



## Managing Gateways and Units

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Prime Performance Manager gateway and unit management includes:

- Displaying gateway and unit information.
- Managing device-to-unit assignments.
- Creating and managing unit protection groups.
- Creating and managing local and geographical gateway high availability.

The following topics describe gateway and unit management:

- [Displaying Gateway and Unit Information, page 13-1](#)
- [Managing Gateway and Unit Connectivity, page 13-5](#)
- [Managing Device-to-Unit Assignments, page 13-5](#)
- [Managing Unit Redundancy Groups, page 13-8](#)
- [Managing Timing Among Gateways, Units, and Clients, page 13-14](#)

### Displaying Gateway and Unit Information

Prime Performance Manager allows you to view information about provisioned gateways and units including details about gateway and unit servers, alarms, events, and device-to-unit distributions. In addition, you can view more detailed server information including CPU, memory, and disk space utilization, user statistics, and other detailed information.

To display gateway and unit server statistics, from the Performance menu, choose **Dashboards**, then choose **Server Health Dashboards**. The following dashboards are displayed:

- Server CPU/Memory/Disk—Displays CPU, memory, and disk and swap space utilization.
- Server CPU/Memory/DiskIO—Displays CPU and memory utilization and disk read and write bytes.
- Server CPU/Memory/Interface—Displays CPU, memory, and interface utilization, and interface error and discard percentages.
- Server CPU/Memory/Temperature—Displays CPU and memory utilization and CPU temperatures.
- Server Disk—Displays disk and swap space utilization and disk read and write bytes.
- Server Processes/Users—Displays server process and user statistics.

**Note**

To display gateway and unit statistics, you must add the gateway and unit as a Prime Performance Manager device. For information, see [Discovering Gateways and Units, page 5-2](#).

To display general gateway and unit information, from the System menu, choose **Gateway/Units**. The System Gateway/Units window displays the gateway and unit properties listed in [Table 13-1](#).

**Table 13-1** Gateway and Unit Properties

Column	Description
Internal ID <sup>1</sup>	Gateway or unit internal ID. Prime Performance Manager assigns the ID for its internal use.
Display Name	Gateway or unit or display name.
Custom Name	Gateway or unit or display name custom name, if created.
IP Address or DNS Hostname	Gateway or unit IP address or DNS name. <b>Note</b> To change a gateway or unit IP address or host name, use the ppm servername command. For information, see <a href="#">ppm servername, page B-87</a> .
Management IP Address	The IP address used to manage the gateway or unit.
Redundancy Group <sup>1</sup>	If the unit belongs to a redundancy group, the redundancy group name. See <a href="#">Managing Unit Redundancy Groups, page 13-8</a> .
Primary/Redundant <sup>1</sup>	If the unit belongs to a redundancy group, the unit role in the group, either Primary or Redundant.
Type	Description of the device type, either gateway or unit.
Annotation	Any annotation added to describe the gateway or unit.
Connection Time	Connection time with the server to a unit or gateway.
Severity	Specifies the severity status of the unit or gateway. Possible values are: <ul style="list-style-type: none"> <li>• Critical</li> <li>• Major</li> <li>• Minor</li> <li>• Normal</li> </ul>
Last Status Change <sup>1</sup>	Date and time that the status of the gateway or unit last changed.
Status	Current status of the unit or gateway. Possible values are: <ul style="list-style-type: none"> <li>• Active</li> <li>• Standby</li> <li>• Discovering</li> <li>• Polling</li> <li>• Unknown</li> <li>• Unmanaged</li> <li>• Waiting</li> <li>• Warning</li> </ul>

Table 13-1 Gateway and Unit Properties (continued)

Column	Description
Status Reason	Reason for the current status. For a full list of possible reasons, see the <i>stateReasons.html</i> file, located in the following directory:  /opt/CSCOppm-gw/apache/share/htdocs/eventHelp  If you cannot see all of the status reason, place the cursor over the cell to see the full text in a tooltip.
Out of Sync <sup>1</sup>	If the gateway is installed in a geographical HA configuration, indicates whether the primary gateway database is out of sync to the secondary one.

1. Not displayed by default. To display hidden properties, see [Adding and Removing Properties from Property Views](#), page 3-20.

