IBM Security QRadar SIEM
Version 7.3.1

High Availability Guide
Product information

This document applies to IBM QRadar Security Intelligence Platform V7.3.1 and subsequent releases unless superseded by an updated version of this document.

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iv  QRadar SIEM High Availability Guide
Introduction to QRadar high-availability deployments

Administrators can protect IBM® Security QRadar® data by implementing a high-availability (HA) solution.

Intended audience

QRadar SIEM administrators who are responsible for installing and deploying the product must know their corporate network infrastructure, the Linux operating system, and networking technologies.

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 lawful 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.

Please Note:

Use of this Program may implicate various laws or regulations, including those related to privacy, data protection, employment, and electronic communications and storage. IBM Security QRadar may be used only for lawful purposes and in a lawful manner. Customer agrees to use this Program pursuant to, and assumes all responsibility for complying with, applicable laws, regulations and policies. Licensee represents that it will obtain or has obtained any consents, permissions, or licenses required to enable its lawful use of IBM Security QRadar.
1 Upgrading an appliance to ensure correct /store partition size

Before you add an appliance to a high-availability (HA) cluster, you must confirm that the combined size of the /store and /transient partitions on the secondary HA host is the same size or larger than the /store partition on the primary HA host. A new appliance with IBM Security QRadar V7.3.0 and later installed has a different /store partition size than a host that is upgraded to V7.3.0. To add a QRadar V7.3.0 appliance to an HA cluster that was upgraded to V7.3.0 GA, you must first flatten the appliance and upgrade from QRadar V7.2.8. You do not have to flatten an appliance that was upgraded to V7.3.0 Patch 1, or later.

Before you begin

Download the following software ISOs and fixes, and burn them to DVDs:

- QRadar V7.3.0 at [Fix Central](https://www-945.ibm.com/support/fixcentral#).

Procedure

1. Install QRadar V7.2.8 on your new appliance. For more information, see [Installing a QRadar Console or managed host](http://www.ibm.com/support/knowledgecenter/SS42VS_7.2.8/com.ibm.qradar.doc/t_siem_inst_con_man_host.html).
2. Upgrade QRadar V7.2.8 with the software fix. For more information, see [Upgrading QRadar products](http://www.ibm.com/support/knowledgecenter/SS42VS_7.2.8/com.ibm.qradar.doc/t_qradar_up_ugrad_sys.html).
3. Install QRadar V7.3.0 on the appliance. For more information, see [Installing a QRadar Console or managed host](http://www.ibm.com/support/knowledgecenter/SS42VS_7.3.0/com.ibm.qradar.doc/t_siem_inst_con_man_host.html).
2 HA overview

If your hardware or network fails, IBM Security QRadar can continue to collect, store, and process event and flow data by using high-availability (HA) appliances.

To enable HA, QRadar connects a primary HA host with a secondary HA host to create an HA cluster.

If a primary HA host fails, then the secondary HA host maintains access to the same data as the primary by using data synchronization or shared external storage.

The secondary HA host inherits the license from the primary HA host. There is no need to apply a separate license to the secondary host.

For more information about using shared external storage with HA, for example iSCSI, Fibre Channel, or NFS, see the IBM Security QRadar Offboard Storage Guide.

Unless otherwise noted, all references to QRadar refer to QRadar SIEM and IBM QRadar Log Manager

Related concepts:

HA clusters" on page 4
A high-availability (HA) cluster consists of a primary HA host, a secondary HA host, and cluster virtual IP address.

"Data consistency for HA"
When an HA failover occurs, IBM Security QRadar ensures the consistency of your data.

Data consistency for HA

When an HA failover occurs, IBM Security QRadar ensures the consistency of your data.

The type of storage that you use determines how HA data consistency is maintained. If you configure HA with external storage, data consistency is maintained by using a component such as an iSCSI or Fibre Channel external storage device. See "Offboard storage requirements for HA" on page 13.

If you do not use external storage devices, then QRadar HA maintains data consistency between a primary and secondary HA host by using Distributed Replicated Block Device, except for QRadar 15XX appliances, which use the Gluster file system.

Data synchronization occurs in the following situations in an HA environment:

* When you initially configure an HA cluster.
* When a primary HA host is restored after a failover.
* During normal HA operation, data is synchronized in real time between the primary and secondary host.

Related concepts:

"HA overview"
If your hardware or network fails, IBM Security QRadar can continue to collect, store, and process event and flow data by using high-availability (HA) appliances.

"Link bandwidth and latency" on page 13
To configure high-availability (HA), you must consider the bandwidth and latency between the primary and secondary HA hosts.

"Status of HA hosts" on page 15
You can review the status of the primary and secondary host in your high-availability (HA) cluster.
Real-time data synchronization
When you configure an HA cluster, the /store file system on the primary HA host is automatically synchronized with the /store partition on the secondary HA host.

If the primary HA host fails over, the /store file system on the secondary HA host is automatically mounted to its local disk, where it continues to read from and write to the data received by the primary HA host before the failover.

After synchronization is complete, the secondary HA host assumes a status of standby.

Depending on the size of the primary /store partition and performance, disk synchronization can take an extended time period. Ensure that the connection between the primary and secondary HA host has a minimum bandwidth of 1 Gbps.

Related concepts:
“Status of HA hosts” on page 15
You can review the status of the primary and secondary host in your high-availability (HA) cluster.

Post-failover data synchronization
Data that is collected by a primary high-availability (HA) host, up to the point of failover, is maintained virtually, in real time, by the secondary HA host.

When the primary HA host is restored after a failure, only the data that is collected by the secondary HA host in the intervening period is synchronized with the primary HA host. Therefore, post-failover disk synchronization is faster than initial disk synchronization, unless the disk on the primary HA host was replaced or reformatted when the host was manually repaired.

When restored from a failover, the status of the primary HA host becomes offline. You must set the primary HA host to an online state, and set the secondary host to an offline state, before it can become the active host. Disk replication with the secondary HA host is enabled while the primary HA host remains offline.

Related tasks:
“Setting an HA host online” on page 20
You can set the primary or secondary HA host to Online.

HA clusters
A high-availability (HA) cluster consists of a primary HA host, a secondary HA host, and cluster virtual IP address.

Primary HA host
The primary HA host is any console or managed host in your IBM Security QRadar SIEM deployment that requires protection from data loss in the event of a failure.

When you create an HA cluster, the IP address of the primary HA host is automatically reassigned to a cluster virtual IP address. Therefore, you must assign an unused IP address to the primary HA host.

The primary HA host can act as a standby system for the secondary HA host. For example, if the primary HA host is repaired after a failover, the status changes to standby.

Secondary HA host
The secondary HA host is the standby system for the primary HA host.
If the primary HA host fails, the secondary HA host automatically takes over all the responsibilities of the primary HA host.

**Virtual IP address**

When you create an HA cluster, the cluster virtual IP address takes the IP address of the primary HA host.

**Configuring the cluster**

Use the HA wizard to configure the primary host, secondary host, and cluster virtual IP address.

