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About this Guide

This user guide introduces the Qualys Network Passive Sensor and will help you with setting up the physical sensor to detect known and unknown devices on your network.

Note: Your use of the Qualys Network Passive Sensor physical sensor appliance is subject to the terms and conditions of the Qualys Service User Agreement.

About Qualys

Qualys, Inc. (NASDAQ: QLYS) is a pioneer and leading provider of cloud-based security and compliance solutions. The Qualys Cloud Platform and its integrated apps help businesses simplify security operations and lower the cost of compliance by delivering critical security intelligence on demand and automating the full spectrum of auditing, compliance and protection for IT systems and web applications.

Founded in 1999, Qualys has established strategic partnerships with leading managed service providers and consulting organizations including Accenture, BT, Cognizant Technology Solutions, Deutsche Telekom, Fujitsu, HCL, HP Enterprise, IBM, Infosys, NTT, Optiv, SecureWorks, Tata Communications, Verizon and Wipro. The company is also a founding member of the Cloud Security Alliance (CSA).

For more information, please visit www.qualys.com.

Contact Qualys Support

Qualys is committed to providing you with the most thorough support. Through online documentation, telephone help, and direct email support, Qualys ensures that your questions will be answered in the fastest time possible. We support you 7 days a week, 24 hours a day. Access support information at www.qualys.com/support/.
About this Guide
Welcome to Qualys Network Passive Sensor

With Qualys Network Passive Sensor (PS), you can automatically detect, and profile devices connected to your network, eliminating blind spots across your IT environment. Network Passive Sensor monitors network activity without any active probing of devices in order to detect active assets in your network.

It’s easy to set up a Network Passive Sensor appliance within your network. Let’s get started!

Check package accessories

Your starter kit package should contain these components. If any components are missing or damaged, please contact Qualys Support.

<table>
<thead>
<tr>
<th>Component</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qualys Network Passive Sensor User Guide</td>
</tr>
<tr>
<td>AC power cord</td>
</tr>
<tr>
<td>CAT6 cable</td>
</tr>
<tr>
<td>Rack screws (quantity 4) - 10-32 x 3/4”, Phillips, black matte, with washer</td>
</tr>
<tr>
<td>For 1G: USB-to-RS232 converter cable</td>
</tr>
<tr>
<td>For 4G: RJ45 to USB or RJ45 to D-type 9 pin</td>
</tr>
</tbody>
</table>
Network requirements / configuration

<table>
<thead>
<tr>
<th>Bandwidth</th>
<th>Minimum recommended bandwidth connection of 1 Megabits per second (Mbps) to the Qualys Cloud Platform for a network containing around 10,000 assets.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appliance Access</td>
<td>The Network Passive Sensor must be able to reach certain infrastructure located on the Qualys Cloud Platform where your Qualys account is located. The local network must be configured to allow outbound HTTPS (port 443) access to the Internet, so that the Network Passive Sensor can communicate with the Qualys Cloud Platform. Tip - Log into your account and go to Help &gt; About to see the Qualys Cloud Platform URLs.</td>
</tr>
<tr>
<td>DHCP or Static IP</td>
<td>By default the Network Passive Sensor is pre-configured with DHCP. If configured with a static IP address, be sure you have the IP address, netmask, default gateway and primary DNS.</td>
</tr>
<tr>
<td>Proxy Support</td>
<td>The Network Passive Sensor includes Proxy support with or without authentication. Proxy-level termination (as implemented in SSL bridging, for example) is not supported. SOCKS proxies are not supported.</td>
</tr>
</tbody>
</table>

Get Started

Once you complete the setup, the Network Passive Sensor will start discovering assets on your network. It takes just a couple of minutes. It’s important that you complete the steps in the order shown.

Before you begin - Mirror the traffic

You need to feed traffic to the sensor by mirroring the traffic (using physical tap or mirror port). Connect the mirrored port to the sniffing interface of the sensor. This step is required in order to see discovered assets.

Step 1 - Generate the Personalization Code

You’ll get a personalization code from the Network Passive Sensor application.

1. Log in to the Qualys UI and select Network Passive Sensor from the app picker.
2. On the Sensors tab, go to New Sensor > Physical Sensor. (Similarly, you can go to the registration step directly from Home > Deploy Network Sensor > Physical Sensor > Deploy).
3. Provide information in the Sensor Details section and then click the **Generate Code** button in the Personalization Code section. You’ll need this code to personalize and activate the sensor. Copy the code using the Copy option. Steps on how to personalize the sensor will appear on the screen.

4. Click **Next** to go to the Define Internal Assets screen. Here, you’ll define the IP ranges within your network you want to monitor. The assets discovered for these IP addresses will be individually inventoried and tracked for traffic analysis. You can use default IP ranges or use customized IP ranges. Select Inventory these assets check box for marking inventoried assets. You’ll be able to apply existing tags to these assets. To configure internal, external and excluded type of assets, refer [Configure Assets](#). Click **Finish** to complete the registration.

**Step 2 - Connect the Appliance to the Network**

Qualys strongly recommends the appliance be plugged into a Managed Power Supply. On the rare occasion where the appliance may need to be rebooted, utilizing the MPS will allow for remote rebooting in unmanned or high security areas.

**Set Up Network Connection**

The Network Passive Sensor connects like any other computer to a switch on your network. To set up the network connection, follow these steps:

- Connect one end of an Ethernet cable to the Ethernet LAN port on the Network Passive Sensor (back panel).
- Connect the other end of the Ethernet cable to a 10BASE-T or 100BASE-TX or 1 Gigabit switch on your network.

**Remote Console Interface Set Up**

This step is optional and is an alternative method for remote configuration and management of the Network Passive Sensor using a VT100 terminal, such as Windows HyperTerminal.

