IBM Security QRadar
Version 7.2.2

Installation Guide

IBM
Before using this information and the product that it supports, read the information in “Notices” on page 43.
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Introduction to QRadar installations

IBM® Security QRadar® appliances are preinstalled with software and the Red Hat Enterprise Linux operating system. You can also install QRadar software on your own hardware.

Information about installing IBM Security QRadar software applies to IBM Security QRadar SIEM, IBM Security QRadar Log Manager, and IBM Security QRadar Network Anomaly Detection products.

To install or recover a high-availability (HA) system, see the IBM Security QRadar High Availability Guide.

Intended audience

Network administrators who are responsible for installing and configuring QRadar systems must be familiar with network security concepts and the Linux operating system.

Technical documentation

To find IBM Security QRadar product documentation on the web, including all translated documentation, access the IBM Knowledge Center (http://www.ibm.com/support/knowledgecenter/SS42VS/welcome).

For information about how to access more technical documentation in the QRadar products library, see Accessing IBM Security Documentation Technical Note (www.ibm.com/support/docview.wss?rs=0&uid=swg21614644).

Contacting customer support

For information about contacting customer support, see the Support and Download Technical Note (http://www.ibm.com/support/docview.wss?rs=0&uid=swg21612861).

Statement of good security practices

IT system security involves protecting systems and information through prevention, detection and response to improper access from within and outside your enterprise. Improper access can result in information being altered, destroyed, misappropriated or misused or can result in damage to or misuse of your systems, including for use in attacks on others. No IT system or product should be considered completely secure and no single product, service or security measure can be completely effective in preventing improper use or access. IBM systems, products and services are designed to be part of a comprehensive security approach, which will necessarily involve additional operational procedures, and may require other systems, products or services to be most effective. IBM DOES NOT WARRANT THAT ANY SYSTEMS, PRODUCTS OR SERVICES ARE IMMUNE FROM, OR WILL MAKE YOUR ENTERPRISE IMMUNE FROM, THE MALICIOUS OR ILLEGAL CONDUCT OF ANY PARTY.
Chapter 1. QRadar deployment overview

You can install IBM Security QRadar on a single server for small enterprises, or across multiple servers for large enterprise environments.

For maximum performance and scalability, you must install a high-availability (HA) managed host appliance for each system that requires HA protection. For more information about installing or recovering an HA system, see the IBM Security QRadar High Availability Guide.

Activation keys and license keys

When you install IBM Security QRadar appliances, you must type an activation key. After you install, you must apply your license keys. To avoid typing the wrong key in the installation process, it is important to understand the difference between the keys.

Activation key

The activation key is a 24-digit, 4-part, alphanumeric string that you receive from IBM. All installations of QRadar products use the same software. However, the activation key specifies which software modules to apply for each appliance type. For example, use the IBM Security QRadar QFlow Collector activation key to install only the QRadar QFlow Collector modules.

You can obtain the activation key from the following locations:

- If you purchased an appliance that is preinstalled with QRadar software, the activation key is included in a document on the enclosed CD.
- If you purchased QRadar software or virtual appliance download, a list of activation keys is included in the Getting Started document. The Getting Started is attached to the confirmation email.

License key

Your system includes a temporary license key that provides you with access to QRadar software for five weeks. After you install the software and before the default license key expires, you must add your purchased licenses.

The following table describes the restrictions for the default license key:

<table>
<thead>
<tr>
<th>Usage</th>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active log source limit</td>
<td>750</td>
</tr>
<tr>
<td>Events per second threshold</td>
<td>5000</td>
</tr>
<tr>
<td>Flows per interval</td>
<td>200000</td>
</tr>
<tr>
<td>User limit</td>
<td>10</td>
</tr>
<tr>
<td>Network object limit</td>
<td>300</td>
</tr>
</tbody>
</table>
Table 2. Restrictions for the default license key for QRadar Log Manager installations

<table>
<thead>
<tr>
<th>Usage</th>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active log source limit</td>
<td>750</td>
</tr>
<tr>
<td>Events per second threshold</td>
<td>5000</td>
</tr>
<tr>
<td>User limit</td>
<td>10</td>
</tr>
<tr>
<td>Network object limit</td>
<td>300</td>
</tr>
</tbody>
</table>

When you purchase a QRadar product, an email that contains your permanent license key is sent from IBM. These license keys extend the capabilities of your appliance type and define your system operating parameters. You must apply your license keys before your default license expires.

**Related tasks:***
- Chapter 2, “Installing a QRadar Console or managed host,” on page 7
- Install IBM Security QRadar Console or a managed host on the QRadar appliance or on your own appliance.
- “Installing RHEL on your own appliance” on page 12
  You can install the Red Hat Enterprise Linux operating system on your own appliance for use with IBM Security QRadar.
- “Installing the QRadar software on a virtual machine” on page 19
  After you create your virtual machine, you must install the IBM Security QRadar software on the virtual machine.

### Integrated Management Module

Use Integrated Management Module, which is on the back panel of each appliance type, to manage the serial and Ethernet connectors.

You can configure Integrated Management Module to share an Ethernet port with the IBM Security QRadar product management interface. However, to reduce the risk of losing the connection when the appliance is restarted, configure Integrated Management Module in dedicated mode.

To configure Integrated Management Module, you must access the system BIOS settings by pressing F1 when the IBM splash screen is displayed. For more information about configuring Integrated Management Module, see the *Integrated Management Module User’s Guide* on the CD that is shipped with your appliance.

**Related concepts:**
- “Prerequisite hardware accessories and desktop software for QRadar installations” on page 4
  Before you install IBM Security QRadar products, ensure that you have access to the required hardware accessories and desktop software.

### QRadar components

IBM Security QRadar consolidates event data from log sources that are used by devices and applications in your network.

**Important:** Software versions for all IBM Security QRadar appliances in a deployment must be same version and fix level. Deployments that use different versions of software are not supported.
QRadar deployments can include the following components:

**QRadar QFlow Collector**
Passively collects traffic flows from your network through span ports or network taps. The IBM Security QRadar QFlow Collector also supports the collection of external flow-based data sources, such as NetFlow.

You can install a QRadar QFlow Collector on your own hardware or use one of the QRadar QFlow Collector appliances.

**Restriction:** The component is available only for QRadar SIEM and QRadar Network Anomaly Detection deployments.

**QRadar Console**
Provides the QRadar product user interface. The interface delivers real-time event and flow views, reports, offenses, asset information, and administrative functions.

In distributed QRadar deployments, use the QRadar Console to manage hosts that include other components.

**QRadar Event Collector**
Gathers events from local and remote log sources. Normalizes raw log source events. During this process, the Magistrate component examines the event from the log source and maps the event to a QRadar Identifier (QID). Then, the Event Collector bundles identical events to conserve system usage and sends the information to the Event Processor.

**QRadar Event Processor**
Processes events that are collected from one or more Event Collector components. The Event Processor correlates the information from QRadar products and distributes the information to the appropriate area, depending on the type of event.

The Event Processor also includes information that is gathered by QRadar products to indicate behavioral changes or policy violations for the event. When complete, the Event Processor sends the events to the Magistrate component.

**Magistrate**
Provides the core processing components. You can add one Magistrate component for each deployment. The Magistrate provides views, reports, alerts, and analysis of network traffic and security events.

The Magistrate component processes events against the custom rules. If an event matches a rule, the Magistrate component generates the response that is configured in the custom rule.

For example, the custom rule might indicate that when an event matches the rule, an offense is created. If there is no match to a custom rule, the Magistrate component uses default rules to process the event. An offense is an alert that is processed by using multiple inputs, individual events, and events that are combined with analyzed behavior and vulnerabilities. The Magistrate component prioritizes the offenses and assigns a magnitude value that is based on several factors, including number of events, severity, relevance, and credibility.

For more information about each component, see the *Administration Guide*.

**Related concepts:**
Chapter 7, “Troubleshooting problems,” on page 31

Troubleshooting is a systematic approach to solving a problem. The goal of troubleshooting is to determine why something does not work as expected and how to resolve the problem.

Prerequisite hardware accessories and desktop software for QRadar installations

Before you install IBM Security QRadar products, ensure that you have access to the required hardware accessories and desktop software.

Hardware accessories

Ensure that you have access to the following hardware components:

- Monitor and keyboard, or a serial console
- Uninterrupted Power Supply (UPS) for all systems that store data, such as QRadar Console, Event Processor components, or QRadar QFlow Collector components
- Null modem cable if you want to connect the system to a serial console

Important: QRadar products support hardware-based Redundant Array of Independent Disks (RAID) implementations, but do not support software-based RAID installations.