The following items are validated when you configure by using the HA wizard:

- the secondary HA host has a valid HA activation key.
- the secondary HA host is not part of another HA cluster
- the software versions on the primary and secondary HA hosts are the same
- if the primary HA host is configured with an external storage device, the secondary HA host is configured to access the same external storage device.
- the primary and secondary HA hosts support the same Device Support Module (DSM), scanner, and protocol RPMs.

**Related concepts:**

- [“HA overview,” on page 3](#)
- [“Primary HA host failure” on page 6](#)
- [“Status of HA hosts” on page 15](#)
- [“IP addressing and subnets” on page 12](#)

**Related tasks:**

- [“Creating an HA cluster” on page 17](#)

**Failovers**

When a primary or secondary high-availability (HA) host fails, IBM Security QRadar maintains data consistency.

The following scenarios cause failover:

- A power supply failure.
- A network failure that is detected by network connectivity tests.
- An operating system malfunction that delays or stops the heartbeat ping tests.
- A complete Redundant Array of Independent Disks (RAID) failure on the primary HA host.
- A manual failover.

The following scenarios do not cause an automatic HA failover:

- If a QRadar process develops an error, stops functioning, or exits with an error.
• If a disk on your primary HA host reaches 95% capacity, QRadar data collection stops, but the primary HA host continues to function.

**Primary HA host failure**

If the secondary high-availability (HA) host detects a primary host failure, it automatically takes over the responsibilities of the primary HA host and becomes the active system.

When a primary HA host is recovered from a failover, it does not automatically take over the active status in the HA cluster. Instead, the secondary HA host remains the active system and the primary host acts as the standby system.

**Important:** You must switch the primary back to the active status after successfully recovering from a primary failure. See “Switching a primary HA host to active” on page 21.

**Related concepts:**

“A high-availability (HA) cluster consists of a primary HA host, a secondary HA host, and cluster virtual IP address.”

**Secondary HA host failure**

If the primary high-availability (HA) host detects a secondary host failure, it automatically assumes the responsibilities of the secondary HA host and becomes the active system.

**HA failover event sequence**

IBM Security QRadar initiates a sequence of events when a primary high-availability (HA) host fails.

During failover, the secondary HA host assumes the responsibilities of the primary HA host. The following actions in sequence are completed in sequence:

1. If configured, external shared storage devices are detected and the file systems are mounted. For more information, see the IBM Security Offboard Storage Guide.
2. A management interface network alias is created, for example, the network alias for eth0 is eth0:0.
3. The cluster virtual IP address is assigned to the network alias.
4. All QRadar services are started.
5. The secondary HA host connects to the console and downloads configuration files.

**Network connectivity tests**

To test network connectivity, the IBM Security QRadar Console automatically pings all existing managed hosts in your QRadar deployment.

If the primary HA QRadar console loses network connectivity to a managed host, but the connection to the secondary HA console remains intact, the HA secondary QRadar console completes another network connectivity test with the managed hosts. If the test succeeds, the primary HA console completes a controlled failover to the secondary HA console. If the test fails, HA failover is not completed because the secondary HA console might also be experiencing network connectivity problems.

**Related tasks:**

“Creating an HA cluster” on page 17

Pairing a primary host, secondary high-availability (HA) host, and a virtual IP address using IBM Security QRadar creates an HA cluster.

**Heartbeat ping tests**

You can test the operation of the primary high-availability (HA) host by configuring the time interval of heartbeat ping tests.
If the secondary HA host does not receive a response from the primary HA host within a preconfigured time period, automatic failover to the secondary HA host is completed.

Related tasks:
- [Creating an HA cluster](#) on page 17
- Pairing a primary host, secondary high-availability (HA) host, and a virtual IP address using IBM Security QRadar creates an HA cluster.

**Primary disk failure**

If RAID completely fails and all disks are unavailable, the primary HA host completes a shutdown and fails over to the secondary HA host.

After a failover, the primary HA host assumes a status of **Failed**.

Related concepts:
- [Status of HA hosts](#) on page 15
  You can review the status of the primary and secondary host in your high-availability (HA) cluster.

**Manual failovers**

You can manually force a failover from a primary high-availability (HA) host to a secondary HA host.

Manually forcing a failover is useful for planned hardware maintenance on a console or managed host. Ensure the following before you conduct a manual failover:

- The primary and secondary HA hosts are synchronized.
- The secondary HA host has a status of standby.

To perform a manual failover on the primary HA host, set the primary system to offline to make the secondary HA host active. After the secondary host becomes active, you can shut down the primary host.

To perform a manual failover on the secondary HA host, set the secondary system to offline. After the primary host becomes active, you can shut down the secondary host.

Do not manually force a failover on a primary HA host when you install patches or install software upgrades. For more information, see the **IBM Security QRadar Upgrade Guide**.

Related tasks:
- [Setting an HA host offline](#) on page 20
  You can set the primary or secondary high-availability (HA) host to **Offline** from the **Active** or **Standby** state.
3 HA deployment planning

Plan your high-availability deployment.

Before you implement high-availability (HA), review all the requirements to understand and prepare your IBM Security QRadar deployment.

Firmware update

Update the firmware on IBM Security QRadar appliances to take advantage of additional features and updates for the internal hardware components.

For more information about updating firmware, see Firmware update for QRadar [http://www-01.ibm.com/support/docview.wss?uid=swg27047121].

Appliance requirements

Before you add a secondary host to your IBM Security QRadar SIEM Console, you must review the hardware configuration differences between your primary and secondary appliances.

Appliances that you order as primary and secondary HA pairs are matched to ensure compatibility. However, replacing an appliance or adding HA to an older Console with a different hardware configuration can lead to data replication issues. Data replication issues can occur when you replace end of life hardware or create primary and secondary HA pairs that have appliances from different manufacturers.

Partition requirements for /store

The combined size of the /store and /transient partitions on the secondary host must be equal to or larger than the /store partition on the primary host.

For example, do not pair a primary host that uses a 4 TB /store partition to a secondary host that has a 2 TB /store partition and a 1 TB /transient partition.

Storage requirements

Follow these storage requirements when you replace an appliance:

- Ensure that the replacement appliance includes storage capacity that is equal to or greater than the original hardware you replace, and be at least 130 gigabytes (GB).
- Secondary replacement appliances can have larger storage capacity than the primary appliance. If so, partitions on the secondary are resized to match the storage capacity on the primary appliance when you configure the HA pair.
- Primary replacement appliances can have larger storage capacity than the secondary appliance. If so, partitions on the primary are resized to match the storage capacity on the secondary appliance when you configure the HA pair.
- If you replace both primary and secondary appliances, then the system resizes the storage partition that is based on the appliance with the smallest capacity.

Managed interfaces

- The primary host cannot contain more physical interfaces than the secondary.
During a failover, the network configuration of the primary is replicated to the secondary host. If the primary is configured with more interfaces, any additional interfaces cannot be replicated to the secondary during a failover.