![Figure 1-1. Set up for Remote Console Interface](image)

A USB-to-RS232 converter cable (For 4G - RJ45 to USB or RJ45 to D-type 9 pin) allows you to connect to their terminal server via network cable. Qualys recommends the following USB-to-RS232 converter cable:

IOGEAR USB-Serial Model GUC232A
Welcome to Qualys Network Passive Sensor
Get Started


Keystroke File Not Supported: The Remote Console interface is not intended for uploading the whole sensor configuration by means of a pre-defined “keystroke file.” Uploading such a file will result in lost characters and incorrect configuration.

To set up the Remote Console interface, follow these steps:

1. Be sure the terminal server is up and running. Also check the terminal server settings. The following settings are required.

<table>
<thead>
<tr>
<th>Port Setting</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bits per second (Baud rate)</td>
<td>115200</td>
</tr>
<tr>
<td>Data Bits</td>
<td>8</td>
</tr>
<tr>
<td>Parity</td>
<td>None</td>
</tr>
<tr>
<td>Flow Control</td>
<td>None</td>
</tr>
<tr>
<td>Terminal Emulation</td>
<td>VT100</td>
</tr>
</tbody>
</table>

2. Connect one end of the USB-to-RS232 converter cable (For 4G - RJ45 to USB or RJ45 to D-type 9 pin) to a USB port on the Network Passive Sensor (back panel).

3. Connect the other end of the USB-to-RS232 converter cable (For 4G - RJ45 to USB or RJ45 to D-type 9 pin) to your terminal server via network cable.

4. Connect the Network Passive Sensor (see Step 3 - Power On the Appliance)

   Note - In the case where the appliance is already powered on, you must reboot the appliance before taking the next step and making any configurations. To reboot, press the Down arrow on the LCD interface until the SYSTEM REBOOT message appears and then press ENTER. Please make sure that the appliance has fully rebooted (this takes up to 3 minutes).

5. Press the ENTER key on the VT100 terminal’s keyboard to display the Remote Console interface.

Step 3 - Power On the Appliance

To power on the appliance, follow these steps:

1. Connect the AC power cord into the Power Supply Socket.

   Note - Qualys strongly recommends the appliance be plugged into a Managed Power Supply. On the rare occasion where the appliance may need to be rebooted, utilizing the MPS will allow for remote rebooting in unmanned or high security areas.
2 Press the power button on the back panel. Be sure that the power indicator has turned green.

3 The **Welcome to Qualys** message appears in the LCD interface followed by other informational messages during the boot process which takes approximately two minutes.

We recommend having a quick look at how to navigate the appliance UI before making configuration settings. See [Navigating the Appliance UI](#).

**Complete the Network Configuration**

Enable network configuration settings for the appliance, as appropriate.

If the appliance is installed on a network with Static IP and without a Proxy server, you need to configure Static IP ([See “Configure Static IP Address” on page 24](#)). If the appliance is installed on a network with DHCP and a Proxy server, you need to configure Proxy ([See “Proxy Configuration” on page 27](#)). If the appliance is installed on a network with Static IP and a Proxy server, you need to configure Static IP and Proxy. Keep default configurations if the appliance is installed on a network with DHCP and without proxy.

Any errors must be resolved before continuing to Step 4. Refer to [Troubleshooting](#) for help with resolving any errors.

**Step 4 - Activate the Appliance**

To activate the appliance, follow these steps:

1 Select the **REGISTER WITH QUALYS PLATFORM** option on the LCD interface.

2 Enter the 14-digit **PERS CODE** which you generated in Step 1 - Generate the Personalization Code. Press Enter when prompted **PERS CODE IS CORRECT?**

3 Once activation completes, you’ll be prompted to set a 4-digit PASSWORD. Please remember this PASSWORD. You will need to enter it to unlock the configuration menu. If activation fails, you’ll see an error message on the LCD interface.

4 The **APPLIANCE NAME–IP ADDRESS** message appears after the appliance successfully connects to the Qualys Cloud Platform. Do you see another message instead? See [Troubleshooting](#) for assistance.

**Step 5 - Check the Status**

Log in to the Qualys UI and select Network Passive Sensor from the application picker. The Sensors tab appears with the list of sensors in your account and their status.
You’ll see the status for each sensor in the list: Paused, Scanning or Not Connected.

If the status is Paused, you can view details for the sensor, reboot the sensor, start scanning, delete assets and deregister.

If the status is Scanning, you can view details and pause scanning.

If the status is Not Connected, you can view details for the sensor.

The status of the scanning and error messages are indicated using LEDs and LCD interface. Appliance has 3 LEDs on front panel - 2 green and 1 amber (red for 4G appliance) colored. Depending on the appliance scanning state, LEDs and LCD interface will have different indications:

For normal state (scanning without any error), S letter appears on LCD with steady green LED.

For pause state, P letter appears on LCD with blinking green LED.

For ECO state, amber (red for 4G appliance) LED blinks.

For Communication error, steady amber (red for 4G appliance) LED is displayed.
That’s all there is to it!
You’ll see the appliance name and IP address in the LCD interface. This indicates you have completed the Quick Start.

Appliance Name and IP Address
The name and IP address appear as shown below.

The name can be changed using the Qualys user interface.

The IP address is available for information purposes only. The Network Passive Sensor is remote controlled by the Qualys Cloud Platform, and it does not allow incoming logins or connections from the network.

The Qualys Cloud Platform indicator for your account appears in the lower right corner.

Configure Assets
Network Passive Sensor can see traffic flows between two types of IP addresses. These IP addresses can be internal (within your network) or external (outside your network).