Desktop software requirements

Ensure that the following applications are installed on all desktop systems that you use to access the QRadar product user interface:

- Java™ Runtime Environment (JRE) version 1.7 or IBM 64-bit Runtime Environment for Java V7.0
- Adobe Flash version 10.x

Related tasks:

- Chapter 2, “Installing a QRadar Console or managed host,” on page 7
- “Installing RHEL on your own appliance” on page 12

Supported web browsers

For the features in IBM Security QRadar products to work properly, you must use a supported web browser.

When you access the QRadar system, you are prompted for a user name and a password. The user name and password must be configured in advance by the administrator.

The following table lists the supported versions of web browsers.
Table 3. Supported web browsers for QRadar products

<table>
<thead>
<tr>
<th>Web browser</th>
<th>Supported version</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mozilla Firefox</td>
<td>17.0 Extended Support Release</td>
</tr>
<tr>
<td></td>
<td>24.0 Extended Support Release</td>
</tr>
<tr>
<td>32-bit Microsoft Internet Explorer, with</td>
<td>8.0</td>
</tr>
<tr>
<td>document mode and browser mode enabled</td>
<td>9.0</td>
</tr>
<tr>
<td>Google Chrome</td>
<td>The current version as of the release date of IBM</td>
</tr>
<tr>
<td></td>
<td>Security QRadar V7.2.2 products</td>
</tr>
</tbody>
</table>

Enabling document mode and browser mode in Internet Explorer

If you use Microsoft Internet Explorer to access IBM Security QRadar products, you must enable browser mode and document mode.

Procedure

1. In your Internet Explorer web browser, press F12 to open the Developer Tools window.
2. Click Browser Mode and select the version of your web browser.
3. Click Document Mode.
   • For Internet Explorer V9.0, select Internet Explorer 9 standards
   • For Internet Explorer V8.0, select Internet Explorer 8 standards

Related concepts:

“Prerequisite hardware accessories and desktop software for QRadar installations” on page 4

Before you install IBM Security QRadar products, ensure that you have access to the required hardware accessories and desktop software.
Chapter 2. Installing a QRadar Console or managed host

Install IBM Security QRadar Console or a managed host on the QRadar appliance or on your own appliance.

IBM Security QRadar Network Anomaly Detection is a stand-alone appliance. Install QRadar Network Anomaly Detection Console on a QRadar or on your own appliance.

Software versions for all IBM Security QRadar appliances in a deployment must be same version and fix level. Deployments that use different versions of software is not supported.

Before you begin

Ensure that the following requirements are met:

• The required hardware is installed.
• For QRadar appliances, a notebook is connected to the serial port on the back of the appliance, or a keyboard and monitor is connected.
• You are logged in as the root user.
• The activation key is available.

If you use a notebook to connect to the system, you must use a terminal program, such as HyperTerminal. Ensure that you set Connect Using option to the appropriate COM port of the serial connector. Ensure that you also set the following properties:

<table>
<thead>
<tr>
<th>Property</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bits per second</td>
<td>9600</td>
</tr>
<tr>
<td>Stop Bits</td>
<td>1</td>
</tr>
<tr>
<td>Data bits</td>
<td>8</td>
</tr>
<tr>
<td>Parity</td>
<td>None</td>
</tr>
</tbody>
</table>

Procedure

1. If you are using your own appliance, mount the QRadar ISO image
   a. Create the /media/cdrom directory by typing the following command:
      ```
      mkdir /media/cdrom
      ```
   b. Obtain the QRadar software.
   c. Mount the QRadar ISO image by typing the following command:
      ```
      mount -o loop <path to the QRadar ISO> /media/cdrom
      ```
   d. To begin the installation, type the following command:
      ```
      /media/cdrom/setup
      ```
2. For all installations, ensure that the End User License Agreement (EULA) is displayed.

   Tip: Press the Spacebar key to advance through the document.
If you are installing QRadar on your own appliance, you are prompted to continue the installation. This process might take up to several hours.

3. When you are prompted for the activation key, enter the 24-digit, 4-part, alphanumeric string that you received from IBM.
   The letter I and the number 1 (one) are treated the same. The letter O and the number 0 (zero) are also treated the same.

4. For the type of setup, select **normal**.

5. Follow the instructions in the installation wizard to complete the installation.

   The following table contains descriptions and notes to help you configure the installation.

   **Table 5. Description of network settings**

<table>
<thead>
<tr>
<th>Network Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Host name</td>
<td>Fully qualified domain name</td>
</tr>
<tr>
<td>Secondary DNS server address</td>
<td>Optional</td>
</tr>
<tr>
<td>Public IP address for networks that use Network Address Translation (NAT)</td>
<td>Optional</td>
</tr>
<tr>
<td></td>
<td>Used to access the server, usually from a different network or the Internet.</td>
</tr>
<tr>
<td></td>
<td>Configured by using Network Address Translation (NAT) services on your network or firewall settings on your network. (NAT translates an IP address in one network to a different IP address in another network).</td>
</tr>
<tr>
<td>Email server name</td>
<td>If you do not have an email server, use localhost.</td>
</tr>
<tr>
<td>Root password</td>
<td>The password must meet the following criteria:</td>
</tr>
<tr>
<td></td>
<td>• Contain at least 5 characters</td>
</tr>
<tr>
<td></td>
<td>• Contain no spaces</td>
</tr>
<tr>
<td></td>
<td>• Can include the following special characters: @, #, ^, and *</td>
</tr>
</tbody>
</table>

After you configure the installation parameters, a series of messages are displayed. The installation process might take several minutes.

6. Apply your license key.
   a. Log in to QRadar:
      
      `https://IP_Address_QRadar`
      
      The default **Username** is admin. The **Password** is the password of the root user account.
   b. Click the login.
   c. Click the **Admin** tab.
   d. In the navigation pane, click **System Configuration**.
   e. Click the **System and License Management** icon.
   f. From the **Display** list box, select **Licenses**, and upload your license key.
   g. Select the unallocated license and click **Allocate System to License**.
   h. From the list of licenses, select and license, and click **Allocate License to System**.
Chapter 3. QRadar software installations on your own appliance

To ensure a successful installation of IBM Security QRadar on your own appliance, you must install the Red Hat Enterprise Linux operating system.

Ensure that your appliance meets the system requirements for QRadar deployments.

Prerequisites for installing QRadar on your own appliance

Before you install the Red Hat Enterprise Linux (RHEL) operating system on your own appliance, ensure that your system meets the system requirements.

The following table describes the system requirements:

Table 6. System requirements for RHEL installations on your own appliance

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supported software version</td>
<td>Version 6.5</td>
</tr>
<tr>
<td>Bit version</td>
<td>64-bit</td>
</tr>
<tr>
<td>KickStart disks</td>
<td>Not supported</td>
</tr>
<tr>
<td>Network Time Protocol (NTP) package</td>
<td>Optional</td>
</tr>
<tr>
<td></td>
<td>If you want to use NTP as your time server, ensure that you install the NTP package</td>
</tr>
<tr>
<td>Memory (RAM) for Console systems</td>
<td>Minimum 24 GB</td>
</tr>
<tr>
<td></td>
<td><strong>Important:</strong> You must upgrade your system memory before you install QRadar.</td>
</tr>
<tr>
<td>Memory (RAM) for Event Processor</td>
<td>12 GB</td>
</tr>
<tr>
<td>Memory (RAM) for QRadar QFlow Collector</td>
<td>6 GB</td>
</tr>
<tr>
<td>Free disk space for Console systems</td>
<td>Minimum 256 GB</td>
</tr>
<tr>
<td></td>
<td><strong>Important:</strong> For optimal performance, ensure that an extra 2-3 times of the minimum disk space is available.</td>
</tr>
<tr>
<td>QRadar QFlow Collector primary drive</td>
<td>Minimum 70 GB</td>
</tr>
<tr>
<td>Firewall configuration</td>
<td>WWW (http, https) enabled</td>
</tr>
<tr>
<td></td>
<td>SSH enabled</td>
</tr>
<tr>
<td></td>
<td><strong>Important:</strong> Before you configure the firewall, disable the SELinux option. The QRadar installation includes a default firewall template that you can update in the System Setup window.</td>
</tr>
</tbody>
</table>
Preparing QRadar software installations for HA and XFS file systems

As part of configuring high availability (HA), the QRadar installer requires a minimal amount of free space in the storage file system, /store/, for replication processes. Space must be allocated in advance because XFS file systems cannot be reduced in size after they are formatted.