- The secondary host must use the same management interface as the primary HA host.
  If the primary HA host uses ens192, for example, as the management interface, the secondary HA host must also use ens192.
- The management interface supports one cluster virtual IP address.
- TCP port 7789 must be open and allow communication between the primary and secondary for Distributed Replicated Block Device traffic.
  Distributed Replicated Block Device traffic is responsible for disk replication and is bidirectional between the primary and secondary host.
- The QRadar software version must be identical between the primary and secondary host before you pair a primary to a secondary appliance for the first time.
  If the QRadar version between your primary and secondary differ, you must patch either the primary or secondary appliance to ensure both appliances use the same software version.
  After the primary and secondary appliances are paired together, disk replication ensures that any additional software updates are also applied to the secondary.
- Ensure that the secondary host has a valid HA activation key.

### Software and virtual appliance requirements

If you install IBM Security QRadar SIEM software on your own hardware or use virtual appliances, review the following requirements before you attempt to configure High-availability (HA).

### System requirements for virtual appliances

To ensure that IBM Security QRadar works correctly, you must use virtual appliances that meet the minimum requirements.

Your virtual appliance must have at least 256 GB of storage available. Before you install your virtual appliance, use the spreadsheet in the Calculating Event Storage Requirements section of [Event FAQ](https://developer.ibm.com/qradar/2017/08/22/1775/) to determine your storage needs.

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

<table>
<thead>
<tr>
<th>Appliance</th>
<th>Minimum memory requirement</th>
<th>Suggested memory requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>QRadar QFlow Virtual 1299</td>
<td>6 GB</td>
<td>6 GB</td>
</tr>
<tr>
<td>QRadar Data Node Virtual 1400</td>
<td>12 GB</td>
<td>48 GB</td>
</tr>
<tr>
<td>appliance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>QRadar Event Collector Virtual 1599</td>
<td>12 GB</td>
<td>16 GB</td>
</tr>
<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>32 GB</td>
<td>48 GB</td>
</tr>
<tr>
<td>5,000 EPS or less</td>
<td></td>
<td></td>
</tr>
<tr>
<td>200,000 FPM or less</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The following table describes the minimum CPU requirements for virtual appliances.

**Table 2. CPU requirements for QRadar virtual appliances**

<table>
<thead>
<tr>
<th>QRadar appliance</th>
<th>Threshold</th>
<th>Minimum number of CPU cores</th>
<th>Suggested number of CPU cores</th>
</tr>
</thead>
<tbody>
<tr>
<td>QRadar QFlow Virtual 1299</td>
<td>10,000 FPM or less</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>QRadar Event Collector Virtual 1599</td>
<td>2,500 EPS or less</td>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>5,000 EPS or less</td>
<td>8</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>20,000 EPS or less</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>QRadar SIEM Event Processor Virtual 1699</td>
<td>2,500 EPS or less</td>
<td>4</td>
<td>24</td>
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<tr>
<td></td>
<td>5,000 EPS or less</td>
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<td>20,000 EPS or less</td>
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<td>QRadar SIEM Flow Processor Virtual 1799</td>
<td>150,000 FPM or less</td>
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<td></td>
<td>300,000 FPM or less</td>
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<td>QRadar SIEM Event and Flow Processor Virtual 1899</td>
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### Table 2. CPU requirements for QRadar virtual appliances (continued)

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<th>Minimum number of CPU cores</th>
<th>Suggested number of CPU cores</th>
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<tr>
<td>QRadar Log Manager Virtual 8099</td>
<td>2,500 EPS or less</td>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>5,000 EPS or less</td>
<td>8</td>
<td>16</td>
</tr>
<tr>
<td>QRadar Vulnerability Manager Processor</td>
<td></td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>QRadar Vulnerability Manager Scanner</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>QRadar Risk Manager</td>
<td>8</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>QRadar Data Node Virtual 1400 appliance</td>
<td></td>
<td>4</td>
<td>16</td>
</tr>
</tbody>
</table>

### IP addressing and subnets

To configure high-availability (HA), you must consider the subnet that is used by the secondary HA host and the virtual IP address.

Administrators must ensure that the following conditions are met:

- The secondary host is in the same subnet as the primary host.
- When the IP address of the primary host is reassigned as a cluster virtual IP, the new IP address that you assign must be in the same subnet.
- The secondary HA host that you want to add to the HA cluster is not a component in another HA cluster.

**Related concepts:**

"HA clusters" on page 4

A high-availability (HA) cluster consists of a primary HA host, a secondary HA host, and cluster virtual IP address.
Link bandwidth and latency

To configure high-availability (HA), you must consider the bandwidth and latency between the primary and secondary HA hosts.

If your HA cluster is using disk synchronization, the following conditions must be met:

- The connection between the primary and secondary HA host has a minimum bandwidth of 1 gigabits per second (Gbps).
- The latency between the primary and secondary HA host is less than 2 milliseconds (ms).

Note: If your HA solution uses a wide area network (WAN) to geographically distribute the hosts in your cluster, latency increases with distance. If latency rises above 2 ms, then system performance is affected.

Related concepts:

“Data consistency for HA” on page 3

When an HA failover occurs, IBM Security QRadar ensures the consistency of your data.

Data backup requirements

There are items to consider for data backup before you configure hosts for High-availability (HA).

If a backup archive originates on an HA cluster, click **Deploy Full Configuration** to restore the HA cluster configuration after the restore is complete. If disk replication is enabled, the secondary HA host immediately synchronizes data after the system is restored.

If the secondary HA host is removed from the deployment after a backup is completed, the secondary HA host displays a **Failed** status on the System and License Management window.

For more information about restoring backup archives in an HA environment, see the IBM Security QRadar Administration Guide

Offboard storage requirements for HA

You can implement high-availability (HA) when the IBM Security QRadar /store partition is mounted to an external storage solution, such as an iSCSI or Fibre Channel device.

If you implement an external storage solution, the data that is received by the primary HA host is automatically moved to the external device. It remains accessible for searching and reporting.

If a failover occurs, the /store partition on the secondary HA host is automatically mounted to the external device. On the external device, it continues to read and write to the data received by the primary HA host before the failover.

For more information about configuring shared external storage with HA, see the IBM Security QRadar Offboard Storage Guide

Administrators must review the following HA requirements before you implement an offboard storage device:

- The primary HA host must be configured to communicate with the external device. The data in the /store partition of the local disk must be moved to the external storage device.
- The secondary HA host must be configured to communicate with the external device. In doing so, when a primary HA host fails over, the secondary HA host can detect the external storage device.
- You must create an HA cluster only after the secondary HA host is configured to access the same external storage device.
If you must reconfigure your external storage device or HA cluster settings, you must remove the HA cluster between the primary and secondary HA host. For more information, see *Disconnecting an HA cluster*.

Ensure that there is at least a 1 Gbps connection between each HA host and your external device.

**Important:** During an upgrade to QRadar, you must reconfigure the external storage device connections to the hosts in your HA cluster. For more information, see the *Reconfiguring offboard storage during a QRadar upgrade technical note*. 
4 HA management

If you need to tune, troubleshoot, or update your high-availability (HA) settings, use the System and License Management window in the IBM Security QRadar SIEM Admin settings.

Administrators can use the System and License management window to complete the following HA tasks:

- Monitor the state of an HA cluster.
- Force the manual failover of a primary HA host to complete maintenance on the primary host.
- Disconnect an HA cluster to alter the partitions of the primary and secondary HA hosts.
- Configure the ping test time period after which automatic failover to a secondary HA host occurs.
- Modify the HA cluster settings that are used to control network connectivity testing.

