. It is usually preferable that IP data packets be of the largest size that does not require fragmentation anywhere along the path from the source to the destination. If any of the data packets are too large to be forwarded without fragmentation by some router along the path, that router will discard them and return **ICMP Destination Unreachable** messages with a code meaning "fragmentation needed and DF set". Upon receipt of such a message, the source host reduces its assumed PMTU for the path.

If you enable this option, Sophos UTM enables PMTU if it is enabled on the server side.

Support congestion signaling (ECN): ECN (Explicit Congestion Notification) is an extension to the Internet Protocol and allows end-to-end notifications of network congestion without dropping packets. Select this option if you want to copy ECN information from the original IP packet header into the IPsec packet header. Note that the remote endpoint must support it as well as the underlying network and involved routers.

Enable XAUTH client mode: XAUTH is an extension of IPsec IKE to authenticate users via username and password at a VPN gateway. To use XAUTH for authentication with this remote gateway, select the option and provide username and password (twice) as required by the remote gateway.

4. Click **Save**.

The gateway definition appears on the **Remote Gateways** list.

To either edit or delete a remote gateway definition, click the corresponding buttons.

16.2.3 Policies

On the **IPsec > Policies** tab you can customize parameters for IPsec connections and unite them into a policy. An IPsec policy defines IKE (Internet Key Exchange) and IPsec proposal parameters of an IPsec connection. Note that each IPsec connection needs an IPsec policy.

Note - Sophos UTM only supports the main mode in IKE phase 1. The aggressive mode is not supported.

To create an IPsec policy, proceed as follows:

1. On the **Policy** tab, click **New IPsec Policy**.

The **Add IPsec Policy** dialog box opens.

2. Make the following settings:

Name: Enter a descriptive name for this policy.

IKE encryption algorithm: The encryption algorithm specifies the algorithm used for encrypting the IKE messages. Supported algorithms are:

- **DES** (56 bit)
- **3DES** (168 bit)
- **AES 128** (128 bit)
- **AES 192** (192 bit)
- **AES 256** (256 bit)
- **Blowfish** (128 bit)
- **Twofish** (128 bit)
- **Serpent** (128 bit)

Security Note - We strongly recommend to use **AES** and **SHA2 256** to reduce potential vulnerability.

IKE authentication algorithm: The authentication algorithm specifies the algorithm used for integrity checking of the IKE messages. Supported algorithms are:

- **MD5** (128 bit)
- **SHA1** (160 bit)
- **SHA2 256** (256 bit)
- **SHA2 384** (384 bit)
- **SHA2 512** (512 bit)

IKE SA lifetime: This value specifies the timeframe in seconds for which the IKE SA (security association) is valid and when the next rekeying should take place. Valid values are between 60 sec and 28800 sec (8 hrs). The default value is 7800 seconds.

IKE DH group: When negotiating a connection, the communicating parties also settle the actual keys used to encrypt the data. In order to generate a session key, IKE uses the **Diffie-Hellman** (DH) algorithm, which utilizes random data. The random data generation is based on pool bits. The IKE group basically tells the number of pool bits. The more pool bits, the larger the random numbers. The larger the numbers, the harder it is to crack the Diffie-Hellman algorithm. As a consequence, more pool bits mean more security but also the consumption of more CPU resources. Currently, the following Diffie-Hellman groups are supported:

- **Group 1: MODP 768**
- **Group 2: MODP 1024**
- **Group 5: MODP 1536**
- **Group 14: MODP 2048**
- **Group 15: MODP 3072**
- **Group 16: MODP 4096**

Security Note - Group 1 (MODP 768) is considered weak and only supported for interoperability reasons. We strongly recommend against using it, as it represents a potential vulnerability.

IPsec encryption algorithm: The same encryption algorithms as for IKE. Additionally there are the following entries:

- **No encryption (null)**
- **AES 128 CTR** (128 bit)
- **AES 192 CTR** (192 bit)
- **AES 256 CTR** (256 bit)

- AES 128 GCM (96 bit)
- AES 192 GCM (96 bit)
- AES 256 GCM (96 bit)
- AES 128 GCM (128 bit)
- AES 192 GCM (128 bit)
- AES 256 GCM (128 bit)

Security Note - We strongly recommend against using no encryption or DES, as this represents a potential vulnerability.

IPsec authentication algorithm: The same authentication algorithms as for IKE. Additionally there are the following algorithms:

- SHA2 256 (96 bit)
- SHA2 384 (96 bit)
- SHA2 512 (96 bit)

Those are available for compliance with tunnel endpoints not adhering to [RFC 4868](#), for example UTM (i.e., ASG) versions older than V8, and therefore do not support truncated checksums longer than 96 bit.

IPsec SA lifetime: This value specifies the timeframe in seconds for which the IPsec SA is valid and when the next rekeying should take place. Valid values are between 60 sec and 86400 sec (1 day). The default value is 3600 seconds.

IPsec PFS group: **Perfect Forward Secrecy (PFS)** refers to the notion that if a session key is compromised, it will permit access only to data of this specific session. In order for PFS to exist, the key used to protect the IPsec SA must not be derived from random keying material used to get the keys for the IKE SA. Therefore, PFS initiates a second Diffie-Hellman key exchange proposing the selected DH group for the IPsec connection to get a new randomly generated key. Supported Diffie-Hellman groups are the same as for IKE.

Enabling PFS is considered to be more secure, but it takes also more time for the exchange. It is not recommended to use PFS on slow hardware.

Note - PFS is not fully interoperable with all vendors. If you notice problems during the negotiation, you might consider disabling PFS.

Strict policy: If an IPsec gateway makes a proposition with respect to an encryption algorithm and to the strength, it might happen that the gateway of the receiver accepts this proposition, even though the IPsec policy does not correspond to it. If you select this option and the remote endpoint does not agree on using exactly the parameters you specified, the IPsec connection will not be established. Suppose the IPsec policy of your Sophos UTM requires AES-256 encryption, whereas, for example, a road warrior

with SSH Sentinel wants to connect with AES-128; with the strict policy option enabled, the connection would be rejected.

Note - The compression setting will not be enforced via **Strict policy**.

Compression: This option specifies whether IP packets should be compressed by means of the **IP Payload Compression Protocol** (IPComp) prior to encryption. IPComp reduces the size of IP packets by compressing them to increase the overall communication performance between a pair of communicating hosts or gateways. Compression is turned off by default.

Comment (optional): Add a description or other information.

3. Click **Save**.

The new policy appears on the **Policies** list.

To either edit or delete a policy, click the corresponding buttons.

16.2.4 Local RSA Key

With RSA authentication, RSA keys are used for authentication of the VPN endpoints. The public keys of the endpoints are exchanged manually before the connection is established. If you want to use this authentication type, you have to define a VPN identifier and create a local RSA key. The public RSA key of the gateway must be made available to remote IPsec devices that use IPsec RSA authentication with Sophos UTM.

Note - Sophos UTM uses [RFC 3110](#) format for RSA keys. RSA authentication will not work with 3rd party endpoints that use a different RSA key format.

Current Local Public RSA Key

Displayed is the public portion of the currently installed local RSA key pair. Click into the box, then press **CTRL-A** and **CTRL-C** to copy it to the clipboard.

Local RSA Key VPN Options

Select the VPN ID type which best suits your needs. By default, the hostname of the gateway is taken as the VPN identifier. If you have a static IP address as local VPN endpoint, select **IP address**. Alternatively, use an email address as VPN ID for mobile IPsec road warriors.

- **Hostname:** Default setting; the hostname of the gateway. However, you can enter a different hostname here.
- **Email address:** By default, this is the email address of the gateway's admin account. However, you can enter a different email address here.
- **IP address:** The IP address of the external interface of the gateway.

Click **Apply** to save your settings. Changing the settings does not modify the RSA key.

Re-generate Local RSA Key

To generate a new RSA key, select the desired key size and click **Apply**. This will start the key generation process, which can take from a few minutes up to two hours, according to your selected key length and used hardware. The key size (key length) is a measure of the number of keys which are possible with a cipher. The length is usually specified in bits. The following key sizes are supported:

- 1024 bits
- 2048 bits
- 4096 bits

Once the RSA key has been generated, the appropriate public key will be displayed in the **Current Local Public RSA Key** box. Generating a new RSA key will overwrite the old one.

16.2.5 Advanced

On the **Site-to-site VPN > IPsec > Advanced** tab you can configure advanced options of IPsec VPN. Depending on your preferred authentication type, you can define the local certificate (for X.509 authentication) and the local RSA key (for RSA authentication), among other things. Note that this should only be done by experienced users.

Local X.509 Certificate

With X.509 authentication, certificates are used to verify the public keys of the VPN endpoints. If you want to use this authentication type, you have to select a local certificate from the drop-down list in the **Local X.509 Certificate** area. The selected key/certificate is then used to authenticate the gateway to remote peers if X.509 authentication is selected.

You can only select certificates where the appropriate private key is present, other certificates are not available in the drop-down list.

If there is no certificate available for selection, you have to add one in the **Certificate Management** menu, either by creating a new one or by importing one using the upload function.

After selecting the certificate, enter the passphrase the private key was protected with. During the saving process, the passphrase is verified and an error message is displayed if it does not match the encrypted key.

Once an active key/certificate is selected, it is displayed in the **Local X.509 Certificate** area.

Preshared Key Settings

Select the VPN ID type which is used by PSK connections. This is useful if your client is behind a NAT gateway and the peer cannot accept any VPN ID. If the text box **VPN ID** is empty, the interface IP address is taken as the VPN identifier.

For IPsec connections using the respond-only mode you can decide to use different pre-shared keys (PSK) for each IPsec connection.

Enable probing of preshared keys: Select the checkbox to enable this option. This will affect L2TP-over-IPsec, remote access IPsec, and VPN IPsec connections.

Dead Peer Detection (DPD)

Use Dead Peer Detection: The dead peer detection option is used for automatically terminating a connection if the remote VPN gateway or client is unreachable. For connections with static endpoints, the tunnel will be re-negotiated automatically. Connections with dynamic endpoints require the remote side to re-negotiate the tunnel. Usually it is safe to always enable this option. The IPsec peers automatically determine whether the remote side supports dead peer detection or not, and will fall back to normal mode if necessary.

NAT Traversal (NAT-T)

Use NAT traversal: Select to enable that IPsec traffic can pass upstream systems which use **Network Address Translation** (NAT). Additionally, you can define the keepalive interval for NAT traversal. Click **Apply** to save your settings.

CRL Handling

There might be situations in which the provider of a certificate attempts to revoke the confirmation awarded with still valid certificates, for example if it has become known that the receiver of the certificate fraudulently obtained it by using wrong data (name, etc.) or because an attacker has got hold of the private key, which is part of the certified public key. For this purpose, so-called **Certificate Revocation Lists** or CRLs are used. They normally contain the serial numbers of those certificates of a certifying instance, that have been held invalid and that are still valid according to their respective periods of validity.

After the expiration of these periods the certificate will no longer be valid and must therefore not be maintained in the block list.

Automatic fetching: This function automatically requests the CRL through the URL defined in the partner certificate via HTTP, Anonymous FTP or LDAP version 3. On request, the CRL can be downloaded, saved and updated, once the validity period has expired. If you use this feature but not via port 80 or 443, make sure that you set the firewall rules accordingly, so that the CRL distribution server can be accessed.

Strict policy: If this option is enabled, any partner certificate without a corresponding CRL will be rejected.

16.2.6 Debug

IKE Debugging

In the **IKE Debugging** section you can configure IKE debug options. Select the checkboxes for which types of IKE messages or communication you want to create debug output.

Note - The **IKE Debugging** section is identical across the **Debug** tabs of the menus **Site-to-site VPN IPsec**, **Remote Access IPsec**, **L2TP over IPsec** and **Cisco VPN Client**.

The following flags can be logged:

- **Control flow:** Displays control messages of IKE state
- **Outbound packets:** Displays content of outgoing IKE messages
- **Inbound packets:** Displays content of incoming IKE messages
- **Kernel messaging:** Displays communication messages with the Kernel
- **High availability:** Displays communication with other HA nodes

16.2.7 Aggressive Mode for IPsec in UTM

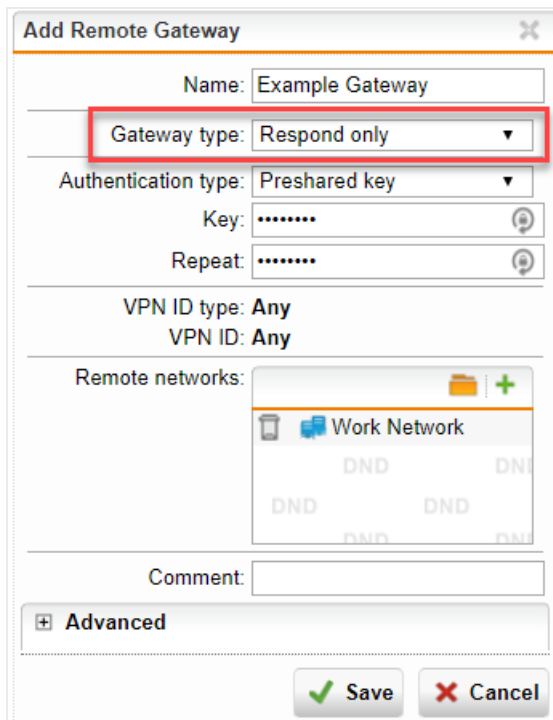
16.2.7.1 Why There's No Aggressive Mode for IPsec in UTM

Aggressive mode is used to authorize the communication partners in phase 1 of establishing an IPsec connection. All Sophos UTM versions, and previous Astaro Security Gateway versions only support main mode. In comparison with aggressive mode, main mode protects the identity of the peers by encrypting the hash values of the preshared key. In aggressive mode, the hash values of the preshared keys are transmitted in plain text. Aggressive mode is required if the IP address of the initiator is unknown and preshared key is selected for authentication.

16.2.7.2 Workaround for Aggressive Mode

1. Go to **Site to Site > IPsec > Remote Gateways**.
2. Create a new remote gateway or edit an existing one.

3. Choose **Respond only** as **Gateway type**.



The screenshot shows the 'Add Remote Gateway' dialog box. The 'Gateway type' dropdown menu is highlighted with a red rectangle and is set to 'Respond only'. Other fields include 'Name' (Example Gateway), 'Authentication type' (Preshared key), 'Key' (.....), 'Repeat' (.....), 'VPN ID type' (Any), 'VPN ID' (Any), 'Remote networks' (Work Network), and a 'Comment' field. There is also an 'Advanced' section and 'Save' and 'Cancel' buttons at the bottom.

If you are using respond-only mode with PSK authentication you must enable probing of pre-shared keys.

Another solution is to work with a dynamic DNS provider on the remote side. Inside the IPsec configuration, it's possible to configure the remote gateway with IP or DNS values.

16.3 SSL

Site-to-site VPN tunnels can be established via an SSL connection. SSL VPN connections have distinct roles attached. The tunnel endpoints act as either client or server. The client always initiates the connection, the server responds to client requests. Keep in mind that this contrasts IPsec where both endpoints normally can initiate a connection.

Note - If you run into problems in establishing a connection, check whether SSL scanning is activated with the Web Filter operating in transparent mode. If so, make sure that the target host of the VPN connection has been added to the **Transparent Mode Skiplist** under **Web Protection > Filtering Options > Misc**.

16.3.1 Connections

To create an SSLVPN site-to-site tunnel, it is crucial to create the server configuration first. The configuration of the client has always to be the second step.

To create a server configuration, proceed as follows:

1. On the **Connections** tab, click **New SSL Connection**.

The **Add SSL Connection** dialog box opens.

2. Make the following settings:

Connection type: Select **Server** from the drop-down list.

Connection name: Enter a descriptive name for the connection.

Use static virtual IP address (optional): Only select this option if the IP address pool is not compatible with the client's network environment: By default clients are assigned an IP address from the **Virtual IP Pool** (configurable on **Settings** tab). Rarely, it may happen that such an IP address is already in use on the client's host. In that case enter a suitable IP address in the **Static Peer IP** field which will then be assigned to the client during tunnel setup.

Local networks: Select or add one or more local networks that are allowed to be accessed remotely. How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.

Remote networks: Select or add one or more remote networks that are allowed to connect to the local network(s).

Note - You can change the **Local networks** and **Remote networks** settings later without having to reconfigure the client.

Automatic firewall rules (optional): When enabled, Sophos UTM will automatically allow access to the selected local networks for all accessing SSL VPN clients.

Comment (optional): Add a description or other information.

3. Click **Save**.

The new SSL server connection appears on the **Connections** list.

4. Download the configuration file.

Use the **Download** button, which is located in the newly created SSL server connection row, to download the client configuration file for this connection.

Encrypt configuration file (optional): It is advisable to encrypt the configuration file for security reasons. Enter a password twice.

Click **Download peer config** to save the file.

This file is needed by the client-side administrator in order to be able to set up the client endpoint of the tunnel.

The next step is the client configuration which has to take place on client side and *not* on server side. Ensure that the downloaded client configuration file is at hand.

To create a client configuration, proceed as follows:

1. On the **Connections** tab, click **New SSL Connection**.

The **Add SSL Connection** dialog box opens.

2. Make the following settings:

Connection type: Select **Client** from the drop-down list.

Connection name: Enter a descriptive name for the connection.

Configuration file: Click the Folder icon, browse for the client configuration file and click **Start Upload**.

Password (optional): If the file has been encrypted, enter the password.

Use HTTP proxy server (optional): Select the checkbox if the client is located behind a proxy and enter the settings for the proxy.

Proxy requires authentication (optional): Select the checkbox if the client needs to authenticate against the proxy and enter username and password.

Override peer hostname (optional): Select the checkbox and enter a hostname here if the server system's regular hostname (or DynDNS hostname) cannot be resolved from the client host.

Automatic firewall rules (optional): When enabled, Sophos UTM will automatically allow traffic between hosts on the tunneled local and remote networks.

Comment (optional): Add a description or other information.

3. Click **Save**.

The new SSL VPN client connection appears on the **Connections** list.

To either edit or delete a client connection, click the corresponding buttons.

Click on the **Site-to-site VPN** menu to see the status of the SSL VPN connection on the overview page. The status icon there turns green when the connection is established. Then information about the interconnected subnets on both sides of the tunnel becomes available, too.

16.3.2 Settings

On the **SSL > Settings** tab you can configure the basic settings for SSL VPN server connections.

Note - This tab is identical for **Site-to-site VPN > SSL** and **Remote Access > SSL**. Changes applied here always affect both SSL configurations.

Server Settings

You can make the following settings for the SSL VPN connection:

- **Interface address:** Default value is **Any**. When using the web application firewall you need to give a specific interface address for the service to listen for SSL connections. This is necessary for the site-to-site/remote access SSL connection handler and the web application firewall to be able to differentiate between the incoming SSL connections.

Note - The combination of an IPv6 interface address and the UDP protocol is not supported by SSL VPN.

- **Protocol:** Select the protocol to use. You can choose either **TCP** or **UDP**.
- **Port:** You can change the port. The default port is 443. You cannot use port 10443, the SUM Gateway Manager port 4422, or the port used by the WebAdmin interface.

Note - Changing the port will also change the remote access configurations and the end-users have to download the new remote access configurations from the User Portal. For more information, see **User Portal > [User Portal: Remote Access](#)**.

- **Override hostname:** The value in the **Override hostname** field is used as the target hostname for client VPN connections and is by default the hostname of the gateway. Only change the default if the system's regular hostname (or DynDNS hostname) cannot be reached under this name from the Internet.

Virtual IP Pool

Pool network: This is the virtual IP address pool which is used to distribute IP addresses from a certain IP range to the SSL clients. By default, the **VPN Pool (SSL)** is selected. In case you select a different address pool, the netmask must not be greater than 29 bits, for OpenVPN cannot handle address pools whose netmask is /30, /31, or /32. Note that the netmask is limited to a minimum of 16.

Duplicate CN

Select **Allow multiple concurrent connections per user** if you want to allow your users to connect from different IP addresses at the same time. When disabled, only one concurrent SSL VPN connection is allowed per user.

16.3.3 Advanced

On the **SSL > Advanced** tab you can configure various advanced server options ranging from the cryptographic settings, through compression settings, to debug settings.

Note - This tab is identical for **Site-to-site VPN > SSL** and **Remote Access > SSL**. Changes applied here always affect both SSL configurations.

Cryptographic Settings

These settings control the encryption parameters for all SSL VPN remote access clients:

- **Encryption algorithm:** The encryption algorithm specifies the algorithm used for encrypting the data sent through the VPN tunnel. The following algorithms are supported, which are all in **Cipher Block Chaining (CBC)** mode:
 - **DES-EDE3-CBC**
 - **AES-128-CBC** (128 bit)
 - **AES-192-CBC** (192 bit)
 - **AES-256-CBC** (256 bit)
 - **BF-CBC** (Blowfish (128 bit))
- **Authentication algorithm:** The authentication algorithm specifies the algorithm used for checking the integrity of the data sent through the VPN tunnel. Supported algorithms are:
 - **MD5** (128 bit)
 - **SHA-1** (160 bit)
 - **SHA2 256** (256 bit)
 - **SHA2 384** (384 bit)
 - **SHA2 512** (512 bit)
- **Key size:** The key size (key length) is the length of the Diffie-Hellman key exchange. The longer this key is, the more secure the symmetric keys are. The length is specified in bits. You can choose between a key size of 1024, 2048, 3072 or 4096 bits.
- **Server certificate:** Select a local SSL certificate to be used by the SSL VPN server to identify itself against the clients.

Note -Sophos UTM does not support wildcard certificates and certificates signed by an intermedia CA in the SSL VPN.

- **Key lifetime:** Enter a time period after which the key will expire. The default is 28,800 seconds.

Compression Settings

Compress SSL VPN traffic: When enabled, all data sent through SSL VPN tunnels will be compressed prior to encryption.

Debug Settings

Enable debug mode: When enabling debug mode, the SSL VPN log file will contain extended information useful for debugging purposes.

16.4 Certificate Management

Manage all certificate-related operations of Sophos UTM. This includes creating or importing X.509 certificates as well as uploading so-called **Certificate Revocation Lists** (CRLs), among other things.

16.4.1 Certificates

Create or import public key certificates in the X.509 standard format. Such certificates are digitally signed statements usually issued by a **Certificate Authority** (CA) binding together a public key with a particular **Distinguished Name** (DN) in X.500 notation. Using Let's Encrypt™ to create certificates is also supported.

You can choose among the following options:

- [Generate a new certificate](#) using the self-signed CA of the UTM.
- [Upload an existing certificate](#).
- [Create a new certificate with Let's Encrypt](#).

You can download certificates either in `PKCS#12` or `PEM` format. The `PEM` file only contains the certificate itself, while the `PKCS#12` file also contains the private key as well as the CA certificate with which it was signed.

Note - Certificates have a validity period. 30 days before a certificate expires, a flag will be added in WebAdmin and you will receive an email notification.

16.4.1.1 Generate a Certificate

All certificates you generate contain an RSA key. They are signed by the self-signed certificate authority (CA) **VPN Signing CA** that was created automatically using the information you provided during the initial login to the WebAdmin interface.

To generate a certificate, proceed as follows:

1. On the **Certificates** tab, click **New Certificate**.

The **Add Certificate** dialog box opens.

2. Make the following settings:

Name: Enter a descriptive name for this certificate.

Method: To create a certificate, select **Generate**.

Key size: The length of the RSA key. The longer the key, the more secure it is. You can choose among key sizes of 1024, 2048, or 4096 bits. Select the maximum key size compatible with the application programs and hardware devices you intend to use. Unless

longer keys cause critical performance issues for your specific purposes, do not reduce the key size in order to optimize performance.