To prepare the XFS partition for use with HA systems, you must do the following tasks:

1. Use the `mkdir` command to create the following directories:
   - /media/cdrom
   - /media/redhat

2. Mount the QRadar software ISO image by typing the following command:
   ```bash
   mount -o loop <path_to_QRadar_iso> /media/cdrom
   ```

3. Mount the RedHat Enterprise Linux V6.5 software by typing the following command:
   ```bash
   mount -o loop <path_to_RedHat_6.5_64bit_dvd_iso_1> /media/redhat
   ```

4. If your system is designated as the primary host in an HA pair, run the following script:
   ```bash
   /media/cdrom/post/prepare_ha.sh
   ```

5. To begin the installation, type the following command:
   ```bash
   /media/cdrom/setup
   ```

   **Note:** This procedure is not required on your HA secondary host.

Linux partition properties for your own appliance

If you use your own appliance, you can delete and re-create partitions on your Red Hat Enterprise Linux operating system rather than modify the default partitions.

Use the values in following table as a guide when you recreate the partitioning on your Red Hat Enterprise Linux operating system.

**Restriction:** Resizing logical volumes by using a logical volume manager (LVM) is not supported.

*Table 7. Partition guide for RHEL*

<table>
<thead>
<tr>
<th>Partition</th>
<th>Description</th>
<th>Mount point</th>
<th>File system type</th>
<th>Size</th>
<th>Forced to be primary</th>
<th>SDA or SDB</th>
</tr>
</thead>
<tbody>
<tr>
<td>/boot</td>
<td>System boot files</td>
<td>/boot</td>
<td>EXT4</td>
<td>200 MB</td>
<td>Yes</td>
<td>SDA</td>
</tr>
<tr>
<td>Partition</td>
<td>Description</td>
<td>Mount point</td>
<td>File system type</td>
<td>Size</td>
<td>Forced to be primary</td>
<td>SDA or SDB</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------</td>
<td>-------------</td>
<td>------------------</td>
<td>------</td>
<td>----------------------</td>
<td>------------</td>
</tr>
<tr>
<td>swap</td>
<td>Used as memory when RAM is full.</td>
<td>empty</td>
<td>swap</td>
<td>Systems with 4 to 8 GB of RAM, the size of the swap partition must match the amount of RAM. Systems with 8 to 24 GB of RAM, configure the swap partition size to be 75% of RAM, with a minimum value of 8 GB and a maximum value of 24 GB.</td>
<td>No</td>
<td>SDA</td>
</tr>
<tr>
<td>/</td>
<td>Installation area for QRadar, the operating system, and associated files.</td>
<td>/</td>
<td>EXT4</td>
<td>20000 MB</td>
<td>No</td>
<td>SDA</td>
</tr>
<tr>
<td>/store/tmp</td>
<td>Storage area for QRadar temporary files</td>
<td>/store/tmp</td>
<td>EXT4</td>
<td>20000 MB</td>
<td>No</td>
<td>SDA</td>
</tr>
<tr>
<td>/var/log</td>
<td>Storage area for QRadar and system log files</td>
<td>/var/log</td>
<td>EXT4</td>
<td>20000 MB</td>
<td>No</td>
<td>SDA</td>
</tr>
<tr>
<td>/store</td>
<td>Storage area for QRadar data and configuration files</td>
<td>/store</td>
<td>XFS</td>
<td>On Console appliances: approximately 80% of the available storage. On managed hosts other than QFlow Collectors and Store and Forward Event Collectors: approximately 90% of the available storage.</td>
<td>No</td>
<td>SDA</td>
</tr>
<tr>
<td>/store/ariel/persistent_data</td>
<td>Storage area for ariel database cursor</td>
<td>/store/ariel/persistent_data</td>
<td>XFS on Consoles EXT4 on managed hosts</td>
<td>On Console appliances: 20% of the available storage. On managed hosts other than QFlow Collectors and Store and Forward Event Collectors: 10% of the available storage.</td>
<td>No</td>
<td>SDA</td>
</tr>
</tbody>
</table>
Table 7. Partition guide for RHEL (continued)

<table>
<thead>
<tr>
<th>Partition</th>
<th>Description</th>
<th>Mount point</th>
<th>File system type</th>
<th>Size</th>
<th>Forced to be primary</th>
<th>SDA or SDB</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The /store and /store/ariel/persistent_data together take 100% of the disk space that remains after you create the first 5 partitions.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Restrictions

Future software upgrades might fail if you reformat any of the following partitions or their subpartitions:

- /store
- /store/tmp
- /store/ariel
- /store/ariel/persistent_data

Installing RHEL on your own appliance

You can install the Red Hat Enterprise Linux operating system on your own appliance for use with IBM Security QRadar.

Procedure

1. Copy the Red Hat Enterprise Linux 6.4 operating system DVD ISO to one of the following portable storage devices:
   - Digital Versatile Disk (DVD)
   - Bootable USB flash drive
     For information about creating a bootable USB flash drive, see the Installing QRadar Using a Bootable USB flash drive technote on the IBM web site (www.ibm.com/support).

2. Insert the portable storage device into your appliance and restart your appliance.

3. From the starting menu, select one of the following options:
   - Select the USB or DVD drive as the boot option.
   - To install on a system that supports Extensible Firmware Interface (EFI), you must start the system in legacy mode.

4. When prompted, log in to the system as the root user.

5. To prevent an issue with Ethernet interface address naming, on the Welcome page, press the Tab key and at the end of the Vmlinuz initrd=initrd.image line add biosdevname=0.

6. Follow the instructions in the installation wizard to complete the installation:
   a. Select the Basic Storage Devices option.
   b. When you configure the host name, the Hostname property can include letters, numbers, and hyphens.
   c. When you configure the network, in the Network Connections window, select System eth0 and then click Edit and select Connect automatically.
   d. On the IPv4 Settings tab, from the Method list, select Manual.
   e. In the DNS servers field, type a comma-separated list.
   f. Select Create Custom Layout option.
   g. Configure EXT4 for the file system type for the /, /boot, and /var/log partitions.
   h. Reformat the swap partition with a file system type of swap.
i. Select **Basic Server**.

7. When the installation is complete, click **Reboot**.

**What to do next**

After installation, if your onboard network interfaces are named anything other than eth0, eth1, eth2, and eth3, you must rename the network interfaces.

**Related reference:**

“Linux partition properties for your own appliance” on page 10

If you use your own appliance, you can delete and re-create partitions on your Red Hat Enterprise Linux operating system rather than modify the default partitions.
Chapter 4. Virtual appliance installations for QRadar SIEM and QRadar Log Manager

You can install IBM Security QRadar SIEM and IBM Security QRadar Log Manager on a virtual appliance. Ensure that you use a supported virtual appliance that meets the minimum system requirements.

To install a virtual appliance, complete the following tasks in sequence:

- Create a virtual machine.
- Install QRadar software on the virtual machine.
- Add your virtual appliance to the deployment.

Overview of supported virtual appliances

A virtual appliance is a IBM Security QRadar system that consists of QRadar software that is installed on a VMWare ESX virtual machine.

A virtual appliance provides the same visibility and function in your virtual network infrastructure that QRadar appliances provide in your physical environment.

After you install your virtual appliances, use the deployment editor to add your virtual appliances to your deployment. For more information on how to connect appliances, see the Administration Guide.

The following virtual appliances are available:

**QRadar SIEM All-in-One Virtual 3199**

This virtual appliance is a QRadar SIEM system that can profile network behavior and identify network security threats. The QRadar SIEM All-in-One Virtual 3199 virtual appliance includes an on-board Event Collector and internal storage for events.

The QRadar SIEM All-in-One Virtual 3199 virtual appliance supports the following items:
- Up to 1,000 network objects
- 200,000 flows per interval, depending on your license
- 5,000 Events Per Second (EPS), depending on your license
- 750 event feeds (more devices can be added to your licensing)
- External flow data sources for NetFlow, sFlow, J-Flow, Packeteer, and Flowlog files
- QRadar QFlow Collector and Layer 7 network activity monitoring

To expand the capacity of the QRadar SIEM All-in-One Virtual 3199 beyond the license-based upgrade options, you can add one or more of the QRadar SIEM Event Processor Virtual 1699 or QRadar SIEM Flow Processor Virtual 1799 virtual appliances:
QRadar SIEM Flow Processor Virtual 1799

This virtual appliance is deployed with any QRadar SIEM 3105 or QRadar SIEM 3124 series appliance. The virtual appliance is used to increase storage and includes an on-board Event Processor, and internal storage.

QRadar SIEM Flow Processor Virtual 1799 appliance supports the following items:
- 600,000 flows per interval, depending on traffic types
- 2 TB or larger dedicated flow storage
- 1,000 network objects
- QRadar QFlow Collector and Layer 7 network activity monitoring

You can add QRadar SIEM Flow Processor Virtual 1799 appliances to any QRadar SIEM 3105 or QRadar SIEM 3124 series appliance to increase the storage and performance of your deployment.