Status of HA hosts

You can review the status of the primary and secondary host in your high-availability (HA) cluster.

The following table describes the status of each host that is displayed in the System and License Management window:

<table>
<thead>
<tr>
<th>Status</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active</td>
<td>Specifies that the host is the active system and that all services are running normally. The primary or secondary HA host can display the active status.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> If the secondary HA host displays the active status, the primary HA host failed.</td>
</tr>
<tr>
<td>Standby</td>
<td>Specifies that the host is acting as the standby system. In the standby state, no services are running but data is synchronized if disk replication is enabled. If the primary or secondary HA host fails, the standby system automatically becomes the active system.</td>
</tr>
<tr>
<td>Failed</td>
<td>Specifies that the primary or secondary host failed.</td>
</tr>
<tr>
<td></td>
<td>If the primary HA host displays Failed, the secondary HA host assumes the responsibilities of the primary HA host and displays the Active status.</td>
</tr>
<tr>
<td></td>
<td>If the secondary HA host displays Failed, the primary HA host remains active, but is not protected by HA.</td>
</tr>
<tr>
<td></td>
<td>A system in a failed state must be manually repaired or replaced, and then restored. If the network fails, you might need access to the physical appliance.</td>
</tr>
<tr>
<td>Synchronizing</td>
<td>Specifies that data is synchronizing between hosts.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> This status is displayed only when disk replication is enabled.</td>
</tr>
<tr>
<td>Online</td>
<td>Specifies that the host is online.</td>
</tr>
</tbody>
</table>
Table 3. HA status descriptions (continued)

<table>
<thead>
<tr>
<th>Status</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Offline</td>
<td>Specifies that an administrator manually set the HA host offline. Offline mode indicates a state that is typically used to complete appliance maintenance.</td>
</tr>
<tr>
<td></td>
<td>When an appliance indicates a status of offline:</td>
</tr>
<tr>
<td></td>
<td>Data replication is functioning between the active and offline HA hosts.</td>
</tr>
<tr>
<td></td>
<td>Services that process events, flows, offenses, and heartbeat ping tests are stopped for the offline HA host.</td>
</tr>
<tr>
<td></td>
<td>Failover cannot occur until the administrator sets the HA host online.</td>
</tr>
<tr>
<td>Restoring</td>
<td>Specifies that the host is restoring. For more information, see &quot;Verifying the status of primary and secondary hosts&quot; on page 29.</td>
</tr>
<tr>
<td>Needs License</td>
<td>Specifies that a license key is required for the HA cluster. In this state, no processes are running.</td>
</tr>
<tr>
<td></td>
<td>For more information about applying a license key, see your Administration Guide.</td>
</tr>
<tr>
<td>Setting Offline</td>
<td>Specifies that an administrator is changing the status of an HA host to offline.</td>
</tr>
<tr>
<td>Setting Online</td>
<td>Specifies that an administrator is changing the status of an HA host to online.</td>
</tr>
<tr>
<td>Needs Upgrade</td>
<td>Specifies that the secondary HA host requires a software upgrade.</td>
</tr>
<tr>
<td></td>
<td>When the Needs Upgrade status is displayed, the primary remains active, but is not protected against failover. Disk replication of events and flows continues between the primary and the secondary HA hosts.</td>
</tr>
<tr>
<td>Upgrading</td>
<td>Specifies that the secondary HA host is being upgraded by the primary HA host.</td>
</tr>
<tr>
<td></td>
<td>If the secondary HA host displays the Upgrading status, the primary HA host remains active, but is not protected by HA. Heartbeat monitoring and disk replication, if enabled, continue to function.</td>
</tr>
<tr>
<td></td>
<td>After DSMs or protocols are installed and deployed on a Console, the Console replicates the DSM and protocol updates to its managed hosts. When primary and secondary HA hosts are synchronized, the DSM and protocols updates are installed on the secondary HA host.</td>
</tr>
<tr>
<td></td>
<td>Only a secondary HA host can display an Upgrading status.</td>
</tr>
</tbody>
</table>

Related concepts:

"Real-time data synchronization" on page 4
When you configure an HA cluster, the /store file system on the primary HA host is automatically synchronized with the /store partition on the secondary HA host.

"HA clusters" on page 4
A high-availability (HA) cluster consists of a primary HA host, a secondary HA host, and cluster virtual IP address.

"Primary disk failure" on page 7
If RAID completely fails and all disks are unavailable, the primary HA host completes a shutdown and fails over to the secondary HA host.

"Data consistency for HA” on page 3
When an HA failover occurs, IBM Security QRadar ensures the consistency of your data.

Related tasks:

"Verifying the status of primary and secondary hosts” on page 29
You must verify that the primary and secondary HA hosts are operational.
Viewing HA cluster IP addresses

You can display the IP addresses of all the components in your High-availability (HA) cluster.

Procedure

1. On the navigation menu ( ), click Admin.
2. On the navigation menu, click System Configuration.
3. Click the System and License Management icon.
4. Identify the QRadar primary console.
5. Hover your mouse over the host name field.

Creating an HA cluster

Pairing a primary host, secondary high-availability (HA) host, and a virtual IP address using IBM Security QRadar creates an HA cluster.

Before you begin

- If external storage is configured for a primary HA host, you must also configure the secondary HA host to use the same external storage options. For more information, see the QRadar Offboard Storage Guide.
- Ensure that no undeployed changes exist before you create an HA cluster.

About this task

If disk synchronization is enabled, it might take 24 hours or more for the data in the /store partition on the primary HA host /store partition to initially synchronize with the secondary HA host.

If the primary HA host fails and the secondary HA host becomes active, the Cluster Virtual IP address is assigned to the secondary HA host.

In an HA deployment, the interfaces on both the primary and secondary HA hosts can become saturated. If performance is impacted, you can use a second pair of interfaces on the primary and secondary HA hosts to manage HA and data replication. Use a crossover cable to connect the interfaces.

Procedure

1. On the navigation menu ( ), click Admin.
2. On the navigation menu, click System Configuration.
3. Click the System and License Management icon.
4. Select the host for which you want to configure HA.
5. From the Actions menu, select Add HA Host and click OK.
6. Read the introductory text. Click Next.
7. Type values for the parameters:

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Host IP address</td>
<td>A new primary HA host IP address. The new IP address replaces the previous IP address. The current IP address of the primary HA host becomes the Cluster Virtual IP address. The new primary HA host IP address must be on the same subnet as the virtual host IP address.</td>
</tr>
<tr>
<td>Option</td>
<td>Description</td>
</tr>
<tr>
<td>---------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Secondary HA host IP address</td>
<td>The IP address of the secondary HA host. The secondary HA host must be on the same subnet as the primary HA host.</td>
</tr>
<tr>
<td>Enter the root password of the host</td>
<td>The root password for the secondary HA host. The password must not include special characters.</td>
</tr>
<tr>
<td>Confirm the root password of the host</td>
<td>The root password for the secondary HA host again for confirmation.</td>
</tr>
</tbody>
</table>