VPN ID type: You have to define a unique identifier for the certificate. The following types of identifiers are available:

- Email address
- Hostname
- IP address
- Distinguished name

VPN ID: Depending on the selected VPNID type, enter the appropriate value into this text box. For example, if you selected **IP address** from the **VPN ID type** list, enter an IP address into this text box. Note that this text box will be hidden when you select **Distinguished Name** from the **VPN ID type** list.

Use the drop-down lists and text boxes from **Country** to **Email** to enter identifying information about the certificate holder. This information is used to build the **Distinguished Name**, that is, the name of the entity whose public key the certificate identifies. This name contains a lot of personal information in the X.500 standard and is supposed to be unique across the Internet. If the certificate is for a road warrior connection, enter the name of the user in the **Common name** box. If the certificate is for a host, enter a hostname.

Comment (optional): Add a description or other information.

3. Click **Save**.

The certificate appears on the **Certificates** list.

16.4.1.2 Upload a Certificate

To upload a certificate, proceed as follows:

1. On the **Certificates** tab, click **New Certificate**.

The **Add Certificate** dialog box opens.

2. Make the following settings:

Name: Enter a descriptive name for this certificate.

Method: Select **Upload**.

File type: Select the file type of the certificate. You can upload certificates being one of the following types:

- **PKCS#12 (Cert+CA):** PKCS refers to a group of **Public Key Cryptography Standards** (PKCS) devised and published by RSA laboratories. The **PKCS#12** file format is commonly used to store private keys with accompanying public key certificates protected with a container passphrase. You must know this container passphrase

to upload files in this format.

- **PEM (Cert only):** A Base64 encoded **Privacy Enhanced Mail** (PEM) file format with no password required.

File: Click the Folder icon next to the **File** box and select the certificate you want to upload.

Comment (optional): Add a description or other information.

3. Click **Save**.

The certificate appears on the **Certificates** list.

16.4.1.3 Create a Let's Encrypt Certificate

Create a Let's Encrypt certificate to be able to present web browsers an officially signed certificate for the domains associated with the certificate. Let's Encrypt will create a signed certificate as well as an intermediate CA thus allowing for a chain of trust.

1. On the **Certificates** tab, click **New Certificate**.

The **Add Certificate** dialog box opens.

2. Make the following settings:

Name: Enter a descriptive name for this certificate.

Method: Select **Let's Encrypt**.

Interface: Select an interface through which the Let's Encrypt servers can contact the domains configured below.

Domains: Add one or more domains for which the certificate should be valid.

Comment (optional): Add a description or other information.

3. Click **Save**.

The certificate appears on the **Certificates** list.

Initially, newly created Let's Encrypt certificates are signed by the self-signed certificate authority VPN Signing CA that was created automatically using the information you provided during the initial login to the WebAdmin interface. This makes the certificate immediately usable right after their creation.

In the background, the certificate domains are validated by Let's Encrypt.

Note - This requires HTTP traffic for the certificate domains to reach the UTM.

As soon as Let's Encrypt issued the certificate, the certificate object is updated automatically. This process is repeated whenever the certificate is due for renewal.

16.4.2 Certificate Authority

You can add new certificate authorities to the unit. Generally speaking, a certificate authority or **Certification Authority (CA)** is an entity which issues digital certificates for use by other parties. A CA attests that the public key contained in the certificate belongs to the person, organization, host, or other entity noted in the certificate by signing the certificate signing request with the private key of the CA's own certificate. Such a CA is therefore called a signing CA.

On Sophos UTM, the signing CA was created automatically using the information you provided during the initial login to Sophos UTM. Thus, all certificates you create on the **Certificates** tab are self-signed certificates, meaning that the issuer and the subject are identical. However, you can alternatively import a signing CA by third-party vendors. In addition, to verify the authenticity of hosts or users requesting an IPsec connection, you can also use alternative CA certificates whose private keys are unknown. Those CA certificates are called verification CAs and can be added on this tab as well.

Important Note - You can have multiple verification CAs on your system, but only one signing CA. So if you upload a new signing CA, the previously installed signing CA automatically becomes a verification CA.

To add a CA, proceed as follows:

1. On the **Certificate Authority** tab, click **New CA**.

The **Add CA** dialog box opens.

2. Make the following settings:

Name: Enter a descriptive name for this CA.

Type: Select the type of CA you are going to import. You can choose between verification CAs or signing CAs. A verification CA must be available in the `PEM` format, while a signing CA must be available in the `PKCS#12` format.

CA certificate: Click the Folder icon next to the **CA certificate** box and select the certificate you want to import. Note that if you are to upload a new signing CA, you must enter the password with which the `PKCS#12` container was secured.

Comment (optional): Add a description or other information.

3. Click **Save**.

The new CA certificate appears on the **Certificate Authority** list.

To delete a CA click the button **Delete** of the respective CA.

The signing CA can be downloaded in `PKCS#12` format. You will then be prompted to enter a password, which will be used to secure the `PKCS#12` container. In addition, verification CAs can be downloaded in `PEM` format.

16.4.3 Revocation Lists (CRLs)

A CRL is a list of certificates (more precisely, their serial numbers) which have been revoked, that is, are no longer valid, and should therefore not be relied upon. You can upload the CRL that is deployed within your PKI.

To add a CRL, proceed as follows:

1. On the **Revocation Lists (CRLs)** tab, click **New CRL**.

The **Add CRL** dialog box opens.

2. Make the following settings:

Name: Enter a descriptive name for this CRL.

CRL file: Click the Folder icon next to the **CRL file** box and select the CRL you want to upload.

Comment (optional): Add a description or other information.

3. Click **Save**.

The new CRL appears on the list of revocation lists.

To delete a CRL click the button **Delete** of the respective CRL.

16.4.4 Advanced

You can re-generate the VPN Signing CA that was created during the initial setup of the unit and enable the use of Let's Encrypt certificates. The VPN Signing CA is the certificate authority with which digital certificates are signed that are used for remote access and site-to-site VPN connections. The old VPN signing CA will be kept as verification CA.

Re-generate Signing CA

You can renew all user certificates using the current signing CA. This becomes relevant once you have installed an alternative VPN Signing CA on the **Certificate Authority** tab.

Caution -Sophos UTM and all user certificates will be re-generated using the new signing CA. This will break certificate-based site-to-site and remote access VPN connections.

Let's Encrypt™ Certificates

Let's Encrypt is a certificate authority that provides free X.509 certificates for Transport Layer Security encryption via an automated process designed to eliminate the hitherto complex process of manual creation, validation, signing, installation, and renewal of certificates for secure websites. (Source: Wikipedia)

Sophos UTM provides Let's Encrypt integration to make managing certificates easier for you. You can use Let's Encrypt certificates anywhere in the UTM, for example with VPN

connections, as WebAdmin or User Portal certificate, or with the web application firewall. To be able to use Let's Encrypt, the domain names used in Let's Encrypt must be publicly accessible. Let's Encrypt certificates are checked once per day by a Cron job and are automatically renewed if they expire in less than 30 days.

Allow Let's Encrypt certificates: To use Let's Encrypt, activate the checkbox and click **Apply**. By that you agree to the Let's Encrypt terms of service. The UTM will contact the Let's Encrypt server and create a Let's Encrypt account for use with the UTM. You can click the Refresh button to see when the process is finished.

When you turn off the Let's Encrypt feature, there will be a warning. If you proceed, all data related to Let's Encrypt will be deleted.

Notifications: You will receive a notification in the following circumstances.

- In case the renewal of a Let's Encrypt signed certificate failed.
- In case the Let's Encrypt terms of service change at some point. You will then have to go back to the **Certificate Management > Advanced** page and re-enable the Let's Encrypt feature. By that you agree to the new terms of service. Until you have done that, no new Let's Encrypt certificates can be created and existing ones cannot be renewed.

You can find logging information at any time in the Let's Encrypt log on the **Logging & Reporting > View Log Files** page of WebAdmin.

17 Remote Access

This chapter describes how to configure remote access settings of Sophos UTM. Remote access using Sophos UTM is realized by means of **Virtual Private Networks** (VPNs), which are a cost effective and secure way to provide remote users such as telecommuting employees access to the corporate network. VPNs use cryptographic tunneling protocols such as IPsec and PPTP to provide confidentiality and privacy of the data transmitted over them.

Sophos UTM automatically generates necessary installation and configuration files for the respective remote access connection type. Those files can be downloaded directly from the User Portal. However, only those files are available to users that correspond to the connection types enabled for them, e.g., users who have been enabled to use SSL remote access will find an SSL installation file only.

Note - You can download remote access configuration files of all or selected users on the **Definitions & Users > Users & Groups > Users** tab.

The **Remote Access Status** page contains an overview of all online users.

The following topics are included in this chapter:

- [SSL](#)
- [PPTP](#)
- [L2TP over IPsec](#)
- [IPsec](#)
- [HTML5 VPN Portal](#)
- [Cisco VPN Client](#)
- [Advanced](#)
- [Certificate Management](#)

17.1 SSL

The remote access SSL feature of Sophos UTM is realized by OpenVPN, a full-featured SSL VPN solution. It provides the ability to create point-to-point encrypted tunnels between remote employees and your company, requiring both SSL certificates and a user-name/password combination for authentication to enable access to internal resources. In addition, it offers a secure User Portal, which can be accessed by all authorized users to download a customized SSL VPN client software bundle. This bundle includes a free SSL VPN client, SSL certificates and a configuration that can be handled by a simple one-click installation procedure. This SSL VPN client supports most business applications such as native Outlook, native Windows file sharing, and many more.

Cross Reference - More information on how to use the SSL VPN client can be found in the [Sophos Knowledge Base](#).

17.1.1 Profiles

On the **Remote Access > SSL > Profiles** tab you can create different profiles for remote access users defining basic settings for SSL VPN access.

To configure an SSL VPN profile, proceed as follows:

1. On the **Profiles** tab, click **New Remote Access Profile**.

The **Add Remote Access Profile** dialog box opens.

2. Make the following settings:

Profile name: Enter a descriptive name for this profile.

Users and groups: Select the users or user groups or add new users that should be able to use SSL VPN remote access with this profile. How to add users is explained on the **Definitions & Users > Users & Groups > Users** page.

Local networks: Select or add the local network(s) that should be reachable to the selected SSL clients through the VPN SSL tunnel. How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.

Note - By default, the SSL VPN solution of Sophos UTM employs so-called split tunneling, that is, the process of allowing remote VPN users to access a public network, for example, the Internet, at the same time that those users are allowed to access resources on the VPN. However, split tunneling can be bypassed if you select **Any** or **Internet** in the **Local networks** field. This will enable SSL VPN configurations to act as a full tunnel. Whether users are allowed to access a public network then depends on your firewall configuration.

Automatic firewall rules: Select this option to automatically add firewall rules that allow traffic for this profile. The rules are added as soon as the profile is enabled, and they are removed when the profile is disabled. If you do not select this option, you need to specify appropriate firewall rules manually.

Comment (optional): Add a description or other information.

3. Click **Save**.

The new profile appears on the **Profiles** list.

To either edit or delete a profile, click the corresponding buttons.

Note - The **Remote Access** menu of the [User Portal](#) is only available to users who are selected in the **Users and groups** box *and* for whom a user definition does exist on Sophos UTM (see **Definitions & Users > Users & Groups > Users**). Authorized users who have

successfully logged in to the User Portal find the SSL VPN client software bundle as well as a link to installation instructions, which are available at the [Sophos Knowledge Base](#). Downloading may fail with some browsers on Android if the CA certificate is not installed or if the hostname does not match the common name in the portal certificate. In this case, users need to install the CA certificate or try another browser.

Open Live Log

The **OpenVPN Live Log** logs remote access activities. Click the button to open the live log in a new window.

17.1.2 Settings

On the **SSL > Settings** tab you can configure the basic settings for SSL VPN server connections.

Note - This tab is identical for **Site-to-site VPN > SSL** and **Remote Access > SSL**. Changes applied here always affect both SSL configurations.

Server Settings

You can make the following settings for the SSL VPN connection:

- **Interface address:** Default value is **Any**. When using the web application firewall you need to give a specific interface address for the service to listen for SSL connections. This is necessary for the site-to-site/remote access SSL connection handler and the web application firewall to be able to differentiate between the incoming SSL connections.

Note - The combination of an IPv6 interface address and the UDP protocol is not supported by SSL VPN.

- **Protocol:** Select the protocol to use. You can choose either **TCP** or **UDP**.
- **Port:** You can change the port. The default port is 443. You cannot use port 10443, the SUM Gateway Manager port 4422, or the port used by the WebAdmin interface.

Note - Changing the port will also change the remote access configurations and the end-users have to download the new remote access configurations from the User Portal. For more information, see **User Portal > [User Portal: Remote Access](#)**.

- **Override hostname:** The value in the **Override hostname** field is used as the target hostname for client VPN connections and is by default the hostname of the gateway. Only change the default if the system's regular hostname (or DynDNS hostname) cannot be reached under this name from the Internet.

Virtual IP Pool

Pool network: This is the virtual IP address pool which is used to distribute IP addresses from a certain IP range to the SSL clients. By default, the **VPN Pool (SSL)** is selected. In case you select a different address pool, the netmask must not be greater than 29 bits, for OpenVPN cannot handle address pools whose netmask is /30, /31, or /32. Note that the netmask is limited to a minimum of 16.

Duplicate CN

Select **Allow multiple concurrent connections per user** if you want to allow your users to connect from different IP addresses at the same time. When disabled, only one concurrent SSL VPN connection is allowed per user.

17.1.3 Advanced

On the **SSL > Advanced** tab you can configure various advanced server options ranging from the cryptographic settings, through compression settings, to debug settings.

Note - This tab is identical for **Site-to-site VPN > SSL** and **Remote Access > SSL**. Changes applied here always affect both SSL configurations.

Cryptographic Settings

These settings control the encryption parameters for all SSL VPN remote access clients:

- **Encryption algorithm:** The encryption algorithm specifies the algorithm used for encrypting the data sent through the VPN tunnel. The following algorithms are supported, which are all in **Cipher Block Chaining (CBC)** mode:
 - **DES-EDE3-CBC**
 - **AES-128-CBC** (128 bit)
 - **AES-192-CBC** (192 bit)
 - **AES-256-CBC** (256 bit)
 - **BF-CBC** (Blowfish (128 bit))
- **Authentication algorithm:** The authentication algorithm specifies the algorithm used for checking the integrity of the data sent through the VPN tunnel. Supported algorithms are:
 - **MD5** (128 bit)
 - **SHA-1** (160 bit)
 - **SHA2 256** (256 bit)

- **SHA2 384** (384 bit)
- **SHA2 512** (512 bit)
- **Key size:** The key size (key length) is the length of the Diffie-Hellman key exchange. The longer this key is, the more secure the symmetric keys are. The length is specified in bits. You can choose between a key size of 1024, 2048, 3072 or 4096 bits.
- **Server certificate:** Select a local SSL certificate to be used by the SSL VPN server to identify itself against the clients.

Note -Sophos UTM does not support wildcard certificates and certificates signed by an intermedia CA in the SSL VPN.

- **Key lifetime:** Enter a time period after which the key will expire. The default is 28,800 seconds.

Compression Settings

Compress SSL VPN traffic: When enabled, all data sent through SSL VPN tunnels will be compressed prior to encryption.

Debug Settings

Enable debug mode: When enabling debug mode, the SSL VPN log file will contain extended information useful for debugging purposes.

17.2 PPTP

Point-to-Point Tunneling Protocol (PPTP) allows single Internet-based hosts to access internal network services through an encrypted tunnel. PPTP is easy to configure and requires no special client software on Microsoft Windows systems.

PPTP is included with versions of Microsoft Windows starting with Windows 95. In order to use PPTP with Sophos UTM, the client computer must support the MSCHAPv2 authentication protocol. Windows 95 and 98 users must apply an update to their systems in order to support this protocol.

17.2.1 Global

To configure global PPTP options, proceed as follows:

1. On the **Global** tab, enable PPTP remote access.

Click the toggle switch.

The toggle switch turns amber and the *Main Settings* area becomes editable.

2. Make the following settings:

Authentication via: Select the authentication mechanism. PPTP remote access only supports local and RADIUS authentication.

- **Local:** If you select **Local**, specify the users and user groups who should be able to use PPTP remote access. It is not possible to drag backend user groups into the field. Until a user account has been specified, PPTP remote access cannot be activated.

Note - Username and password of the selected users may only contain ASCII printable characters¹.

Note - Similar to SSL VPN, the **Remote Access** menu of the User Portal is only available to users who are selected in the **Users and groups** box and for whom a user definition does exist on Sophos UTM. Authorized users who have successfully logged in to the User Portal will find a link to installation instructions, which are available at the [Sophos Knowledge Base](#).

- **RADIUS:** **RADIUS** can only be selected if a RADIUS server has been previously configured. With this authentication method users will be authenticated against an external RADIUS server that can be configured on the **Definitions & Users > Authentication Services > Servers** tab. The **Users and Groups** dialog box will be grayed out. However, its settings can still be changed, which has no effect. The RADIUS server must support MSCHAPv2 challenge-response authentication. The server can pass back parameters such as the client's IP address and DNS/WINS server addresses. The PPTP module sends the following string as NAS-ID to the RADIUS server: pptp. Note that when RADIUS authentication is selected, local users cannot be authenticated with PPTP anymore. Note further that clients must support MSCHAPv2 authentication as well.

Assign IP addresses by: IP addresses can be either assigned from a predefined IP address pool or distributed automatically by means of a DHCP server:

- **IP Address pool:** Select this option if you want to assign IP addresses from a certain IP range to the clients gaining remote access through PPTP. By default, addresses from the private IP space 10.242.1.0/24 are assigned. This network definition is called the **VPN Pool (PPTP)** and can be used in all network-specific configuration options. If you want to use a different network, simply change the definition of the **VPN Pool (PPTP)** on the **Definitions & Users > Network Definitions** page. Alternatively, you can create another IP address pool by clicking the Plus icon next to the **Pool network** text box. Note that the netmask is limited to a minimum of 16.
- **DHCP server:** If you select **DHCP server**, also specify the network interface through which the DHCP server is connected. The DHCP server does not have to

¹http://en.wikipedia.org/wiki/ASCII#ASCII_printable_characters

be directly connected to the interface—it can also be accessed through a router. Note that the local DHCP server is not supported; the DHCP server selected here must be running on a physically different system.

3. Click **Apply**.

Your settings will be saved.

The toggle switch turns green.

Live Log

The PPTP daemon live log logs all PPTP remote access activities. Click the button to open the live log in a new window.

17.2.2 iOS Devices

You can enable that iOS device users are offered automatic PPTP configuration in the User Portal.

However, only users that have been added to the **Users and groups** box on the **Global** tab will find configuration files on their User Portal site. The iOS device status is enabled by default.

Connection name: Enter a descriptive name for the PPTP connection so that iOS device users may identify the connection they are going to establish. The default name is your company name followed by the protocol PPTP.

Note - Connection name must be unique among all iOS device connection settings (PPTP, L2TP over IPsec, Cisco VPN Client).

Override hostname: In case the system hostname cannot be publicly resolved by the client, you can enter a server hostname here that overrides the internal preference of the **DynDNS Hostname** before the **System DNS Hostname**.

To disable automatic iOS device configuration, click the toggle switch.

The toggle switch turns gray.

17.2.3 Advanced

On the **Remote Access > PPTP > Advanced** tab you can configure the encryption strength and the amount of debug output with regard to PPTP remote access. Note that advanced PPTP options can only be configured if PPTP remote access status is enabled on the **Global** tab.

Encryption Strength

You can choose between strong (128-bit) and weak (40-bit) tunnel encryption (MPPE). Do not use weak encryption unless you have endpoints that do not support 128-bit encryption.

Debug Mode

Enable debug mode: This option controls how much debug output is generated in the PPTP log. Select this option if you encounter connection problems and need detailed information about the negotiation of client parameters, for example.

17.3 L2TP over IPsec

L2TP, short for **Layer Two (2) Tunneling Protocol**, is a data link layer (layer 2 of the OSI model) protocol for tunneling network traffic between two peers over an existing network (usually the Internet), better known as VPNs. Because of the lack of confidentiality inherent in the L2TP protocol, it is often combined with IPsec, which provides confidentiality, authentication, and integrity. The combination of these two protocols is also known as L2TP over IPsec. L2TP over IPsec allows you, while providing the same functions as PPTP, to give individual hosts access to your network through an encrypted IPsec tunnel.

17.3.1 Global

On the **L2TP over IPsec > Global** tab you can configure basic options for setting up remote access via L2TP over IPsec.

Note - By default, the 96-bit Android-friendly version of L2TP authentication is enabled. If you want to follow the official RFC (e.g. to use L2TP with Nokia Smartphones), see the [Sophos Knowledge Base](#).

To use L2TP over IPsec, proceed as follows:

1. On the **Global** tab enable L2TP over IPsec.

Click the toggle switch.

The toggle switch turns amber and the **Server Settings and IP Address Assignment** area becomes editable.

2. Make the following settings:

Interface: Select the network interface to be used for L2TP VPN access.

Note - If you use uplink balancing, only the primary interface that is up will be used for L2TP traffic.

Authentication mode: You can choose between the following authentication modes:

- **Preshared key:** Enter a password which is subsequently used as preshared key. The **Preshared Key** method makes use of a shared secret that is exchanged by the communicating parties prior to the communication taking place. To communicate,

both parties prove that they know the secret. The shared secret is a secure phrase or password that is used to encrypt the traffic using the encryption algorithm for L2TP. For best security, you should take appropriate measures to increase the strength of the shared secret. The security of a shared secret depends on the quality of the password and how securely it has been transmitted. Passwords consisting of common words are extremely vulnerable to dictionary attacks. For that reason, the shared secret should be quite long and contain a variety of letters, capital letters, and numbers. Consequently, using a preshared secret as an authentication method should be replaced by certificates whenever possible.

Note - If you want to enable access for iOS devices you need to select **Preshared Key** because iOS devices only support PSK authentication.

- **X.509 CA check:** X.509 certificates ease the process of exchanging public authentication keys in large VPN setups with a lot of participants. A so-called CA gathers and checks the public keys of the VPN endpoints and issues a certificate for each member. The certificate contains the peer's identity along with its public key. Because the certificate is digitally signed, no one else can issue a forged certificate without being detected.

During the key exchange, certificates are exchanged and verified using locally stored CA public keys. The actual authentication of the VPN endpoints is then done by using public and private keys. If you want to use this authentication mode, select an X.509 certificate.

Note that for X.509 authentication to work, you need to have a valid CA configured on the **Remote Access > Certificate Management > [Certificate Authority](#)** tab.

Assign IP addresses by: IP addresses can be either assigned from a predefined IP address pool or distributed automatically by means of a DHCP server:

- **Pool network:** By default, **IP Address Pool** is selected as IP address assignment, having the pre-defined **VPN Pool (L2TP)** network definition selected as the **Pool Network**. The **VPN Pool (L2TP)** is a randomly generated network from the 10.x.x.x IP address space for private Internets, using a class C subnet. It is normally not necessary to ever change this, as it ensures that the users have a dedicated pool of addresses to make connections from. If you want to use a different network, you can simply change the definition of the **VPN Pool (L2TP)**, or assign another network as IP address pool here. Note that the netmask is limited to a minimum of 16.

Note - If you use private IP addresses for your L2TP VPN Pool and you want IPsec hosts to be allowed to access the Internet, appropriate masquerading or NAT rules must be in place for the IP address pool.

- **DHCP server:** If you select **DHCP server**, also specify the network interface through which the DHCP server is connected. The DHCP server does not have to be directly connected to the interface—it can also be accessed through a router. Note that the local DHCP server is not supported; the DHCP server selected here must be running on a physically different system.

3. Click **Apply**.

Your settings will be saved.

The toggle switch turns green.

To cancel the configuration, click the amber colored toggle switch.

Access Control

Authentication via: L2TP remote access only supports local and RADIUS authentication.