You can configure how you want to categorize your assets discovered by the sensors while monitoring traffic flow. All these assets are listed in the Assets tab of Global IT Asset Inventory.

Assets can be defined as Internal Assets, Excluded Assets, and External Assets.

Internal Assets
To add internal assets, simply go to Configuration > Internal Assets > Add.
Welcome to Qualys Network Passive Sensor

Get Started

Here, you’ll define the IP ranges within your network you want to monitor. The assets discovered for these IP addresses will be individually inventoried and tracked for traffic analysis. You can use default IP ranges or use customized IP ranges. Select Inventory these assets check box for marking inventoried assets. You’ll be able to apply existing tags to these assets.

To complete the sensor setup and to start sensing assets you must define Internal Asset ranges. The passive sensor senses all the traffic that you have mirrored. However, by defining internal asset ranges, you choose the assets you want to monitor and report on.

**Excluded Assets**
To add excluded assets, simply go to Configuration > Excluded Assets > Add.
Here, you’ll define the IP Ranges or MAC addresses to be excluded from the inventory. The assets discovered for these addresses will be masked as Excluded in the traffic summary.

**External Assets**

To add external assets, simply go to Configuration > External Assets > Add.
Here, you'll define the external sites you want to monitor. These sites will be reported individually for traffic summary however these will not be inventoried like the internal assets.
Network Passive Sensor Tour

This section gives you a tour of the Qualys Network Passive Sensor physical appliance, its features, basic operation and configuration options.

A Quick Look at the Appliance
Navigating the Appliance UI
System Reboot and Shutdown
Configure Static IP Address
Proxy Configuration
A Quick Look at the Appliance

Front Panel
You’ll see Welcome to Qualys in the LCD display when you connect the appliance to the network for the first time. After you’ve successfully completed the Quick Start steps you’ll see the appliance name and IP address.

The appliance has a user interface for configuration and management. You can choose to use the LCD display and keypad on the front panel. LCD display offers the functionality to select menus and navigation (ENTER and arrow keys) for a consistent user experience.

Use the keypad to enter information and respond to prompts.

- Left and Right arrow buttons move the cursor to left/right in an entry field.
- Up and Down arrow buttons scroll through menu options, and scroll through characters in an entry field.
- ENTER button, in the center, is used to confirm entries and move to the next screen.

Back Panel
The appliance's back panel includes: the power socket, the Ethernet LAN port, the Ethernet WAN port, two USB 2.0 ports and two USB 3.0 ports.

Power socket - Use to connect the power connector to the appliance.

Power button - Use to power on the appliance. A green light indicates the appliance is on.

LAN port - Use to connect the appliance to a hub or switch on your network using a straight through CAT6 twisted pair Ethernet cable. The LAN port is required for management connectivity to the Qualys Cloud Platform.

WAN port - Use to connect the appliance to access or distribution or core switch or core router on your network using a straight through CAT6 twisted pair Ethernet cable. The Wan port is used for incoming mirrored traffic.
USB ports - Connect a USB-to-RS232 converter cable (For 4G - RJ45 to USB or RJ45 to D-type 9 pin) to a USB port if you want to use the optional Remote Console interface (any port may be used).

Navigating the Appliance UI

Main Menu

To access the main menu, press ENTER when the appliance name and IP address are displayed. This shows the Password prompt. Enter the password to display the first menu option SETUP NETWORK. A password is required to configure anything on the Physical Passive Sensor Appliance using the LCD panel. This prevents any unauthorized access to the appliance. The default admin password is 0000. After completion of registration process, the admin will be prompted to enter the new admin password which will be used later. If the admin doesn’t enter the password within 1 minute, the appliance will continue to use the default password 0000. When the appliance is de-registered, the admin password will be reset to default password(0000).

Figure 2-1. Network Passive Sensor Main Menu
To move up through menu options, press the Up arrow. To move down through menu options, press the Down arrow. To select an option, press ENTER. To exit the main menu, press the down arrow button until the **EXIT THIS MENU** option appears, and then press ENTER.

**Navigation Indicators**

Each screen displays one or more indicators in the top right corner, indicating the navigation options available from the current screen.

<table>
<thead>
<tr>
<th>LCD Button</th>
<th>Remote Console Key</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ENTER</td>
<td>Confirm a selection. After you press ENTER, another screen appears.</td>
</tr>
<tr>
<td></td>
<td>RIGHT</td>
<td>Move the cursor to the right in an entry field.</td>
</tr>
<tr>
<td></td>
<td>LEFT</td>
<td>Move the cursor to the left in an entry field. (For 4G appliance, this button is not available).</td>
</tr>
</tbody>
</table>
|            | UP                | Used to:  
— Increase the value in an entry field  
— Move up through menu options  
— Cancel a confirmation message |
|            | DOWN              | Used to:  
— Decrease the value in an entry field  
— Move down through menu options |

Note these important guidelines for using buttons: 1) Press one button at a time, 2) Do not hold down an arrow button (except as noted in guideline #3), instead press the arrow multiple times, and 3) When entering a user name or password, you can hold down the Up and Down arrow buttons to scroll through characters quickly.

**Entering Information**

The LCD interface allows users to enter information in the fields provided using arrow keys. The Left and Right arrows move the cursor to the left and right and the Up and Down arrows are used to scroll through characters. Some fields allow only certain characters to be entered. The character restrictions are described below.

**Up and Down Arrows**

Using the LCD interface use the Up and Down arrows to enter characters in a field. Using the Remote Console interface you have the option to use the Up and Down arrows or to use your keyboard to enter characters.
In numeric entry fields, press the Up and Down arrows to select a value between 0 and 9. When a numeric field is first displayed, a default value appears.