8. To configure advanced parameters, click the arrow beside **Show Advanced Options** and type values for the parameters.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heartbeat Interval (seconds)</td>
<td>The time, in seconds, that you want to elapse between heartbeat pings. The default is 10 seconds.</td>
</tr>
<tr>
<td>Heartbeat Timeout (seconds)</td>
<td>The time, in seconds, that you want to elapse before the primary HA host is considered unavailable if no heartbeat is detected. The default is 30 seconds.</td>
</tr>
<tr>
<td>Network Connectivity Test List peer IP addresses (comma delimited)</td>
<td>The IP addresses of the hosts that you want the secondary HA host to ping. The default is to ping all other managed hosts in the QRadar deployment.</td>
</tr>
<tr>
<td>Disk Synchronization Rate (MB/s)</td>
<td>The disk synchronization rate. The default is 100 MB/s.</td>
</tr>
<tr>
<td>Disable Disk Replication</td>
<td>This option is displayed only when you are configuring an HA cluster by using a managed host.</td>
</tr>
<tr>
<td>Configure Crossover Cable</td>
<td>Crossover cables allow QRadar to isolate the replication traffic from all other QRadar traffic, such as events, flows, and queries. You can use crossover cables for connections between 10 Gbps ports, but not the management interface.</td>
</tr>
<tr>
<td>Crossover Interface</td>
<td>Select the interfaces that you want to connect to the primary HA host. <strong>Important:</strong> All interfaces with an established link, or an undetermined link, appear in the list. Select interfaces with established links only.</td>
</tr>
<tr>
<td>Crossover Advanced Options</td>
<td>Select <strong>Show Crossover Advanced Options</strong> to enter, edit, or view the property values.</td>
</tr>
</tbody>
</table>

9. Click **Next**, and then click **Finish**.

**Important:** When an HA cluster is configured, you can display the IP addresses that are used in the HA cluster. Hover your mouse over the **Host Name** field on the System and License Management window.

10. On the navigation menu (≡), click **Admin**.
11. Click **Advanced > Deploy Full Configuration** to enable network connectivity tests.

**Related concepts:**

- "**HA clusters** on page 4"  
  A high-availability (HA) cluster consists of a primary HA host, a secondary HA host, and cluster virtual IP address.

- "**Network connectivity tests** on page 6"  
  To test network connectivity, the IBM Security QRadar Console automatically pings all existing managed hosts in your QRadar deployment.

- "**Heartbeat ping tests** on page 6"  
  You can test the operation of the primary high-availability (HA) host by configuring the time interval of heartbeat ping tests.

---

**Disconnecting an HA cluster**

By disconnecting an HA cluster, the data on your primary HA console or managed host is not protected against network or hardware failure.

**Before you begin**

If you migrated the /store file system to a Fibre Channel device, **you must modify the /etc/fstab file** before you disconnect the HA cluster. For more information, see "**Updating the /etc/fstab file.**"

**Procedure**

1. On the navigation menu ( ), click **Admin**.
2. On the navigation menu, click **System Configuration**.
3. Click the **System and License Management** icon.
4. Select the HA host that you want to remove.
5. From the toolbar, select **High Availability > Remove HA Host**.
6. Click **OK**.

   **Note:** When you remove an HA host from a cluster, the host restarts.

**Updating the /etc/fstab file**

Before you disconnect a Fibre Channel HA cluster, **you must modify the /store and /storetmp mount information in the /etc/fstab file.**

**About this task**

You must update the /etc/fstab file on the primary HA host and the secondary HA host.

**Procedure**

1. Use SSH to log in to your QRadar host as the root user:
2. Modify the etc/fstab file.
   a. Locate the existing mount information for the /store and /storetmp file systems.
   b. Remove the noauto option for the /store and /storetmp file systems.
3. Save and close the file.

**What to do next**

 Disconnecting an HA cluster
Editing an HA cluster
You can edit the advanced options for your HA cluster.

Procedure
1. On the navigation menu ( ), click Admin.
2. On the navigation menu, click System Configuration.
3. Click the System and License Management icon.
4. Select the row for the HA cluster that you want to edit.
5. From the toolbar, select High Availability > Edit HA Host.
6. Edit the parameters in the table in the advanced options section.
7. Click Next.
8. Review the information.
9. Click Finish.

Setting an HA host offline
You can set the primary or secondary high-availability (HA) host to Offline from the Active or Standby state.

Procedure
1. On the navigation menu ( ), click Admin.
2. On the navigation menu, click System Configuration.
3. Click the System and License Management icon.
4. Select the HA host that you want to set to offline.
5. From the toolbar, select High Availability > Set System Offline.

Related concepts:
“Manual failovers” on page 7
You can manually force a failover from a primary high-availability (HA) host to a secondary HA host.

Setting an HA host online
You can set the primary or secondary HA host to Online.

Procedure
1. On the navigation menu ( ), click Admin.
2. On the navigation menu, click System Configuration.
3. Click the System and License Management icon.
4. Select the offline HA host that you want to set to Online.
5. From the toolbar, select High Availability > Set System Online.

What to do next
On the System and License Management window, verify the status of the HA host. Choose from one of the following options:
• If the primary HA host displays a status of Active, HA host is restored.
• If you experience a problem, restore the primary or secondary HA host. For more information, see Restoring a failed secondary HA host or Restoring a failed primary HA host.
Switching a primary HA host to active

You can set the primary high-availability (HA) host to be the active system.

Before you begin

The primary HA host must be the standby system and the secondary HA host must be the active system.

About this task

If your primary host is recovered from a failure, it is automatically assigned as the standby system in your HA cluster. You must manually switch the primary HA host to be the active system and the secondary HA host to be the standby system.

Procedure

1. On the navigation menu ( ), click Admin.
2. On the navigation menu, click System Configuration.
3. Click the System and License Management icon.
4. In the System and License Management window, select the secondary HA host.
5. From the toolbar, select High Availability > Set System Offline. Your primary HA host is automatically switched to be the Active HA host.

   Note: Your IBM Security QRadar SIEM user interface might be inaccessible during this time.
6. In the System and License Management window, select the secondary HA host.
7. From the toolbar, select High Availability > Set System Online. Your secondary HA host is now the standby system.

What to do next

When you can access the System and License Management window, check the status column. Ensure that the primary HA host is the active system and the secondary HA host is the standby system.
5 Recovery options for HA appliances

You can reinstall or recover IBM Security QRadar high-availability (HA) appliances.

If your HA cluster uses shared storage, manually configure your external storage device. For more information, see the IBM Security QRadar Offboard Storage Guide.

Recovering a failed primary HA host

You can recover a failed primary high-availability (HA) IBM Security QRadar host if the build version of the primary HA host must be the same as the QRadar build version installed on the secondary HA host.

**Before you begin**

Ensure that the following requirements are met:

- The required hardware is installed.
- You need the cluster virtual IP address and the primary HA host IP address. You can identify the IP address in the System and License Management window. For more information, see “Viewing HA cluster IP addresses” on page 17.
- A keyboard and monitor are connected by using the VGA connection.
- If you installed QRadar on your own hardware and you chose to install the RHEL operating system, follow the steps in the Preparing QRadar software installations for XFS file systems (https://www.ibm.com/support/knowledgecenter/SS42VS_7.3.1/com.ibm.qradar.doc/t_qradar_inst_format_xfs.html).