To display detailed gateway or unit information, select the gateway or unit in the navigation area. [Table 13-2](#) lists the information that is displayed.



Note

The Reports, Dashboards, and Report Status tabs require the gateway and unit to be added as a Prime Performance Manager device. For information, see [Discovering Gateways and Units](#), page 5-2.

Table 13-2 Detailed Gateway and Unit Properties

Tab	Description
Server Reports	Displays the unit or gateway CPU utilization.
Details	Provides detailed gateway or unit information. For a description of the detailed gateway and unit information, see <a href="#">Displaying Detailed Gateway and Unit Information and Performance</a> , page 13-4
Events	Displays the gateway or unit events. For a description of the event properties, see <a href="#">Displaying Alarms and Events</a> , page 10-1.
Alarms	Displays the gateway or unit alarms. For a description of the alarm properties, see <a href="#">Displaying Alarms and Events</a> , page 10-1.
Thresholds	Displays the gateway or unit device thresholds.
Report Status	Displays the status of reports generated from the gateway or unit and allows you to enable or disable them. For more information, see <a href="#">Managing Reports, Dashboards, and Views</a> , page 7-1.
Annotation	Displays any annotation that has been added to describe the gateway or unit. For more information, see <a href="#">Annotating a Device</a> , page 9-23
Devices for Unit (Units only)	Displays the devices assigned to the selected unit. For a description of device properties, see <a href="#">Displaying Device Properties at the Network Level</a> , page 9-3.
Device Distributions for Unit (Units only)	Displays the device distributions for the selected unit. For a description of device properties, see <a href="#">Displaying Device Type Distributions at the Network Level</a> , page 9-6.
Device Poll Response (Units only)	Displays the poll responses for devices assigned to the selected unit. For a description of poll response properties, see <a href="#">Displaying Device Polling Responses at the Network Level</a> , page 9-8.

## Displaying Detailed Gateway and Unit Information and Performance

To display detailed Prime Performance Manager gateway and unit naming, status, and performance information:

- 
- Step 1** From the System menu, choose **Gateways/Units**.
- Step 2** In the System Gateway/Units window, click the link of the gateway or unit whose detailed information and status you want to view.
- Step 3** In the gateway or unit window, click **Details**.

The following gateway or unit information is displayed:

- Naming Information
  - Display Name—The gateway or unit display name.
  - Custom Name—The gateway or unit custom name.
  - DNS Name—The gateway or unit DNS name.
  - IP Address—The gateway or unit IP address.
  - Type—The type, either gateway or unit.
  - In Service—Indicates whether the gateway or unit is in service.
  - Connection Time—Provides the gateway or unit connection time.
- Status Information
  - Alarm Severity—The severity of the highest alarm on the gateway or unit.
  - Status—The gateway or unit status, either Active or Inactive.
  - Last Status Change—The date and time of the last status change.
  - Status Reason—The reason for the last status change.
- Server Hardware Performance
  - Average CPU Utilization (Last 15 Min)—CPU utilization within the last 15 minutes.
  - Average CPU Utilization (Last 60 Min)—CPU utilization within the last 60 minutes.
  - Avg Server Memory Utilization (Last 15 Min)—Server memory utilization within the last 15 minutes.
  - Avg Server Memory Utilization (Last 60 Min)—Server memory utilization within the last 60 minutes.



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**Note** Utilization data text color is based on the Utilization Color Settings defined in User Preferences. For information, see [Customizing the GUI and Information Display, page 3-8](#).

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- Gateway (or Unit) Performance
  - Max JVM Memory Utilization (Last 15 Min)—Maximum Java Virtual Machine (JVM) utilization within the last 15 minutes.
  - Max JVM Memory Utilization (Last 60 Min)—Maximum JVM memory utilization within the last 60 minutes.
  - Avg JVM Memory Utilization (Last 15 Min)—Average JVM memory utilization within the last 15 minutes.

- Avg JVM Memory Utilization (Last 60 Min)—Average JVM memory utilization within the last 60 minutes.



**Note** Utilization data text color is based on the Utilization Color Settings defined in User Preferences. For information, see [Customizing the GUI and Information Display, page 3-8](#).