- **Local:** If you select **Local**, specify the users and user groups who should be able to use L2TP remote access. It is not possible to drag backend user groups into the field. For local users you need to add users in the usual way and enable L2TP for them. If no users or groups are selected, L2TP remote access is turned off. How to add users is explained on the **Definitions & Users > Users & Groups > Users** page.

Note - Username and password of the selected users may only contain ASCII printable characters¹.

Note - Similar to SSL VPN the **Remote Access** menu of the User Portal is only available to users who are selected in the **Users and groups** box and for whom a user definition does exist on Sophos UTM. Depending on the authentication mode, authorized users who have successfully logged in to the User Portal find the IPsec pre-shared key (authentication mode **Preshared key**) or the **PKCS#12** file (authentication mode **X.509 CA Check**) as well as a link to installation instructions, which are available at the [Sophos Knowledge Base](#)).

- **RADIUS:** If you select **RADIUS**, the authentication requests are forwarded to the RADIUS server. The L2TP module sends the following string as NAS-ID to the RADIUS server: `l2tp`.

The authentication algorithm gets automatically negotiated between client and server. For local users, Sophos UTM supports the authentication protocol MSCHAPv2.

For RADIUS users, Sophos UTM supports the following authentication protocols:

- MSCHAPv2
- MSCHAP
- CHAP

¹http://en.wikipedia.org/wiki/ASCII#ASCII_printable_characters

17.3.2 iOS Devices

You can enable that iOS device users are offered automatic L2TP over IPsec configuration in the User Portal.

However, only users that have been added to the **Users and groups** box on the **Global** tab will find configuration files on their User Portal site. The iOS device status is enabled by default.

Connection name: Enter a descriptive name for the L2TP over IPsec connection so that iOS device users may identify the connection they are going to establish. The default name is your company name followed by the protocol L2TP over IPsec.

Note - Connection name must be unique among all iOS device connection settings (PPTP, L2TP over IPsec, Cisco VPN Client).

Override hostname: In case the system hostname cannot be publicly resolved by the client, you can enter a server hostname here that overrides the internal preference of the **DynDNS Hostname** before the **System DNS Hostname**.

To disable automatic iOS device configuration, click the toggle switch.

The toggle switch turns gray.

17.3.3 Debug

IKE Debugging

In the **IKE Debugging** section you can configure IKE debug options. Select the checkboxes for which types of IKE messages or communication you want to create debug output.

Note - The IKE Debugging section is identical across the **Debug** tabs of the menus **Site-to-site VPN IPsec**, **Remote Access IPsec**, **L2TP over IPsec** and **Cisco VPN Client**.

The following flags can be logged:

- **Control flow:** Displays control messages of IKE state
- **Outbound packets:** Displays content of outgoing IKE messages
- **Inbound packets:** Displays content of incoming IKE messages
- **Kernel messaging:** Displays communication messages with the Kernel
- **High availability:** Displays communication with other HA nodes

L2TP Debugging

If **Enable debug mode** is selected, the **IPsec VPN** log file will contain extended information about L2TP or PPP connection negotiation.

17.4 IPsec

IP Security (IPsec) is a standard for securing **Internet Protocol (IP)** communications by encrypting and/or authenticating all IP packets.

The IPsec standard defines two service modes and two protocols:

- Transport mode
- Tunnel mode
- **Authentication Header (AH)** authentication protocol
- **Encapsulated Security Payload (ESP)** encryption (and authentication) protocol

IPsec also offers methods for manual and automatic management of **Security Associations (SAs)** as well as key distribution. These characteristics are consolidated in a **Domain of Interpretation (DOI)**.

IPsec Modes

IPsec can work in either transport mode or tunnel mode. In principle, a host-to-host connection can use either mode. If, however, one of the endpoints is a security gateway, the tunnel mode must be used. The IPsec VPN connections on this Sophos UTM always use the tunnel mode.

In transport mode, the original IP packet is not encapsulated in another packet. The original IP header is retained, and the rest of the packet is sent either in clear text (AH) or encrypted (ESP). Either the complete packet can be authenticated with AH, or the payload can be encrypted and authenticated using ESP. In both cases, the original header is sent over the WAN in clear text.

In tunnel mode, the complete packet—header and payload—is encapsulated in a new IP packet. An IP header is added to the IP packet, with the destination address set to the receiving tunnel endpoint. The IP addresses of the encapsulated packets remain unchanged. The original packet is then authenticated with AH or encrypted and authenticated using ESP.

IPsec Protocols

IPsec uses two protocols to communicate securely on the IP level.

- **Authentication Header (AH):** A protocol for the authentication of packet senders and for ensuring the integrity of packet data.
- **Encapsulating Security Payload (ESP):** A protocol for encrypting the entire packet and for the authentication of its contents.

The **Authentication Header** protocol (AH) checks the authenticity and integrity of packet data. In addition, it checks that the sender and receiver IP addresses have not been changed in transmission. Packets are authenticated using a checksum created using a

Hash-based Message Authentication Code (HMAC) in connection with a key. One of the following hashing algorithms will be used:

- **Message Digest Version 5 (MD5):** This algorithm generates a 128-bit checksum from a message of any size. This checksum is like a fingerprint of the message, and will change if the message is altered. This hash value is sometimes also called a digital signature or a message digest.
- **The Secure Hash (SHA-1):** This algorithm generates a hash similar to that of MD5, though the SHA-1 hash is 160 bits long. SHA-1 is more secure than MD5, due to its longer key.

Compared to MD5, an SHA-1 hash is somewhat harder to compute, and requires more CPU time to generate. The computation speed depends, of course, on the processor speed and the number of IPsec VPN connections in use at Sophos UTM.

In addition to encryption, the **Encapsulated Security Payload** protocol (ESP) offers the ability to authenticate senders and verify packet contents. If ESP is used in tunnel mode, the complete IP packet (header and payload) is encrypted. New, unencrypted IP and ESP headers are added to the encapsulating packet: The new IP header contains the address of the receiving gateway and the address of the sending gateway. These IP addresses are those of the VPN tunnel.

For ESP with encryption normally the following algorithms are used:

- Triple Data Encryption Standard (3DES)
- Advanced Encryption Standard (AES)

Of these, AES offers the highest standard of security. The effective key lengths that can be used with AES are 128, 192 and 256 bits. Sophos UTM supports a number of encryption algorithms. Either the MD5 or SHA-1 algorithms can be used for authentication.

NAT Traversal (NAT-T)

NAT traversal is a technology for establishing connections between hosts in TCP/IP networks which use NAT devices. This is achieved by using UDP encapsulation of the ESP packets to establish IPsec tunnels through NAT devices. UDP encapsulation is only used if NAT is detected between the IPsec peers; otherwise normal ESP packets will be used.

With NAT traversal you are able to place the gateway or a road warrior behind a NAT router and still establish an IPsec tunnel. Both IPsec peers must support NAT traversal if you want to use this feature, which is automatically negotiated. Make sure that the NAT device has IPsec-passthrough turned off, because this could impair the use of NAT traversal.

If road warriors want to use NAT traversal, their corresponding user object in WebAdmin must have a static remote access IP address (RAS address) set (see also **Use Static Remote Access IP** on the [Users](#) page in WebAdmin).

By default, a NAT traversal keep-alive signal is sent at intervals of 60 seconds to prevent an established tunnel from expiring when no data is transmitted. The keep-alive messages are

sent to ensure that the NAT router keeps the state information associated with the session so that the tunnel stays open.

TOS

Type of Service bits (TOS bits) are several four-bit flags in the IP header. These bits are referred to as **Type of Service** bits because they allow the transferring application to tell the network which type of service quality is necessary.

With the IPsec implementation of Sophos UTM the TOS value is always copied.

17.4.1 Connections

On the **IPsec > Connections** tab you can create and edit IPsec connections.

To create an IPsec connection, proceed as follows:

1. On the **Connections** tab, click **New IPsec Remote Access Rule**.

The **Add IPsec Remote Access Rule** dialog box opens.

2. Make the following settings:

Name: Enter a descriptive name for this connection.

Interface: Select the name of the interface which is used as the local endpoint of the IPsec tunnel.

Local networks: Select or add the local networks that should be reachable through the VPN tunnel. How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.

Virtual IP pool: The IP address pool where clients get an IP address assigned from in case they do not have a static IP address. The default pool is **VPN Pool (IPsec)** which comprises the private IP space `10.242.4.0/24`. You can, however, select or create a different IP address pool. Note that the netmask is limited to a minimum of 16. How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.

Policy: Select the IPsec policy for this IPsec connection. IPsec policies can be defined on the **Remote Access > IPsec > Policies** tab.

Authentication type: Select the authentication type for this remote gateway definition. The following types are available:

- **Preshared key:** Authentication with **Preshared Keys** (PSK) uses secret passwords as keys. These passwords must be distributed to the endpoints before establishing the connection. When a new VPN tunnel is established, each side checks that the other knows the secret password. The security of PSKs depends on the quality of the passwords used: common words and phrases are subject to dictionary attacks.

Permanent or long-term IPsec connections should use certificates instead.

- **X.509 certificate:** The X.509 Certificate authentication scheme uses public keys and private keys. An X.509 certificate contains the public key together with information identifying the owner of the key. Such certificates are signed and issued by a trusted **Certificate Authority (CA)**. Once selected, specify the users that should be allowed to use this IPsec connection. Unless you select the checkbox **Automatic firewall rules**, you need to specify appropriate firewall rules manually in the **Network Protection** menu.

Note - The User Portal can only be accessed by users who are selected in the **Allowed users** box and for whom a user definition does exist on Sophos UTM. Authorized users who have successfully logged in to the User Portal find the **Sophos IPsec Client (SIC)**, its configuration file, the **PKCS#12** file as well as a link to installation instructions, which are available at the [Sophos Knowledge Base](#).

- **CA DN match:** This authentication type uses a match of the **Distinguished Name (DN)** of CA certificates to verify the keys of the VPN endpoints. Once selected, select an **Authority** and choose a **DN mask** that matches the DNs of remote access clients. Now select or add a **Peer Subnet Range**. Clients are only allowed to connect if the DN mask matches the one in their certificate.

Enable XAUTH (optional): Extended authentication should be enabled to require authentication of users against configured backends.

Automatic firewall rules (optional): This option is only available with the authentication type **X.509 Certificate**. By selecting this option you can automatically add firewall rules that allow traffic for this connection. The rules are added as soon as the connection is enabled, and they are removed when the connection is disabled.

Comment (optional): Add a description or other information.

3. Click **Save**.

The new remote access rule appears on the **Connections** list.

To either edit or delete a remote access rule, click the corresponding buttons.

17.4.2 Policies

On the **Remote Access > IPsec > Policies** tab you can customize parameters for IPsec connections and unite them into a policy. An IPsec policy defines IKE (Internet Key Exchange) and IPsec proposal parameters of an IPsec connection. Note that each IPsec connection needs an IPsec policy.

Note - Sophos UTM only supports the main mode in IKE phase 1. The aggressive mode is not supported.

To create an IPsec policy, proceed as follows:

1. On the **Policy** tab, click **New IPsec Policy**.

The **Add IPsec Policy** dialog box opens.

2. Make the following settings:

Name: Enter a descriptive name for this policy.

IKE encryption algorithm: The encryption algorithm specifies the algorithm used for encrypting the IKE messages. Supported algorithms are:

- **DES** (56 bit)
- **3DES** (168 bit)
- **AES 128** (128 bit)
- **AES 192** (192 bit)
- **AES 256** (256 bit)
- **Blowfish** (128 bit)
- **Twofish** (128 bit)
- **Serpent** (128 bit)

Security Note - We strongly recommend to use **AES** and **SHA2 256** to reduce potential vulnerability.

IKE authentication algorithm: The authentication algorithm specifies the algorithm used for integrity checking of the IKE messages. Supported algorithms are:

- **MD5** (128 bit)
- **SHA1** (160 bit)
- **SHA2 256** (256 bit)
- **SHA2 384** (384 bit)
- **SHA2 512** (512 bit)

IKE SA lifetime: This value specifies the timeframe in seconds for which the IKE SA (security association) is valid and when the next rekeying should take place. Valid values are between 60 sec and 28800 sec (8 hrs). The default value is 7800 seconds.

IKE DH group: When negotiating a connection, the communicating parties also settle the actual keys used to encrypt the data. In order to generate a session key, IKE uses the **Diffie-Hellman** (DH) algorithm, which utilizes random data. The random data generation is based on pool bits. The IKE group basically tells the number of pool bits. The more pool bits, the larger the random numbers. The larger the numbers, the harder it is to crack the Diffie-Hellman algorithm. As a consequence, more pool bits mean more security but also the consumption of more CPU resources. Currently, the following Diffie-Hellman groups are supported:

- Group 1: MODP 768
- Group 2: MODP 1024
- Group 5: MODP 1536
- Group 14: MODP 2048
- Group 15: MODP 3072
- Group 16: MODP 4096

Security Note - Group 1 (MODP 768) is considered weak and only supported for interoperability reasons. We strongly recommend against using it, as it represents a potential vulnerability.

IPsec encryption algorithm: The same encryption algorithms as for IKE. Additionally there are the following entries:

- No encryption (null)
- AES 128 CTR (128 bit)
- AES 192 CTR (192 bit)
- AES 256 CTR (256 bit)
- AES 128 GCM (96 bit)
- AES 192 GCM (96 bit)
- AES 256 GCM (96 bit)
- AES 128 GCM (128 bit)
- AES 192 GCM (128 bit)
- AES 256 GCM (128 bit)

Security Note - We strongly recommend against using no encryption or DES, as this represents a potential vulnerability.

IPsec authentication algorithm: The same authentication algorithms as for IKE. Additionally there are the following algorithms:

- SHA2 256 (96 bit)
- SHA2 384 (96 bit)
- SHA2 512 (96 bit)

Those are available for compliance with tunnel endpoints not adhering to [RFC 4868](#), for example UTM (i.e., ASG) versions older than V8, and therefore do not support truncated checksums longer than 96 bit.

IPsec SA lifetime: This value specifies the timeframe in seconds for which the IPsec SA is valid and when the next rekeying should take place. Valid values are between 60 sec and 86400 sec (1 day). The default value is 3600 seconds.

IPsec PFS group: **Perfect Forward Secrecy (PFS)** refers to the notion that if a session key is compromised, it will permit access only to data of this specific session. In order for PFS to exist, the key used to protect the IPsec SA must not be derived from random keying material used to get the keys for the IKE SA. Therefore, PFS initiates a second Diffie-Hellman key exchange proposing the selected DH group for the IPsec connection to get a new randomly generated key. Supported Diffie-Hellman groups are the same as for IKE.

Enabling PFS is considered to be more secure, but it takes also more time for the exchange. It is not recommended to use PFS on slow hardware.

Note - PFS is not fully interoperable with all vendors. If you notice problems during the negotiation, you might consider disabling PFS.

Strict policy: If an IPsec gateway makes a proposition with respect to an encryption algorithm and to the strength, it might happen that the gateway of the receiver accepts this proposition, even though the IPsec policy does not correspond to it. If you select this option and the remote endpoint does not agree on using exactly the parameters you specified, the IPsec connection will not be established. Suppose the IPsec policy of your Sophos UTM requires AES-256 encryption, whereas, for example, a road warrior with SSH Sentinel wants to connect with AES-128; with the strict policy option enabled, the connection would be rejected.

Note - The compression setting will not be enforced via **Strict policy**.

Compression: This option specifies whether IP packets should be compressed by means of the **IP Payload Compression Protocol (IPComp)** prior to encryption. IPComp reduces the size of IP packets by compressing them to increase the overall communication performance between a pair of communicating hosts or gateways. Compression is turned off by default.

Comment (optional): Add a description or other information.

3. Click **Save**.

The new policy appears on the **Policies** list.

To either edit or delete a policy, click the corresponding buttons.

17.4.3 Advanced

On the **Remote Access > IPsec > Advanced** tab you can configure advanced options of IPsec VPN. Depending on your preferred authentication type, you can define the local cer-

tificate (for X.509 authentication) and the local RSA key (for RSA authentication), among other things. Note that this should only be done by experienced users.

Local X.509 Certificate

With X.509 authentication, certificates are used to verify the public keys of the VPN endpoints. If you want to use this authentication type, you have to select a local certificate from the drop-down list in the **Local X.509 Certificate** area. The selected key/certificate is then used to authenticate the gateway to remote peers if X.509 authentication is selected.

You can only select certificates where the appropriate private key is present, other certificates are not available in the drop-down list.

If there is no certificate available for selection, you have to add one in the **Certificate Management** menu, either by creating a new one or by importing one using the upload function.

After selecting the certificate, enter the passphrase the private key was protected with. During the saving process, the passphrase is verified and an error message is displayed if it does not match the encrypted key.

Once an active key/certificate is selected, it is displayed in the **Local X.509 Certificate** area.

Preshared Key Settings

Select the VPN ID type which is used by PSK connections. This is useful if your client is behind a NAT gateway and the peer cannot accept any VPN ID. If the text box **VPN ID** is empty, the interface IP address is taken as the VPN identifier.

For IPsec connections using the respond-only mode you can decide to use different pre-shared keys (PSK) for each IPsec connection.

Enable probing of preshared keys: Select the checkbox to enable this option. This will affect L2TP-over-IPsec, remote access IPsec, and VPN IPsec connections.

Dead Peer Detection (DPD)

Use Dead Peer Detection: The dead peer detection option is used for automatically terminating a connection if the remote VPN gateway or client is unreachable. For connections with static endpoints, the tunnel will be re-negotiated automatically. Connections with dynamic endpoints require the remote side to re-negotiate the tunnel. Usually it is safe to always enable this option. The IPsec peers automatically determine whether the remote side supports dead peer detection or not, and will fall back to normal mode if necessary.

NAT Traversal (NAT-T)

Use NAT traversal: Select to enable that IPsec traffic can pass upstream systems which use **Network Address Translation** (NAT). Additionally, you can define the keepalive interval for NAT traversal. Click **Apply** to save your settings.

CRL Handling

There might be situations in which the provider of a certificate attempts to revoke the confirmation awarded with still valid certificates, for example if it has become known that the receiver of the certificate fraudulently obtained it by using wrong data (name, etc.) or because an attacker has got hold of the private key, which is part of the certified public key. For this purpose, so-called **Certificate Revocation Lists** or CRLs are used. They normally contain the serial numbers of those certificates of a certifying instance, that have been held invalid and that are still valid according to their respective periods of validity.

After the expiration of these periods the certificate will no longer be valid and must therefore not be maintained in the block list.

Automatic fetching: This function automatically requests the CRL through the URL defined in the partner certificate via HTTP, Anonymous FTP or LDAP version 3. On request, the CRL can be downloaded, saved and updated, once the validity period has expired. If you use this feature but not via port 80 or 443, make sure that you set the firewall rules accordingly, so that the CRL distribution server can be accessed.

Strict policy: If this option is enabled, any partner certificate without a corresponding CRL will be rejected.

17.4.4 Debug

IKE Debugging

In the **IKE Debugging** section you can configure IKE debug options. Select the checkboxes for which types of IKE messages or communication you want to create debug output.

Note - The **IKE Debugging** section is identical across the **Debug** tabs of the menus **Site-to-site VPN IPsec**, **Remote Access IPsec**, **L2TP over IPsec** and **Cisco VPN Client**.

The following flags can be logged:

- **Control flow:** Displays control messages of IKE state
- **Outbound packets:** Displays content of outgoing IKE messages
- **Inbound packets:** Displays content of incoming IKE messages
- **Kernel messaging:** Displays communication messages with the Kernel
- **High availability:** Displays communication with other HA nodes

17.5 HTML5 VPN Portal

The HTML5 VPN Portal feature enables users from external networks to access internal resources via pre-configured connection types, using only a browser as a client, without installing plug-ins. To do so, users log in to the User Portal of Sophos UTM where on the

HTML5 VPN Portal tab a list of all connections available to them is shown. Clicking on the **Connect** button initiates the connection to the defined internal resource. As an administrator, you have to generate these connections beforehand, specifying the allowed users, the connection type and other settings. Internal resources can be accessed using different connection types: either Remote Desktop Protocol (RDP) or Virtual Network Computing (VNC) to access remote desktops, a browser to use web applications (HTTP/HTTPS), or Telnet/Secure Shell (SSH) for terminal sessions. However, the HTML5 VPN Portal does not permit to download content, e.g. via HTTP, to the user's local computer.

Using this feature it is possible to give multiple users access to internal resources which do not support multi-user access themselves (e.g., network hardware like switches) or easily provide very granular access to just one specific service instead of giving access to entire systems or networks.

Examples:

- Give access to telephone service company to maintain your telephone system.
- Give access to a specific internal website, e.g., intranet.

Important Note - With Safari browser on Mac OSX or iOS, users have to import the CA certificate of Sophos UTM first before they can use clientless access. The CA certificate can be downloaded from Sophos UTM under **Remote Access > Certificate Management > Certificate Authority**.

Note - Users' browser has to be HTML5-compliant. The following browsers support the HTML5 VPN feature: Firefox 6.0 onwards, Internet Explorer 10 onwards, Chrome, Safari 5 onwards (on MAC only).

Note - It is not possible to have multiple users with dedicated sessions.

17.5.1 Global

On the **Remote Access > HTML5 VPN Portal > Global** tab you can activate the HTML5 VPN Portal and manage the respective VPN Portal connections. Note that the number of connections is limited to 100. For the allowed users, the enabled connections are available on the **HTML5 VPN Portal** tab of the User Portal.

To activate the HTML5 VPN Portal and create a new HTML5 VPN connection, proceed as follows:

1. Enable the HTML5 VPN Portal.

Click the toggle switch.

The toggle switch turns green and the elements on the page become editable. All existing, enabled connections will now be visible in the User Portal of the allowed users.

2. Click the **New HTML5 VPN Portal Connection** button.

The **Add HTML5 VPN Portal Connection** dialog box opens.

3. Make the following settings:

Name: Enter a descriptive name for this connection.

Connection type: Select the connection type. Depending on the selected connection type, different parameters are displayed. The following types are available:

- **Remote Desktop:** Remote access using the Remote Desktop Protocol (RDP), e.g., to open a remote desktop session to a Windows host.

Note - Users using iOS and Safari need to install the WebAdmin CA certificate into their system key chain list. How to install the WebAdmin CA is explained on the **Management > WebAdmin Settings > [HTTPS Certificate](#)** tab.

Network Definitions page.

- **Webapp (HTTP):** Browser-based access to web applications via HTTP.
- **Webapp (HTTPS):** Browser-based access to web applications via HTTPS.

Note - The URL used for the HTTP/HTTPS connection is composed of the **Destination**, the **Port** and the **Path** options for this connection. The web application has to be compatible with Mozilla Firefox (version 6.0 onwards).

- **Telnet:** Terminal access using the Telnet protocol, e.g., to give access to a switch or a printer.
- **SSH:** Terminal access using SSH.
- **VNC:** Remote access using Virtual Network Computing (VNC), e.g., to open a remote desktop of a Linux/Unix host.

Note - Currently only VNC classic authentication (password only) is supported. Make sure your server is set up accordingly.

Destination: Select or add the host which allowed users should be able to connect to. How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.

Note - If the selected destination host supplies a self-signed certificate, make sure that the CN (Common Name) of the certificate matches your destination hostname. Otherwise users will get a certificate warning in the portal browser. If you e.g. use a DNS host *www.mydomain.com*, make sure that the self-signed certificate contains this name. If you use a host instead of a DNS host, make sure that the self-signed certificate contains the host's IP address as a *Subject Alternative Name*.

Path (only with connection types **Webapp**): Enter the path which allowed users should be able to connect to.

Username (only with connection type **SSH**): Enter the username the user should use to connect.

Automatic login/Automatic login (Basic Auth): If enabled, users can log in without knowing the authentication data. In this case, you have to provide the authentication data. The displayed options depend on the selected connection type:

- **Username**: Enter the username users should use to connect.
- **Password**: Enter the password users should use to connect.