**Procedure**

1. Type root at the login prompt to start the installation wizard.
2. Accept the End User License Agreement.
3. Select the appliance type:
   - Appliance Install
   - Software Install
4. In the Type of Setup window, select **HA Recovery Setup**.
5. Follow the instructions in the wizard.
6. Configure the QRadar network settings.
   a. In the Cluster Virtual IP Address Setup window, enter the cluster virtual IP address.
   b. In the Network Information Setup window, enter the IP address of the primary HA host.
7. Configure the QRadar root password.
8. Review your software version. If your secondary HA host patch version is newer than the software on this appliance, download and install the SFS (software fix/patch) from Fix Central (www.ibm.com/support/fxcentral/) to upgrade this appliance to match the software version.
9. Log in to the QRadar user interface.
10. Select **Main menu > Admin > System and License Management > Systems**.
11. Highlight the primary HA host that you are restoring and select **High Availability > Restore System**.
Recovering a failed secondary HA host

You can recover a failed secondary high-availability (HA) IBM Security QRadar host if the build version of the secondary HA host must be the same as the QRadar build version installed on the primary HA host.

Before you begin

Ensure that the following requirements are met:

- The required hardware is installed.
- You need the secondary HA host IP address. You can identify the IP address in the System and License Management window.
- A keyboard and monitor are connected by using the VGA connection.
- If you have installed QRadar on your own hardware and you chose to install the RHEL operating system, follow the steps in "Preparing QRadar software installations for XFS file systems" (https://www.ibm.com/support/knowledgecenter/SS42VS_7.3.1/com.ibm.qradar.doc/t_qradar_inst_format_xfs.html).

Procedure

1. Type root at the login prompt to launch the installation wizard.
2. Accept the End User License Agreement.
3. Select the appliance type: High Availability Appliance.
4. Follow the instructions in the wizard.
5. Configure the QRadar root password.
6. Review your software version. If your primary HA host patch version is newer than the software on this appliance, download and install the SFS (software fix/patch) from Fix Central (www.ibm.com/support/fixcentral/) to upgrade this appliance to match the software version.
7. Log in to the QRadar user interface.
8. Select Main menu > Admin > System and License Management > Systems.
9. Highlight the secondary HA host that you are restoring and select High Availability > Restore System.

Restoring a primary HA host to a previous version or factory default

Restore an IBM Security QRadar primary high-availability (HA) host to a previous version or factory default. You can restore a failed QRadar primary HA host that does not include a recovery partition or a USB port to a previous version. You can also restore the system to factory defaults. When you restore the failed primary HA host, all data is removed and the factory default configuration is restored on the host.

Procedure

1. Use SSH to log in to the console as the root user.
2. Copy the recovery.py script from the console to the failed primary HA host.
   ```
   scp recovery.py root@<TargetIP_address>:/root
   ```
3. Obtain the QRadar ISO from the following location: https://www.ibm.com/support
4. Copy the ISO file to the target QRadar host.
   ```
   scp <iso_file_name> root@<TargetIP_address>:/root
   ```
5. Use SSH to log in to the primary HA host.
6. Type the following commands:
   ```
   chmod 755 recovery.py
   ./recovery.py -r --default --reboot <iso_file_name>
   ```
7. Press Enter when prompted to restart the system.
8. When prompted, type `flatten` and press Enter.

**Results**

The installer repartitions and reformats the hard disk, installs the operating system, and then installs QRadar. Wait for the `flatten` process to complete. This process can take up to several minutes. After the process is complete, the normal installation process continues.

**What to do next**

“Recovering a failed primary HA host” on page 23

**Restoring a secondary HA host to a previous version or factory default**

Restore an IBM Security QRadar secondary high-availability (HA) host to a previous version or factory default. You can restore a failed QRadar secondary HA host that does not include a recovery partition or a USB port to a previous version. You can also restore the system to factory defaults. When you restore the failed secondary HA host, all data is removed and the factory default configuration is restored on the host.

**Procedure**

1. Use SSH to log in to the console as the root user.
2. Copy the `recovery.py` script from the console to the failed secondary HA host.
   
   ```bash
   scp recovery.py root@<TargetIP_address>:/root
   ``

3. Obtain the QRadar ISO from the following location: https://www.ibm.com/support

4. Copy the ISO file to the target QRadar host.
   
   ```bash
   scp <iso_file_name> root@<TargetIP_address>:/root
   ``