- Average Scheduler Queue Size—Average scheduler queue size. This indicates the number of polling requests that are waiting in queue. 0 indicates polling requests are being processed normally. An increasing number indicates a backlog exists that might result in polling delays. To investigate, check the number of active Go Live sessions and reports with 1-minute polling enabled. For additional information, see [Displaying Network and Device Reports, page 7-10](#).
- Persistence Directory Disk Usage—The usage data for the Prime Performance Manager directory where Prime Performance Manager data files are stored (/opt/CSCOppm-gw/data/ or /opt/CSCOppm-unit/data) MB or GB used and MB or GB available.
- Log Directory Disk Usage—The usage data for the Prime Performance Manager log directory (/opt/CSCOppm-gw/logs/ or /opt/CSCOppm-unit/logs) MB or GB used and MB or GB available.
- Report Directory Disk Usage—The usage data for the Prime Performance Manager reports directory (/opt/CSCOppm-gw/reports/ or /opt/CSCOppm-unit/reports) MB or GB used and MB or GB available.
- Backup Directory Disk Usage—The usage data for the Prime Performance Manager backup directory (/opt/) MB or GB used and MB or GB available.

## Managing Gateway and Unit Connectivity

Gateway to unit connectivity requires that the unit hostname be resolvable on the gateway. To ensure gateway-to-unit connectivity is not lost due to an unresolved unit hostname, you can perform any of the following actions:

- On the unit, use the unit IP address as its server name not its hostname, for example:  

```
/opt/CSCOppm-unit/bin/ppm servername = 111.222.333.444
```
- On the gateway add an entry to the /etc/hosts file for the unit.
- Add a DNS entry for the unit.



**Note** If you change the gateway server clock, restart Prime Performance Manager, or you might lose connectivity between the gateway and units.

## Managing Device-to-Unit Assignments

Prime Performance Manager allows you to create multiple units, assign them to a gateway and distribute the network devices among them. During device discovery, whether performed from Prime Performance Manager or by importing the Prime Network device inventory, Prime Performance Manager assigns devices to units based upon the device-to-unit mappings that you must create in the Unit Editor

administrative tab. You can create these mappings before or after device discovery. If you create the mappings before device discovery, Prime Performance Manager assigns the devices to the units based on the information in the maps. If device-to-unit maps are not present when device discovery is run, Prime Performance Manager assigns all discovered devices to the unit installed with the gateway, if present, or to another unit if a collocated unit is not installed.

**Note**

Determining the best allocation of devices among multiple units will take time. Many factors are involved including the unit server size, the number of enabled reports, the number of reportable objects, and many other factors.

The following topics tell you how to create and manage the device-to-unit maps:

- [Displaying Device-to-Unit Assignments, page 13-6](#)
- [Creating Device-to-Unit Maps, page 13-6](#)
- [Editing Device-to-Unit Maps, page 13-7](#)
- [Deleting Device-to-Unit Maps, page 13-7](#)
- [Changing a Device-to-Unit Assignment, page 13-8](#)

## Displaying Device-to-Unit Assignments

If your Prime Performance Manager implementation has only one unit, all devices in your network are assigned to it. If you have allocated devices to multiple units, an easy way to view the device-to-unit assignments is to add the Unit parameter to the Devices table. To do this:

- 
- Step 1** From the Network menu, choose **Devices**.
  - Step 2** Right-click the table header and add the Unit parameter.
  - Step 3** Click **Apply**. (The Apply button is located at the bottom of the parameter list.)

For additional information, see:

- [Displaying Device Information at the Network Level, page 9-2](#)
  - [Creating and Editing Device Polling Groups, page 9-35](#)
- 

## Creating Device-to-Unit Maps

The following procedure tells you how to create a device-to-unit map to distribute devices across multiple units. Before you complete the procedure, you will need the IP addresses or address ranges of all discovered devices, and a plan on how you want to distribute them across the units.