Note - When using the connection type **Telnet**, for security reasons automatic login only works when the banner length sent from the Telnet server does not exceed 4096 characters (including the password prompt). If the banner is longer, automatic login fails. In this case reduce the banner length or switch to manual login.

- **Authentication method** (only with connection type **SSH**): Select the SSH authentication method. You can either provide the **Password** for the selected username or add the **Private SSH key** for the SSH connection.

SSL host certificate (only with connection type **HTTPS**): Add the SSL host security certificate to identify the destination host.

- **SSL certificate**: Click the **Fetch** button to automatically add the certificate of the selected destination host.

Public host key (only with connection type **SSH**): Add the public key of the SSH host.

- **SSH public key**: Click the **Fetch** button to automatically retrieve the SSH public key of the selected destination host.

Allowed users (User Portal): Select the users or groups or add the new users that should be allowed to use the VPN Portal connection. By default, only one user can use a connection at the same time. If you want the users to share a session simultaneously, select the **Shared session** checkbox in the **Advanced** section. How to add users is explained on the **Definitions & Users > Users & Groups > Users** page.

Note - When you add a group with backend membership, make sure that the group is also allowed for the User Portal. On the **Management > User Portal > Global** tab, either select **Allow all users** or **Allow only specific users** and explicitly add the group. If you only allow individual group members for the User Portal, they will not be provided the connections allowed for the group.

Comment (optional): Add a description or other information.

4. Optionally, make the following advanced settings:

Port: Enter a port number for the connection. By default the standard port of the selected connection type is selected.

Protocol security (only with connection type **Remote Desktop**): Select the security protocol for the Remote Desktop session. You can choose between RDP, TLS and NLA (Network Level Authentication). Your settings have to comply with the server settings. NLA requires to enable **Automatic login** above.

Share session: Select this option to allow users to use the connection simultaneously and see the same screen.

Allow external resources (only with connection types **Webapp (HTTP/S)**): Enter additional resources that are allowed to be accessed via this connection. This is useful if for example images or other resources are stored on a different server than the webpage itself. For the selected host(s) or network ranges port 80 and 443 will be allowed.

5. Click **Save**.

The new connection appears on the **Connections** list.

6. Enable the connection.

Click the toggle switch to activate the connection.

The connection is now available for the allowed users. It is located on the **HTML5 VPN Portal** tab of the User Portal.

To either edit or delete a connection, click the corresponding buttons.

17.6 Cisco VPN Client

Sophos UTM supports IPsec remote access via Cisco VPN Client. The Cisco VPN Client is an executable program from Cisco Systems that allows computers to connect remotely to a **Virtual Private Network (VPN)** in a secure way.

17.6.1 Global

On the **Remote Access > Cisco VPN Client > Global** tab you can configure basic options for setting up remote access via Cisco VPN Client.

Note - By default, the 96-bit Android-friendly version of CISCO VPN authentication is enabled. If you want to follow the official RFC (e.g. to use CISCO VPN with Nokia Smartphones), see the [Sophos Knowledge Base](#).

To configure Sophos UTM to allow Cisco VPN Client connections, proceed as follows:

1. On the **Global** tab enable Cisco VPN Client.

Click the toggle switch.

The toggle switch turns amber and the **Server Settings** area becomes editable.

2. Make the following settings:

Interface: Select an interface to be used for Cisco VPN Client connections.

Server certificate: Select the certificate with which the server identifies itself to the client.

Pool network: Select a network pool to choose virtual network addresses from to assign them to connecting clients. By default **VPN Pool (Cisco)** is selected.

Local networks: Select or add the local networks that should be reachable through the VPN tunnel. How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.

Users and groups: Select users or user groups, or add users that are allowed to connect to Sophos UTM via Cisco VPN Client. How to add users is explained on the **Definitions & Users > Users & Groups > Users** page.

Automatic firewall rules (optional): By selecting this option you can automatically add firewall rules that allow traffic for this connection. The rules are added as soon as the connection is enabled, and they are removed when the connection is disabled.

3. Click **Apply**.

Your settings will be saved.

The toggle switch turns green.

Live Log

Use the live log to track connection logs of the IPsec IKE daemon log. It shows information on establishing, upkeeping, and closing connections.

17.6.2 iOS Devices

You can enable that iOS device users are offered automatic Cisco IPsec configuration in the User Portal.

However, only users that have been added to the **Users and groups** box on the **Global** tab will find configuration files on their User Portal site. The iOS device status is enabled by default.

Connection name: Enter a descriptive name for the Cisco IPsec connection so that iOS device users may identify the connection they are going to establish. The default name is your company name followed by the protocol Cisco IPsec.

Note - Connection name must be unique among all iOS device connection settings (PPTP, L2TP over IPsec, Cisco VPN Client).

Override hostname: In case the system hostname cannot be publicly resolved by the client, you can enter a server hostname here that overrides the internal preference of the **DynDNS Hostname** before the **System DNS Hostname**.

Establish VPN connection on demand: Select this option to automatically initiate a VPN connection whenever the location matches one of the hostnames or domains listed in the box.

- **Match domain or host:** Enter the domains or hostnames for which you want to establish VPN connections on demand. This could be your local intranet, for example.
- **Establish only when DNS lookup fails:** By default, the VPN connection is only established after a DNS lookup has failed. If unselected, the VPN connection is established regardless of whether the hostname can be resolved or not.

Note that connecting iOS devices get presented the server certificate specified on the **Global** tab. The iOS device checks whether the VPN ID of this certificate corresponds to the server hostname and refuses to connect if they differ. If the server certificate uses **Distinguished Name** as VPN ID Type it compares the server hostname with the **Common Name** field instead. You need to make sure the server certificate fulfills these constraints.

To disable automatic iOS device configuration, click the toggle switch.

The toggle switch turns gray.

17.6.3 Debug

IKE Debugging

In the **IKE Debugging** section you can configure IKE debug options. Select the checkboxes for which types of IKE messages or communication you want to create debug output.

Note - The **IKE Debugging** section is identical across the **Debug** tabs of the menus **Site-to-site VPN IPsec**, **Remote Access IPsec**, **L2TP over IPsec** and **Cisco VPN Client**.

The following flags can be logged:

- **Control flow:** Displays control messages of IKE state
- **Outbound packets:** Displays content of outgoing IKE messages
- **Inbound packets:** Displays content of incoming IKE messages
- **Kernel messaging:** Displays communication messages with the Kernel
- **High availability:** Displays communication with other HA nodes

17.7 Advanced

On the **Remote Access > Advanced** page you can make the advanced configurations for remote access clients. The IP addresses of the DNS and WINS servers you enter here are provided for the use of remote access clients while establishing a connection to the gateway, thus providing full name resolution for your domain.

DNS server: Specify up to two DNS servers of your organization.

Note - IPv6 servers are not supported by SSL VPN on Windows.

WINS server: Specify up to two WINS servers of your organization. **Windows Internet Naming Service** (WINS) is Microsoft's implementation of **NetBIOS Name Server** (NBNS) on Windows operating systems. Effectively, WINS is to NetBIOS names what DNS is to domain names—a central mapping of hostnames to IP addresses.

Domain name: Enter the hostname of your Sophos UTM as a **fully qualified domain name** (FQDN). The fully qualified domain name is an unambiguous domain name that specifies the node's absolute position in the DNS tree hierarchy, for example `utm.example.com`. A hostname may contain alphanumeric characters, dots, and hyphens. At the end of the hostname there must be a special designator such as `com`, `org`, or `de`. The hostname will be used in notification messages to identify Sophos UTM.

Note - For PPTP and L2TP over IPsec the domain name *cannot* be distributed automatically, but needs to be configured on the client side.

With iOS devices using **Cisco VPN Client**, the DNS servers specified above are only used to resolve hosts that belong to the specified domain.

17.8 Certificate Management

Manage all certificate-related operations of Sophos UTM. This includes creating or importing X.509 certificates as well as uploading so-called **Certificate Revocation Lists** (CRLs), among other things.

17.8.1 Certificates

Create or import public key certificates in the X.509 standard format. Such certificates are digitally signed statements usually issued by a **Certificate Authority** (CA) binding together a public key with a particular **Distinguished Name** (DN) in X.500 notation. Using Let's Encrypt™ to create certificates is also supported.

You can choose among the following options:

- [Generate a new certificate](#) using the self-signed CA of the UTM.
- [Upload an existing certificate](#).
- [Create a new certificate with Let's Encrypt](#).

You can download certificates either in `PKCS#12` or `PEM` format. The `PEM` file only contains the certificate itself, while the `PKCS#12` file also contains the private key as well as the CA certificate with which it was signed.

Note - Certificates have a validity period. 30 days before a certificate expires, a flag will be added in WebAdmin and you will receive an email notification.

17.8.1.1 Generate a Certificate

All certificates you generate contain an RSA key. They are signed by the self-signed certificate authority (CA) **VPN Signing CA** that was created automatically using the information you provided during the initial login to the WebAdmin interface.

To generate a certificate, proceed as follows:

1. On the **Certificates** tab, click **New Certificate**.

The **Add Certificate** dialog box opens.

2. Make the following settings:

Name: Enter a descriptive name for this certificate.

Method: To create a certificate, select **Generate**.

Key size: The length of the RSA key. The longer the key, the more secure it is. You can choose among key sizes of 1024, 2048, or 4096 bits. Select the maximum key size compatible with the application programs and hardware devices you intend to use. Unless longer keys cause critical performance issues for your specific purposes, do not reduce the key size in order to optimize performance.

VPN ID type: You have to define a unique identifier for the certificate. The following types of identifiers are available:

- Email address
- Hostname
- IP address
- Distinguished name

VPN ID: Depending on the selected VPNID type, enter the appropriate value into this text box. For example, if you selected **IP address** from the **VPN ID type** list, enter an IP address into this text box. Note that this text box will be hidden when you select **Distinguished Name** from the **VPN ID type** list.

Use the drop-down lists and text boxes from **Country** to **Email** to enter identifying information about the certificate holder. This information is used to build the **Distinguished Name**, that is, the name of the entity whose public key the certificate identifies. This name contains a lot of personal information in the X.500 standard and is supposed to be unique across the Internet. If the certificate is for a road warrior connection, enter the name of the user in the **Common name** box. If the certificate is for a host, enter a hostname.

Comment (optional): Add a description or other information.

3. Click **Save**.

The certificate appears on the **Certificates** list.

17.8.1.2 Upload a Certificate

To upload a certificate, proceed as follows:

1. On the **Certificates** tab, click **New Certificate**.

The **Add Certificate** dialog box opens.

2. Make the following settings:

Name: Enter a descriptive name for this certificate.

Method: Select **Upload**.

File type: Select the file type of the certificate. You can upload certificates being one of the following types:

- **PKCS#12 (Cert+CA):** PKCS refers to a group of **Public Key Cryptography Standards** (PKCS) devised and published by RSA laboratories. The **PKCS#12** file format is commonly used to store private keys with accompanying public key certificates protected with a container passphrase. You must know this container passphrase to upload files in this format.
- **PEM (Cert only):** A Base64 encoded **Privacy Enhanced Mail** (**PEM**) file format with no password required.

File: Click the Folder icon next to the **File** box and select the certificate you want to upload.

Comment (optional): Add a description or other information.

3. Click **Save**.

The certificate appears on the **Certificates** list.

17.8.1.3 Create a Let's Encrypt Certificate

Create a Let's Encrypt certificate to be able to present web browsers an officially signed certificate for the domains associated with the certificate. Let's Encrypt will create a signed certificate as well as an intermediate CA thus allowing for a chain of trust.

1. On the **Certificates** tab, click **New Certificate**.

The **Add Certificate** dialog box opens.

2. Make the following settings:

Name: Enter a descriptive name for this certificate.

Method: Select **Let's Encrypt**.

Interface: Select an interface through which the Let's Encrypt servers can contact the domains configured below.

Domains: Add one or more domains for which the certificate should be valid.

Comment (optional): Add a description or other information.

3. Click **Save**.

The certificate appears on the **Certificates** list.

Initially, newly created Let's Encrypt certificates are signed by the self-signed certificate authority VPN Signing CA that was created automatically using the information you provided during the initial login to the WebAdmin interface. This makes the certificate immediately usable right after their creation.

In the background, the certificate domains are validated by Let's Encrypt.

Note - This requires HTTP traffic for the certificate domains to reach the UTM.

As soon as Let's Encrypt issued the certificate, the certificate object is updated automatically. This process is repeated whenever the certificate is due for renewal.

17.8.2 Certificate Authority

You can add new certificate authorities to the unit. Generally speaking, a certificate authority or **Certification Authority** (CA) is an entity which issues digital certificates for use by other parties. A CA attests that the public key contained in the certificate belongs to the person, organization, host, or other entity noted in the certificate by signing the certificate signing request with the private key of the CA's own certificate. Such a CA is therefore called a signing CA.

On Sophos UTM, the signing CA was created automatically using the information you provided during the initial login to Sophos UTM. Thus, all certificates you create on the **Certificates** tab are self-signed certificates, meaning that the issuer and the subject are identical. However, you can alternatively import a signing CA by third-party vendors. In addition, to verify the authenticity of hosts or users requesting an IPsec connection, you can also use alternative CA certificates whose private keys are unknown. Those CA certificates are called verification CAs and can be added on this tab as well.

Important Note - You can have multiple verification CAs on your system, but only one signing CA. So if you upload a new signing CA, the previously installed signing CA automatically becomes a verification CA.

To add a CA, proceed as follows:

1. On the **Certificate Authority** tab, click **New CA**.

The **Add CA** dialog box opens.

2. Make the following settings:

Name: Enter a descriptive name for this CA.

Type: Select the type of CA you are going to import. You can choose between verification CAs or signing CAs. A verification CA must be available in the `PEM` format, while a signing CA must be available in the `PKCS#12` format.

CA certificate: Click the Folder icon next to the **CA certificate** box and select the certificate you want to import. Note that if you are to upload a new signing CA, you must enter the password with which the `PKCS#12` container was secured.

Comment (optional): Add a description or other information.

3. Click **Save**.

The new CA certificate appears on the **Certificate Authority** list.

To delete a CA click the button **Delete** of the respective CA.

The signing CA can be downloaded in `PKCS#12` format. You will then be prompted to enter a password, which will be used to secure the `PKCS#12` container. In addition, verification CAs can be downloaded in `PEM` format.

17.8.3 Revocation Lists (CRLs)

A CRL is a list of certificates (more precisely, their serial numbers) which have been revoked, that is, are no longer valid, and should therefore not be relied upon. You can upload the CRL that is deployed within your PKI.

To add a CRL, proceed as follows:

1. On the **Revocation Lists (CRLs)** tab, click **New CRL**.

The **Add CRL** dialog box opens.

2. Make the following settings:

Name: Enter a descriptive name for this CRL.

CRL file: Click the Folder icon next to the **CRL file** box and select the CRL you want to upload.

Comment (optional): Add a description or other information.

3. Click **Save**.

The new CRL appears on the list of revocation lists.

To delete a CRL click the button **Delete** of the respective CRL.

17.8.4 Advanced

You can re-generate the VPN Signing CA that was created during the initial setup of the unit and enable the use of Let's Encrypt certificates. The VPN Signing CA is the certificate authority with which digital certificates are signed that are used for remote access and site-to-site VPN connections. The old VPN signing CA will be kept as verification CA.

Re-generate Signing CA

You can renew all user certificates using the current signing CA. This becomes relevant once you have installed an alternative VPN Signing CA on the **Certificate Authority** tab.

Caution -Sophos UTM and all user certificates will be re-generated using the new signing CA. This will break certificate-based site-to-site and remote access VPN connections.

Let's Encrypt™ Certificates

Let's Encrypt is a certificate authority that provides free X.509 certificates for Transport Layer Security encryption via an automated process designed to eliminate the hitherto complex process of manual creation, validation, signing, installation, and renewal of certificates for secure websites. (Source: Wikipedia)

Sophos UTM provides Let's Encrypt integration to make managing certificates easier for you. You can use Let's Encrypt certificates anywhere in the UTM, for example with VPN connections, as WebAdmin or User Portal certificate, or with the web application firewall. To be able to use Let's Encrypt, the domain names used in Let's Encrypt must be publicly accessible. Let's Encrypt certificates are checked once per day by a Cron job and are automatically renewed if they expire in less than 30 days.

Allow Let's Encrypt certificates: To use Let's Encrypt, activate the checkbox and click **Apply**. By that you agree to the Let's Encrypt terms of service. The UTM will contact the Let's Encrypt server and create a Let's Encrypt account for use with the UTM. You can click the Refresh button to see when the process is finished.

When you turn off the Let's Encrypt feature, there will be a warning. If you proceed, all data related to Let's Encrypt will be deleted.

Notifications: You will receive a notification in the following circumstances.

- In case the renewal of a Let's Encrypt signed certificate failed.
- In case the Let's Encrypt terms of service change at some point. You will then have to go back to the **Certificate Management > Advanced** page and re-enable the Let's Encrypt feature. By that you agree to the new terms of service. Until you have done that, no new Let's Encrypt certificates can be created and existing ones cannot be renewed.

You can find logging information at any time in the Let's Encrypt log on the **Logging & Reporting > View Log Files** page of WebAdmin.

18 Logging & Reporting

This chapter describes the logging and reporting functionality of Sophos UTM.

Sophos UTM provides extensive logging capabilities by continuously recording various system and network protection events. The detailed audit trail provides both historical and current analysis of various network activities to help identify potential security threats or to troubleshoot occurring problems.

The reporting function of Sophos UTM provides real-time information of its managed devices by collecting current log data and presenting it in a graphical format.

The **Log Partition Status** page in WebAdmin shows the status of the log partition of your Sophos UTM unit, including information about the disk space left and fillup rate as well as a four-week histogram of the log partition utilization. As the fillup rate is the difference between the measurement point and the starting point divided by the time elapsed, the value is somewhat inaccurate in the beginning but becomes more precise the longer the system is up.

Note - Be aware that if there are too many reporting details and too much data traffic the hard disc space might get filled.

The following topics are included in this chapter:

- [View Log Files](#)
- [Hardware](#)
- [Network Usage](#)
- [Network Protection](#)
- [Web Protection](#)
- [Email Protection](#)
- [Remote Access](#)
- [Webserver Protection](#)
- [Executive Report](#)
- [Log Settings](#)
- [Reporting Settings](#)

Reporting Charts

Sophos UTM displays reporting data in line charts and pie charts. Due to their interactivity, those charts allow a fine-grained access to information.

Line Charts

Interacting with line charts is easy: When hovering the mouse cursor on a chart a big dot will appear, which gives detailed information of this part of the chart. The dot is clung to the line of the chart. As you move the mouse cursor the dot follows. In case a chart has several lines, the dot switches between them according to where you move the mouse cursor. Additionally, the dot changes its color depending on which line its information refer to, which is especially useful with lines running close to each other.

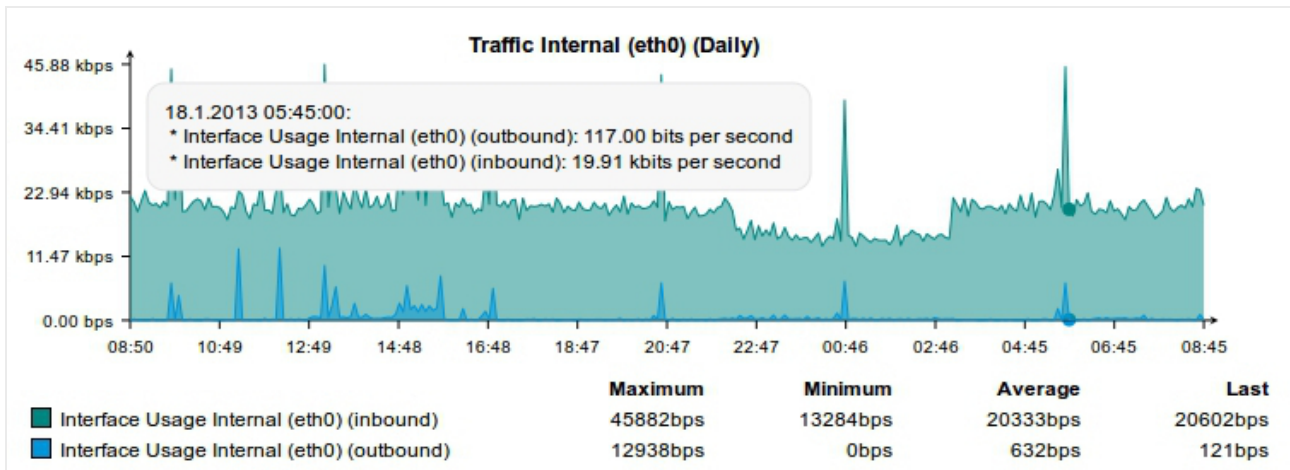


Figure 30 Reporting: Example of a Line Chart

Pie Charts

Similar to line charts, you can interact with pie charts: Direct the mouse cursor to a piece of a pie chart. This piece will immediately be extracted from the rest of the pie, the tooltip showing detailed information of the extracted piece.

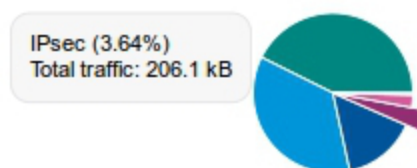


Figure 31 Reporting: Example of a Pie Chart

18.1 View Log Files

The **Logging & Reporting > View Log Files** menu offers the possibility to view different kind of log files and to search in log files.

18.1.1 Today's Log Files

On the **Logging & Reporting > View Log Files > Today's Log Files** tab all current logs can easily be accessed.

This tab provides various actions that can be applied to all log files. The following actions are available:

- **Live Log:** Opens a pop-up window allowing you to view the log file in real-time. New lines are added to the log file on the fly. If you select **Autoscroll**, the pop-up window will automatically scroll down to always display the most recent log. In addition, the pop-up window also contains a filter text box that allows you to limit the display of new logs to only those records that match the filter.
- **View:** Opens a pop-up window that shows the log file in its current state.

Note - Log files bigger than 512 MB cannot be viewed or selected.

- **Clear:** Deletes the contents of the log file.

Using the drop-down list in the table footer, you can either download selected log files as a `zip` file or clear their contents simultaneously.

18.1.2 Archived Log Files

On the **Logging & Reporting > View Log Files > Archived Log Files** tab you can manage the log file archive. All log files are archived on a daily basis. To access an archived log file, select the subsystem of Sophos UTM for which logs are written as well as a year and month.

All available log files that match your selection will be displayed in chronological order. You can either view the archived log file or download it in `zip` file format. Click **Export all logs** to download all listed log files at once, including the Sophos UTM system ID.

Using the drop-down list in the table footer, you can either download selected log files as a `zip` file or delete them simultaneously.

Note - Log files with an uncompressed size bigger than 512 MB cannot be viewed. Log files bigger than 512 MB cannot be downloaded.

18.1.3 Search Log Files

The tab **Logging & Reporting > View Log Files > Search Log Files** enables you to search through your local log files for various time periods. First, select the log file you want to search through, then enter the search term and select the time range. If you select **Custom Time Frame** from the **Select Time Frame** list, you can specify a start and end date. After clicking the **Start Search** button, a popup window will open presenting the results of your query. Depending on your browser it may be necessary to allow pop-up windows for WebAdmin.

If you select **Web Filtering** or **Endpoint Web Protection** from the **Select log file to search** list, you get more filter categories. You can search for specific **User**, **URL**, **Source IP** and **Action**

- **User:** Search for a full username in the logs.
- **URL:** Search for the substring match of a URL.
- **Source IP:** The source IP where the activity originated.
- **Action:** Dropdown list with all kinds of possible actions.

Note - Searching for '407' will not give any output. You can search logs on the back-end in this case.

Note - If you select a **checkbox** under the **Search term**, you can optionally display the results in report format, limit results to only page requests, and do the same search on **Web Filtering** and **Endpoint Protection** at the same time.

Cross Reference - Find information about enhanced webfilter search in the [Sophos Knowledge Base](#).