In text entry fields where you enter a username and password, press the Up and Down arrows to select a character (numeric, alphabetic, underscore or special character). In these fields, you can hold the Up/Down arrow to scroll through the available characters. Text fields are blank to start (filled with spaces).

**Scrolling through Characters**

Some fields allow you to select characters. Press the Up arrow to scroll through characters in ascending order. Starting from the space character, the characters appear in this order: lowercase letters (a to z), space, numbers (0 to 9), underscore, special characters (for Proxy username and password only), uppercase letters (A to Z).

![Figure 2-2. Scrolling characters in ascending order](image)

Press the Down arrow to scroll through characters in descending order. Starting from the space character, the characters appear in this order: uppercase letters (Z to A), special characters (for Proxy username and password only), underscore, numbers (9 to 0), space, lowercase letters (z to a).

![Figure 2-3. Scrolling characters in descending order](image)
Space Character

When a text field entry contains fewer characters than the characters displayed on the LCD interface screen, you must select the space character for the unused positions before or after the field entry. Only the characters associated with the field entry and space characters may be included in a text field entry.

Embedded spaces are not permitted in text field entries (except for the Proxy password).

Use the space character to remove characters when editing text fields (except for the Proxy password). To remove a character in an entry field using the LCD interface, move the cursor on the character (using the Left and Right arrows), select the space character (using the Up and Down arrows) and then press ENTER. Any space characters entered appear in the LCD interface screen until the next time you revisit the screen.

IP Addresses

Entry fields for IP addresses are pre-filled with values in this format: \texttt{nnn.nnn.nnn.nnn}

The IP address format displays values for each character position in all octets. When entering an IP address, you replace the three “n” digits for each octet as appropriate. If an octet has less than three digits, then the octet must include leading zeros. For example, to specify the IP address “194.55.176.2”, you need to enter the IP address as “194.055.176.002”.

Proxy User Name

For the Proxy user name in the PROXY USER field you may enter a maximum of 32 characters including lower case letters, upper case letters, numbers and underscore. These special characters can be used: underscore (_), dash (-), backslash (\), period (.), at sign (@).

![Figure 2-4. Special characters in the Proxy user field](image)

The screen displays 16 characters of the PROXY USER field entry, and it scrolls left. For example, the first character of the Proxy username is hidden when the 17th character is entered. As each additional character is entered, the Proxy user name scrolls left. The space character should be used to remove characters.

The format of a Proxy user entry is: “domain\user”. If there is a backslash in the middle of the entry, the appliance interprets the string before the backslash as the domain name. No double backslashes (\\) are needed in front of the “domain\user” format.
**Proxy Password**

The **PROXY PASS** allows you to enter a maximum of 16 characters including lowercase letters, uppercase letters, numbers, space, and underscore. Many special characters are allowed. These characters are shown in ascending order in the table below. Using the LCD interface, to scroll through characters 1 to 30, press the Up arrow. To scroll through characters in descending order, press the Down arrow.

### Special Characters in the PROXY PASS field

<table>
<thead>
<tr>
<th>Order (ascending)</th>
<th>Character</th>
<th>Name</th>
<th>Order (ascending)</th>
<th>Character</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>_</td>
<td>underscore</td>
<td>16</td>
<td>+</td>
<td>plus</td>
</tr>
<tr>
<td>2</td>
<td>-</td>
<td>hyphen</td>
<td>17</td>
<td>=</td>
<td>equal</td>
</tr>
<tr>
<td>3</td>
<td>\</td>
<td>backslash</td>
<td>18</td>
<td>(</td>
<td>parenthesis left</td>
</tr>
<tr>
<td>4</td>
<td>/</td>
<td>slash</td>
<td>19</td>
<td>)</td>
<td>parenthesis right</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td>20</td>
<td>[</td>
<td>brace left</td>
</tr>
<tr>
<td>6</td>
<td>~</td>
<td>tilda</td>
<td>21</td>
<td>}</td>
<td>brace right</td>
</tr>
<tr>
<td>7</td>
<td>!</td>
<td>exclamation</td>
<td>22</td>
<td>[</td>
<td>bracket left</td>
</tr>
<tr>
<td>8</td>
<td>?</td>
<td>question</td>
<td>23</td>
<td>]</td>
<td>bracket right</td>
</tr>
<tr>
<td>9</td>
<td>@</td>
<td>at sign</td>
<td>24</td>
<td>&lt;</td>
<td>less</td>
</tr>
<tr>
<td>10</td>
<td>#</td>
<td>number sign</td>
<td>25</td>
<td>&gt;</td>
<td>greater</td>
</tr>
<tr>
<td>11</td>
<td>$</td>
<td>dollar</td>
<td>26</td>
<td>;</td>
<td>semicolon</td>
</tr>
<tr>
<td>12</td>
<td>%</td>
<td>percent</td>
<td>27</td>
<td>`</td>
<td>double quote</td>
</tr>
<tr>
<td>13</td>
<td>^</td>
<td>caret</td>
<td>28</td>
<td>\</td>
<td>grave</td>
</tr>
<tr>
<td>14</td>
<td>&amp;</td>
<td>ampersand</td>
<td>29</td>
<td>,</td>
<td>comma</td>
</tr>
<tr>
<td>15</td>
<td>*</td>
<td>asterisk</td>
<td>30</td>
<td>.</td>
<td>period</td>
</tr>
</tbody>
</table>
System Reboot and Shutdown

It is important to follow the proper system shutdown instructions described below. If you do not follow these instructions, file system corruption may occur.