To create the map:

- 
- Step 1** Log into the Prime Performance Manager GUI as a System Administrator user.
  - Step 2** From the Administration menu, choose **Unit Editor**.
  - Step 3** On the Unit Editor toolbar, click **Add a Device to Unit Map** (the plus icon).
  - Step 4** In the Add Device to Unit Map dialog box, enter the following:

- IP Address Range or Hostname—Enter the device IP address, device IP address range, or hostname of the device(s) you want to assign to the unit for this map.
  - Unit—Choose the unit where you want to assign the devices. The field is populated with units that are assigned to the gateway.
- Step 5** Click **OK**.
- The map is added to the Unit Editor table.
- Step 6** Repeat Steps 3 through 5 until you have completed the device maps that you want.
- Step 7** In the Unit Editor toolbar, click **Save all Unit Entries**.
- Step 8** Choose one of the following:
- If device discovery has been completed and you want to redistribute the devices now, on the Unit Editor toolbar, click **Redistribute Devices to Units**. Click **OK** on the confirmation dialog.
  - If device discovery is not completed, you can run it at any time. During device discovery, devices are assigned to units based on the maps in the Unit Editor table. For device discovery procedures, see [Chapter 5, “Discovering Devices With Prime Performance Manager.”](#)
- 

## Editing Device-to-Unit Maps

To edit a device-to-unit map, complete the following steps:

- 
- Step 1** Log into the Prime Performance Manager GUI as a System Administrator user.
- Step 2** From the Administration menu, choose **Unit Editor**.
- Step 3** In the Unit Editor device-to-unit entries, edit the following:
- IP Address Range or Hostname—In the table cell, you can edit the device IP address, device IP address range, or hostname.
  - Unit—If you want to assign the IP address or address range to a different unit, choose the unit from the drop-down list, which displays units connected to the gateway.
- Step 4** When you are finished, in the Unit Editor toolbar, click **Save all Unit Entries**.
- Step 5** Choose one of the following:
- If device discovery is completed and you want to redistribute the devices based on the edits, on the Unit Editor toolbar, click **Redistribute Devices to Units**. Click **OK** on the confirmation dialog.
  - If device discovery is not completed, you can run it at any time, and the edited device-to-unit maps will be applied at that time.
- 

## Deleting Device-to-Unit Maps

To delete a device-to-unit map:

- 
- Step 1** Log into the Prime Performance Manager GUI as a System Administrator user.
- Step 2** From the Administration menu, choose **Unit Editor**.

- Step 3** In the Unit Editor device-to-unit entries, click the map table row that you want to delete then under Action, click **Delete**.
- Step 4** When finished, in the Unit Editor toolbar, click **Save all Unit Entries**.
- Step 5** Choose one of the following:
- If device discovery is completed and you want to redistribute the devices based on the edits, on the Unit Editor toolbar, click **Redistribute Devices to Units**. Click **OK** on the confirmation dialog.
  - If device discovery is not completed, you can run it at any time, and the edited device-to-unit maps will be applied at that time.

## Changing a Device-to-Unit Assignment

If your network has multiple Prime Performance Manager units, you can change the device unit assignment by editing the device-to-unit map. (See [Editing Device-to-Unit Maps, page 13-7](#).) You can also change the device unit assignment by individual device in the Devices window.

To change a device assignment:

- Step 1** Log into the Prime Performance Manager GUI as a System Administrator user.
- Step 2** From the Network menu, choose **Devices**.
- Step 3** In the device table, choose the device(s) whose unit assignment you want to change. To choose more than one device, press **Shift**.
- Step 4** From the Actions menu, choose **Relocate Device**.



**Note** This option is grayed if only one unit is available.

- Step 5** In the Relocate Device dialog box, choose the unit to which you want to assign the device(s), then click **Relocate**.

The new device-to-unit assignments will occur immediately.

## Managing Unit Redundancy Groups

Prime Performance Manager protection groups provide protection for units on a 1:1 or N:1 basis, where N = any number of primary units. Prime Performance Manager unit protection groups include the following key points:

- Multiple redundancy groups can be created. However a unit can only belong to one redundancy group.
- A unit added to a protection group as a redundant unit cannot have devices attached to it. If a failure occurs to a primary unit, the devices attached to the primary unit are switched to the redundant unit.
- Devices cannot be added to units in standby status, regardless of whether the unit is designated as a primary or standby unit. If a redundant unit become active due to a switchover, the following occurs:



- When you request a new device discovery, the device is directed to the active redundant unit for processing. After the failback to the primary unit, the primary unit processes the discovered device(s).
- When you move a device to the active redundant unit, the device is moved to the active redundant unit. After the failback, the primary unit processes the moved device.
- If you move a device from an active redundant unit to another unit, the move is completed. After the failback, the primary unit does not process the moved node.
- Moving a device to a failed primary unit is not allowed.
- To prevent units from engaging in down/up flapping, a switchover delay is provided. The delay is the amount of time the gateway waits after a unit becomes unavailable before it initiates a failover to the redundant unit. You specify the length of the delay when you create the redundancy group. The gateway determines the unit unavailability based on a unit connection that is lost. The connection can be lost for many reasons, for example, the unit is shut down or it crashes, or the network connectivity between the gateway and unit is lost.
- After the problem that caused a switchover is resolved, you must manually initiate the return to the primary unit using the ppm redundancygroups failback command.
- Following a switchover, redundant units service devices in the same manner as the primary unit. State changes are communicated to the gateway. After a failback, the primary unit picks up where the redundant unit left off.
- RMS upload servers are not moved to redundant units when a primary unit fails. To repartition the processing for an RMS upload server, use the ppm manageulsredundancy partitioner repartition command. For information, see [ppm manageulsredundancy, page B-55](#).



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**Note** Unit redundancy is not recommended for small cell implementations.

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The following topics tell you how to create, edit, failover, failback or delete, unit redundancy groups:

- [Creating New Unit Redundancy Groups, page 13-9](#)
- [Editing Redundancy Groups, page 13-10](#)
- [Performing Manual Redundant Unit Failovers, page 13-11](#)
- [Switching Redundant Units Back to Standby, page 13-11](#)
- [Unit Redundancy Group Failover Scenarios, page 13-12](#)
- [Replacing a Failed Unit, page 13-13](#)

## Creating New Unit Redundancy Groups

Creating new redundancy groups assigns a Prime Performance Manager redundancy unit to serve as the backup unit for one or multiple units.

To create a new unit redundancy group:

- 
- Step 1** From the System menu, choose **Gateways/Units**.
  - Step 2** In the left navigation pane, click **Redundancy Editor**.  
The Redundancy Editor displays information about current redundancy groups.
  - Step 3** From the Actions menu, choose **New Group**.

- Step 4** In the Redundancy Group Editor, complete the following:
- **Name**—Enter the name of the new group.
  - **Switchover Delay**—Enter the switchover delay. This is the amount of time Prime Performance Manager waits before switching to a redundant unit after a primary unit problem occurs. The default is 300 seconds.
  - **Enabled**—The redundancy group is enabled by default. If you do not want it enabled, uncheck this box.
  - **Redundant Unit**—Under Available Units, choose the unit that you want to be the redundant unit, then click the arrow to move it into the Redundant Unit box.



**Note** Do not select the unit with the lowest internal ID because Prime Performance Manager uses it as the default unit. To display the internal ID in the System Gateway/Units window, right-click the table header and select **Internal ID**. (Internal ID is not displayed by default.)

- **Units In Group**—Under Available Units, choose the unit(s) that you want included in the redundant unit group, that is, the units that will be backed up by the redundant unit.

- Step 5** Click **Save**. The Redundancy Editor window is refreshed and the new group is displayed.

## Editing Redundancy Groups

To edit an existing unit redundancy group:

- Step 1** From the **System** menu, choose **Gateways/Units**.
- Step 2** In the left navigation pane, click **Redundancy Editor**.  
The Redundancy Editor page displays information about current redundancy groups.
- Step 3** Under Redundancy Groups, choose the group you want to edit, then from the Actions menu, choose **Edit Group**.
- Step 4** In the Redundancy Group Editor, edit any of the following:
- **Name**—The redundant group name.
  - **Switchover Delay**—The amount of time Prime Performance Manager waits before switching to a redundant unit after a primary unit problem occurs.
  - **Available Units**—The units that are available for the redundant unit and units in the group.
  - **Enabled**—Enables (checked) or disables (unchecked) the redundancy group.
  - **Redundant Unit**—Use the arrows to change the redundant unit.
  - **Units In Group**—Use the arrows to change the units in the redundancy group.
- Step 5** Click **Save**. The Redundancy Editor window is refreshed and the edited group information is displayed.