18.2 Hardware

The **Logging & Reporting > Hardware** menu provides overview statistics about the utilization of hardware components for several time periods.

18.2.1 Daily

The **Hardware > Daily** tab provides overview statistics about the following hardware components of the last 24 hours:

- CPU Usage
- Memory/Swap Usage
- Partition Usage

CPU Usage: The histogram displays the current processor utilization in percent.

Memory/Swap Usage: The utilization of memory and swap in percent. The swap usage heavily depends on your system configuration. The activation of system services such as Intrusion Prevention or the proxy servers will result in a higher memory usage. If the system runs out of free memory, it will begin to use swap space, which decreases the overall performance of the system. The used swap space should be as low as possible. To achieve that, increase the total amount of memory available to your system.

Partition Usage: The utilization of selected partitions in percent. All charts show three graphs, each representing one hard disk drive partition:

- **Root:** The root partition is the partition where the root directory of Sophos UTM is located. In addition, this partition stores update packages and backups.
- **Log:** The log partition is the partition where log files and reporting data is stored. If you run out of space on this partition, please adjust your settings under **Logging & Reporting > Log Settings > Local Logging**.
- **Storage:** The storage partition is the partition where proxy services store their data, for example images for the Web Filter, messages for the SMTP proxy, quarantined mails and the like. In addition, the database, temporary data, and configuration files are located there.

18.2.2 Weekly

The **Hardware > Weekly** tab provides overview statistics about selected hardware components for the last seven days. The histograms are described in the [Daily](#) section.

18.2.3 Monthly

The **Hardware > Monthly** tab provides overview statistics about selected hardware components for the last four weeks. The histograms are described in the [Daily](#) section.

18.2.4 Yearly

The **Hardware > Yearly** tab provides overview statistics about selected hardware components for the last twelve months. The histograms are described in the [Daily](#) section.

18.3 Network Usage

The tabs of the **Logging & Reporting > Network Usage** menu provide overview statistics about the traffic passing each interface of Sophos UTM for several time periods. Each chart presents its data using the following units of measurement:

- u (Micro, 10^{-6})
- m (Milli, 10^{-3})
- k (Kilo, 10^3)
- M (Mega, 10^6)
- G (Giga, 10^9)

Note that the scaling can range from 10^{-18} to 10^8 .

18.3.1 Daily

The **Network Usage > Daily** tab provides overview statistics about the traffic passing each configured interface of the last 24 hours.

Each histogram shows two graphs:

- **Inbound:** The average incoming traffic for that interface, in bits per second.
- **Outbound:** The average outgoing traffic for that interface, in bits per second.

The **Concurrent Connections** chart shows you the total of concurrent connections.

18.3.2 Weekly

The **Network Usage > Weekly** tab provides overview statistics about the traffic passing each configured interface of the last seven days. The histograms are described in the [Daily](#) section.

18.3.3 Monthly

The **Network Usage > Monthly** tab provides overview statistics about the traffic passing each configured interface of the last four weeks. The histograms are described in the [Daily](#) section.

18.3.4 Yearly

The **Network Usage > Yearly** tab provides overview statistics about the traffic passing each configured interface of the last twelve months. The histograms are described in the [Daily](#) section.

18.3.5 Bandwidth Usage

The **Network Usage > Bandwidth Usage** tab presents comprehensive data about the network traffic which was transferred to/from and through the device.

From the first drop-down list, select the type of data to display, e.g., **Top Clients** or **Top Services By Client**. Select the desired entry, and, if an additional box is displayed, specify the respective filter argument. Additionally, using the drop-down list below, you can filter the entries by time. Always click **Update** to apply the filters.

On the **By Client** and **By Server** views you can manually provide an IP/Network, as well as network ranges (e.g., `192.168.1.0/24` or `10/8`). On the **By Services** views you can enter protocol and service, separated by comma (e.g., `TCP,SMTP,UDP,6000`). If you do not supply the protocol, TCP will be assumed (e.g. `HTTP` is also valid).

On the **Top Clients** and **Top Servers** views, if an IP or a hostname is clicked in the result table, it will automatically be used as a filter for the **Top Services By Client** or **Top Services By Server** view. On the **Top Services**, **Top Applications**, and **Top Application Categories** views, if you click a service, an application, or an application category in the result table, it will automatically be used as a filter for the **Top Clients by Service**, **Top Clients by Application**, or **Top Clients by Category** view.

Top Applications/Top Application Categories: If Application Control is turned off, network traffic will be displayed as "unclassified". If Application Control is active, network traffic will be displayed by type, e.g. "WebAdmin", "NTP", "facebook", etc. For more information on Application Control see chapter **Web Protection > Application Control**.

Please note that the labels **IN** and **OUT** for traffic may vary depending on the point of view. When running in proxy mode, the client connects to port 8080 on Sophos UTM (even in transparent mode), so data sent by the client (the request) is seen as **incoming** traffic and the data sent to the client (the response) is seen as **outgoing** traffic on the internal interface.

By default, 20 entries per page are displayed. If there are more entries, you can jump forward and backward using the Forward and Backward icons, respectively. In the **Number of rows** drop-down list, you can increase the number of entries displayed per page.

You can sort all data by clicking the table column headers. For example, if you want to sort all hosts by incoming traffic, click on **IN** in the table heading. Thus, hosts causing the most incoming traffic will be listed first. Note that the data for traffic is given in kibibytes (KiB) and mebibytes (MiB), both of which are base-2 units of computer storage (e.g., 1 kibibyte = 2^{10} bytes = 1 024 bytes).

You can download the data in PDF or Excel format by clicking one of the corresponding icons in the top right corner of the tab. The report is generated from the current view you have selected. Additionally, by clicking the Pie Chart icon—if present—you can get a pie chart displayed above the table.

18.4 Network Protection

The tabs of the **Logging & Reporting > Network Protection** menu provide overview statistics about relevant network protection events detected by Sophos UTM.

18.4.1 Daily

The **Network Protection > Daily** tab provides overview statistics about the following events of the last 24 hours:

- Firewall Violations
- Intrusion Prevention Statistics

Firewall Violations: Every data packet that is dropped or rejected is counted as a firewall violation. The number of firewall violations is calculated over a time span of five minutes.

Intrusion Prevention Statistics: All charts show two graphs:

- **Alert Events:** The number of data packets that triggered an intrusion alert.
- **Drop Events:** The number of data packets that were dropped by the intrusion prevention system.

18.4.2 Weekly

The **Network Protection > Weekly** tab provides overview statistics about firewall violations and intrusion prevention events of the last seven days. The histograms are described in the [Daily](#) section.

18.4.3 Monthly

The **Network Protection > Monthly** tab provides overview statistics about firewall violations and intrusion prevention events of the last four weeks. The histograms are described in the [Daily](#) section.

18.4.4 Yearly

The **Network Protection > Yearly** tab provides overview statistics about firewall violations and intrusion prevention events of the last twelve months. The histograms are described in the [Daily](#) section.

18.4.5 Firewall

The **Network Protection > Firewall** tab presents comprehensive data about the firewall activity, classified according to source IP, source hosts, number of received packets and number of services.

Note - Packets with a TTL less than or equal to one are dropped without being logged.

From the first drop-down list, select the type of data to display, e.g., **Top Source Hosts** or **Top Services By Destination**. Select the desired entry, and, if an additional box is displayed, specify the respective filter argument. Additionally, using the drop-down list below, you can filter the entries by time. Always click **Update** to apply the filters.

On the **By Source** and **By Destination** views you can manually provide an IP/Network, as well as network ranges (e.g., 192.168.1.0/24 or 10/8). On the **By Service** views you can enter protocol and service, separated by comma (e.g., TCP,SMTP or UDP,6000).

On the **Top Source Hosts** and **Top Destination Hosts** views, if you click an IP or a host-name in the result table, it will automatically be used as a filter for the **Top Services By Source** or **Top Services By Destination** view. On the **Top Services** view, if you click a service in the result table, it will automatically be used as a filter for the **Top Source Host By Services** view.

By default, 20 entries per page are displayed. If there are more entries, you can jump forward and backward using the Forward and Backward icons, respectively. In the **Number of rows** drop-down list, you can increase the number of entries displayed per page.

You can sort all data by clicking the table column headers.

You can download the data in PDF or Excel format by clicking one of the corresponding icons in the top right corner of the tab. The report is generated from the current view you have selected. Additionally, by clicking the Pie Chart icon—if present—you can get a pie chart displayed above the table.

18.4.6 Advanced Threat Protection

The **Advanced Protection > Advanced Threat Protection** tab presents comprehensive data about advanced threats in your network.

From the first drop-down list, select the type of data to display, e.g., **Recent Infections** or **Recent Infections by Host**. Select the desired entry, and, if an additional box is displayed, specify the respective filter argument. Additionally, using the drop-down list below, you can filter the entries by time. Always click **Update** to apply the filters.

On the **Recent Infected by Malware** and **Recent Infections by Malware** views you can manually filter a specific threat. On the **Recent Infections by Host** views you can manually filter a specific host.

By default, 20 entries per page are displayed. If there are more entries, you can jump forward and backward using the Forward and Backward icons, respectively. In the **Number of rows** drop-down list, you can increase the number of entries displayed per page.

You can sort all data by clicking the table column headers.

You can download the data in PDF or Excel format by clicking one of the corresponding icons in the top right corner of the tab. The report is generated from the current view you have selected. Additionally, by clicking the Pie Chart icon—if present—you can get a pie chart displayed above the table.

18.4.7 IPS

The **Network Protection > IPS** tab presents comprehensive data about intrusion prevention activities on your network.

From the first drop-down list, select the type of data to display, e.g., **Top Source Hosts** or **Top Destinations By Source**. Select the desired entry, and, if an additional box is displayed, specify the respective filter argument. Additionally, using the drop-down list below, you can filter the entries by time. Always click **Update** to apply the filters.

On the **By Source** and **By Destination** views you can manually provide an IP/Network, as well as network ranges (e.g., 192.168.1.0/24 or 10/8). On the **Top Source Hosts** or **Top Destinations Hosts** views, if you click an IP in the result table, it will automatically be used as a filter for the **Top Destinations by Source** or **Top Sources by Destination** view.

By default, 20 entries per page are displayed. If there are more entries, you can jump forward and backward using the Forward and Backward icons, respectively. In the **Number of rows** drop-down list, you can increase the number of entries displayed per page.

You can sort all data by clicking the table column headers.

You can download the data in PDF or Excel format by clicking one of the corresponding icons in the top right corner of the tab. The report is generated from the current view you have selected. Additionally, by clicking the Pie Chart icon—if present—you can get a pie chart displayed above the table.

18.5 Web Protection

The tabs of the **Logging & Reporting > Web Protection** menu provide overview statistics about the most active web users and most frequently visited websites.

18.5.1 Web Usage Report

The **Logging & Reporting > Web Protection > Web Usage Report** page is useful if you want to take a deeper look into your network traffic and your users' web usage.

Web Surfing Data Statistics

The collection of web surfing data is session-based. Sophos UTM distinguishes between sessions per user ('How long has this user been surfing?') and sessions per user and domain ('How long has this user been surfing on this domain?'), where the domain is the top-level domain plus one significant level. To achieve good approximations, all data is gathered as follows: each web request is logged by taking the traffic volume and the duration between requests into account. If for a period of five minutes of inactivity no requests are recorded for a session, the session is considered closed. To take into account that users might still view a webpage within five minutes of inactivity, one minute is always added to the **Time Spent** values. Note further that reporting data is updated every 15 minutes.

Thus, if a user for example switches between two domains for 10 minutes, this will result in a total of 10 minutes for this user but 20 minutes for the domains surfed by this user. However, if the user uses different tabs or browsers to surf on the same domain, this will not influence the result.

When clients try to request invalid URLs, the Web Filter will log the request but will not be able to serve it. Those links will be counted as errors. They are not errors of the reporting or the Web Filter; in most cases, those errors occur because invalid or malformed links are placed in web content by the page creator.

Page Structure

Header Bar

First there is the header bar which consists of the following elements:

- **Home:** This icon takes you back to the beginning, clear of any clicks or filters.
- **Forward/Backward:** Use these icons to move back and forth along the history of your changes and settings. It works like in every web browser.

- **Available Reports:** This drop-down list contains all available report types including, if existent, your saved reports. It is set to **Sites** by default. The result table of the **Web Usage Report** page is directly dependent on this reporting type setting.

Note - When using filters and clicking through reports notice how the **Available Reports** setting changes automatically. It always reflects the current reporting basis.

Standard: There are several report types available, see below for a detailed description.

Saved Web Reports: Here you can select saved web reports you created in the past.

- **Delete:** Click this icon to delete a saved web report. Standard reports cannot be deleted.
- **Save:** Click this icon to save a current view to be able to access this view easily in the future. It will be stored in the **Available Reports** drop-down list.

Filter Bar

Next there is the filter bar which consists of the following elements:

- **Plus:** Click this icon to create additional filters, see below for a detailed description.
- **Amount:** Use the drop-down list to reduce the amount of results in the table. You can limit the results to the top 10, top 50, or top 100 results.
- **Time:** Use the drop-down list to limit or expand the results in the table to certain time frames. The **Custom** timeframe allows you to specify your own timeframe.
- **Departments:** Use the drop-down list to limit the results in the table to defined departments. Departments can be created on the **Departments** page.

You can download the data in PDF or Excel format by clicking one of the corresponding icons on the right of the filter bar. The report is generated from the current view you have selected. Additionally, by clicking the Pie Chart icon you can get a pie chart displayed above the table. If you click the Send icon, a dialog window opens where you can enter one or more email recipients who should receive this report as well as a subject and a message before sending the data. You can also receive saved reports on a regular basis, see section **Scheduled Reports** for more information.

Results Table

What is displayed depends on the selected report type and defined filters.

Note - When anonymization is enabled, users are not displayed by their name or IP address but they appear enumerated instead.

Depending on the report type, the table provides different information:

#: Position with regard to traffic caused.

Traffic: Size of traffic caused.

%: Percentage on overall traffic.

Duration: Users report type: time spent by users. Sites report type: total time (sum over all users) spent on the website(s).

Pages: Number of pages (that is, all requests answered with code 200 and content-type text/html) requested.

Requests: Number of web requests for a category, site, domain, or URL.

User: Name of the users who bypassed blocking. If anonymization is enabled, **user_#** is displayed.

Quotatime Used: The amount of quota time used.

Site: Site for which blocking was bypassed.

Categories: Shows all categories a URL belongs to. With more than one category, clicking the category opens a small dialog field to select one of the categories from before a filter is created based on that category.

Action: Displays whether the website has been delivered to the client (**passed**), whether it has been **blocked** by an application control rule, or whether users gained access to a blocked page using the bypass blocking feature (**overridden**).

Reason: Displays why a website request has been blocked or overridden. Example: A user tries to download an `msi` file and there is an application control rule which prohibits file transfers, then the cell displays `msi` for reason. In case of an overridden page, the reason entered by the user is displayed.

Info: If available, this cell displays additional information to why a website request has been blocked, e.g. when a file download was blocked due to its extension then the cell says **extension**.

Defining Filters

Filters are used to drill down the information displayed in the result table. They can be defined in two different ways: either by clicking the Plus icon in the Filter Bar or by clicking into the table.

Via Plus icon: After clicking the green Plus icon in the Filter Bar a small filter box with two fields is displayed. The first field, a drop-down list, lets you choose a report type, for example **Category**. The second field lets you choose or enter a value for the selected report type, e.g. **Adult Topics** when **Category** is selected. Click **Save** to save the filter and at the same time apply it to the result table.

Via table: Clicking into the table opens a dialog window **Reporting Direction** if there is more than one report type available for the item you clicked. You need to select one of the presented options for filtering. After that the **Reporting Direction** window closes, the relevant filter is created and displayed in the Filter Bar. The results table now shows the newly filtered results.

Example: The default report of the **Web Usage Report** is **Sites**. In the results table you click on any row (e.g. amazon.com). The **Reporting Direction** window opens and gives you three options: either you want to see information on **Domains** for the site, on **Users** who visited the site, or on **Categories** the site belongs to. You see that several users visited amazon.-com and you want to know more about this, so you click the **Users** box. The window closes. In the Header Bar you see that the report type changed to **Users** and in the Filter Bar you see that the result table for **Users** is filtered by the site you selected (amazon.com). Therefore the table shows all users who visited that site and additionally information on their sessions.

Note - Sometimes it makes a difference where you click into a table row as some table cells provide their own filter (see the items with an asterisk (*) in the section **Results Table** above).

18.5.2 Search Engine Report

The **Logging & Reporting > Web Protection > Search Engine Report** page provides information on search engines used by your users and searches they made. At a first glance, this page looks very complicated, but the best way to start is to use it and learn from the results.

Page Structure

Header Bar

First there is the header bar which consists of the following elements:

- **Home:** This icon takes you back to the beginning, clear of any clicks or filters.
- **Forward/Backward:** Use these icons to move back and forth along the history of your changes and settings. It works like in every web browser.
- **Available Reports:** This drop-down list contains all available report types including, if existent, your saved reports. It is set to **Searches** by default. The result table of the **Search Engine Report** page is directly dependent on this reporting type setting.

Note - When using filters and clicking through reports notice how the **Available Reports** setting changes automatically. It always reflects the current reporting basis.

Standard: There are three report types available, see below for a detailed description.

Saved Search Engine Reports: Here you can select saved search engine reports you created in the past.

- **Delete:** Click this icon to delete a saved search engine report. Standard reports cannot be deleted.
- **Save:** Click this icon to save a current view to be able to access this view easily in the future. It will be stored in the **Available Reports** drop-down list.

Filter Bar

Next there is the filter bar which consists of the following elements:

- **Plus:** Click this icon to create additional filters, see below for a detailed description.
- **Amount:** Use the drop-down list to reduce the amount of results in the table. You can limit the results to the top 10, top 50, or top 100 results.
- **Time:** Use the drop-down list to limit or expand the results in the table to certain time frames. The **Custom** timeframe allows you to specify your own timeframe.
- **Departments:** Use the drop-down list to limit the results in the table to defined departments. Departments can be created on the **Departments** page.

You can download the data in PDF or Excel format by clicking one of the corresponding icons on the right of the filter bar. The report is generated from the current view you have selected. Additionally, by clicking the Pie Chart icon you can get a pie chart displayed above the table. If you click the Send icon, a dialog window opens where you can enter one or more email recipients who should receive this report as well as a subject and a message before sending the data. You can also receive saved reports on a regular basis, see section **Scheduled Reports** for more information.

Results Table

Last, there is the results table. What you see here depends firstly on the selected report type (always reflected at **Available Reports** list) and secondly on possibly defined filters. The following report types are available:

- **Searches:** Displays the search terms your users used.
- **Search Engines:** Displays the search engines your users used.
- **Users Searches:** Displays the users who did searches.

Note - When anonymization is enabled, users are not displayed by their name or IP address but they appear enumerated instead.

For each report type, the table provides the following information:

#: Position with regard to frequency.

Requests: Number of requests for a search term, for a search engine, or by a user.

%: Percentage on overall searches.

Defining Filters

Filters are used to drill down the information displayed in the result table. They can be defined in two different ways: either by clicking the Plus icon in the Filter Bar or by clicking into the table.

Via Plus icon: After clicking the green Plus icon in the Filter Bar, a small filter box with two fields is displayed. The first field, a drop-down list, lets you choose a report type, for example **Search Engine**. The second field lets you choose or enter a value for the selected report type, e.g. **Google (google.com)** when **Search Engine** is selected. Click **Save** to save the filter and at the same time apply it to the result table. Search terms are case insensitive and support wildcards: '*' to match zero or more characters and '?' to match one character.

Via table: Clicking into the table opens a dialog window **Reporting Direction** if there is more than one report type available for the item you clicked. You need to select one of the presented options for filtering. After that the **Reporting Direction** window closes, the relevant filter is created and displayed in the Filter Bar. The results table now shows the newly filtered results.

Example: The default report of the **Search Engine Report** is **Searches**. In the results table you click on any row (e.g. weather). The **Reporting Direction** window opens and gives you two options: either you want to see information on the search engines used for the search (**Search Engines**) or on users who searched for this term (**Users Searches**). You see that several users searched for weather and you want to know more about this, so you click the **Users Searches** box. The window closes. In the Header Bar you see that the report type changed to **Users Searches** and in the Filter Bar you see that the result table for **Users Searches** is filtered by the search you selected (weather). Therefore the table shows all users who searched for weather and additionally information on those searches.

18.5.3 Departments

On the **Logging & Reporting > Web Protection > Departments** page you can group users or hosts and networks to virtual departments. Those departments can then be used to filter web usage reports or search engine reports.

To create a department, proceed as follows:

1. On the **Departments** tab, click **New Department**.

The **Add Department** dialog box opens.

2. Enter a name.

In the **Name** field, enter a descriptive name for the department.

3. Add users or hosts/networks.

A department definition can only contain users or hosts/networks, not both types at the same time.

- **Users:** Add one or more users to the box who should be part of this department.
- **Hosts/Networks:** Add one or more hosts or networks to the box which should be part of this department.

Comment (optional): Add a description or other information.

4. Click **Save**.

The new department appears on the **Departments** list.

To either edit, delete, or clone a department click the corresponding buttons.

For information on usage of departments please see sections **Web Usage Report** and **Search Engine Report**.

18.5.4 Scheduled Reports

On the **Logging & Reporting > Web Protection > Scheduled Reports** page you define which of your saved reports you would like to send by email on a regular basis. Before you can create a scheduled report, you need to have at least one saved report (for more information on saving reports, see chapter [Web Usage Report](#) or [Search Engine Report](#)).

To create a scheduled report, proceed as follows:

1. On the **Scheduled Reports** tab, click **Add Scheduled Report**.

The **Add Scheduled Report** dialog box opens.

2. Make the following settings:

Name: Enter a descriptive name for the scheduled report.

Interval: Select an interval from the drop-down list at which the report(s) should be sent.

Reports: All saved reports are listed here. Select the checkbox in front of each report that should be sent at the selected interval.

Recipients: Add recipients to the box who should receive the selected report(s). Note that you can add a list of recipients via the import button.

Comment (optional): Add a description or other information.

3. Click **Save**.

The new scheduled report appears on the **Scheduled Reports** list.

To either edit, delete, or clone a scheduled report, click the corresponding buttons. Use the toggle switch of a report to disable sending of reports without deleting the scheduled report itself.

18.5.5 Application Control

The **Logging & Reporting > Web Protection > Application Control** page contains comprehensive statistics about the most active sources, most frequently visited destinations, and the most popular applications given for various time ranges.

From the first drop-down list, select the type of data to display, e.g., **Top Sources** or **Top Applications**. Select the desired entry, and, if an additional box is displayed, specify the respective filter argument. Additionally, using the drop-down list below, you can filter the entries by time. Always click **Update** to apply the filters.

On the **By Source** and **By Destination** views you can manually provide an IP/Network, as well as network ranges (e.g., 192.168.1.0/24 or 10/8).

On the **Top Sources** view, if you click an IP or a hostname in the result table, it will automatically be used as a filter for the **Top Applications by Source** view. On the **Top Applications** and **Top Application Categories** views, if you click an application or application category in the result table, it will automatically be used as a filter for the **Top Sources by Application** or **Top Sources by Application Category** view.

By default, 20 entries per page are displayed. If there are more entries, you can jump forward and backward using the Forward and Backward icons, respectively. In the **Number of rows** drop-down list, you can increase the number of entries displayed per page.

You can sort all data by clicking the table column headers.

You can download the data in PDF or Excel format by clicking one of the corresponding icons in the top right corner of the tab. The report is generated from the current view you have selected. Additionally, by clicking the Pie Chart icon—if present—you can get a pie chart displayed above the table.

The most active sources do not appear immediately in the table, but only after a session timeout had occurred. This is the case if a certain client (username or IP address) has ceased to surf the web for five minutes. Sophos UTM determines this surfing session as "dead" and sends it to a database before it gets displayed on the most active sources list.