How to reboot the system

1. With the appliance name and IP address displayed, press ENTER.
2. When the SETUP NETWORK menu option appears, press the Down arrow to navigate through the menu options.
3. When the SYSTEM REBOOT menu option appears, press ENTER to select the option.
4. When the REALLY REBOOT SYSTEM? prompt appears, press ENTER to confirm.

Review the confirmation messages starting with REBOOTING SYSTEM message. The APPLIANCE NAME–IP ADDRESS is displayed after the Network Passive Sensor makes a successful connection to the Qualys Cloud Platform. This message indicates the Network Passive Sensor is ready for use. If another message appears you may need to activate the appliance or troubleshoot the issue. See Troubleshooting for help resolving errors.

How to shutdown the system

1. With the appliance name and IP address displayed, press ENTER.
2. When the SETUP NETWORK menu option appears, press the Down arrow to navigate through the menu options.
3. When the SYSTEM SHUTDOWN menu option appears, press ENTER.
4. When the REALLY SHUTDOWN SYSTEM? prompt appears, press ENTER to confirm.
5. Important! The appliance should now power down within 60 seconds and then you can safely unplug the appliance.

Configure Static IP Address

If DHCP is not on your network, you must enable the appliance with a static IP address using the ENABLE STATIC N/W CONFIG menu option.

Entry fields for IP addresses used in the static IP address configuration are pre-filled with three digits for all octets, and you must enter a value for each digit. For example, to specify the IP address “176.34.20.5”, you need to enter the IP address as "176.034.020.005". See IP Addresses for details.
Tell me the steps

When enabling a static IP address on the LAN interface, you must enter network configuration settings for the Network Passive Sensor so that the appliance can communicate with the Qualys Cloud Platform. Also, you have the option to enter some network settings for informational purposes.

To enable a static IP address on the LAN interface, follow these steps:

1. Go to the **SETUP NETWORK** menu option and press ENTER to continue.
2. Press the Down arrow until the **ENABLE STATIC N/W CONFIG** menu option appears. Then press ENTER to continue.
3. Press the Down arrow to choose **ENABLE IPv4** or **ENABLE IPv6** to enable Internet Protocol and press ENTER to continue.
4. When the **CFG STATIC N/W PARAMS?** prompt appears, press ENTER to continue. Or press the Up arrow to quit this procedure and return to the **SETUP NETWORK** menu option.

Entering parameters

The LCD interface allows users to enter information using the arrow keys. With the Remote Console interface, you enter characters using the VT100 terminal’s keyboard.

1. When the **IP ADDR** prompt appears, enter the static IP address, and then press ENTER to continue.
2. When the **NETMASK** prompt appears, use the Up and Down arrows to scroll to the desired netmask value. For information about netmask values, see *Tell me about Netmask*. After selecting a netmask value, press ENTER to continue.
3. When the **GATEWAY** prompt appears, enter the gateway IP address, and then press ENTER to continue.
4. When the **DNS1** prompt appears, enter the IP address for the primary DNS server, and then press ENTER to continue.
5. When the **DNS2** prompt appears, enter the IP address for the secondary DNS server. This entry is optional. Press ENTER to continue.
6. When the **SAVE AND APPLY?** prompt appears, press ENTER to continue. Or press the Up arrow to quit this procedure and return to the **SETUP NETWORK** menu.
7. Review the confirmation messages. The Network Passive Sensor attempts to make a connection to the Qualys Cloud Platform using the new configuration. Upon success the **APPLIANCE NAME-IP ADDRESS** message appears and the static IP address is enabled.
Confirm the configuration

The message **APPLIANCE NAME–IP ADDRESS** appears when the Network Passive Sensor made a successful connection to the Qualys Cloud Platform using the new configuration.

An appliance configuration error appears if it failed to make a connection to the Qualys Cloud Platform. An error may occur because the static IP parameters you entered are incorrect, or they do not match the IP subnet configuration on your network. See **Troubleshooting** for help with resolving the issue.

Tell me about Netmask

When entering static network parameters, you will notice that the cursor does not appear after the **NETMASK** prompt and you cannot enter characters in the entry field. At first, the netmask “255.255.255.000” appears. Use the Up and Down arrows to scroll through valid netmasks. When the appropriate netmask value appears, press ENTER to confirm.

Possible netmask values are listed below. If you press the Down arrow, the values appear in this order: “255.255.255.000”, “255.255.254.000”, “255.255.252.000”... If you press the Up arrow, the values appear in this order: “255.255.255.000”, “255.255.255.128”, “255.255.255.192”...

### Scrolling netmask values in the Netmask field

<table>
<thead>
<tr>
<th>Prefix</th>
<th>Netmask value</th>
<th>Prefix</th>
<th>Netmask value</th>
</tr>
</thead>
<tbody>
<tr>
<td>/24</td>
<td>255.255.255.000</td>
<td>/9</td>
<td>255.128.000.000</td>
</tr>
<tr>
<td>/23</td>
<td>255.255.254.000</td>
<td>/8</td>
<td>255.000.000.000</td>
</tr>
<tr>
<td>/22</td>
<td>255.255.252.000</td>
<td>/7</td>
<td>254.000.000.000</td>
</tr>
<tr>
<td>/21</td>
<td>255.255.248.000</td>
<td>/6</td>
<td>252.000.000.000</td>
</tr>
<tr>
<td>/20</td>
<td>255.255.240.000</td>
<td>/5</td>
<td>248.000.000.000</td>
</tr>
<tr>
<td>/19</td>
<td>255.255.224.000</td>
<td>/4</td>
<td>255.000.000.000</td>
</tr>
<tr>
<td>/18</td>
<td>255.255.192.000</td>
<td>/3</td>
<td>224.000.000.000</td>
</tr>
<tr>
<td>/17</td>
<td>255.255.128.000</td>
<td>/2</td>
<td>192.000.000.000</td>
</tr>
<tr>
<td>/16</td>
<td>255.255.000.000</td>
<td>/1</td>
<td>128.000.000.000</td>
</tr>
<tr>
<td>/15</td>
<td>255.254.000.000</td>
<td>/30</td>
<td>255.255.252</td>
</tr>
<tr>
<td>/14</td>
<td>255.252.000.000</td>
<td>/29</td>
<td>255.255.248</td>
</tr>
<tr>
<td>/13</td>
<td>255.248.000.000</td>
<td>/28</td>
<td>255.255.240</td>
</tr>
<tr>
<td>/12</td>
<td>255.240.000.000</td>
<td>/27</td>
<td>255.255.224</td>
</tr>
<tr>
<td>/11</td>
<td>255.224.000.000</td>
<td>/26</td>
<td>255.255.192</td>
</tr>
<tr>
<td>/10</td>
<td>255.192.000.000</td>
<td>/25</td>
<td>255.255.128</td>
</tr>
</tbody>
</table>
Interface - Enable Static IP