QRadar SIEM Event Processor Virtual 1699

This virtual appliance is a dedicated Event Processor that allows you to scale your QRadar SIEM deployment to manage higher EPS rates. The QRadar SIEM Event Processor Virtual 1699 includes an on-board Event Collector, Event Processor, and internal storage for events.

The QRadar SIEM Event Processor Virtual 1699 appliance supports the following items:
- Up to 10,000 events per second
- 2 TB or larger dedicated event storage

The QRadar SIEM Event Processor Virtual 1699 virtual appliance is a distributed Event Processor appliance and requires a connection to any QRadar SIEM 3105 or QRadar SIEM 3124 series appliance.

QRadar Data Node Virtual 1400

This virtual appliance provides retention and storage for events and flows. The virtual appliance expands the available data storage of Event Processors and Flow Processors, and also improves search performance.

Size your QRadar Data Node Virtual 1400 appliance appropriately, based on the EPS rate and data retention rules of the deployment.

Data retention policies are applied to a QRadar Data Node Virtual 1400 appliance in the same way that they are applied to stand-alone Event Processors and Flow Processors. The data retention policies are evaluated on a node-by-node basis. Criteria, such as free space, is based on the individual QRadar Data Node Virtual 1400 appliance and not the cluster as a whole.

Data Nodes can be added to the following appliances:
- Event Processor (16XX)
- Flow Processor (17XX)
- Event/Flow Processor (18XX)
- All-In-One (2100 and 31XX)
To enable all features included in the QRadar Data Node Virtual 1400 appliance, install using the 1400 activation key.

**QRadar VFlow Collector 1299**

This virtual appliance provides the same visibility and function in your virtual network infrastructure that a QRadar QFlow Collector offers in your physical environment. The QRadar QFlow Collector virtual appliance analyzes network behavior and provides Layer 7 visibility within your virtual infrastructure. Network visibility is derived from a direct connection to the virtual switch.

The QRadar VFlow Collector 1299 virtual appliance supports a maximum of the following items:

- 10,000 flows per minute
- Three virtual switches, with one more switch that is designated as the management interface.

The QRadar VFlow Collector 1299 virtual appliance does not support NetFlow.

**System requirements for virtual appliances**

To ensure that IBM Security QRadar works correctly, ensure that virtual appliance that you use meets the minimum software and hardware requirements.

Before you install your virtual appliance, ensure that the following minimum requirements are met:

*Table 8. Requirements for virtual appliances*

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>VMware client</td>
<td>VMware ESXi Version 5.0</td>
</tr>
<tr>
<td></td>
<td>VMware ESXi Version 5.1</td>
</tr>
<tr>
<td>Virtual disk size on all appliance except QRadar QFlow Collector appliances</td>
<td>Minimum: 256 GB</td>
</tr>
<tr>
<td></td>
<td><strong>Important:</strong> For optimal performance, ensure that an extra 2-3 times of the minimum disk space is available.</td>
</tr>
<tr>
<td>Virtual disk size for QRadar QFlow Collector appliances</td>
<td>Minimum: 70 GB</td>
</tr>
</tbody>
</table>

The following table describes the minimum memory requirements for virtual appliances.

*Table 9. Minimum and optional memory requirements for QRadar virtual appliances*

<table>
<thead>
<tr>
<th>Appliance</th>
<th>Minimum memory requirement</th>
<th>Suggested memory requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>QRadar VFlow Collector 1299</td>
<td>6 GB</td>
<td>6 GB</td>
</tr>
<tr>
<td>QRadar Event Collector Virtual 1599</td>
<td>12 GB</td>
<td>16 GB</td>
</tr>
</tbody>
</table>
Table 9. Minimum and optional memory requirements for QRadar virtual appliances (continued)

<table>
<thead>
<tr>
<th>Appliance</th>
<th>Minimum memory requirement</th>
<th>Suggested memory requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>QRadar SIEM Event Processor Virtual 1699</td>
<td>12 GB</td>
<td>48 GB</td>
</tr>
<tr>
<td>QRadar SIEM Flow Processor Virtual 1799</td>
<td>12 GB</td>
<td>48 GB</td>
</tr>
<tr>
<td>QRadar SIEM All-in-One Virtual 3199</td>
<td>24 GB</td>
<td>48 GB</td>
</tr>
<tr>
<td>QRadar Log Manager Virtual 1790</td>
<td>24 GB</td>
<td>48 GB</td>
</tr>
</tbody>
</table>

Related tasks:

“Creating your virtual machine”
To install a virtual appliance, you must first use VMware vSphere Client 5.0 to create a virtual machine.

Creating your virtual machine

To install a virtual appliance, you must first use VMware vSphere Client 5.0 to create a virtual machine.

Procedure

1. From the VMware vSphere Client, click File > New > Virtual Machine.
2. Use the following steps to guide you through the choices:
   a. In the Configuration pane of the Create New Virtual Machine window, select Custom.
   c. For the Operating System (OS), select Red Hat Enterprise Linux 6 (64-bit).
   d. On the CPUs page, configure the number of virtual processors that you want for the virtual machine:
      When you configure the parameters on the CPU page, you must configure a minimum of two processors. The combination of number of virtual sockets and number of cores per virtual socket determines how many processors are configured on your system.
      The following table provides examples of CPU page settings you can use:

Table 10. Sample CPU page settings

<table>
<thead>
<tr>
<th>Number of processors</th>
<th>Sample CPU page settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Number of virtual sockets = 1</td>
</tr>
<tr>
<td></td>
<td>Number of cores per virtual socket = 2</td>
</tr>
<tr>
<td>2</td>
<td>Number of virtual sockets = 2</td>
</tr>
<tr>
<td></td>
<td>Number of cores per virtual socket = 1</td>
</tr>
<tr>
<td>4</td>
<td>Number of virtual sockets = 4</td>
</tr>
<tr>
<td></td>
<td>Number of cores per virtual socket = 1</td>
</tr>
<tr>
<td>4</td>
<td>Number of virtual sockets = 2</td>
</tr>
<tr>
<td></td>
<td>Number of cores per virtual socket = 2</td>
</tr>
</tbody>
</table>
e. In the **Memory Size** field, type or select 8 or higher.

f. Use the following table to configure your network connections.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>How many NICs do you want to connect</td>
<td>You must add at least one Network Interface Controller (NIC)</td>
</tr>
</tbody>
</table>

| Adapter               | VMXNET3               |


g. In the **SCSI controller** pane, select **VMware Paravirtual**.

h. In the **Disk** pane, select **Create a new virtual disk** and use the following table to configure the virtual disk parameters.

<table>
<thead>
<tr>
<th>Property</th>
<th>Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity</td>
<td>256 or higher (GB)</td>
</tr>
<tr>
<td>Disk Provisioning</td>
<td>Thin provision</td>
</tr>
<tr>
<td>Advanced options</td>
<td>Do not configure</td>
</tr>
</tbody>
</table>

3. On the **Ready to Complete** page, review the settings and click **Finish**.

## Installing the QRadar software on a virtual machine

After you create your virtual machine, you must install the IBM Security QRadar software on the virtual machine.

### Before you begin

Ensure that the activation key is readily available.

### Procedure

1. In the left navigation pane of your VMware vSphere Client, select your virtual machine.
2. In the right pane, click the **Summary** tab.
3. In the **Commands** pane, click **Edit Settings**.
4. In the left pane of the **Virtual Machine Properties** window, click **CD/DVD Drive 1**.
5. In the **Device Status** pane, select the **Connect at power on** check box.
6. In the **Device Type** pane, select **Datastore ISO File** and click **Browse**.
7. In the Browse Datastores window, locate and select the QRadar product ISO file, click **Open** and then click **OK**.
8. After the QRadar product ISO image is installed, right-click your virtual machine and click **Power > Power On**.
9. Log in to the virtual machine by typing `root` for the user name. The user name is case-sensitive.
10. Ensure that the End User License Agreement (EULA) is displayed.

**Tip:** Press the Spacebar key to advance through the document.

11. For the type of setup, select **normal**.
12. For QRadar Console installations, select the Enterprise tuning template.

13. Follow the instructions in the installation wizard to complete the installation.

The following table contains descriptions and notes to help you configure the installation.