18.5.6 Deanonymization

The **Web Protection > Deanonymization** tab is only accessible if anonymization is activated (see **Logging & Reporting > Reporting Settings > Anonymizing**).

Here it is possible to abandon anonymization for specific users regarding web protection reports. Proceed as follows:

1. Enter both passwords.

Enter the first and the second password that have been provided to enable anonymization.

2. Add users to deanonymize.

To the **Deanonymize users** box add the usernames of those users you want to deanonymize.

3. Click **Apply**.

Your settings will be saved.

18.6 Email Protection

The tabs of the **Logging & Reporting > Email Protection** menu provide overview statistics about mail flow, mail usage and email protection.

18.6.1 Usage Graphs

The **Email Protection > Usage Graphs** tab provides overview statistics about the mail flow on Sophos UTM given for various time frames:

- Daily
- Weekly
- Monthly
- Yearly

18.6.2 Mail Usage

The **Email Protection > Mail Usage** tab contains comprehensive statistics about the most actively used email addresses and address domains given for various time ranges.

From the first drop-down list, select the type of data to display, e.g., **Top Senders** or **Top Domains**. Select the desired entry, and, if an additional box is displayed, specify the respective filter argument. Additionally, using the drop-down list below, you can filter the entries by time. Always click **Update** to apply the filters.

On the **by Domain** and **by Address** views you can manually provide a domain or an address, respectively. Note that for specifying domains, you can use the percent sign (%) as a wildcard. By placing a percent sign at the end of your keyword, you are telling Sophos UTM to look for exact matches or sub-sets. Note that the filter field is case-sensitive.

On the **Top Addresses** and **Top Domains** views, if you click an address or a domain in the result table, it will automatically be used as a filter for the **Top Addresses by Domain** or **Top Peers by Address** view.

By default, 20 entries per page are displayed. If there are more entries, you can jump forward and backward using the Forward and Backward icons, respectively. In the **Number of rows** drop-down list, you can increase the number of entries displayed per page.

You can sort all data by clicking the table column headers.

You can download the data in PDF or Excel format by clicking one of the corresponding icons in the top right corner of the tab. The report is generated from the current view you have selected. Additionally, by clicking the Pie Chart icon—if present—you can get a pie chart displayed above the table.

18.6.3 Blocked Mail

The **Email Protection > Blocked Mail** tab contains comprehensive statistics about all blocked email requests based on antivirus and antispyware.

From the first drop-down list, select the type of data to display, e.g., **Top Blocked Spam Reason** or **Top Blocked Malware**. Select the desired entry, and, if an additional box is dis-

played, specify the respective filter argument. Additionally, using the drop-down list below, you can filter the entries by time. Always click **Update** to apply the filters.

On the **Top Blocked Domain** view, if you click a domain in the result table, it will automatically be used as a filter for the **Top Blocked Addresses by Domain** view. On the **by Domain** view you can manually provide a domain. Note that you can use the percent sign (%) as a wildcard. By placing a percent sign at the end of your keyword, you are telling Sophos UTM to look for exact matches or sub-sets. Note that the filter field is case-sensitive.

By default, 20 entries per page are displayed. If there are more entries, you can jump forward and backward using the Forward and Backward icons, respectively. In the **Number of rows** drop-down list, you can increase the number of entries displayed per page.

You can sort all data by clicking the table column headers.

You can download the data in PDF or Excel format by clicking one of the corresponding icons in the top right corner of the tab. The report is generated from the current view you have selected. Additionally, by clicking the Pie Chart icon—if present—you can get a pie chart displayed above the table.

18.6.4 Deanonymization

The **Email Protection > Deanonymization** tab is only accessible if anonymization is activated (see **Logging & Reporting > Reporting Settings > [Anonymizing](#)**).

Here it is possible to abandon anonymization for specific email addresses and/or domains regarding email protection reports. Proceed as follows:

1. Enter both passwords.

Enter the first and the second password that have been provided to enable anonymization.

2. Make the following settings:

Deanonymize addresses: You can add email addresses you want to deanonymize.

Deanonymize domains: You can add domains you want to deanonymize.

3. Click **Apply**.

Your settings will be saved.

Provided email addresses and domains become readable in reports.

18.7 Wireless Protection

The tabs of the **Logging & Reporting > Wireless Protection** menu provide overview statistics about relevant wireless protection events detected by Sophos UTM.

18.7.1 Daily

The **Wireless Protection > Daily** tab provides overview statistics of the last 24 hours about wireless networks and access points.

SSID Based Reporting

There is a chart for each wireless network. Each chart shows two graphs:

- **Connected clients:** The number of clients connected to the wireless network.
- **Failed connection attempts:** The number of failed connection attempts at the wireless network.

AP Based Reporting

For each access point the table shows the maximum and average connected users, the uptime (the accumulated time span the access point was up during the last 24 hours) as well as the number of reconnects.

18.7.2 Weekly

The **Wireless Protection > Weekly** tab provides overview statistics about wireless networks and access points of the last seven days. The histograms are described in the [Daily](#) section.

18.7.3 Monthly

The **Wireless Protection > Monthly** tab provides overview statistics about wireless networks and access points of the last four weeks. The histograms are described in the [Daily](#) section.

18.7.4 Yearly

The **Wireless Protection > Yearly** tab provides overview statistics about wireless networks and access points of the last twelve months. The histograms are described in the [Daily](#) section.

18.8 Remote Access

The tabs of the **Logging & Reporting > Remote Access** menu provide overview statistics about remote access activity and information on sessions.

18.8.1 Activity

The **Remote Access > Activity** tab provides overview statistics about the remote access activity on Sophos UTM for IPsec, SSL VPN, PPTP, and L2TP given for various timeframes:

- Daily
- Weekly
- Monthly
- Yearly

Select Timeframe: Use the drop-down list to select a reporting timeframe. The page will reload automatically.

18.8.2 Session

The **Remote Access > Session** tab contains comprehensive statistics about completed sessions, failed logins, and current users given for various time ranges.

Note - The columns **Up** and **Down** show accounting data of the remote access connections. Accounting by default is disabled because it can increase the system load. You can enable it on the **Reporting Settings > Settings** tab in the **Remote Access Accounting** section.

From the first drop-down list, you can select the type of session you want to display: **Current Users**, **Completed Sessions**, or **Failed Logins**. Click the **Update** button to apply the filter.

Using the second drop-down list, you can filter the results. Depending on the selected session type, different filters are available, e.g., **By Service** or **By Source IP Address**. Some filters require to select or enter a filter argument.

Using the third drop-down list, you can filter the results by time. Always click **Update** to apply the filters.

By default, 20 entries per page are displayed. If there are more entries, you can jump forward and backward using the Forward and Backward icons, respectively. In the **Number of rows** drop-down list, you can increase the number of entries displayed per page.

You can sort all data by clicking the table column headers.

You can download the data in PDF or Excel format by clicking one of the corresponding icons in the top right corner of the tab. The report is generated from the current view you have selected. Additionally, by clicking the Pie Chart icon—if present—you can get a pie chart displayed above the table.

18.9 Webserver Protection

The tabs of the **Logging & Reporting > Webserver Protection** menu provide overview statistics about webserver requests, warnings, and alerts.

18.9.1 Usage Graphs

The **Webserver Protection > Usage Graphs** tab provides overview statistics about the webserver requests, warnings, and alerts on Sophos UTM given for various time frames:

- Daily
- Weekly
- Monthly
- Yearly

18.9.2 Details

The **Webserver Protection > Details** tab contains comprehensive statistics about the most active clients, virtual hosts, backends, response codes, and various attacks given for various time ranges.

From the first drop-down list, select the type of data to display, e.g., **Top Clients** or **Top Attackers Per Virtual Host**. Select the desired entry, and, if an additional box is displayed, specify the respective filter argument. Additionally, using the drop-down list below, you can filter the entries by time. Always click **Update** to apply the filters.

On the **By Client** and **By Attacker** views you can manually provide an IP/Network, as well as network ranges (e.g., 192.168.1.0/24 or 10/8). On the **by Virtual Host** views you can manually provide a domain. Note that you can use the percent sign (%) as a wildcard. By placing a percent sign at the end of your keyword, you are telling Sophos UTM to look for exact matches or sub-sets. Note that the filter field is case-sensitive.

On the **Top Clients** or **Top Attackers** views, if you click an IP in the result table, it will automatically be used as a filter for the **Top Response Codes by Client** or **Top Rules by Attacker** view.

By default, 20 entries per page are displayed. If there are more entries, you can jump forward and backward using the Forward and Backward icons, respectively. In the **Number of rows** drop-down list, you can increase the number of entries displayed per page.

You can sort all data by clicking the table column headers.

You can download the data in PDF or Excel format by clicking one of the corresponding icons in the top right corner of the tab. The report is generated from the current view you have selected. Additionally, by clicking the Pie Chart icon—if present—you can get a pie chart displayed above the table.

18.10 Executive Report

In the menu **Logging & Reporting > Executive Report** you can create a collection of the most important reporting data presented in graphical format to show network utilization for a number of services.

Note - The graphs in the executive report might vary compared to the reporting data stated in the executive report. Variations might also occur in regard to the inline reports.

18.10.1 View Report

On the **Logging & Reporting > Executive Report > View Report** tab you can create a complete executive report based on the individual reports in the tabs and pages of the **Reporting** menu. Click the button **Generate Report Now** to open a window showing the executive report.

18.10.2 Archived Executive Reports

The **Executive Report > Archived Executive Reports** tab provides an overview of all archived executive reports. Only those executive reports will be archived for which archiving has been selected on the **Configuration** tab.

18.10.3 Configuration

On the **Executive Report > Configuration** tab you can make the settings for executive reports.

Daily Executive Report

Daily executive report: If enabled, a daily executive report is created.

Archive PDF reports: If enabled, the daily executive report will be archived in PDF format. Archived executive reports can be accessed on the **Archived Executive Reports** tab.

Send reports as PDF instead of HTML: If enabled, the executive report sent by email is an attached PDF file. If unselected, it will be sent in HTML format.

Email addresses: Enter the email addresses of the recipients who should receive the executive report.

Weekly Executive Report

Most of the settings are described in the **Daily Executive Report** section.

You can additionally choose the weekday when the executive report should start to collect its data.

Monthly Executive Report

The settings are described in the **Daily Executive Report** section.

18.11 Log Settings

In the **Logging & Reporting > Log Settings** menu you can configure basic settings for local and remote logging.

18.11.1 Local Logging

On the **Logging & Reporting > Log Settings > Local Logging** tab you can make the settings for local logging. Local logging is enabled by default.

However, to activate local logging in case it was disabled, proceed as follows:

1. On the **Local Logging** tab enable local logging.

Click the toggle switch.

The toggle switch turns green and the areas on this tab become editable.

2. Select a time frame when log files are to be deleted.

From the drop-down list select what action is to be applied automatically on log files.

Never delete log files is selected by default.

3. Click **Apply**.

Your settings will be saved.

The toggle switch turns green.

Thresholds

Here you can define thresholds for local logging which are bound to certain actions that are to be carried out if a threshold is reached. The following actions are available:

- **Nothing:** No actions will be initiated.
- **Send notification:** A notification will be sent to the administrator stating that the threshold was reached.
- **Delete oldest log files:** Oldest log files will be deleted until the remaining amount is below the configured threshold or until the log file archive is empty. In addition, a notification of that event will be sent to the administrator.
- **Shutdown system:** The system will be shut down. A notification of that event will be sent to the administrator. In case of a system shutdown, the administrator has to change the configuration of the local logging, configure log file deletion or move away/delete log files manually. If the reason for the system shutdown persists, the system will shut down itself again the next time the log cleaning process runs, which happens daily at 12:00 AM (i.e., at midnight).

Click **Apply** to save your settings.

18.11.2 Remote Syslog Server

On the **Logging & Reporting > Log Settings > Remote Syslog Server** tab you can make the settings for remote logging. This function allows you to forward log messages from Sophos UTM to other hosts. This is especially useful for networks using a host to collect logging information from several Sophos UTM units. The selected host must run a logging daemon that is compatible to the syslog protocol.

To configure a remote syslog server, proceed as follows:

1. On the **Remote Syslog Server** tab enable remote syslog.

Click the toggle switch.

The toggle switch turns amber and the **Remote Syslog Settings** area becomes editable.

2. Click the Plus icon in the **Syslog Servers** box to create a server.

The **Add Syslog Server** dialog box opens.

3. Make the following settings:

Name: Enter a descriptive name for the remote syslog server.

Server: Add or select the host that should receive log data from Sophos UTM. How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.

Caution - Do not use one of the interfaces of Sophos UTM as a remote syslog host, since this will result in a logging loop.

Port: Add or select the service definition which is to be used for the connection. How to add a definition is explained on the **Definitions & Users > Network Definitions > Network Definitions** page.

4. Click **Apply**.

Your settings will be saved.

The toggle switch turns green.

Remote Syslog Buffer

In this area you can change the buffer size of the remote syslog. The buffer size is the number of log lines kept in the buffer. Default is 1000. Click **Apply** to save your settings.

Remote Syslog Log Selection

This area is only editable when remote syslog is enabled. Select the checkboxes of the logs that should be delivered to the syslog server. You can select all logs at once by selecting the option **Select All**. Click **Apply** to save your settings.

18.11.3 Remote Log File Archives

On the **Logging & Reporting > Log Settings > Remote Log File Archives** tab you can make the settings for remote archiving of log files. If remote log file archiving is enabled, the log files of the past day are packed and compressed into one file, which is transferred to a remote log file storage. Using the drop-down list you can select your preferred transfer method.

To configure a remote log file archive, proceed as follows:

1. Enable the **Remote Log File Archives** function.

Click the toggle switch.

The toggle switch turns amber and the **Remote Log File Archive** area becomes editable.

2. Select the log file archiving method.

From the drop-down list, select your preferred archiving method. Depending on your selection, the related configuration options for each archiving method will be displayed below. You can choose between the following archiving methods:

- **FTP server:** The **File Transfer Protocol (FTP)** method needs the following parameters to be set:
 - **Host:** Host definition of the FTP server.
 - **Service:** TCP port the server is listening on.
 - **Username:** Username for the FTP server account.
 - **Password:** Password for the FTP server account.
 - **Path:** Remote (relative) path where the log files are stored.
- **SMB (CIFS) share:** The SMB method needs the following parameters to be set:
 - **Host:** Host definition of the SMB server.
 - **Username:** Username for the SMB account.
 - **Password:** Password for the SMB account.

Security Note - The password will be saved plain-text in the configuration file. It is therefore advisable to create a user/password combination uniquely for this logging purpose.

- **Share:** SMB share name. Enter the path or the network share information where the log files are to be transferred to, e.g. `/logs/log_file_archive`.
- **Workgroup/Domain:** Enter the workgroup or domain the log file archive is part of.

- **Secure Copy (SSH server):** To use the SCP method, it is necessary that you add the public SSH DSA key to the authorized keys of your SCP server. On a Linux system, you can simply cut and paste the SSH DSA key and add it to the `~/.ssh/authorized_keys` file of the configured user account. During the installation, Sophos UTM creates a new SSHDSA key. For security reasons, this SSH DSA key is not included in backups. After a new installation or the installation of a backup, you must therefore store the new SSH DSA key on the remote server to be able to securely copy your log file archives to the SCP server.

Note - Find more information on generating and uploading SSH keys under Windows on the [Opengear Help Desk](#).

The SCP method requires the following settings:

- **Host:** Host definition for the SCP server.
- **Username:** Username for the SCP server account.
- **Path:** Remote (full) path where the log files should be stored.
- **Public DSA key:** On the remote storage host, add the provided public DSA key to the list of authorized keys.
- **Send by email:** To have the log file archive sent by email, enter a valid email address.

3. Click **Apply**.

Your settings will be saved.

The toggle switch turns green.

If the transfer fails, the archive will remain on Sophos UTM. During each run of the log cleaning process, Sophos UTM tries to deliver all remaining archives.

18.11.4 CloudWatch

On the **Logging & Reporting > Log Settings > CloudWatch** tab you can forward all log files to Amazon CloudWatch. CloudWatch is an AWS service that monitors all your resources and applications in Amazon Web Services (AWS) and any custom applications or services like Sophos UTM. Enabling this option forwards all Sophos UTM log files in real-time.

To activate logging to CloudWatch, you need to have an AWS profile created on **Definitions & Users > AWS Profiles > Profiles** and selected it under **AWS Profile Settings**.

18.11.4.1 AWS Profile Settings

You can select the AWS profile which communicates with the Amazon CloudWatch service.

Note - How to create an AWS profile is described on **Definitions & Users > AWS Profiles**.

18.12 Reporting Settings

In the **Logging & Reporting > Reporting Settings** menu you can make settings for the reporting functions such as enabling/disabling certain features of reporting, setting time frames and amounts for keeping data. Additionally, you can anonymize data to enhance privacy protection.

18.12.1 Settings

The **Settings** tab allows you to define reporting actions and the time period reporting data will be kept on the system before it is automatically deleted. The following report topics can be set:

- **Advanced Threat Protection:** If turned on, find the reporting data under [Advanced Protection](#) and **Logging & Reporting > Network Protection > Advanced Threat Protection**.
- **Application Control:** If turned on, find the reporting data under **Logging & Reporting > Web Protection > Application Control**.
- **Authentication:** If turned on, find the reporting data under [Management](#).
- **Email Protection**
- **Firewall:** If turned on, find the reporting data under **Logging & Reporting > Network Protection > Firewall**.
- **IPS:** If turned on, find the reporting data under **Logging & Reporting > Network Protection > IPS**.
- **Network Usage**
- **Remote Access**
- **Web Protection**
- **Webserver Protection**

Use the checkboxes on the left side to enable or disable reporting for a certain report topic. By default, all report topics are enabled.

Note - Disabling needless reports will lower the base load of your machine and can reduce performance bottlenecks. Try to keep time frames as short as possible since high amounts of stored data result in a higher base load and decreased responsiveness on the dynamical reporting pages.

Use the drop-down lists on the right to determine how long reporting data is kept.

Note - Reducing the time period for reporting data will reduce base load and increase responsiveness in the dynamic reporting pages but not increase space on the reporting database.

The settings on this tab do not affect the log file archives.

Web Protection Reporting Detail Level

In this section you can define the detail level of Web Protection reporting. Note that a higher detail level results in a perceptible increase in memory usage and system load, so unless necessary, it is recommended to keep the detail level low.

The following detail levels are available:

- **Domain only:** Reports display the top-level domain and second-level domain of a URL, e.g. `example.com`. Third-level domains will be also displayed if they are enforced, such as `example.co.uk`.
- **Full domain:** Reports display the full domains, e.g. `www.example.com` or `shop.example.com`
- **1 level of URL:** Reports display additionally the first (virtual) directory of a URL, e.g. `www.example.com/en/`.
- **2 levels of URL:** Reports display additionally the first two (virtual) directories of a URL, e.g. `www.example.com/en/products/`.
- **3 levels of URL:** Reports display additionally the first three (virtual) directories of a URL, e.g. `www.example.com/en/products/new/`.

Executive Report Settings

In this area you can define respectively the number of executive reports to keep:

- Daily reports: 60 at maximum
- Weekly reports: 52 at maximum
- Monthly reports: 12 at maximum

Click **Apply** to save your settings.

For more information on the executive report and its options, see [Logging & Reporting > Executive Report](#).

PDF Paper Settings

The default paper format for the PDF executive report is A4. Using the drop-down list you can alternatively select **Letter** or **Legal**. Click **Apply** to save your settings.

Remote Access Accounting

Here you can enable or disable accounting for remote access connections. If enabled, data about remote access connections is stored and displayed on the **Logging & Reporting > Remote Access > Session** tab in the **Down** and **Up** columns. If disabled, accounting is stopped. Note that if enabled, this feature may increase the system load.

CSV Delimiter Settings

Here you can define which delimiter is used when exporting reporting data to CSV format. Please note that with Windows operating systems the delimiter should match the regional settings of your system to make sure that the exported data will be displayed correctly in a spreadsheet program like e.g., Excel.

IPFIX Accounting

By means of IPFIX you can export IPv4 flow data of Sophos UTM to a provider for e.g. monitoring, reporting, accounting, or billing purposes.

Internet Protocol Flow Information Export (IPFIX) is a message-based protocol for exporting accounting information in a universal way. The accounting information is collected by an *exporter* and sent to a *collector*. A typical set of accounting information for an IPv4 flow consists of *source address*, *destination address*, *source port*, *destination port*, *bytes*, *packets*, and *network traffic classification data*.

If enabled, Sophos UTM serves as exporter: It exports IPFIX accounting data. The collector generally is located at a provider's site where the accounting data of one or more of your Sophos UTM units are aggregated and analyzed. During the system setup at your provider, you will be given the hostname and you have to define a unique Observation Domain ID (OID) per exporter, i.e., Sophos UTM. Enter this data into the corresponding fields.

Data is exported on UDP port 4739. A single network connection uses two IPFIX flows—one for the export direction, one for the reply.

Security Note - Be aware that with IPFIX the accounting data will be transmitted unencrypted. It is therefore recommended to send the data via private network only.

Click **Apply** to save your settings.

IPFIX Private Enterprise Numbers

The templates used by Sophos UTM are referencing with Private Enterprise Numbers (PEN) 9789 _Astaro AG and 21373 _netfilter/iptables project_. The following elements are available:

| Name | ID | Type | Enterprise | Meaning |
|------|----|----------|------------|-------------------------------|
| mark | 4 | uint32_t | Netfilter | The Netfilter conntrack mark. |

| Name | ID | Type | Enterprise | Meaning |
|-----------------|----|----------|------------|--|
| conntrack_id | 6 | uint32_t | Netfilter | The Netfilter conntrack ID. |
| afcProtocol | 1 | uint16_t | Astaro | The protocol detected by the Astaro Flow Classifier. This field is always present, even if the classifier is off. If the classifier wasn't able to detect a protocol it reports protocol ID 0, which just means 'unknown'. |
| afcProtocolName | 2 | string | Astaro | The protocol name detected by the Astaro Flow Classifier as a 32 character ASCII string, zero terminated. |
| flowDirection | 4 | uint8_7 | Astaro | The direction of the flow, which is one of In (1), Out (2) or Not In/Out (0). Each flow will be exported two times. One time for each direction. |

18.12.2 Exceptions

The **Reporting Settings > Exceptions** tab allows you to exclude certain domains and addresses from reporting, which affects the Executive Report as well as the affected **Logging & Reporting** pages and the affected statistics overview pages.

Note - The effect will not be immediately visible on today's statistics pages because the information on these pages is updated every 10 to 15 minutes only. Note also the import function with which you can define multiple items at once.

Reporting Exceptions: Web

In this section you can define domains to be excluded from all web protection reports. The domain names have to be entered exactly as they are listed in the **Domains** report on the **Logging & Reporting > Web Protection > Web Usage Report** tab. Click **Apply** to save your settings.

Reporting Exceptions: Mail

In these two sections you can define domains and mail addresses to be excluded from all email protection reports.

Use the **Domains** box to exclude all email addresses of a particular domain. Just enter the domain part of the email address e.g. `sophos.com`. Use the **Addresses** box to enter particular email addresses to exclude from the reports. Click **Apply** to save your settings.

Emails having the specified domain names or addresses as sender or recipient will be excluded from all email protection reports.

Reporting Exceptions: Network Protection

In this section you can define IPv4 and IPv6 addresses to be excluded from all network protection reports. Click **Apply** to save your settings.

Reporting Exceptions: Network Accounting

In this section you can define IPv4 and IPv6 addresses to be excluded from all network usage reports. Click **Apply** to save your settings.

18.12.3 Anonymizing

The **Reporting Settings > Anonymizing** tab allows to anonymize reporting data based on the four-eyes principle. That means that deanonymization can only take place when two different people agree on that procedure. Anonymization ensures that user data is kept secret when viewing reporting data, and therefore actions (such as web-surfing habits) cannot be traced back to a specific person.