Only one option may be enabled: **ENABLE STATIC N/W CONFIG** or **ENABLE DHCP**. After one option is enabled, the other option disappears from the **SETUP NETWORK** menu.

Once you configure **ENABLE STATIC N/W CONFIG** the option will change to **CHANGE STATIC N/W CONFIG**. Once you configure **ENABLE DHCP** the option will appear as **RENEW DHCP**.

Proxy Configuration

If the appliance is behind a Proxy server, you need to enable a Proxy configuration using the **ENABLE PROXY** menu option. Provide details in the Proxy user and password fields to authenticate to your proxy server.

The Network Passive Sensor uses Secure Sockets Layer (SSL) protocol (HTTPS) to secure its connection to the Qualys web application, in a similar way that a web browser does to a secure web server. If the Qualys connection must pass through a Proxy server, then you must enable the Proxy option on the appliance. This configuration re-directs Qualys outbound connections through the Proxy server.
Your Proxy server must be configured to tunnel or pass through the SSL session to the Qualys UI. This ensures a secured end-to-end connection. SSL bridging or tunnel termination must not be configured in your Proxy server when supporting the Network Passive Sensor.

Tell me the steps
To configure the appliance with Proxy support, follow these steps:

1. Go to the **SETUP NETWORK** menu option.
2. Press the Down arrow until the **ENABLE PROXY** menu option appears. Then press **ENTER** to continue.
3. When the **CONFIG PROXY PARAMETERS** prompt appears, press **ENTER** to continue. Or press the Up arrow two times to quit this procedure and return to the **SETUP NETWORK** menu option.

Entering parameters
Enter Proxy parameters using the Up and Down arrows to scroll through characters.

1. When the **PROXY HOST** prompt appears, enter the Proxy server’s FQDN/IP address. The gateway IP address appears in the screen by default. Use the LCD interface to enter an FQDN/IP address, and then press **ENTER** to continue.
   - IP addresses are allowed in dotted decimal format, e.g. 176.34.20.5
   - Supported characters for FQDN: Uppercase letters, numbers, dot (.) and hyphen (-)
2. When the **PROXY PORT** prompt appears, enter the port number assigned to the Proxy server. Port “0443” appears by default. Confirm that the port number shown is correct or enter a different one, if necessary. When the correct port number appears, press **ENTER** to continue.
   - Supported Characters: numbers only
3. When the **PROXY USER** prompt appears, enter the username for Proxy authentication. If authentication is not enabled at the Proxy level, leave the entry field blank. Press **ENTER** to continue.
   - Supported Characters: Lowercase letters, uppercase letters, numbers, and these special characters: _-\@.
4. When the **PROXY PASS** prompt appears, enter the password for Proxy authentication. If authentication is not enabled at the Proxy level, leave the entry field blank. Press **ENTER** to continue.
   - Supported Characters: Lowercase letters, uppercase letters, numbers, and these special characters: _-\!@#$%^&*+=(){}<>":;~. (including dot).
5 When the **REALLY ENABLE PROXY?** prompt appears, press ENTER to continue. Or press the Up arrow two times to quit this procedure and return to the **SETUP NETWORK** menu option.

6 Review the confirmation messages. The **ENABLING PROXY SUPPORT** message appears followed by other messages while the Network Passive Sensor attempts to make a connection to the Qualys Cloud Platform using the new configuration. Upon success the **APPLIANCE NAME–IP ADDRESS** message appears and the configured proxy is now confirmed working and being used.

**Interface - Enable Proxy**

The LCD interface to enable Proxy support is shown below.

---

**Figure 2-6. Interface to Enable Proxy**
Want to update proxy settings?

Once a Proxy configuration is enabled, the Proxy settings are stored on the appliance. You can change or disable these settings at any time.

To change Proxy parameters, follow these steps:

1. Go to the **SETUP NETWORK** menu option.
2. Press the Down arrow until the **CHANGE PROXY PARAMS** menu option appears. Then press ENTER to continue.
3. Follow the prompts and messages in the LCD interface to change the existing Proxy parameters. Existing parameters are displayed in each screen. Change and confirm each parameter. If a parameter has not changed, press ENTER to view the next parameter.
4. When the **REALLY ENABLE PROXY?** prompt appears, press ENTER to continue. Or press the Up arrow two times to quit this procedure and return to the **SETUP NETWORK** menu option.
5. Review the confirmation messages. The **ENABLING PROXY SUPPORT** message appears followed by others.