<table>
<thead>
<tr>
<th>Network Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Host name</td>
<td>Fully qualified domain name</td>
</tr>
<tr>
<td>Secondary DNS server address</td>
<td>Optional</td>
</tr>
</tbody>
</table>
| Public IP address for networks that use Network Address Translation (NAT) | Optional
   |                                                               | Used to access the server, usually from a different network or the Internet. |
   |                                                               | Configured by using Network Address Translation (NAT) services on your network or firewall settings on your network. (NAT translates an IP address in one network to a different IP address in another network). |
| Email server name                                         | If you do not have an email server, use localhost.                          |
| Root password                                             | The password must meet the following criteria:                             |
|                                                           | • Contain at least 5 characters                                              |
|                                                           | • Contain no spaces                                                         |
|                                                           | • Can include the following special characters: @, #, ^, and *.              |

After you configure the installation parameters, a series of messages are displayed. The installation process might take several minutes.

Related tasks:

“Creating your virtual machine” on page 18

To install a virtual appliance, you must first use VMware vSphere Client 5.0 to create a virtual machine.

Adding your virtual appliance to your deployment

After the IBM Security QRadar software is installed, add your virtual appliance to your deployment.

Procedure

1. Log in to the QRadar Console.
2. On the Admin tab, click the Deployment Editor icon.
3. In the Event Components pane on the Event View page, select the virtual appliance component that you want to add.
4. On the first page of the Adding a New Component task assistant, type a unique name for the virtual appliance.
   The name that you assign to the virtual appliance can be up to 20 characters in length and can include underscores or hyphens.
5. Complete the steps in the task assistant.
6. From the Deployment Editor menu, click File > Save to staging.
7. On the Admin tab menu, click Deploy Changes.
8. Apply your license key.
   a. Log in to QRadar:
      https://IP_Address_QRadar
      The default Username is admin. The Password is the password of the root user account.
   b. Click the login.
   c. Click the Admin tab.
   d. In the navigation pane, click System Configuration.
   e. Click the System and License Management icon.
   f. From the Display list box, select Licenses, and upload you license key.
   g. Select the unallocated license and click Allocate System to License.
   h. From the list of licenses, select and license, and click Allocate License to System.

Related tasks:

“Creating your virtual machine” on page 18

To install a virtual appliance, you must first use VMware vSphere Client 5.0 to create a virtual machine.
Chapter 5. Installations from the recovery partition

When you install IBM Security QRadar products, the installer (ISO image) is copied to the recovery partition. From this partition, you can reinstall QRadar products. Your system is restored back to the default configuration. Your current configuration and data files are overwritten.

When you restart your QRadar appliance, an option to reinstall the software is displayed. If you do not respond to the prompt within 5 seconds, the system continues to start as normal. Your configuration and data files are maintained. If you choose the reinstall option, a warning message is displayed and you must confirm that you want to reinstall.

After a hard disk failure, you might not be able to reinstall from the recovery partition because the recovery partition is no longer be available. If you experience a hard disk failure, contact Customer Support for assistance.

Any software upgrades of QRadar version 7.2.0 replaces the existing ISO file with the newer version.

These guidelines apply to new QRadar version 7.2.0 installations or upgrades from new QRadar version 7.0 installations on QRadar version 7.0 appliances.

Reinstalling from the recovery partition

You can reinstall IBM Security QRadar products from the recovery partition.

Before you begin

Locate your activation key. The activation key is a 24-digit, four-part, alphanumeric string that you receive from IBM. You can find the activation key in one of the following locations:

- Printed on a sticker and physically placed on your appliance.
- Included with the packing slip; all appliances are listed along with their associated keys.

If you do not have your activation key, go to the IBM Support website (www.ibm.com/support) to obtain your activation key. You must provide the serial number of the QRadar appliance. Software activation keys do not require serial numbers.

If your deployment includes offboard storage solutions, you must disconnect your offboard storage before you reinstall QRadar. After you reinstall, you can remount your external storage solutions. For more information on configuring offboard storage, see the Offboard Storage Guide.

Procedure

1. Restart your QRadar appliance and select Factory re-install.
2. Type flatten.
The installer partitions and reformats the hard disk, installs the OS, and then reinstalls the QRadar product. You must wait for the flatten process to complete. This process can take up to several minutes. When the process is complete, a confirmation is displayed.

3. Type SETUP.
4. Log in as the root user.
5. Ensure that the End User License Agreement (EULA) is displayed.

**Tip:** Press the Spacebar key to advance through the document.

6. For QRadar Console installations, select the Enterprise tuning template.
7. Follow the instructions in the installation wizard to complete the installation.

The following table contains descriptions and notes to help you configure the installation.

<table>
<thead>
<tr>
<th>Network Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Host name</td>
<td>Fully qualified domain name</td>
</tr>
<tr>
<td>Secondary DNS server address</td>
<td>Optional</td>
</tr>
<tr>
<td>Public IP address for networks that use Network Address Translation (NAT)</td>
<td>Optional Used to access the server, usually from a different network or the Internet. Configured by using Network Address Translation (NAT) services on your network or firewall settings on your network. (NAT translates an IP address in one network to a different IP address in another network).</td>
</tr>
<tr>
<td>Email server name</td>
<td>If you do not have an email server, use localhost.</td>
</tr>
<tr>
<td>Root password</td>
<td>The password must meet the following criteria:</td>
</tr>
<tr>
<td></td>
<td>• Contain at least 5 characters</td>
</tr>
<tr>
<td></td>
<td>• Contain no spaces</td>
</tr>
<tr>
<td></td>
<td>• Can include the following special characters: @, #, ^, and *</td>
</tr>
</tbody>
</table>

After you configure the installation parameters, a series of messages are displayed. The installation process might take several minutes.

8. Apply your license key.
   a. Log in to QRadar:
      
      https://IP_Address_QRadar
      
      The default **Username** is admin. The **Password** is the password of the root user account.
   b. Click the login.
   c. Click the **Admin** tab.
   d. In the navigation pane, click **System Configuration**.
   e. Click the **System and License Management** icon.
   f. From the **Display** list box, select **Licenses**, and upload your license key.
   g. Select the unallocated license and click **Allocate System to License**.
h. From the list of licenses, select and license, and click **Allocate License to System**.
Chapter 6. Network settings management

Use the qchange_netsetup script to change the network settings of your IBM Security QRadar system. Configurable network settings include host name, IP address, network mask, gateway, DNS addresses, public IP address, and email server.

Changing the network settings in an all-in-one system

You can change the network settings in your all-in-one system. An all-in-one system has all IBM Security QRadar components that are installed on one system.

Before you begin

You must have a local connection to your QRadar Console.

Procedure

1. Log in to as the root user.
2. Type the following command:
   qchange_netsetup
3. Follow the instructions in the wizard to complete the configuration.

The following table contains descriptions and notes to help you configure the network settings.

<table>
<thead>
<tr>
<th>Network Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Host name</td>
<td>Fully qualified domain name</td>
</tr>
<tr>
<td>Secondary DNS server address</td>
<td>Optional</td>
</tr>
<tr>
<td>Public IP address for networks that use</td>
<td>Optional</td>
</tr>
<tr>
<td>Network Address Translation (NAT)</td>
<td>Used to access the server, usually from a different network or the Internet.</td>
</tr>
<tr>
<td></td>
<td>Configured by using Network Address Translation (NAT) services on your network or firewall settings on your network. (NAT translates an IP address in one network to a different IP address in another network).</td>
</tr>
<tr>
<td>Email server name</td>
<td>If you do not have an email server, use localhost.</td>
</tr>
</tbody>
</table>

A series of messages are displayed as QRadar processes the requested changes. After the requested changes are processed, the QRadar system is automatically shutdown and restarted.

Changing the network settings of a QRadar Console in a multisystem deployment

To change the network settings in a multi-system IBM Security QRadar deployment, remove all managed hosts, change the network settings, read the managed hosts, and then reassign the component.
Procedure

1. To remove managed hosts, log in to QRadar:

   https://IP_Address_QRadar

   The Username is admin.
   a. Click the Admin tab.
   b. Click the Deployment Editor icon.
   c. In the Deployment Editor window, click the System View tab.
   d. For each managed host in your deployment, right-click the managed host and select Remove host.
   e. On the Admin tab, click Deploy Changes.

2. To change network settings on the QRadar Console, use SSH to log in to QRadar as the root user.
   The username is root.
   a. Type the following command: `qchange_netsetup`.
   b. Follow the instructions in the wizard to complete the configuration.
   The following table contains descriptions and notes to help you configure the network settings.