To use anonymization, proceed as follows:

1. On the **Anonymizing** tab enable anonymization.

Click the toggle switch.

The toggle switch turns amber and the **Anonymizing Settings** area becomes editable.

2. Enter two security passwords.

The four-eyes principle is only allowed for when two different people enter a password unknown to each other.

3. Click **Apply**.

Your settings will be saved.

The toggle switch turns green.

To disable anonymization (globally) again, both passwords are necessary.

1. On the **Anonymizing** tab click the toggle switch.

The toggle switch turns amber and the **Anonymizing Settings** area becomes editable.

2. Enter both passwords.

Enter the first and the second password that have been provided to enable anonymization.

3. Click **Apply**.

Your settings will be saved.

The toggle switch turns green.

Anonymization is available for the options **Web Protection** and **Email Protection** and can be disabled for single users under **Logging & Reporting > [Web Protection](#)** and **Logging & Reporting > [Email Protection](#)**.

19 Support

This chapter describes the support tools available for Sophos UTM.

The pages of the **Support** menu contain many customer support related features ranging from various web links, through contact information, to the output of useful network tools that are used to determine important network properties without the need to access the command-line interface of Sophos UTM.

The following topics are included in this chapter:

- [Documentation](#)
- [Printable Configuration](#)
- [Contact Support](#)
- [Tools](#)
- [Advanced](#)

In addition, the main page of the **Support** menu contains web links to the following information resources:

- **Knowledge Base (KB)**: Official knowledgebase of Sophos NSG contains numerous information on configuring Sophos UTM.
- **Known Issues List (KIL)**: The list of known problems that cannot be fixed or for which a workaround is available.
- **Hardware Compatibility List (HCL)**: The list of hardware that is compatible to Sophos UTM Software.
- **Up2Date Information**: Sophos NSG Up2Date blog, which informs about product improvements and firmware updates.

19.1 Documentation

Online Help

This section gives a description of how to open and use the online help.

Manual Download

You can download the current Administration Guide in PDF format. Select the language of the guide and click **Start download**. Note that you need a special reader to open PDF documents such as Adobe's Reader or Xpdf.

Cross Reference - Administration Guides from former Sophos UTM versions and other documentation can be downloaded from the [Sophos Knowledge Base](#).

19.2 Printable Configuration

On the **Support > Printable Configuration** page you can create a detailed report of the current WebAdmin configuration.

Note - The printable configuration is opened in a new window. Depending on your browser it may be necessary to allow pop-up windows for WebAdmin.

The structure of the printable configuration matches the WebAdmin menu structure to facilitate finding the corresponding configuration options in WebAdmin.

The printable configuration browser page consists of an overview page, called **index**, and several subpages. Links to subpages are highlighted blue. Subpages give detailed information to the respective topic. You can always return from a subpage to the index by clicking the **Back to the index** link at the bottom of the subpage.

Security Note - Passwords saved as plain text in the storage, e.g. with Active Directory, will be shown unencrypted in the printable configuration.

There are two more viewing options for the printable configuration:

- WebAdmin format
- Confd format

You can find the links to these viewing options at the bottom of the index page.

19.3 Contact Support

Sophos offers a comprehensive range of customer support services for its security solutions. Based on the support/maintenance level, you have various levels of access and committed response time by the Sophos service department and/or Sophos NSG Certified Partners.

All support cases concerning Sophos UTM are processed via the [MyUTM Portal](#). You may open a support case via a web form by clicking **Open Support Ticket in New Window**. For more information, see the [MyUTM User Guide](#).

19.4 Support Access

The Support Access function on the **Support > Support Access** tab enables support staff to connect to the WebAdmin of Sophos UTM without knowing a certain login account. Support will have root access to Sophos UTM and connect via SSH. The HTTPS traffic of the session is proxied by the Support Access function. Identification of Sophos UTM happens through an access ID which you have to convey to the support staff. When Support Access is

enabled, Support can access Sophos UTM over HTTPS on TCP port 22 from the WAN. The connection can only be initiated by Sophos UTM.

To initiate the Support Access Management function, proceed as follows:

1. Enable Support Access Management.

Click the toggle switch.

The toggle switch turns green and the **Settings** area becomes editable.

2. Specify the access time.

Select from **Grant access for** the time the access should be valid.

Note - You can extend or shorten the access time at any time by applying the settings again.

3. Click **Apply**.

Sophos UTM establishes a secure control connection and negotiates a unique access ID.

4. Communicate the **Access ID** to the Sophos support.

The support uses this access ID to log in to Sophos UTM. The connection remains established until the specified time expires or you deactivate the function.

To deactivate the Support Access, click the toggle switch.

19.4.1 Access Status

If the Support Access is enabled, the **Access ID** and the time the access ends automatically are displayed.

19.4.2 Live Log

The **Live Log** logs the Support Access activities, showing all incoming commands. Click the button to open the live log in a new window.

19.5 Tools

The tabs of the **Support > Tools** menu display the output of useful network tools that can be used to determine important network properties without the need to access the command-line interface of Sophos UTM. The output of the following tools can be viewed:

- Ping
- Traceroute
- DNS Lookup

19.5.1 Ping Check

The program **ping** is a computer network tool used to test whether a particular host is reachable across an IP network. Ping works by sending ICMP **echo request** packets to the target host and listening for ICMP **echo response** replies. Using interval timing and response rate, ping estimates the round-trip time and packet loss rate between hosts.

To make a ping check, proceed as follows:

1. Select the ping host.

Select the host you want to ping. In the **Ping Host** box, you can select a host for which a host definition exists. Alternatively, you can also select **Custom hostname/IP address** and enter a custom hostname or IP address into the textbox below.

2. Select the IP version (only available if IPv6 is globally enabled).

From the **IP version** drop-down list, select **IPv4** or **IPv6**.

3. Select the interface.

Select via which interface you want to ping.

4. Click **Apply**.

The output of the ping check will be displayed in the **Ping Check Result** area.

19.5.2 Traceroute

The program **traceroute** is a computer network tool used to determine the route taken by packets across an IP network. It lists the IP addresses of the routers that were involved in transporting the packet. If the packet's route cannot be determined within a certain time frame, traceroute will report an asterisk (*) instead of the IP address. After a certain number of failures, the check will end. An interruption of the check can have many causes, but most likely it is caused by a firewall along the network path that blocks traceroute packets.

To trace a route, proceed as follows:

1. Specify the traceroute host.

Select the host you want to trace the route to. In the **Traceroute host** box, you can select a host for which a host definition exists. Alternatively, you can also select **Custom hostname/IP address** and enter a custom hostname or IP address into the textbox below.

2. Select the IP version (only available if IPv6 is globally enabled).

From the **IP version** drop-down list, select **IPv4** or **IPv6**.

3. Select the interface.

Select the interface which you want to use for tracerouting.

4. Print hop addresses numerically rather than symbolically and numerically (optional).

Selecting this option saves a nameserver address-to-name lookup for each gateway found on the path.

5. Click **Apply**.

The output of traceroute will be displayed in the **Traceroute Result** area.

19.5.3 DNS Lookup

The program **host** is a network tool for interrogating DNS name servers. It performs DNS lookups and displays the answers that are returned from the name server(s) that were queried.

To make a DNS lookup, proceed as follows:

1. Specify the hostname/IP address.

Enter the hostname or IP address of the host for which you want to determine DNS information.

2. Select **Enable verbose output** (optional).

Select this option to generate lengthy output showing more information.

3. Click **Apply**.

The output of dig will be displayed in the **DNS Lookup Result** area.

19.6 Advanced

The **Support > Advanced** menu displays even more information on your Sophos UTM and gives access to advanced features. It gives overview of running processes and local network connections and you can view the routing table and the interfaces table. Additionally, you can download a support package for debugging and recovery purposes and find background information about internally used configuration references which you may encounter in log files.

19.6.1 Process List

The program **ps** displays a header line followed by lines containing information about your processes that have controlling terminals. This information is sorted by controlling terminal, then by process ID.

19.6.2 LAN Connections

The program **netstat** (short for **Network Statistics**) is a network tool that displays a list of the active Internet connections a computer currently has, both incoming and outgoing.

19.6.3 Routes Table

The program **ip** is a network tool for controlling TCP/IP networking and traffic control. Invoked with the parameter `route show table all` it displays the contents of all routing tables of Sophos UTM.

19.6.4 Interfaces Table

The table shows all configured interfaces of Sophos UTM, both network interface cards and virtual interfaces. The program **ip** invoked with parameter `addr` displays interfaces and their properties.

19.6.5 Config Dump

For debugging or recovery purposes it is useful to gather as many information as possible about your installation of Sophos UTM. The support package that can be downloaded from the **Support > Advanced > Config Dump** tab provides exactly this. The `zip` file contains the following items:

- The entire dump of the configuration of Sophos UTM (`storage.abf`). Note that this is no genuine backup file—it does not contain any passwords, among other things—and can be used for debugging purposes only.
- Information on the hardware present in the system (`hwinfo`).
- Information on the software packages installed on the system (`swinfo`).

19.6.6 Resolve REF

For debugging purposes you can resolve configuration references internally used by the system. If you encounter a reference somewhere in the logs, you can paste the reference string here (e.g., `REF_DefaultSuperAdmin`). The tab will then display an excerpt of the configuration daemon's data structure.

20 Log Off

You can log out of Sophos UTM by clicking the **Log Off** menu entry. If you do not log out properly or if you close the web browser inadvertently, you might not be able to log in again for approximately 30 seconds.

Note - You will be logged out if you visit a different website during a session. In this case, you will have to log in again.

21 User Portal

This chapter provides information on how the User Portal works and which services it provides for end users.

The User Portal of Sophos UTM is a browser-based application providing among others personalized email and remote access services to authorized users. It can be accessed by browsing to the URL of Sophos UTM, for example, `https://192.168.2.100` (note the HTTPS protocol).

On the login page, users can select a language from the drop-down list located on the right side of the header bar.

Depending which services and features have been activated in WebAdmin by an administrator, users can have access to the following services:

- [Mail Quarantine](#)
- [Mail Log](#)
- [POP3 Accounts](#)
- [Sender Whitelist](#)
- [Sender Blacklist](#)
- [Hotspots](#)
- [Client Authentication](#)
- [OTP Tokens](#)
- [Remote Access](#)
- [HTML5 VPN Portal](#)
- [Change Password](#)
- [HTTPS Proxy](#)

If the one-time password feature is enabled, a login page with one or more QR codes is displayed after the login attempt under some conditions. The login page is displayed only when the **Auto-create OTP tokens for users** feature is enabled, and users logged in with their user-specific password only (not appending a one-time password), and an unused OTP token is available for the users. The page shows instructions on how to configure a mobile device to generate one-time passwords. After configuring the mobile device, the users can log in again, now using Sophos UTM password, directly followed by the one-time password. Example: If your Sophos UTM password is `1z58.xa` and the one-time password is `123456`, just enter the password `1z58.xa123456` to log in.

21.1 User Portal: Mail Quarantine

On this tab, end users can view and release messages held in quarantine.

Note - The **Mail Quarantine** tab is available if either POP3 or SMTP has been activated in WebAdmin and the users have been configured to use these services. If users should receive emails both via SMTP and POP3, the emails will be organized into two tabs **POP3 Quarantine** and **SMTP Quarantine**, both providing a similar functionality.

The **Mail Quarantine** tab shows an overview of all emails addressed to the users but blocked and quarantined by Sophos UTM. For POP3 quarantine emails to be listed, users have to enter their POP3 credentials on the **POP3 Accounts** tab.

Sort and Filter Quarantined Emails

By default, all emails are shown. If the list contains more than twenty emails, it is split into several chunks which can be browsed with Next (>) and Previous (<) buttons.

Users can influence which items are displayed:

Sort by: By default, the list is sorted by time of arrival. Messages can be sorted by date, subject line, sender address, and message size.

and show: The checkbox allows to display 20, 50, 100, 250, 500, 1000, or all messages per page. Note that showing all messages may take a lot of time.

Several elements on the page let users filter their emails:

- **# messages quarantined:** On top of the page, several checkboxes allow to show or hide emails by the reason why they were quarantined (malware, spam, expression match, file extension, MIME type, unscannable, others).
- **Addresses or Accounts:** Allows to filter the messages according to the recipient address (SMTP) or account (POP3).
- **Sender/Rcpt/Subject substring:** Here users can enter a sender, recipient (only with POP3), or subject to search for in the quarantined messages.
- **Received date:** To only show messages processed during a certain time frame, users can enter a date or select a date from the Calendar icon.

Manage Quarantined Emails

Users can apply actions on a message using the drop-down list in front of the message. An action can also be applied to several selected messages. Use the checkbox in front of each message or click a message to select it. Then select one of the actions available in the drop-down list below the table. The following actions are available:

- **View** (only available for an individual message): Opens a window with the contents of the email.
- **Download:** Selected messages will be downloaded in EML format.
- **Delete:** Selected messages will be deleted irrevocably.

- **Whitelist Sender** (only available for an individual message): Moves the email to your inbox and adds the sender to your whitelist (**Sender Whitelist** tab). Successive emails of this sender will not be quarantined. Note, that mails containing malicious content will always be quarantined, even if the sender is on the whitelist.
- **Release**: Selected messages will be released from quarantine.
- **Release and report as false positive**: Selected messages will be released from quarantine and reported as false positive to the spam scan engine.

Note - The allowed actions depend on the reason why the email was quarantined, and on the WebAdmin settings. Users can only release messages they are explicitly allowed to. Only an administrator can release *all* messages held in quarantine.

Select global cleanup action: Here you find several deletion options that will be applied on messages globally, that is, regardless whether they are selected and/or displayed or not.

21.2 User Portal: Mail Log

On this tab, end users can view a log of their email traffic sent via SMTP.

Note - The **Mail Log** tab is only for email address belonging to the domain monitored by the SMTP proxy of Sophos UTM, and only available for users whom an administrator gave access rights to this feature. If both SMTP and POP3 have been activated for certain users, the tab is called **SMTP Log** for them.

The **Mail Log** tab shows log entries of all email traffic of the users' email addresses. Log entries of undelivered emails contain the information about why they have not been delivered. Double-clicking a log entry opens a window with more log information.

By default, all emails are shown. If the list contains more than twenty emails, it is split into several chunks which can be browsed with Next (>) and Previous (<) buttons.

Users can influence which items are displayed:

Sort by: By default, the list is sorted by time of arrival. Messages can be sorted by date, subject line, sender address, and message size.

and show: The checkbox allows to display 20, 50, 100, 250, 500, 1000, or all messages per page. Note that showing all messages may take a lot of time.

Several elements on the page let users filter their emails:

- **# log events on file**: On top of the page, several checkboxes allow to show or hide emails according to their status.
- **Addresses**: Allows to filter the emails according to the sender address.
- **Sender/Subject substring**: Here users can enter a sender or subject to search for in the quarantined messages.

- **Received date:** To only show messages processed during a certain time frame, users can enter a date or select a date from the Calendar icon.

21.3 User Portal: POP3 Accounts

On this tab, end users can identify themselves to be able to view and release their POP3 quarantine emails and receive quarantine reports.

Note - The **POP3 Accounts** tab is only available if an administrator enabled POP3 and added a POP3 server.

On the page, users need to enter the credentials of the POP3 accounts they use. Only those spam emails will appear in the User Portal for which POP3 account credentials are given. Users for whom POP3 account credentials are stored will receive an individual quarantine report for each email address.

21.4 User Portal: Sender Whitelist

On this tab, end users can whitelist senders, so that messages from them are never regarded as spam. However, emails with viruses or unscannable emails will still be quarantined.

Note - The **Sender Whitelist** tab is only available if the users' email address belongs to the network or domain monitored by Sophos UTM, and an administrator assigned them access rights to the feature.

Whitelisted senders can be specified by clicking the Plus icon, entering the address and clicking the Tick icon to save it. Users can either enter valid email addresses (e.g., `jdoe@example.com`) or all email addresses of a specific domain using an asterisk as wildcard (e.g., `*@example.com`). Sender whitelist and sender blacklist can be used in combination: Users can for example blacklist an entire domain (e.g., `*@hotmail.com`) but whitelist specific email addresses belonging to this domain (e.g., `mycolleague@hotmail.com`). If the exact email address is listed on both, whitelist and blacklist, the address is blacklisted.

21.5 User Portal: Sender Blacklist

On this tab, end users can blacklist email senders, so the messages from them are always regarded as spam and therefore will be quarantined.

Note - The **Sender Blacklist** tab is only available if the users' email address belongs to the network or domain monitored by Sophos UTM, and an administrator assigned them access rights to the feature.

The blacklist is applied to both SMTP and POP3 email, if these are in use on the system. Blacklisted senders can be specified by clicking the Plus icon, entering the address and clicking the Tick icon to save it. Users can either enter valid email addresses (e.g., `jdoe@example.com`) or all email addresses of a specific domain using an asterisk as wildcard (e.g., `*@example.com`). Sender whitelist and sender blacklist can be used in combination: Users can for example blacklist an entire domain (e.g., `*@hotmail.com`) but whitelist specific email addresses belonging to this domain (e.g., `mycolleague@hotmail.com`). If the exact email address is listed on both, whitelist and blacklist, the address is blacklisted.

21.6 User Portal: Hotspots

The Hotspot feature allows cafes, hotels, companies, etc. to provide time- and traffic-restricted Internet access to guests.

Note - The **Hotspots** tab of the User Portal is only visible for users if you have created a hotspot of one of the types **Password** or **Voucher**, and added these users to the administrative users.

On this tab, users can distribute the hotspot access information to wireless network guests. What they can do on the tab depends on the type of the selected hotspot: they can either distribute a general password or generate and distribute vouchers.

Hotspot type: Password of the day

In the **Password** field, the current password is displayed. It changes automatically once a day. However, users can change the password manually. The former password will immediately become invalid and active sessions will be terminated.

To change the password, users need to proceed as follows:

1. In the User Portal, they need to select the **Hotspots** tab.
2. They need to select the hotspot for which they want to manage the access information.
From the **Hotspot** drop-down list, they need to select the hotspot for which they want to change the password.
3. They need to define a new password.
They need to enter the new password in the **Password** field or automatically create a new password by clicking the **Generate** button.
4. If users want to send the new password per email, they need to select the **Send Mail** checkbox.

The password will be sent to the email recipients you specified. If you did not specify any email addresses, the checkbox is not available.

5. They need to click **Save**.

The password will be changed immediately.

Hotspot type: Voucher

Users can create vouchers, each with a unique code. The vouchers can be printed and given to guests. A list of created vouchers gives an overview about their usage and helps to manage them.

To create vouchers, users need to proceed as follows:

1. In the User Portal, they need to select the **Hotspots** tab.
2. They need to make the following settings:

Hotspot: They need to select the hotspot for which they want to create a voucher.

Voucher Definition: You can define different types of vouchers. Which type to use for what purpose has to be defined within the company.

Amount: Users need to enter the amount of vouchers of this type to be created.

Comment: Optionally, they can enter a comment. The comment will be displayed in the users' vouchers list.

Print: If users directly want to print the vouchers, they need to select this option.

Page Size: They need to select the page size they want to print.

Vouchers Per Page: They select how many vouchers will be printed onto one page. Sophos UTM automatically adjusts the vouchers on the page.

Add QR Code: Users can request that in addition to the voucher text data, the printed voucher should also contain a QR code. A QR code is a square image containing encoded data. It can be scanned by a mobile device in order to access the hotspot login page, where the fields are pre-populated with the necessary data.

3. They need to click the **Create Vouchers** button.

The vouchers are generated. Each voucher will immediately be displayed as a new line in the voucher list below. If specified, they will be printed directly. Each voucher has a unique code.

Note - You can determine contents, size, and layout of the vouchers.

In the voucher list users can manage vouchers. They can sort and filter the list, they can enter or change the comment and they can print, delete, or export selected vouchers.

- To sort the list, users need to select the desired sorting criterion in the **Sort by** drop-down list. With the drop-down list to the right, they can determine the number of displayed vouchers per page.

- To filter the list, users need to use one of the fields **Status**, **Code**, or **Comment**. they need to select or enter, respectively, the desired attribute. The list will be filtered directly while typing. To reset the filter, they need to select the status entry **All** and delete all text from the **Code** and/or **Comment** text field.
- To enter or change a comment, users need to click the Notepad icon in the **Comment** column of the respective voucher. An edit field is displayed. Users can enter or edit text and press the Enter key or click the checkmark to save changes.
- To print or delete vouchers, users need to select the checkbox in front of the desired vouchers, then click the appropriate button on the bottom.

Note - Vouchers can automatically be deleted after a specified time, which you can configure.

- To export vouchers, users need to proceed as follows: They need to select the checkbox in front of the desired vouchers, then click the **Export CSV** button on the bottom. A window appears where they can decide to save or to directly open the CSV file. The selected vouchers will be saved in one CSV file. When opening the file users need to take care to select the correct character for column separation.

21.7 User Portal: Client Authentication

On this tab, end users can download the setup file of the Sophos Authentication Agent (SAA). The SAA can be used as authentication mode for the Web Filter.

Note - The **Client Authentication** tab is only available if client authentication is enabled by an administrator.

21.8 User Portal: OTP Tokens

On this tab, end users have access to the QR codes and data to install the OTP configuration on their mobile device.

Configure OTP Token With Google Authenticator

1. Install Google Authenticator on your mobile device.
2. Scan the QR code.
3. Open the app.
It shows you the one-time password that changes every 30 seconds.
4. Open the facility which you have to use the one-time password for.

An administrator configured the services for which you need to enter the one-time password, for example for connecting via remote access, for the web application firewall, or for the User Portal itself.

5. Enter your credentials.

Enter your username and your Sophos UTM password, directly followed by the current one-time password.

6. Click the **Login** button.

Now you have access to the facility.

Using Other Software

1. Install the software on your mobile device.
2. Open the app.
3. Configure the app using the data beside the QR code.

The app now produces the one-time passwords.

4. Open the facility which you have to use the one-time password for.

An administrator configured the services for which you need to enter the one-time password, for example for connecting via remote access, for the web application firewall or for the User Portal itself.

5. Enter your credentials.

Enter your username and your Sophos UTM password, directly followed by the current one-time password.

6. Click the **Login** button.

Now you have access to the facility.

21.9 User Portal: Remote Access

On this tab, end users can download remote access client software and configuration file automatically generated and provided for them according to the WebAdmin settings made by an administrator.

Note - The **Remote Access** tab is only available to users if at least one remote access mode has been enabled for them.

Only those remote access data is available that corresponds to the connection types you enabled for the users, e.g., if a user has been enabled to use SSL VPN remote access, they will find an **SSL VPN** section.

Each connection type is displayed in a separate section. Depending on the connection type, information and/or buttons to download the respective software are available. Where

appropriate, on top of the sections, users find an **Open installation instructions in new window** link which opens a detailed installation documentation.

21.10 User Portal: HTML5 VPN Portal

The HTML5 VPN Portal feature allows users from external sources to access internal resources via pre-configured connection types, using only a browser as a client.

Important Note - The **HTML5 VPN Portal** tab is only available for users for whom an administrator created VPN connections and added them to the allowed users. With Safari browser on Mac OSX or iOS, users have to import the CA certificate of Sophos UTM first before they can use clientless access. The CA certificate can be downloaded from Sophos UTM under **Remote Access > Certificate Management > Certificate Authority**.

Note - Users' browser has to be HTML5-compliant. The following browsers support the HTML5 VPN feature: Firefox 6.0 onwards, Internet Explorer 10 onwards, Chrome, Safari 5 onwards (on MAC only).

On the **HTML5 VPN Portal** tab the allowed connections are listed. The icons give a hint about the type of connection.

To use a connection, users need to proceed as follows:

1. Clicking the respective **Connect** button.

A new browser window opens. Contents and layout depend on the connection type, e.g., it contains a website if the user opened a HTTP or HTTPS connection, whereas it contains a command-line interface for SSH connections.