To disable Proxy parameters, follow these steps:

1. Go to the **SETUP NETWORK** menu option.
2. Press the Down arrow until the **DISABLE PROXY** menu option appears. Then press ENTER to continue.
3. When the **REALLY DISABLE PROXY?** prompt appears, press ENTER to continue. Or press the Up arrow two times to quit this procedure and return to the **SETUP NETWORK** menu option.
4. Review the confirmation messages.
Confirm the configuration

The message **APPLIANCE NAME–IP ADDRESS** appears if the Network Passive Sensor made a successful connection to the Qualys Cloud Platform using the new configuration.

The **USER LOGIN** prompt appears if the Network Passive Sensor made a successful connection to the Qualys Cloud Platform, however the appliance has not been activated. See Step 1 in the Get Started and follow the instructions to activate the appliance.

An appliance configuration error appears if the Network Passive Sensor failed to make a connection to the Qualys Cloud Platform. An error may occur because the Proxy parameters you entered are incorrect, or they do not match the Proxy configuration on your network. See Troubleshooting for help with resolving this issue.
Network Passive Sensor Tour
Proxy Configuration
Troubleshooting

Use the troubleshooting techniques described here to respond to errors and performance conditions when using the Network Passive Sensor physical appliance.

How can I test network connectivity?

Communication Failure message

Appliance Configuration Errors

How can I test network connectivity?

Use a Laptop

It is recommended that you test network connectivity to the Qualys Cloud Platform using your laptop (or other device):

1) Take the laptop to the location where the Network Passive Sensor will be installed and connect the laptop to the network, using the same network cable and port that will be used for the appliance.

2) Configure the laptop with the same network configuration that the Network Passive Sensor will use (IP address, gateway, DNS server, etc.).

3) If the connection to the Qualys Cloud Platform must pass through a proxy server, configure the laptop’s web browser with proxy information.

4) Open a browser and try to log into your Qualys account. You’ll see the Qualys Log In page after a successful connection is made to the Qualys Cloud Platform.

Test DNS Name Resolution

You can test DNS name resolution from any machine connected to the same network as your Network Passive Sensor. If DNS name resolution is working properly, server information is returned including the server name and IP address. (Note that “nslookup” is not available on all systems.)
Troubleshooting
Communication Failure message

Communication Failure message

You’ll see a **COMMUNICATION FAILURE** message if there is a network communications breakdown between the Network Passive Sensor and the Qualys Cloud Platform.

**Why does it happen?**

The communication failure may be due to one of these reasons: the network cable was unplugged from the appliance, the local network went down, or any of the network devices between the Network Passive Sensor and the Qualys Cloud Platform went down.

**When does the message appear?**

If any point of time communication breaks between Network Passive Sensor and Qualys Cloud Platform, then the **COMMUNICATION FAILURE** message appears.

**How do I know the issue is resolved?**

After the root cause is resolved, you’ll see the **COMMUNICATION FAILURE** message until the next time the appliance makes a successful polling request to the Qualys Cloud Platform. Then you’ll see the appliance’s name and IP address and you can start using your appliance.

Note - The **COMMUNICATION FAILURE** message may not disappear right away. There may be some lag after the network is restored and before the appliance is back online, depending on when the next polling request is scheduled. Additional time is necessary for communication to be processed by a Proxy server if the appliance has a Proxy configuration.

**Appliance Configuration Errors**

An appliance configuration error indicates the Network Passive Sensor attempted to connect to the Qualys Cloud Platform and failed.

Important! The Network Passive Sensor is not functional until the error is resolved. Make sure to resolve the error.

You’ll see an error code and short description to help you with troubleshooting. Please refer to the short description provided to help you resolve the issue. If you still need help with the issue, please identify the error code when you contact Qualys Support.

<table>
<thead>
<tr>
<th>Error Code</th>
<th>Error Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Internal Error</td>
</tr>
<tr>
<td>12</td>
<td>DNS Lookup Failed</td>
</tr>
<tr>
<td>13</td>
<td>Invalid IP Address</td>
</tr>
<tr>
<td>14</td>
<td>Invalid Gateway IP</td>
</tr>
<tr>
<td>Error Code</td>
<td>Error Description</td>
</tr>
<tr>
<td>------------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>15</td>
<td>Invalid DNS1 IP</td>
</tr>
<tr>
<td>16</td>
<td>Invalid DNS2 IP</td>
</tr>
<tr>
<td>17</td>
<td>Loopback IP Error</td>
</tr>
<tr>
<td>18</td>
<td>Invalid N/W CFG</td>
</tr>
<tr>
<td>19</td>
<td>Invalid Proxy Host</td>
</tr>
<tr>
<td>20</td>
<td>Proxy User not Specified</td>
</tr>
<tr>
<td>21</td>
<td>Proxy Password not Specified</td>
</tr>
<tr>
<td>22</td>
<td>Invalid Prxy CFG</td>
</tr>
<tr>
<td>23</td>
<td>Invalid PERS code</td>
</tr>
<tr>
<td>24</td>
<td>Registration Failed</td>
</tr>
<tr>
<td>25</td>
<td>Gateway Unreachable</td>
</tr>
<tr>
<td>26</td>
<td>DNS1 Unreachable</td>
</tr>
<tr>
<td>27</td>
<td>DNS2 Unreachable</td>
</tr>
<tr>
<td>28</td>
<td>Invalid Password</td>
</tr>
<tr>
<td>29</td>
<td>DNS 1 &amp; 2 cannot be same</td>
</tr>
<tr>
<td>30</td>
<td>Appliance in ECO state</td>
</tr>
<tr>
<td>31</td>
<td>Communication Failed with Cloud</td>
</tr>
<tr>
<td>32</td>
<td>Prxy Unreachable</td>
</tr>
<tr>
<td>33</td>
<td>NTLM unsupported</td>
</tr>
</tbody>
</table>
Troubleshooting
Appliance Configuration Errors
## Appendix A - Product Specifications