<table>
<thead>
<tr>
<th>Network Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Host name</td>
<td>Fully qualified domain name</td>
</tr>
<tr>
<td>Secondary DNS server address</td>
<td>Optional</td>
</tr>
<tr>
<td>Public IP address for networks that use</td>
<td>Optional</td>
</tr>
<tr>
<td>Network Address Translation (NAT)</td>
<td>Used to access the server, usually from a different network or the Internet.</td>
</tr>
<tr>
<td></td>
<td>Configured by using Network Address Translation (NAT) services on your network or firewall settings on your network. (NAT translates an IP address in one network to a different IP address in another network).</td>
</tr>
<tr>
<td>Email server name</td>
<td>If you do not have an email server, use localhost.</td>
</tr>
</tbody>
</table>

   After you configure the installation parameters, a series of messages are displayed. The installation process might take several minutes.

3. To reallocate and reassign the managed hosts, log in to QRadar:

   https://IP_Address_QRadar

   The Username is admin.
   a. Click the Admin tab.
   b. Click the Deployment Editor icon.
   c. In the Deployment Editor window, click the System View tab.
   d. Click Actions > Add a managed host.
   e. Follow the instructions in the wizard to add a host.

   Select the Host is NATed option to configure a public IP address for the server. This IP address is a secondary IP address that is used to access the server, usually from a different network or the Internet. The Public IP address is often configured by using Network Address Translation (NAT)
services on your network or firewall settings on your network. NAT translates an IP address in one network to a different IP address in another network.

4. Reassign all components that are not your QRadar Console to your managed hosts.
   a. In the Deployment Editor window, click the Event View tab, and select the component that you want to reassign to the managed host.
   b. Click Actions > Assign.
   c. From the Select a host list list, select the host that you want to reassign to this component.
   d. On the Admin tab, click Deploy Changes.

### Updating network settings after a NIC replacement

If you replace your integrated system board or stand-alone (Network Interface Cards) NICs, you must update your IBM Security QRadar network settings to ensure that your hardware remains operational.

**About this task**

The network settings file contains one pair of lines for each NIC that is installed and one pair of lines for each NIC that was removed. You must remove the lines for the NIC that you removed and then rename the NIC that you installed.

Your network settings file might resemble the following example, where `NAME="eth0"` is the NIC that was replaced and `NAME="eth4"` is the NIC that was installed.

```
# PCI device 0x14e4:0x163b (bnx2)
SUBSYSTEM="net", ACTION="add", DRIVERS="?*",
ATTR{address}="78:2a:cb:23:1a:2f", ATTR{type}="1",
KERNEL="eth", NAME="eth0"

# PCI device 0x14e4:0x163b (bnx2)
SUBSYSTEM="net", ACTION="del", DRIVERS="?*",
ATTR{address}="78:2a:cb:23:1a:2f", ATTR{type}="1",
KERNEL="eth", NAME="eth4"
```

**Procedure**

1. Use SSH to log in to the IBM Security QRadar product as the root user.
   The user name is root.

2. Type the following command:
   ```
   cd /etc/udev/rules.d/
   ```

3. To edit the network settings file, type the following command:
   ```
   vi 70-persistent-net.rules
   ```

4. Remove the pair of lines for the NIC that was replaced: `NAME="eth0"`. 

Chapter 6. Network settings management 29
5. Rename the Name=<eth> values for the newly installed NIC.

   **Example:** Rename NAME="eth4" to NAME="eth0".

6. Save and close the file.

7. Type the following command: `reboot`.
Chapter 7. Troubleshooting problems

Troubleshooting is a systematic approach to solving a problem. The goal of troubleshooting is to determine why something does not work as expected and how to resolve the problem.

Review the following table to help you or customer support resolve a problem.

Table 17. Troubleshooting actions to prevent problems

<table>
<thead>
<tr>
<th>Action</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apply all known fix packs, service levels, or program temporary fixes (PTF).</td>
<td>A product fix might be available to fix the problem.</td>
</tr>
<tr>
<td>Ensure that the configuration is supported.</td>
<td>Review the software and hardware requirements.</td>
</tr>
<tr>
<td>Look up error message codes by selecting the product from the <a href="http://www.ibm.com/support/entry/portal">IBM Support Portal</a> and then typing the error message code into the Search <a href="http://www.ibm.com/support/entry/portal">support</a> box.</td>
<td>Error messages give important information to help you identify the component that is causing the problem.</td>
</tr>
<tr>
<td>Reproduce the problem to ensure that it is not just a simple error.</td>
<td>If samples are available with the product, you might try to reproduce the problem by using the sample data.</td>
</tr>
<tr>
<td>Check the installation directory structure and file permissions.</td>
<td>The installation location must contain the appropriate file structure and the file permissions. For example, if the product requires write access to log files, ensure that the directory has the correct permission.</td>
</tr>
<tr>
<td>Review relevant documentation, such as release notes, technotes, and proven practices documentation.</td>
<td>Search the IBM knowledge bases to determine whether your problem is known, has a workaround, or if it is already resolved and documented.</td>
</tr>
<tr>
<td>Review recent changes in your computing environment.</td>
<td>Sometimes installing new software might cause compatibility issues.</td>
</tr>
</tbody>
</table>

If you still need to resolve problems, you must collect diagnostic data. This data is necessary for an IBM technical-support representative to effectively troubleshoot and assist you in resolving the problem. You can also collect diagnostic data and analyze it yourself.

Related concepts:

“QRadar components” on page 2
IBM Security QRadar consolidates event data from log sources that are used by devices and applications in your network.

Troubleshooting resources

Troubleshooting resources are sources of information that can help you resolve a problem that you have with a product. Many of the resource links provided can also be viewed in a short video demonstration.
To view the video version, search for "troubleshooting" through either Google search engine or YouTube video community.

Related concepts:
“QRadar log files” on page 33
Use the IBM Security QRadar log files to help you troubleshoot problems.

Support Portal
The IBM Support Portal is a unified, centralized view of all technical support tools and information for all IBM systems, software, and services.

Use IBM Support Portal to access all the IBM support resources from one place. You can adjust the pages to focus on the information and resources that you need for problem prevention and faster problem resolution. Familiarize yourself with the IBM Support Portal by viewing the demo videos (https://www.ibm.com/blogs/SPNA/entry/the_ibm_support_portal_videos).

Find the IBM Security QRadar content that you need by selecting your products from the IBM Support Portal (http://www.ibm.com/support/entry/portal).

Service requests
Service requests are also known as Problem Management Records (PMRs). Several methods exist to submit diagnostic information to IBM Software Technical Support.

To open a service request, or to exchange information with technical support, view the IBM Software Support Exchanging information with Technical Support page (http://www.ibm.com/software/support/exchangeinfo.html). Service requests can also be submitted directly by using the Service requests (PMRs) tool (http://www.ibm.com/support/entry/portal/Open_service_request) or one of the other supported methods that are detailed on the exchanging information page.

Fix Central
Fix Central provides fixes and updates for your system software, hardware, and operating system.


Knowledge bases
You can often find solutions to problems by searching IBM knowledge bases. You can optimize your results by using available resources, support tools, and search methods.

Use the following knowledge bases to find useful information.

Technotes and APARs
From the IBM Support Portal (http://www.ibm.com/support/entry/portal), you can search technotes and APARs (problem reports).

IBM masthead search
Use the IBM masthead search by typing your search string into the Search field at the top of any ibm.com page.
External search engines

Search for content by using any external search engine, such as Google, Yahoo, or Bing. If you use an external search engine, your results are more likely to include information that is outside the ibm.com® domain. However, sometimes you can find useful problem-solving information about IBM products in newsgroups, forums, and blogs that are not on ibm.com.

Tip: Include “IBM” and the name of the product in your search if you are looking for information about an IBM product.

QRadar log files

Use the IBM Security QRadar log files to help you troubleshoot problems.

You can review the log files for the current session individually or you can collect them to review later.

Follow these steps to review the QRadar log files.
1. To help you troubleshoot errors or exceptions, review the following log files.
   - /var/log/qradar.log
   - /var/log/qradar.error
2. If you require more information, review the following log files:
   - https://console_ip/system_info.cgi
   - /var/log/qradar-sql.log
   - /opt/tomcat5/logs/catalina.out
   - /opt/imq/share/var/instances/imqbroker/log/log.txt
   - /var/log/qflow.debug
3. To collect log files for an IBM technical-support representative, from the command line, run the following command:
   /opt/qradar/support/get_logs.sh -s
   The command creates a logs_<console_name>_<date_time>.tar.bz2 file in the /var/log directory.

Related concepts:
“Troubleshooting resources” on page 31
Troubleshooting resources are sources of information that can help you resolve a problem that you have with a product. Many of the resource links provided can also be viewed in a short video demonstration.

Ports used by QRadar

Review the common ports that are used by IBM Security QRadar, services, and components.

For example, you can determine the ports that must be opened for the QRadar Console to communicate with remote Event Processors.