## Performing Manual Redundant Unit Failovers

Failovers normally occur automatically when system changes occur on the deployed gateway local HA clusters. (For information about automatic failovers, see [Unit Redundancy Group Failover Scenarios, page 13-12](#).) If a single service failure occurs, the service is restarted. If the restart fails, the service is relocated to the second gateway server. You normally perform manual failovers to revert the cluster to its original configuration.

To perform a manual failover:

- 
- Step 1** From the System menu, choose **Gateways/Units**.
  - Step 2** In the left navigation pane, click **Redundancy Editor**.  
The Redundancy Editor page displays information about current redundancy groups.
  - Step 3** Under Redundancy Groups, choose the unit redundancy group you want to manually fail over.
  - Step 4** Under Group Members, choose the primary unit that you want to replace with the redundant unit.
  - Step 5** From the Actions menu, choose **Failover**.  
The Redundancy Editor window is refreshed. Under Group Members, the redundant unit has an Active status; the primary unit has a Standby status with severity Minor.
  - Step 6** To switch the redundant unit back to Standby status, complete the [Switching Redundant Units Back to Standby, page 13-11](#).
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## Switching Redundant Units Back to Standby

After the conditions that caused the failover to occur are fixed, you need to perform a manual switch back to return the redundant unit to Standby status.

To switch a unit back to Standby:

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- Step 1** From the System menu, choose **Gateways/Units**.
  - Step 2** In the left navigation pane, click **Redundancy Editor**.
  - Step 3** Under Redundancy Groups, choose the unit redundancy group containing the unit you want switch back.
  - Step 4** Under Group Members, choose the primary unit that is in Standby status.
  - Step 5** From the Actions menu, choose **Failback**.  
The Redundancy Editor window is refreshed. Under Group Members, the redundant unit now has a Standby status; the primary unit has an Active status.
-

## Displaying Redundancy Group Unit Status

After redundancy groups are created, you can view the status of units in the group by choosing **Gateways/Units** from the System menu, then in the navigation pane of the Redundancy Editor window, choose **Redundancy Editor**.

The Redundancy Editor displays the following information:

- Redundancy Groups—Displays the following details for created redundancy groups:
  - Group Name—Lists all created redundancy groups. You can click the column header to sort the groups in ascending or descending alphabetical order.
  - Is Enabled—Indicates whether the redundancy group is enabled.
  - Switchover Delay—Displays the redundancy group switchover delay time.
- Group Members—Displays the following details about redundancy group members.
  - Display Name—The redundancy group name.
  - Management IP Address—The group member IP address. This can be either gateway or unit IP address.
  - Primary/Redundant—The redundancy group role, either primary or redundant.
  - In Service—Indicates whether the group is in service.
  - Severity—If a failover occurs, the severity of the failover.
  - Status—The member unit status, either active or standby.
  - Status Reason—The member unit status description in detail.

You can also display redundancy group status on the Gateway/Units Summary window. This is displayed by default when you can choose from the Gateway/Units from the System menu.



### Note

To display the unit redundancy status, add the Redundancy Group and Primary/Redundant columns to the window. For information, see [Adding and Removing Properties from Property Views, page 3-20](#).

## Unit Redundancy Group Failover Scenarios

[Table 13-3](#) describes the unit redundancy group and failover behavior after common network circumstances occur.