### 1Gbps

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CPU</strong></td>
<td>Xeon E31275v3, 4C/8T, 3.5GHz</td>
</tr>
<tr>
<td><strong>Memory</strong></td>
<td>16GB</td>
</tr>
<tr>
<td><strong>Storage</strong></td>
<td>1TB</td>
</tr>
<tr>
<td><strong>USB</strong></td>
<td>Two USB 2.0 ports + two USB 3.0 ports</td>
</tr>
<tr>
<td><strong>Sensing Interface</strong></td>
<td>1 x RJ45 Ethernet supporting 10/100/1000Mbps</td>
</tr>
<tr>
<td><strong>Management Interface</strong></td>
<td>1 x RJ45 Ethernet supporting 10/100/1000Mbps</td>
</tr>
<tr>
<td><strong>Power Input</strong></td>
<td>100-240 VAC, 50-60Hz, 4A Single phase</td>
</tr>
<tr>
<td><strong>Power Consumption</strong></td>
<td>Max: 91W (310 BTU/hr); Typical: 80W (273 BTU/hr)</td>
</tr>
<tr>
<td><strong>Max Throughput</strong></td>
<td>1 Gbps</td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td>1.75 (H) x 17 (W) x 14 (D) inches</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>12.65 lbs.</td>
</tr>
</tbody>
</table>

### 4 Gbps

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CPU</strong></td>
<td>Gold 6138T, 20C/48T, 2.0GHz</td>
</tr>
<tr>
<td><strong>Memory</strong></td>
<td>32GB</td>
</tr>
<tr>
<td><strong>Storage</strong></td>
<td>512GB SSD</td>
</tr>
<tr>
<td><strong>Sniffing Interface</strong></td>
<td>4 x 1GbE RJ45 and 4 x 10GbE SFP+</td>
</tr>
<tr>
<td><strong>Management Interface</strong></td>
<td>1 x GbE RJ45</td>
</tr>
<tr>
<td><strong>Power Input</strong></td>
<td>Dual, 120/240 VAC 50/60hz</td>
</tr>
<tr>
<td><strong>Max Throughput</strong></td>
<td>4 Gbps</td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td>650mm x 438mm x 43.5mm</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>16.5Kg</td>
</tr>
</tbody>
</table>

### Environment Specifications

#### 1 Gbps

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Acoustic Noise</strong></td>
<td>~45 dBA acoustic noise level at 23°C</td>
</tr>
<tr>
<td><strong>Operating Conditions</strong></td>
<td>0°C to 35°C, from 0 to 5,000 feet; 20% to 90% RH</td>
</tr>
<tr>
<td><strong>Storage Conditions</strong></td>
<td>-10°C to 70°C, 10% to 85% R.H. (non-condensing)</td>
</tr>
<tr>
<td><strong>Operating Vibration</strong></td>
<td>0.3 Grms, 10 to 500 Hz, 5 minutes per axis</td>
</tr>
<tr>
<td><strong>In-Package Shock</strong></td>
<td>In accordance with ISTA 2A</td>
</tr>
</tbody>
</table>
## Appendix A - Product Specifications

<table>
<thead>
<tr>
<th>Regulatory</th>
<th>UL (conforms to UL 60950-1/CSA C22.2 No. 60950/EN 60950-1, 2nd ed.</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMC</td>
<td>FCC Part 15 Class A/ICES-003/EN 55032/EN 55024, CISPR 32</td>
</tr>
<tr>
<td>Environmental</td>
<td>RoHS</td>
</tr>
<tr>
<td>Other certifications</td>
<td>Per specific requirements</td>
</tr>
</tbody>
</table>

### 4 Gbps

<table>
<thead>
<tr>
<th>Operating Temperature</th>
<th>0°C to 40°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-operating Temperature</td>
<td>-20°C to -70°C</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Approvals and Compliance</th>
<th>CE/FCC Class A, UL, RoHS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Humidity</td>
<td>5-90% Operating, 5-95% Non-operating</td>
</tr>
</tbody>
</table>
Portions of the software embedded in the Qualys Network Passive Sensor were developed by third parties and are governed by the terms and conditions detailed in the following Qualys document:

Qualys Network Passive Sensor Software Credits

Appendix C - Safety Notices

Elevated Operating Ambient — The ambient temperature of an operating rack environment will be greater than the room’s ambient temperature. The unit must be installed in a rack where its operating ambient temperature does not exceed the unit’s maximum ambient temperature.

Reduced Air Flow — The unit must be installed in a rack which enables adequate air flow for the proper cooling of the unit.

Adequate Power — The rack must be set up to ensure that an appropriate level and amount of power is available to the unit. The overall connection of the rack equipment to the supply circuit and the effect that overloading the supply circuit might have on overcurrent protection and supply wiring should also be considered.

Reliable Grounding — Reliable grounding of rack equipment must be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (for example, use of power strips).

Mechanical Loading — The unit should be installed in a rack in a manner that does not create a hazardous condition due to uneven mechanical overloading.

Cautionary Notices

The socket-outlet shall be installed near the equipment and shall be easily accessible.

Le socle de prise de courant doit être installé à proximité du matériel et doit être aisément accessible.

CAUTION: RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE. DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS.

ATTENTION: IL Y A RISQUE D’EXPLOSION SI LA BATTERIE EST REMPLACÉE PAR UNE BATTERIE DE TYPE INCORRECT. METTRE AU REBUT LES BATTERIES USAGÉES CONFORMÉMENT AUX INSTRUCTIONS.

WARNING
Hazardous moving parts
Keep away from moving fan blades
Appendix C - Safety Notices