Note - When using an Android device connecting to SSH, the keyboard may not work. In this case, users have to replace the Samsung keyboard by the original Google keyboard. This can be downloaded for free from the Play Store.

2. Working in the new VPN window.

For some tasks, the VPN window provides a connection-type-specific menu bar which fades in when the cursor is moved to the window top:

- Using function keys or key combinations: If users want to use special commands like function keys or **CTRL-ALT-DEL**, they need to select the respective entry in the **Keyboard** menu.
- Copy & paste from the local host into the VPN window: On the local machine, users need to copy the respective text into the clipboard. In the connection window, they need to select the **Clipboard** menu. With **CTRL-V**, they paste the text into the text box. After that they need to click the **Send to Server** button: With SSH or Telnet connections, the text will then be directly pasted at the cursor position. With RDP or

VNC connections, the text will be sent to the clipboard of the server and can then be pasted as usual.

Note - Copy & paste does not work with Webapp connections.

- Copy & paste from the VPN window into another window: With SSH and Telnet connections, users can just copy and paste text like they would in local windows. With RDP or VNC connections, in the VPN window, users need to copy the respective text to their clipboard. Then they select the **Clipboard** menu. The copied text is displayed in the text box. Users need to mark the text and press `CTRL-C`. Now it is in the local clipboard and can be pasted as usual.
- Changing keyboard layout in a Remote Desktop connection: For Remote Desktop connections with a Windows host, users can change the keyboard language settings of the VPN window. Especially for the Windows login the selected language should match the Windows language settings to ensure that users type the password correctly. Users need to select the appropriate language from the **Keyboard > Keyboard Layout** menu. The selected keyboard layout is saved in a cookie.
- Go back to the Start page in a Webapp connection: To return to the default page in a Webapp connection, select the **Navigation > Home** menu.

3. Closing the connection after having finished their work.

- To finally terminate the connection, users need to select the **Stop Session** command from the **Connection** menu or close the browser window by clicking the X icon in the title bar. They can start a new session using the **Connect** button again.
- To disconnect the session, users need to select the **Suspend Session** command from the **Connection** menu. The status of the session will be saved for five minutes. When they connect again during this time interval, users can continue the previous session.

21.11 User Portal: Change Password

On this tab, end users can change their password for access to the User Portal and, if available, remote access over PPTP.

21.12 User Portal: HTTPS Proxy

On this tab, end users can import the HTTP/S Proxy CA certificate to get rid of error messages when visiting secure websites.

Note - The **HTTPS Proxy** tab of the User Portal is only available if an administrator globally provided an HTTP/S Proxy certificate.

After clicking **Import Proxy CA Certificate**, users will be prompted by their browser to trust the CA for various purposes.

Appendix - Allocated Ports

On each TCP port and on each UDP port, only one server can listen at a time. Some servers listen to TCP traffic only, some to UDP traffic only, some to both, as specified in the list below. There are very rare exceptions when two servers can share the same port. For example, OpenVPN can pass through HTTPS traffic to the end user portal.

Some servers always listen on the same, hard-coded port. Therefore these ports are listed as "fixed". No other program can ever use these ports.

Note - Some of these services can be disabled. If no server is listening on one of the fixed ports, the service normally using that port has probably been switched off.

Allocated TCP ports:

- 21 => ['Fixed:FTPreirect'],
- 25 => ['Fixed:SMTP'],
- 53 => ['Fixed:DNS'],
- 110 => ['Fixed:POP3redirect'],
- 113 => ['Fixed:ident'],
- 414 => ['Fixed:ap_radius'],
- 465 => ['Fixed:SMTPS'],
- 587 => ['Fixed:submission'],
- 1080 => ['Fixed:SOCKS'],
- 1234 => ['Fixed:cssd'],
- 1337 => ['Fixed:AD'],
- 2121 => ['Fixed:FTP'],
- 2712 => ['Fixed:awed'],
- 3000 => ['Fixed:restd'],
- 3001 => ['Fixed:screenmgr'],
- 3002 => ['Fixed:restd_local'],
- 3400 => ['Fixed:RED'],
- 4472 => ['Fixed:Confd'],
- 4501 => ['Fixed:hotspot'],
- 5432 => ['Fixed:PostgreSQL'],
- 5433 => ['Fixed:PostgreSQL_rsync'],
- 5900 - 5999 => ['Fixed:screenmgr_vnc'],

- 6060 => ['Fixed:STAS'],
- 8110 => ['Fixed:POP3'],
- 8111 => ['Fixed:POP3rpc'],
- 9009 => ['Fixed:HAproxy'],
- 9865 => ['Fixed:csync2'],
- 9980 => ['Fixed:aac'],
- 10443 => ['Fixed:HTTPSshare'],
- 15723 => ['Fixed:AUA'],
- 18080 => ['Fixed:HTTPproxy'],
- 18081 => ['Fixed:HTTPproxy'],
- 18090 => ['Fixed:Up2DateProgress'],
- 21378 => ['Fixed:Epp'],
- 22022 => ['Fixed:support_access'],

Allocated UDP ports

- 53 => ['Fixed:DNS'],
- 67 => ['Fixed:DHCP'],
- 123 => ['Fixed:NTP'],
- 161 => ['Fixed:SNMP'],
- 414 => ['Fixed:ap_radius'],
- 415 => ['Fixed:ap_syslog'],
- 695 => ['Fixed:HA'],
- 1701 => ['Fixed:L2TP'],
- 3400 => ['Fixed:RED'],
- 3401 => ['Fixed:REDW'],
- 3410 => ['Fixed:RED2'],
- 3780 => ['Fixed:conntrackd'],
- 4500 => ['Fixed:IPsec'],

Glossary

3

3DES

Triple Data Encryption Standard

A

AD

Active Directory

Address Resolution Protocol

Used to determine the Ethernet MAC address of a host when only its IP address is known.

ADSL

Asymmetric Digital Subscriber Line

AES

Advanced Encryption Standard

AH

Authentication Header

API

Application Programming Interface

ARP

Address Resolution Protocol

AS

Autonomous System

ASCII

American Standard Code for Information Interchange

Authentication Header

IPsec protocol that provides for anti-replay and verifies that the contents of the packet have not been modified in transit.

Auto Scaling

Web service to launch or terminate Amazon EC2 instances automatically based on policies, schedules and health checks.

Autonomous System

Collection of IP networks and routers under the control of one entity that presents a common routing policy to the Internet.

Availability Zones

Each Amazon data center location is called a region, each region contains multiple distinct locations called Availability Zones, or AZs.

AWE

Astaro Wireless Extension

AWE client

Client daemon which runs on access points and REDs with wireless support. It registers access points on the UTM.

AWS

Amazon Web Services

B

BATV

Bounce Address Tag Validation

BGP

Border Gateway Protocol

Bounce Address Tag Validation

Name of a method designed for determining whether the return address specified in an email message is valid. It is designed to reject bounce messages to forged return addresses.

Broadcast

The address used by a computer to send a message to all other computers on the network at the same time. For example, a network with IP address 192.168.2.0 and network mask 255.255.255.0 would have a broadcast address of 192.168.2.255.

C**CA**

Certificate Authority

CBC

Cipher Block Chaining

CCL

Content Control List

CDMA

Code Division Multiple Access

Certificate Authority

Entity or organization that issues digital certificates for use by other parties.

CHAP

Challenge-Handshake Authentication Protocol

Cipher Block Chaining

Refers in cryptography to a mode of operation where each block of plaintext is "XORed" with the previous ciphertext block before being encrypted. This way, each ciphertext block is dependent on all plaintext blocks up to that point.

CloudFormation

Free service for AWS customers which provides tools needed to create and manage the infrastructure a particular software application requires to run on AWS.

CloudFormation Template

Template which describes the Amazon Web Service infrastructure.

CloudWatch

A component of Amazon Web Services which provides monitoring of AWS resources and applications running on the Amazon infrastructure.

Cluster

Group of linked computers, working together closely so that in many respects they form a single computer.

CMS

Content Management System

CPU

Central Processing Unit

CRL

Certificate Revocation List

CSS

Cascading Style Sheets

D**DC**

Domain Controller

DCC

Direct Client Connection

DDoS

Distributed Denial of Service

DER

Distinguished Encoding Rules

Destination Network Address Translation

Special case of NAT where the destination addresses of data packets are rewritten.

Device tree

Located below the main menu. Grants access to all gateway units registered with the SUM.

DHCP

Dynamic Host Configuration Protocol

Digital Signature Algorithm

Standard propagated by the United States Federal Government (FIPS) for digital signatures.

Digital Subscriber Line

Family of technologies that provides digital data transmission over the wires of a local telephone network.

Distinguished Encoding Rules

Method for encoding a data object, such as an X.509 certificate, to be digitally signed or to have its signature verified.

DKIM

Domain Keys Identified Mail

DMZ

Demilitarized Zone

DN

Distinguished Name

DNAT

Destination Network Address Translation

DNS

Domain Name Service

DOI

Domain of Interpretation

Domain Name Service

Translates the underlying IP addresses of computers connected through the

Internet into more human-friendly names or aliases.

DoS

Denial of Service

DSA

Digital Signature Algorithm

DSCP

Differentiated Services Code Point

DSL

Digital Subscriber Line

DUID

DHCP Unique Identifier

Dynamic Host Configuration Protocol

Protocol used by networked devices to obtain IP addresses.

E**eBGP**

Exterior Border Gateway Protocol

EC

Elliptic Curve (public key encryption technology)

EC2

Elastic Compute Cloud

ECN

Explicit Congestion Notification

Elastic Compute Cloud

Amazon EC2 provides scalable computing capacity in AWS which allows users to rent virtual computers to run their own computer applications.

Elastic IP

Elastic IP address is a static IP address designed for dynamic cloud computing and is associated with an AWS account.

Elastic Load Balancing

Load balancing solution which automatically scales incoming application traffic across multiple targets.

Encapsulating Security Payload

IPsec protocol that provides data confidentiality (encryption), anti-replay, and authentication.

ESP

Encapsulating Security Payload

Explicit Congestion Notification

Explicit Congestion Notification (ECN) is an extension to the Internet Protocol and allows end-to-end notifications of network congestion without dropping packets. ECN only works if both endpoints of a connection successfully negotiate to use it.

F**FAT**

File Allocation Table

File Transfer Protocol

Protocol for exchanging files over packet-switched networks.

FQHN

Fully Qualified HostName

FTP

File Transfer Protocol

G**Generic Routing Encapsulation**

Tunneling protocol designed for encapsulation of arbitrary kinds of network layer packets inside arbitrary kinds of network layer packets.

GeoIP

Technique to locate devices worldwide by means of satellite imagery.

GRE

Generic Routing Encapsulation

GSM

Global System for Mobile Communications

H**H.323**

Protocol providing audio-visual communication sessions on packet-switched networks.

HA

High Availability

HCL

Hardware Compatibility List

HELO

A command in the Simple Mail Transfer Protocol (SMTP) with which the client responds to the initial greeting of the server.

High Availability

System design protocol that ensures a certain absolute degree of operational continuity.

HIPS

Host-based Intrusion Prevention System

HMAC

Hash-based Message Authentication Code

HTML

Hypertext Transfer Markup Language

HTTP

Hypertext Transfer Protocol

HTTP pipelining

Technique in which several HTTP requests are sent without waiting for each request to respond.

HTTP/S

Hypertext Transfer Protocol Secure

HTTPS

Hypertext Transfer Protocol Secure

Hypertext Transfer Protocol

Protocol for the transfer of information on the Internet.

Hypertext Transfer Protocol over Secure Socket Layer

Protocol to allow more secure HTTP communication.

I**IANA**

Internet Assigned Numbers Authority

iBGP

Interior Border Gateway Protocol

ICMP

Internet Control Message Protocol

ID

Identity

IDE

Intelligent Drive Electronics

IDENT

Standard protocol that helps identify the user of a particular TCP connection.

IDN

International Domain Name

IE

Internet Explorer

IKE

Internet Key Exchange

IM

Instant Messaging

Internet Control Message Protocol

Special kind of IP protocol used to send and receive information about the network's status and other control information.

Internet Protocol

Data-oriented protocol used for communicating data across a packet-switched network.

Internet Relay Chat

Open protocol enabling the instant communication over the Internet.

Internet service provider

Business or organization that sells to consumers access to the Internet and related services.

Intrusion Prevention System

Network security and threat prevention technology that examines network traffic flows to detect and prevent vulnerability.

IP

Internet Protocol

IP Address

Unique number that devices use in order to identify and communicate with each other on a computer network utilizing the Internet Protocol standard.

IPS

Intrusion Prevention System

IPsec

Internet Protocol Security

IRC

Internet Relay Chat

ISP

Internet Service Provider

L**L2TP**

Layer Two (2) Tunneling Protocol

LAG

Link Aggregation Group

LAN

Local Area Network

LDAP

Lightweight Directory Access Protocol

Link-state advertisement

Basic communication means of the OSPF routing protocol for IP.

Local WiFi Device

SG appliance with WiFi capability on board

LSA

Link-state advertisement

LTE

3GPP Long Term Evolution

M**MAC**

Media Access Control

MAC Address

Unique code assigned to most forms of networking hardware.

Managed Security Service Provider

Provides security services for companies.

Management Information Base

Type of database used to manage the devices in a communications network. It comprises a collection of objects in a (virtual) database used to manage entities (such as routers and switches) in a network.

Masquerading

Technology based on NAT that allows an entire LAN to use one public IP address to communicate with the rest of the Internet.

MD5

Message-Digest algorithm 5

Message-Digest algorithm 5

Cryptographic hash function with a 128-bit hash value.

MIB

Management Information Base

MIME

Multipurpose Internet Mail Extensions

MPLS

Multiprotocol Label Switching

MPPE

Microsoft Point-to-Point Encryption

MSCHAP

Microsoft Challenge Handshake Authentication Protocol

MSCHAPv2

Microsoft Challenge Handshake Authentication Protocol Version 2

MSP

Managed Service Provider

MSSP

Managed Security Service Provider

MTU

Maximum Transmission Unit

Multipurpose Internet Mail Extensions

Internet Standard that extends the format of email to support text in character sets other than US-ASCII, non-text attachments, multi-part message bodies, and header information in non-ASCII character sets.

MX record

Type of resource record in the Domain Name System (DNS) specifying how emails should be routed through the Internet.

N**NAS**

Network Access Server

NAT

Network Address Translation

NAT-T

NAT Traversal

Network Address Translation

System for reusing IP addresses.

Network Time Protocol

Protocol for synchronizing the clocks of computer systems over packet-switched networks.

NIC

Network Interface Card

Not-so-stubby area

In the OSPF protocol, a type of stub area that can import autonomous system (AS) external routes and send them to the backbone, but cannot receive AS external routes from the backbone or other areas.

NSSA

Not-so-stubby area

NTLM

NT LAN Manager (Microsoft Windows)

NTP

Network Time Protocol

O**Open Shortest Path First**

Link-state, hierarchical interior gateway protocol (IGP) for network routing.

OpenPGP

Protocol combining strong public-key and symmetric cryptography to provide security services for electronic communications and data storage.

OSI

Open Source Initiative

OSPF

Open Shortest Path First

OU

Organisational Unit

P**PAC**

Proxy Auto Configuration

PAP

Password Authentication Protocol

PCI

Peripheral Component Interconnect

PEM

Privacy Enhanced Mail

PGP

Pretty Good Privacy

PKCS

Public Key Cryptography Standards

PKI

Public Key Infrastructure

PMTU

Path Maximum Transmission Unit

PoE

Power over Ethernet

POP3

Post Office Protocol version 3

Port

Virtual data connection that can be used by programs to exchange data directly. More specifically, a port is an additional identifier—in the cases of TCP and UDP, a number between 0 and 65535 - that allows a computer to distinguish between multiple concurrent connections between the same two computers.

Portscan

Action of searching a network host for open ports.

Post Office Protocol version 3

Protocol for delivery of emails across packet-switched networks.

Power over Ethernet

Provides a device with data connection and electric power through one Ethernet

cable.

PPP

Point-to-Point Protocol

PPPoA

PPP over ATM Protocol

PPTP

Point to Point Tunneling Protocol

Privacy Enhanced Mail

Early IETF proposal for securing email using public key cryptography.

Protocol

Well-defined and standardized set of rules that controls or enables the connection, communication, and data transfer between two computing endpoints.

Proxy

Computer that offers a computer network service to allow clients to make indirect network connections to other network services.

PSK

Preshared Key

Q**QoS**

Quality of Service

R**RADIUS**

Remote Authentication Dial In User Service

RAID

Redundant Array of Independent Disks

RAM

Random Access Memory

RAS

Remote Access Server

RBL

Realtime Blackhole List

RDN

Relative Distinguished Name

RDNS

Reverse Domain Name Service

RDP

Remote Desktop Protocol

Real-time Blackhole List

Means by which an Internet site may publish a list of IP addresses linked to spamming. Most mail transport agent (mail server) software can be configured to reject or flag messages which have been sent from a site listed on one or more such lists. For web servers as well it is possible to reject clients listed on an RBL.

RED

Remote Ethernet Device

Redundant Array of Independent Disks

Refers to a data storage scheme using multiple hard drives to share or replicate data among the drives.

Remote Authentication Dial In User Service

Protocol designed to allow network devices such as routers to authenticate users against a central database.

RFC

Request for Comment

Router

Network device that is designed to forward packets to their destination along the most efficient path.

RPS

RED Provisioning Service

RSA

Rivest, Shamir, & Adleman (public key encryption technology)

S**S/MIME**

Secure/Multipurpose Internet Mail Extensions

S3

Simple Storage Solution

SA

Security Associations

SAA

Sophos Authentication Agent

Sandbox

A sandbox is a security mechanism to execute software in a restricted operating system environment.

SCP

Secure Copy (from the SSH suite of computer applications for secure communication)

SCSI

Small Computer System Interface

Secure Shell

Protocol that allows establishing a secure channel between a local and a remote computer across packet-switched networks.

Secure Sockets Layer

Cryptographic protocol that provides secure communications on the Internet, predecessor of the Transport Layer Security (TLS).

Secure/Multipurpose Internet Mail Extensions

Standard for public key encryption and signing of email encapsulated in MIME.

Security Group

Acts as virtual firewall for an AWS instance to control inbound and outbound traffic.

Security Parameter Index

Identification tag added to the header while using IPsec for tunneling the IP traffic.

Sender Policy Framework

Extension to the Simple Mail Transfer Protocol (SMTP). SPF allows software to identify and reject forged addresses in the SMTP MAIL FROM (Return-Path), a typical annoyance of email spam.

Session Initiation Protocol

Signalization protocol for the setup, modification and termination of sessions between two or several communication partners. The text-oriented protocol is based on HTTP and can transmit signalization data through TCP or UDP via IP networks. Thus, it is the base among others for Voice-over-IP videotelephony (VoIP) and multimedia services in real time.

SFQ

Stochastic Fairness Queuing

Shared Secret

Password or passphrase shared between two entities for secure communication.

SIM

Subscriber Identification Module

Simple Mail Transfer Protocol

Protocol used to send and receive email across packet-switched networks.

Single sign-on

Form of authentication that enables a user to authenticate once and gain access to multiple applications and systems using a single password.

SIP

Session Initiation Protocol

SLAAC

Stateless Address Autoconfiguration

SlowHTTP

SlowHTTP attacks are DoS attacks, in which the attacker sends HTTP requests slowly and in pieces to a Webserver. So the Webserver keeps its resources busy waiting for the data. A DoS is created when the server's concurrent connection pool reaches its maximum.

SMB

Server Message Block

SMP

Symmetric Multiprocessing

SMTP

Simple Mail Transfer Protocol

SNAT

Source Network Address Translation

SNMP

Simple Network Message Protocol

SOCKets

Internet protocol that allows client-server applications to transparently use the services of a network firewall. SOCKS, often called the Firewall Traversal Protocol, is currently at version 5 and must be implemented in the client-side program in order to function correctly.

SOCKS

SOCKets

Sophos UTM Manager

Software for monitoring and administering multiple UTM units by means of a single interface. Formerly known as Astaro Command Center.

Source Network Address Translation

Special case of NAT. With SNAT, the IP address of the computer which initiated the connection is rewritten.

Spanning Tree Protocol

Network protocol to detect and prevent bridge loops

SPF

Sender Policy Framework

SPI

Security Parameter Index

SPX

Secure PDF Exchange

SSH

Secure Shell

SSID

Service Set Identifier

SSL

Secure Sockets Layer

SSO

Single sign-on

STARTTLS

Takes an existing insecure connection and upgrades it to a secure connection using SSL/TLS.

STP

Spanning Tree Protocol

SUA

Sophos User Authentication

Subnet mask

The subnet mask (also called netmask) of a network, together with the network address, defines which addresses are part of the local network and which are not. Individual computers will be assigned to a network on the basis of the definition.

SUM

Sophos UTM Manager

Symmetric Multiprocessing

The use of more than one CPU.

SYN

Synchronous

T**TACACS**

Terminal Access Controller Access Control System

TCP

Transmission Control Protocol

TFTP

Trivial File Transfer Protocol

Time-to-live

8-bit field in the Internet Protocol (IP) header stating the maximum amount of time a packet is allowed to propagate through the network before it is discarded.

TKIP

Temporal Key Integrity Protocol

TLS

Transport Layer Security

TOS

Type of Service

Transmission Control Protocol

Protocol of the Internet protocol suite allowing applications on networked computers to create connections to one another. The protocol guarantees reliable and in-order delivery of data from sender to receiver.

Transport Layer Security

Cryptographic protocol that provides secure communications on the Internet, successor of the Secure Sockets Layer (SSL).

TTL

Time-to-live

U**UDP**

User Datagram Protocol

UMTS

Universal Mobile Telecommunications System

Unified Threat Management

Software for unified threat management, including mail and web security.

Formerly known as Astaro Security Gateway.

Uniform Resource Locator

String that specifies the location of a resource on the Internet.

Uninterruptible power supply

Device which maintains a continuous supply of electric power to connected equipment by supplying power from a separate source when utility power is not available.

Up2Date

Service that allows downloading relevant update packages from the Sophos server.

UPS

Uninterruptible Power Supply

URL

Uniform Resource Locator

USB

Universal Serial Bus

User Datagram Protocol

Protocol allowing applications on networked computers to send short messages sometimes known as datagrams to one another.

UTC

Coordinated Universal Time

UTM

Unified Threat Management

V**VDSL**

Very High Speed Digital Subscriber Line

Virtual Private Cloud

VPC provides secure data transfer between private enterprises and public cloud provider. Each data remains isolated from every other data both in transit and inside the cloud provider's network.

Virtual Private Network

Private data network that makes use of the public telecommunication infrastructure, maintaining privacy through the use of a tunneling protocol such as PPTP or IPsec.

VLAN

Virtual LAN

VNC

Virtual Network Computing

Voice over IP

Routing of voice conversations over the Internet or through any other IP-based network.

VoIP

Voice over IP

VPC

Virtual Private Cloud

VPN

Virtual Private Network

VXLAN

Virtual eXtensible LAN

W**W-CDMA**

Wideband Code Division Multiple Access

WAF

Web Application Firewall

WAN

Wide Area Network

WebAdmin

Web-based graphical user interface of Sophos/Astaro products such as UTM, SUM, ACC, ASG, AWG, and AMG.

WEP

Wired Equivalent Privacy

Windows Internet Naming Service

Microsoft's implementation of NetBIOS Name Server (NBNS) on Windows, a name server and service for NetBIOS computer names.

WINS

Windows Internet Naming Service

WLAN

Wireless Local Area Network

WPA

Wi-Fi Protected Access

X**X.509**

Specification for digital certificates published by the ITU-T (International Telecommunications Union - Telecommunication). It specifies information and attributes required for the identification of a person or a computer system.

XSS

Cross-site scripting

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