Ports and iptables

The listen ports for QRadar are valid only when iptables is enabled on your QRadar system.
SSH communication on port 22

All the ports that are described in following table can be tunneled, by encryption, through port 22 over SSH. Managed hosts that use encryption can establish multiple bidirectional SSH sessions to communicate securely. These SSH sessions are initiated from the managed host to provide data to the host that needs the data in the deployment. For example, Event Processor appliances can initiate multiple SSH sessions to the QRadar Console for secure communication. This communication can include tunneled ports over SSH, such as HTTPS data for port 443 and Ariel query data for port 32006. QRadar QFlow Collectors that use encryption can initiate SSH sessions to Flow Processor appliances that require data.

QRadar ports

Unless otherwise noted, information about the assigned port number, descriptions, protocols, and the signaling direction for the port applies to all IBM Security QRadar products.

The following table lists the ports, protocols, communication direction, description, and the reason that the port is used.

*Table 18. Listening ports that are used by QRadar, services, and components*

<table>
<thead>
<tr>
<th>Port</th>
<th>Description</th>
<th>Protocol</th>
<th>Direction</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>SSH</td>
<td>TCP</td>
<td>Bidirectional from the QRadar Console to all other components.</td>
<td>Remote management access, Adding a remote system as a managed host, Log source protocols to retrieve files from external devices, for example the log file protocol, Users who use the command-line interface to communicate from desktops to the Console, High-availability (HA)</td>
</tr>
<tr>
<td>25</td>
<td>SMTP</td>
<td>TCP</td>
<td>From all managed hosts to the SMTP gateway</td>
<td>Emails from QRadar to an SMTP gateway, Delivery of error and warning email messages to an administrative email contact</td>
</tr>
<tr>
<td>37</td>
<td>rdate (time)</td>
<td>UDP/TCP</td>
<td>All systems to the QRadar Console, QRadar Console to the NTP or rdate server</td>
<td>Time synchronization between the QRadar Console and managed hosts</td>
</tr>
</tbody>
</table>
Table 18. Listening ports that are used by QRadar, services, and components (continued)

<table>
<thead>
<tr>
<th>Port</th>
<th>Description</th>
<th>Protocol</th>
<th>Direction</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>111</td>
<td>Port mapper</td>
<td>TCP/UDP</td>
<td>Managed hosts that communicate to the QRadar Console Users that connect to the QRadar Console</td>
<td>Remote Procedure Calls (RPC) for required services, such as Network File System (NFS)</td>
</tr>
<tr>
<td>135 and dynamically allocated ports above 1024 for RPC calls.</td>
<td>DCOM</td>
<td>TCP</td>
<td>WinCollect agents and Windows operating systems that are remotely polled for events Bidirectional traffic between QRadar Console components that use the Microsoft Security Event Log Protocol and Windows operating systems that are remotely polled for events or bidirectional traffic between or Event Collectors that use the Microsoft Security Event Log Protocol and Windows operating systems that are remotely polled for events Bidirectional traffic between Adaptive Log Exporter agents and Windows operating systems that are remotely polled for events.</td>
<td>This traffic is generated by WinCollect, Microsoft Security Event Log Protocol, or Adaptive Log Exporter. <strong>Note:</strong> DCOM typically allocates a random port range for communication. You can configure Microsoft Windows products to use a specific port. For more information, see your Microsoft Windows documentation.</td>
</tr>
<tr>
<td>137</td>
<td>Windows NetBIOS name service</td>
<td>UDP</td>
<td>Bidirectional traffic between WinCollect agents and Windows operating systems that are remotely polled for events Bidirectional traffic between QRadar Console components or Event Collectors that use the Microsoft Security Event Log Protocol and Windows operating systems that are remotely polled for events. Bidirectional traffic between Adaptive Log Exporter agents and Windows operating systems that are remotely polled for events.</td>
<td>This traffic is generated by WinCollect, Microsoft Security Event Log Protocol, or Adaptive Log Exporter.</td>
</tr>
</tbody>
</table>

Chapter 7. Troubleshooting problems  35
Table 18. Listening ports that are used by QRadar, services, and components (continued)

<table>
<thead>
<tr>
<th>Port</th>
<th>Description</th>
<th>Protocol</th>
<th>Direction</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>138</td>
<td>Windows NetBIOS datagram service</td>
<td>UDP</td>
<td>Bidir</td>
<td>This traffic is generated by WinCollect, Microsoft Security Event Log Protocol, or Adaptive Log Exporter.</td>
</tr>
<tr>
<td>139</td>
<td>Windows NetBIOS session service</td>
<td>TCP</td>
<td>Bidir</td>
<td>This traffic is generated by WinCollect, Microsoft Security Event Log Protocol, or Adaptive Log Exporter.</td>
</tr>
<tr>
<td>199</td>
<td>NetSNMP</td>
<td>TCP</td>
<td>QRadar managed hosts that connect to the QRadar Console</td>
<td>TCP port for the NetSNMP daemon that listens for communications (v1, v2c, and v3) from external log sources</td>
</tr>
<tr>
<td>427</td>
<td>Service Location Protocol (SLP)</td>
<td>UDP/TCP</td>
<td>QRadar Event Collectors</td>
<td>The Integrated Management Module uses the port to find services on a LAN.</td>
</tr>
<tr>
<td>443</td>
<td>Apache/HTTPS</td>
<td>TCP</td>
<td>Bidirectional traffic for secure communications from all products to the QRadar Console</td>
<td>Configuration downloads to managed hosts from the QRadar Console; QRadar managed hosts that connect to the QRadar Console; Users to have log in access to QRadar; QRadar Console that manage and provide configuration updates for WinCollect agents</td>
</tr>
</tbody>
</table>
Table 18. Listening ports that are used by QRadar, services, and components (continued)

<table>
<thead>
<tr>
<th>Port</th>
<th>Description</th>
<th>Protocol</th>
<th>Direction</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>445</td>
<td>Microsoft Directory Service</td>
<td>TCP</td>
<td>Bidir</td>
<td>This traffic is generated by WinCollect, Microsoft Security Event Log Protocol, or Adaptive Log Exporter.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Bidirectional traffic between WinCollect agents and Windows operating systems that are remotely polled for events</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Bidirectional traffic between QRadar Console components or Event Collectors that use the Microsoft Security Event Log Protocol and Windows operating systems that are remotely polled for events</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Bidirectional traffic between Adaptive Log Exporter agents and Windows operating systems that are remotely polled for events</td>
</tr>
<tr>
<td>514</td>
<td>Syslog</td>
<td>UDP/TCP</td>
<td>External network appliances that provide TCP syslog events use bidirectional traffic.</td>
<td>External log sources to send event data to QRadar components</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Syslog traffic includes WinCollect agents and Adaptive Log Exporter agents capable of sending either UDP or TCP events to QRadar</td>
</tr>
<tr>
<td>762</td>
<td>Network File System (NFS) mount daemon (mountd)</td>
<td>TCP/UDP</td>
<td>Connections between the QRadar Console and NFS server</td>
<td>The Network File System (NFS) mount daemon, which processes requests to mount a file system at a specified location</td>
</tr>
<tr>
<td>1514</td>
<td>Syslog-ng</td>
<td>TCP/UDP</td>
<td>Connection between the local Event Collector component and local Event Processor component to the syslog-ng daemon for logging</td>
<td>Internal logging port for syslog-ng</td>
</tr>
<tr>
<td>2049</td>
<td>NFS</td>
<td>TCP</td>
<td>Connections between the QRadar Console and NFS server</td>
<td>The Network File System (NFS) protocol to share files or data between components</td>
</tr>
<tr>
<td>2055</td>
<td>NetFlow data</td>
<td>UDP</td>
<td>From the management interface on the flow source (typically a router) to the QRadar QFlow Collector.</td>
<td>NetFlow datagram from components, such as routers</td>
</tr>
<tr>
<td>3389</td>
<td>Remote Desktop Protocol (RDP) and Ethernet over USB is enabled</td>
<td>TCP/UDP</td>
<td></td>
<td>If the Windows operating system is configured to support RDP and Ethernet over USB, a user can initiate a session to the server over the management network. This means the default port for RDP, 3389 must be open.</td>
</tr>
</tbody>
</table>
# Listening ports that are used by QRadar, services, and components (continued)