5. Use SSH to log in to the secondary HA host.
6. Type the following commands:
   
   ```bash
   chmod 755 recovery.py
   ./recovery.py -r --default --reboot <iso_file_name>
   ``

7. Press Enter when prompted to restart the system.
8. When prompted, type `flatten` and press Enter.

**Results**

The installer repartitions and reformats the hard disk, installs the operating system, and then installs QRadar. Wait for the `flatten` process to complete. This process can take up to several minutes. After the process is complete, the normal installation process continues.

**What to do next**

“Recovering a failed secondary HA host” on page 24
6 Troubleshooting QRadar HA deployments

Use the status of the HA hosts in the System and License Management window to help you troubleshoot.

Status combinations and possible resolutions

The following table describes the possible status settings for primary and secondary HA hosts. Each status combination requires a different troubleshooting approach.

Table 4. System and license management window host statuses.

<table>
<thead>
<tr>
<th>Primary HA host status</th>
<th>Secondary HA host status</th>
<th>Possible action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active</td>
<td>Failed or Unknown</td>
<td>Ensure that the secondary host is on, and that you can log on to it as a root user by using SSH. If you can connect, see “Restoring a failed secondary HA host” on page 28.</td>
</tr>
<tr>
<td>Failed or Unknown</td>
<td>Active</td>
<td>Ensure that the primary host is on, and that you can log on to it as a root user by using SSH. If you can connect, see “Restoring a failed primary HA host” on page 28.</td>
</tr>
<tr>
<td>Unknown</td>
<td>Unknown</td>
<td>If you cannot connect to the primary or secondary HA host by using SSH, ensure that your network and hardware configuration is operational.</td>
</tr>
<tr>
<td>Offline</td>
<td>Active</td>
<td>To set the primary host online, see “Set the primary HA host online”</td>
</tr>
</tbody>
</table>

Identifying active hosts

You can identify the most recent active host in your HA cluster by using SSH.

1. To display the HA cluster configuration, type the following command:
   /opt/qradar/ha/bin/ha cstate
2. Review the following line: in the output:
   Local: R:PRIMARY S:ACTIVE/ONLINE CS:NONE P:1:0 HBT:UP RTT:2 1:0 S1:4105589

   • If the line does not display the following text, cs:Connected, determine the most recent active HA host in the HA cluster.
   • If the output displays the following text, Secondary/Primary, the secondary HA Host is the active system.
   • If the output displays the following text, ro:Primary/Secondary, the primary HA Host is the active system.
3. If the line displays ro:Secondary/Secondary, review the following line in the output:
   0: cs:Connected ro:Secondary/Secondary

   • If the output displays the following text, ds:< >/UpToDate, the secondary HA Host is the active system.
   • If the output displays the following text, ds:UpToDate/< >, the primary HA Host is the active system.
   • If the output displays the following text, ds:< >/< >, determine the most recent active HA host in your HA cluster.
• If the output displays the following text, ds:UpToDate/UpToDate, determine the most recent active HA host in your HA cluster.

Restoring a failed secondary HA host
You can restore a failed secondary HA host.

About this task

Important: Restore only a failed secondary host, or a secondary host with unknown status. If you reinstall the HA secondary host, the state changes to standby.

Procedure

1. On the navigation menu (≡), click Admin.
2. On the navigation menu, click System Configuration.
3. Click System and License Management.
4. Select the secondary HA host that you want to restore.
5. From the High Availability menu, click Restore System.
6. If the secondary HA host displays a status of Failed or Unknown in the System and License Management window, use SSH to log in to the secondary HA host as the root user to ensure that the host is operational.
7. Restart the secondary HA host by typing reboot.
8. After the system is restarted, if the secondary HA host displays a status of Failed or Unknown, from the High Availability menu, click Restore System.

Related tasks:

“Verifying the status of primary and secondary hosts” on page 29
You must verify that the primary and secondary HA hosts are operational.

Restoring a failed primary HA host
You can restore a failed primary HA host.

Procedure

1. On the navigation menu (≡), click Admin.
2. On the navigation menu, click System Configuration.
3. Click System and License Management.
4. Select the primary HA host that you want to restore.
5. From the High Availability menu, click Restore System.
6. Verify the status of the primary HA host.
7. If the primary HA host displays a status of Offline, in the System and License Management window, click High Availability > Set System Online.
8. If the primary HA host displays a status of Failed or Unknown in the System and License Management window, use SSH to log in to the primary HA host as the root user to ensure that the host is operational.
9. Restart the primary HA host by typing the following command: reboot

Related tasks:

“Setting the status of the primary HA host to online” on page 29
If the primary HA host displays a status of offline, you can reset the status to online.
Verifying the status of primary and secondary hosts

You must verify that the primary and secondary HA hosts are operational.

Procedure
1. Identify whether the primary HA host was configured as a console or managed host.
2. If the primary HA host is configured as a console, use SSH to log in to the Cluster Virtual IP address as the root user:
   • If you can connect to the Cluster Virtual IP address, restore access to the QRadar. For more information, see the IBM Security QRadar SIEM Troubleshooting Guide.
   • If you cannot connect to the Cluster Virtual IP address, use SSH to log in to the secondary HA host as the root user to ensure that it is operational.
3. If your secondary host is configured as a managed host, use SSH to log in to the secondary HA host as the root user.
   • If you cannot connect to the primary or secondary HA host by using SSH, ensure that your network and hardware configuration is operational.
   • If you can connect to the primary and secondary HA host, identify the most recently active HA host in your HA cluster.

Related concepts:
“Status of HA hosts” on page 15
You can review the status of the primary and secondary host in your high-availability (HA) cluster.

Related tasks:
“Verifying the status of primary and secondary hosts”
You must verify that the primary and secondary HA hosts are operational.

Setting the status of the primary HA host to online

If the primary HA host displays a status of offline, you can reset the status to online.

Procedure
1. On the navigation menu ( ), click Admin.
2. On the navigation menu, click System Configuration.
3. Click System and License Management.
4. Select the primary HA host that you want to restore.
5. In the System and License Management window, if the primary HA host displays a status of Offline, you must restore the primary HA host.

Related tasks:
“Restoring a failed primary HA host” on page 28
You can restore a failed primary HA host.
7 Disaster recovery in QRadar deployments

Implement disaster recovery (DR) to safeguard your IBM Security QRadar configurations and data by mirroring your data to another identical QRadar system. Disaster recovery is possible when you have two identical QRadar systems in separate geographic environments that are a mirror of each other, and data is collected at both sites.

Enable disaster recovery (DR) when you forward live data, for example, flows and events from a primary QRadar system, to a parallel system at another site. Forwarding data uses off-site forwarding, which is set up on both the primary and secondary deployments. You can set up disaster recovery with deployments that are in different geographical locations.

Choose one of the following disaster recovery deployment scenarios:

**Primary QRadar Console and backup console**
A hardware failure solution, where the backup console is a copy of the primary server, with the same configuration but stays powered off. Only one console is operational at any one time. If the primary console fails, you manually turn the power on the backup console, apply the primary configuration backup, and use the IP address from the primary console. After you restore the primary server and before you turn it on, you manually turn off the backup server. If the system is down for a long time, apply the backup console configuration backup to the primary server.

**Event and flow forwarding**
Events and flows are forwarded from a primary site to a secondary site. Identical architectures in two separate data centers are required.

**Distributing the same events and flows to the primary and secondary sites**
Distribute the same event and flow data to two live sites by using a load balancer or other method to deliver the same data to mirrored appliances. Each site has a record of the log data that is sent.

**Primary QRadar Console and backup QRadar Console**
When the primary QRadar Console fails and you want the backup QRadar Console to take up the role of the primary, you manually turn the power on the backup console, apply the configuration backup and the IP address from the primary. Use a similar switchover method for other appliances such as a QRadar QFlow Collector or an Event Collector, where each appliance has a cold backup or spare that is an identical appliance.

The backup console takes over the primary QRadar Console role from the time of activation, and does not store past events, flow, or offenses from the original primary QRadar Console. Use this type of deployment for your appliances, to minimize downtime, when there is a hardware failure.

- A backup console requires its own dedicated license key (matching the EPS and FPM values of the primary console).
- The backup console uses a standard appliance Activation key.
- The license configuration of the backup console needs to match the values of the primary QRadar Console; this includes the EPS and FPS values of the primary QRadar Console.

**Example:** If the primary QRadar Event Processor was licensed for 15K EPS, the redundant backup console should also be licensed for 15K EPS.
- There are special failover upgrade parts that need to be purchased for the backup console.
• From a technical perspective, the license for both primary and backup consoles are identical, however for compliance reasons the backup console (and associated license) cannot not be processing live data unless a failure has occurred with the primary QRadar Console.

• Data collected by the backup console will need to be copied back to the Primary console when the Primary console once again becomes functional.