Table 13-3 Unit Redundancy Group Failover Scenarios

Circumstance	Response
Unit is shut down or fails.	<p>The gateway waits for the delay time configured for the protection group. After the gateway determines the unit is down, it forces a failover of its devices to the redundant unit. The redundant unit begins collecting statistics for the devices; it now owns the devices and forwards CSV data to the gateway. The gateway accesses the redundant server for interactive reports. The unit that is down does not collect statistics. After it recovers and reconnects to the server, a handshake occurs and the gateway informs the unit that it is being covered for by a redundant unit. The failed unit is placed in a standby state and remains idle. It does not poll any devices; however, it can provide historical data to the gateway for interactive reporting.</p> <p>To return the failed unit to its primary role, you must issue a failback. After the failback is requested, the devices on the redundant unit return to the primary unit and processing continues on the primary unit. The redundant unit returns to standby state and stops device polling, although it can participate in interactive reports. The primary unit returns to normal state and begins forwarding CSV data to the gateway.</p>
Connectivity between a gateway and unit is lost.	<p>The redundant unit picks up for the “failed” unit and takes ownership of its devices. During the network connectivity unavailability, the redundant unit and the primary unit both poll the devices. The primary unit does not forward data to the gateway, because it cannot connect to the gateway. After connectivity is restored and the unit reconnects to the gateway, during the handshake the unit recognizes that a redundant unit is processing for it, so it drops any data queued for the gateway. This includes CSV and event data. The “failed” unit is placed in a standby state and is idle. It does not poll any devices; however it can provide historical data to the gateway for interactive reporting. To return the primary unit to its original role, you must issue a failback command.</p>
The gateway is brought down or fails.	<p>The unit continues to process devices and queue data for the gateway. After the gateway is restored, the unit forwards the queued data to it. Because the gateway contains the unit protection group configuration information, a gateway failure causes the unit redundancy to be lost. If a gateway is down and a unit that is part of a redundancy group fails, the redundant unit will not take over for the failed unit.</p>

## Replacing a Failed Unit

On occasion you might need to replace a unit in a unit redundancy group that failed and is no longer operable. To replace a unit with minimal data loss:

- The failed unit must be in a unit redundancy group.
- The active unit must be backed up regularly and the backup file must be available. By default, backup files are located under `/opt:unit-backup.tar` by default. Placing the `/opt` directory on share storage is recommended using the following command:

```
/opt/CSCOppm-unit/bin/ppm backupdir /NewBackupDirLocation
```

For more information about Prime Performance Manager backups, see [Chapter 18, “Backing Up and Restoring Prime Performance Manager.”](#)

You can use the following unit replacement procedure for any gateway HA configuration including no HA, local HA only, geographical HA only, or both local and geographical HA.



### Note

This procedure is intended for a unit that has failed and will not be brought back into the network. If you bring a failed unit back into the network after you complete this procedure data corruption will occur.

To replace a failed unit:

**Step 1** Install a new unit (Unit3) on a server connected to the gateway with the same parameters as the failed unit (Unit1) including SSL, gateway association, and other parameters. For installation procedures, see the *Cisco Prime Performance Manager 1.7 Quick Start Guide*.

**Step 2** Copy the Unit1 backup file to Unit3:

```
#scp failedactiveunit backup.tar root@newunit:/opt/
```

**Step 3** Verify the Unit1 backup file is available to Unit3:

```
scp /opt/ failedactiveunit-backup.tar root@newunit:/opt/
```

**Step 4** If Unit3 has the same hostname as Unit1, continue with the next step. If the units have different hostnames, rename the Unit1 backup file to the hostname of Unit3:

```
#mv failedactiveunit-backup.tar newunit-backup.tar
```



**Note** The name of the backup file is relative to the SERVER\_NAME in the System.properties file. Failure to properly rename the backup file will cause problems during the restore process.

**Step 5** Restore Unit3 with the backup file copied from Unit1:

```
# /opt/CSCOppm-unit/bin/ppm restore
```

**Step 6** If SSL was enabled on Unit1, clear SSL on Unit3:

```
opt/CSCOppm-unit/bin/ppm ssl clear
```

**Step 7** Complete the “[Enabling SSL on Remote Units](#)” procedure on page 6-4 on Unit3.

**Step 8** After the gateway and Unit3 reboot, if you want to switch the active and standby roles of Unit3 and Unit2 (the former unit redundancy group standby unit), complete the “[Switching Redundant Units Back to Standby](#)” procedure on page 13-11.



**Note** After Unit3 is online, do not start Prime Performance Manager on Unit1 again. Starting Prime Performance Manager on Unit1 will cause catastrophic database corruption.

## Managing Timing Among Gateways, Units, and Clients

In general, set all Prime Performance Manager gateways, units, and clients to a common Network Timing Protocol server. If you do not provision them to an NTP server, timing can become unsynchronized. A message appears when timing is not synchronized between any of the following:

- Gateway and units.
- GUI clients and the current gateway.
- Primary and secondary gateways in a geographical redundant deployment.

If this occurs, update the date and time on the systems reporting the error. For the gateway and units, log into the server and set the time using the Linux date command. For clients, update the time using the client OS date time utilities.