<table>
<thead>
<tr>
<th>Port</th>
<th>Description</th>
<th>Protocol</th>
<th>Direction</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>3900</td>
<td>Integrated Management Module remote presence port</td>
<td>TCP/UDP</td>
<td></td>
<td>Use this port to interact with the QRadar console through the Integrated Management Module.</td>
</tr>
<tr>
<td>4333</td>
<td>Redirect port</td>
<td>TCP</td>
<td></td>
<td>This port is assigned as a redirect port for Address Resolution Protocol (ARP) requests in QRadar offense resolution</td>
</tr>
<tr>
<td>5432</td>
<td>Postgres</td>
<td>TCP</td>
<td>Communication for the managed host that is used to access the local database instance</td>
<td>Required for provisioning managed hosts from the Admin tab</td>
</tr>
<tr>
<td>6543</td>
<td>High-availability heartbeat</td>
<td>TCP/UDP</td>
<td>Bidirectional between the secondary host and primary host in an HA cluster</td>
<td>Heartbeat ping from a secondary host to a primary host in an HA cluster to detect hardware or network failure</td>
</tr>
<tr>
<td>7676, 7677, and four randomly bound ports above 32000.</td>
<td>Messaging connections (IMQ)</td>
<td>TCP</td>
<td>Message queue communications between components on a managed host.</td>
<td>Message queue broker for communications between components on a managed host. Ports 7676 and 7677 are static TCP ports and four extra connections are created on random ports.</td>
</tr>
<tr>
<td>7777 - 7782, 7790, 7791</td>
<td>JMX server ports</td>
<td>TCP</td>
<td>Internal communications, these ports are not available externally</td>
<td>JMX server (Mbean) monitoring for ECS, hostcontext, Tomcat, VIS, reporting, ariel, and accumulator services Note: These ports are used by QRadar support.</td>
</tr>
<tr>
<td>7789</td>
<td>HA Distributed Replicated Block Device</td>
<td>TCP/UDP</td>
<td>Bidirectional between the secondary host and primary host in an HA cluster</td>
<td>Distributed Replicated Block Device is used to keep drives synchronized between the primary and secondary hosts in HA configurations</td>
</tr>
<tr>
<td>7800</td>
<td>Apache Tomcat</td>
<td>TCP</td>
<td>From the Event Collector to the QRadar Console</td>
<td>Real-time (streaming) for events</td>
</tr>
<tr>
<td>7801</td>
<td>Apache Tomcat</td>
<td>TCP</td>
<td>From the Event Collector to the QRadar Console</td>
<td>Real-time (streaming) for flows</td>
</tr>
<tr>
<td>7803</td>
<td>Apache Tomcat</td>
<td>TCP</td>
<td>From the Event Collector to the QRadar Console</td>
<td>Anomaly detection engine port</td>
</tr>
<tr>
<td>8000</td>
<td>Event Collection service (ECS)</td>
<td>TCP</td>
<td>From the Event Collector to the QRadar Console</td>
<td>Listening port for specific Event Collection service (ECS).</td>
</tr>
<tr>
<td>Port</td>
<td>Description</td>
<td>Protocol</td>
<td>Direction</td>
<td>Requirement</td>
</tr>
<tr>
<td>--------</td>
<td>--------------------------------------------------</td>
<td>----------</td>
<td>-----------</td>
<td>------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>8001</td>
<td>SNMP daemon port</td>
<td>UDP</td>
<td>External</td>
<td>UDP listening port for external SNMP data requests.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>SNMP trap</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>information</td>
<td></td>
</tr>
<tr>
<td>8005</td>
<td>Apache Tomcat</td>
<td>TCP</td>
<td>None</td>
<td>A local port that is not used by QRadar</td>
</tr>
<tr>
<td>8009</td>
<td>Apache Tomcat</td>
<td>TCP</td>
<td>From the HTTP daemon (HTTPd) process to Tomcat</td>
<td>Tomcat connector, where the request is used and proxied for the web service</td>
</tr>
<tr>
<td>8080</td>
<td>Apache Tomcat</td>
<td>TCP</td>
<td>From the HTTP daemon (HTTPd) process to Tomcat</td>
<td>Tomcat connector, where the request is used and proxied for the web service</td>
</tr>
<tr>
<td>9995</td>
<td>NetFlow data</td>
<td>UDP</td>
<td>From the management interface on the flow source (typically a router) to the QFlow Collector</td>
<td>NetFlow datagram from components, such as routers</td>
</tr>
<tr>
<td>10000</td>
<td>QRadar web-based, system administration interface</td>
<td>TCP/UDP</td>
<td>User desktop systems to all QRadar hosts</td>
<td>Server changes, such as the hosts root password and firewall access</td>
</tr>
<tr>
<td>23111</td>
<td>SOAP web server</td>
<td>TCP</td>
<td></td>
<td>SOAP web server port for the event collection service (ECS)</td>
</tr>
<tr>
<td>23333</td>
<td>Emulex Fibre Channel</td>
<td>TCP</td>
<td>User desktop systems that connect to QRadar appliances with a Fibre Channel card</td>
<td>Emulex Fibre Channel HBAAnywhere Remote Management service (elxmgmt)</td>
</tr>
<tr>
<td>32004</td>
<td>Normalized event forwarding</td>
<td>TCP</td>
<td>Bidirectional between QRadar components</td>
<td>Normalized event data that is communicated from an off-site source or between Event Collectors</td>
</tr>
<tr>
<td>32005</td>
<td>Data flow</td>
<td>TCP</td>
<td>Bidirectional between QRadar components</td>
<td>Data flow communication port between Event Collectors when on separate managed hosts</td>
</tr>
<tr>
<td>32006</td>
<td>Ariel queries</td>
<td>TCP</td>
<td>Bidirectional between QRadar components</td>
<td>Communication port between the Ariel proxy server and the Ariel query server</td>
</tr>
<tr>
<td>32009</td>
<td>Identity data</td>
<td>TCP</td>
<td>Bidirectional between QRadar components</td>
<td>Identity data that is communicated between the passive vulnerability information service (VIS) and the Event Collection service (ECS)</td>
</tr>
<tr>
<td>32010</td>
<td>Flow listening source port</td>
<td>TCP</td>
<td>Bidirectional between QRadar components</td>
<td>Flow listening port to collect data from QRadar QFlow Collectors</td>
</tr>
</tbody>
</table>
**Table 18. Listening ports that are used by QRadar, services, and components (continued)**

<table>
<thead>
<tr>
<th>Port</th>
<th>Description</th>
<th>Protocol</th>
<th>Direction</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>32011</td>
<td>Ariel listening port</td>
<td>TCP</td>
<td>Bidirectional</td>
<td>Ariel listening port for database searches, progress information, and other associated commands</td>
</tr>
<tr>
<td>32000-33999</td>
<td>Data flow (flows, events, flow context)</td>
<td>TCP</td>
<td>Bidirectional</td>
<td>Data flows, such as events, flows, flow context, and event search queries</td>
</tr>
<tr>
<td>40799</td>
<td>PCAP data</td>
<td>TCP</td>
<td>From Juniper Networks SRX Series appliances to QRadar</td>
<td>Collecting incoming packet capture (PCAP) data from Juniper Networks SRX Series appliances. <strong>Note:</strong> The packet capture on your device can use a different port. For more information about configuring packet capture, see your Juniper Networks SRX Series appliance documentation.</td>
</tr>
<tr>
<td>ICMP</td>
<td>ICMP</td>
<td>ICMP</td>
<td>Bidirectional</td>
<td>Testing the network connection between the secondary host and primary host in an HA cluster by using Internet Control Message Protocol (ICMP)</td>
</tr>
</tbody>
</table>

**Searching for ports in use by QRadar**

Use the `netstat` command to determine which ports are in use on the QRadar Console or managed host. Use the `netstat` command to view all listening and established ports on the system.

**Procedure**

1. Using SSH, log in to your QRadar Console, as the root user.
2. To display all active connections and the TCP and UDP ports on which the computer is listening, type the following command:
   ```bash
   netstat -nap
   ```
3. To search for specific information from the netstat port list, type the following command:
   ```bash
   netstat -nap | grep port
   ```

**Examples:**

- To display all ports that match 199, type the following command: `netstat -nap | grep 199`
- To display all postgres related ports, type the following command: `netstat -nap | grep postgres`
- To display information on all listening ports, type the following command: `netstat -nap | grep LISTEN`
Viewing IMQ port associations

You can view port numbers associations for messaging connections (IMQ) to which application services are allocated. To look up the additional port numbers, connect to the localhost by using telnet.

Important: Random port associations are not static port numbers. If a service is restarted, the ports that generated for a service are reallocated and the service is assigned a new set of port numbers.

Procedure

1. Using SSH to log in to the QRadar Console, as the root user.
2. To display a list of associated ports for the IMQ messaging connection, type the following command:
   `telnet localhost 7676`
3. If no information is displayed, press the Enter key to close the connection.
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