If the primary fails, take the following steps to set up the backup console as the primary QRadar Console:
1. Power on the backup console.
2. Add the IP address from the primary console.
3. Restore configuration backup data from the primary console to the backup console.

The backup console functions as the primary console until the primary console is brought back online. Ensure that both servers are not online at the same time.

**Configuring the IP address on the backup console**

When the primary QRadar Console fails, you configure the secondary backup console to take on the primary console role. Add the IP address of the failed QRadar Console to the backup console so that your QRadar system continues to function.

**Before you begin**

Power on the backup console.

**Procedure**

1. Use SSH to log in to as the root user.
2. To configure the IP address on the backup console, follow these steps:
   a. Type the following command:
      `qchange_netsetup`
   b. Follow the instructions in the wizard to enter the configuration parameters. After the requested changes are processed, the QRadar system automatically shuts down and restarts.

**Backup and recovery**

Back up your IBM Security QRadar configuration information and data so that you can recover from a system failure or data loss.

Use the backup and recovery that is built-in to QRadar to back up your data. However, you must restore the data manually. By default, QRadar creates a daily backup archive of your configuration information at midnight. The backup archive includes configuration information, generated data, or both from the previous day.

You can create the following types of backup:

• Configuration backups, which include system configuration data, for example, assets and log sources in your QRadar deployment.

• Data backups, which include information that is generated by a working QRadar deployment such as log information or event dates.

For more information about backing up and recovering your data, see the *IBM Security QRadar Administration Guide*. 
Event and flow forwarding from a primary data center to another data center

To ensure that there is a redundant data store for events, flows, offenses, and that there is an identical architecture in two separate data centers, forward event and flow data from site 1 to site 2.

The following information is provided only for general guidance and is not intended or designed as a how-to guide.

This scenario is dependent upon site 1 remaining active. If site 1 fails, data is not transmitted to Site 2, but the data is current up to the time of failure. In the case of failure at site 1, you implement disaster recovery (DR), by manually changing IP addresses and use a backup and restore to fail over from site 1 to site 2, and to switch to site 2 for all QRadar hosts.

The following list describes the setup for event and flow forwarding from the primary site to the secondary site:

- There is an identical distributed architecture in two separate data centers, which includes a primary data center and a secondary data center.
- The primary QRadar Console is active and collecting all events and flows from log sources and is generating correlated offenses.
- You configure off-site targets on the primary QRadar Console to enable forwarding of event and flow data from the primary data center to the event and flow processors in another data center.

**Fast path:** Use routing rules instead of off-site targets because the setup is easier.

- Periodically, use the content management tool to update content from the primary QRadar Console to the secondary QRadar Console.

For more information about forwarding destinations and routing rules, see the *IBM Security QRadar Administration Guide*.

In the case of a failure at site 1, you can use a high-availability (HA) deployment to trigger an automatic failover to site 2. The secondary HA host on site 2 takes over the role of the primary HA host on site 1. Site 2 continues to collect, store, and process event and flow data. Secondary HA hosts that are in a standby state don’t have services that are running but data is synchronized if disk replication is enabled. For more information about HA deployment planning, see [3, “HA deployment planning,” on page 9](#).

**Note:** You can use a load balancer to divide events, and split flows such as NetFlow, J-Flow, and sFlow but you can’t use a load balancer to split QFlows. Use external technologies such as a regenerative tap to divide QFlow and send to the backup site.

The following diagram shows how site 2 is used as a redundant data store for site 1. Event and flow data are forwarded from site 1 to site 2.
Event and flow forwarding configuration

For data redundancy, configure IBM Security QRadar systems to forward data from one site to a backup site.

The target system that receives the data from QRadar is known as a forwarding destination. QRadar systems ensure that all forwarded data is unaltered. Newer versions of QRadar systems can receive data from earlier versions of QRadar systems. However, earlier versions cannot receive data from later versions. To avoid compatibility issues, upgrade all receivers before you upgrade QRadar systems that send data. Follow these steps to set up forwarding:

1. Configure one or more forwarding destinations.
   A forwarding destination is the target system that receives the event and flow data from the IBM Security QRadar primary console. You must add forwarding destinations before you can configure bulk or selective data forwarding. For more information about forwarding destinations, see the IBM Security QRadar Administration Guide.

2. Configure routing rules, custom rules, or both.
   After you add one or more forwarding destinations for your event and flow data, you can create filter-based routing rules to forward large quantities of data. For more information about routing rules, see the IBM Security QRadar Administration Guide.

3. Configure data exports, imports, and updates.
   You use the content management tool to move data from your primary QRadar Console to the QRadar secondary console. Export security and configuration content from IBM Security QRadar into
an external, portable format. For more information about using the content management tool to transfer data, see the IBM Security QRadar Administration Guide.

Load balancing of events and flows between two sites

When you are running two live IBM Security QRadar deployments at both a primary and secondary site, you send event and flow data to both sites. Each site has a record of the log data that is sent. Use the content management tool to keep the data synchronized between the deployments.

The following diagram shows two live sites, where data from each site is replicated to the other site.

![Diagram of load balancing of events and flows between two sites](image)

**Figure 2. Load balancing of events and flows between two sites**

Related concepts:

- "Event and flow data redundancy" on page 36

Send the same events and flows to separate data centers or geographically separate sites and enable data redundancy by using a load balancer or other method to deliver the same data to mirrored appliances.

Restoring configuration data from the primary to the secondary QRadar Console

After you set up the secondary QRadar Console as the destination for the logs, you either add or import a backup archive from the primary QRadar Console. You can restore a backup archive that is created on another QRadar host. Log in to the secondary QRadar Console and do a full restore of the primary console backup archive to the secondary QRadar Console.
Before you begin

You must have a data backup from your primary console to complete this task.

Procedure

1. On the navigation menu ( ), click Admin.
2. On the navigation menu, click System Configuration.
3. Click the Backup and Recovery icon.
4. In the Upload Archive field, click Browse.
5. Locate and select the archive file that you want to upload.

   Tip: If the QRadar backup archive file is in the /store/backupHost/inbound directory on the console server, the backup archive file is automatically imported.
   The archive file must have a .tgz extension.
6. Click Open.
7. Click Upload.
8. Select the archive that you uploaded and click Restore.
   When the restore is finished, the secondary QRadar Console becomes the primary console.

Event and flow data redundancy

Send the same events and flows to separate data centers or geographically separate sites and enable data redundancy by using a load balancer or other method to deliver the same data to mirrored appliances.

Configure the distribution of log and flow sources for data redundancy:

- Send log source data to the Event Processor on the second site.
- Send flow source data to the Flow Processor on the second site.

   For more information about configuring log sources, see the IBM Security QRadar Log Sources Configuration Guide.
   For more information about flow sources, see the IBM Security QRadar Administration Guide.
Configure QRadar to receive events

QRadar automatically discovers many log sources that send syslog messages in your deployment. Log sources that are automatically discovered by QRadar appear in the Log Sources window.

You configure the automatic discovery of log sources for each Event Collector by using the Autodetection Enabled setting in the Event Collector configuration. If you want to keep the log source event IDs synchronized with the primary Event Collector, you disable the Autodetection setting. In this situation, use the content management tool to synchronize the log source configuration or restore a configuration backup to the site.

For more information about auto discovered log sources and configurations specific to your device or appliance, see the IBM Security QRadar DSM Configuration Guide and the IBM Security QRadar Log Sources Configuration Guide.

Configure QRadar to receive flows

To enable data redundancy for flows, you need to send NetFlow, J-Flow, and sFlow to both sites for QFlow collection.

You can collect flows from a SPAN or tap and then send packets to your backup location, or you mirror the SPAN or tap in the backup location by using external technologies. A load balancer splits flows such as NetFlow, J-Flow, and sFlow but it can't split QFlow.

For more information about flow sources, see the IBM Security QRadar Administration Guide.

Use the Content Management Tool (CMT)
If you want to ensure that the primary QRadar Console from site 1 and the secondary QRadar Console from site 2 have identical configurations, use the content management tool to update site 2 with the configurations from site 1.

For more information about using the content management tool, see the IBM Security QRadar Administration Guide.
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