

# Upgrading Devices in an NSRP Configuration without Downtime

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## NetScreen-500 & NetScreen-5000 Series Devices Only

This document provides information on how to upgrade NetScreen devices configured for high availability from ScreenOS 4.0.X to ScreenOS 5.0.0 without causing any network downtime. It describes two upgrade procedures addressing two different NSRP configurations: NSRP active/passive and NSRP active/active.

The upgrade procedures require that you synchronize the devices. To be able to synchronize, both devices must be running the same ScreenOS firmware version. You cannot synchronize RTOs (run-time objects) on a device running ScreenOS 4.0.X with RTOs on a device running ScreenOS 5.0.0. The solution is to install ScreenOS 5.0-UP on one device. ScreenOS 5.0-UP is an interim firmware that enables a NetScreen device to synchronize RTOs with another device running either ScreenOS 4.0.X or ScreenOS 5.0.0.

This document covers the following topics:

- [“Requirements to Upgrade” on page 2](#)
- [“Downloading the New Firmware” on page 3](#)
- [“NSRP Active/Passive Configuration” on page 5](#)
  - [“Upgrade Procedure” on page 6](#)
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  - [“Upgrade Procedure” on page 12](#)

## REQUIREMENTS TO UPGRADE

This section lists the requirements for upgrading the firmware from ScreenOS 4.0.X to ScreenOS 5.0.0 on two NetScreen devices in an NSRP cluster. You can use either the WebUI or the CLI to perform the upgrade. However, you can use only the CLI for some of the steps in the procedures.

**Note:** *Although you can upgrade a NetScreen device locally or remotely, NetScreen recommends that you perform the upgrade at the device location. If something unforeseen interrupts the upgrade process and prevents its completion, you might need direct access to the device through the console.*

To use the WebUI, you must have:

- Root or read-write privileges to both NetScreen devices
- Network access to the NetScreen devices from your computer
- An Internet browser installed on your computer
- The ScreenOS 5.0.0 and ScreenOS 5.0-UP image files (downloaded from the NetScreen Web site and saved locally on your computer, see [“Downloading the New Firmware” on page 3](#))

To use the CLI, you must have:

- Root or read-write privileges to both NetScreen devices
- A console connection or Telnet access to the NetScreen devices from your computer
- A TFTP server installed on your computer
- The ScreenOS 5.0.0 and ScreenOS 5.0-UP image files (downloaded from the NetScreen Web site and saved to the TFTP server root directory on your computer, see [“Downloading the New Firmware” on page 3](#))

## DOWNLOADING THE NEW FIRMWARE

Before you begin the upgrade of the NetScreen devices, you must have the ScreenOS 5.0.0 and ScreenOS 5.0-UP firmware. You can obtain these ScreenOS image files from the NetScreen Web site. To access firmware downloads, you must be a registered customer with an active user ID and password. If you have not yet registered your NetScreen product, do so before you proceed. You can register your product on the NetScreen Web site.

To get the latest ScreenOS firmware, enter <http://www.netscreen.com> in your Web browser. Click Services > Customer Service Online, and then follow these steps:

1. Log in by entering your user ID and password.
2. Under My Technical Assistance Center, click **Download Software**.

A page appears displaying all the products you have registered.

3. Click **Download Software** for the device for which you want to download a new image file.  
After verifying and confirming your entitlement, the Firmware and Software Download page appears.
4. Click the product link for the firmware you want to download.

The Upgrades page appears.



The screenshot shows the NetScreen website's 'Services' page. The navigation bar includes 'Company', 'Products', 'Services', 'Resources', 'Partners', and 'Contacts'. The main content area is titled 'Services' and features a 'Download Software' link. Below this, the breadcrumb trail reads 'Home > Support > Software Downloads'. The main heading is 'Firmware and Software Downloads', followed by the sub-heading 'File Download Versions for all released products'. A list of product links is displayed under the '5.0' version, including NS-200, NS-25, NS-50, NS-500, NS-5000, NS-5200, NS-5400, NS-5gt, NS-5xp, NS-5xt, and NS-Hardware\_Security\_Client. A blue bracket on the right side of the list is labeled 'Product Links' with an arrow pointing to it.

5. Click the link for the ScreenOS version you want to download.
6. Click the upgrade link.

The Download File dialog box appears.

7. Click **Save** and navigate to the location where you want to save the firmware Zip file.

You must save the image file onto the computer from which you want to perform the upgrade.

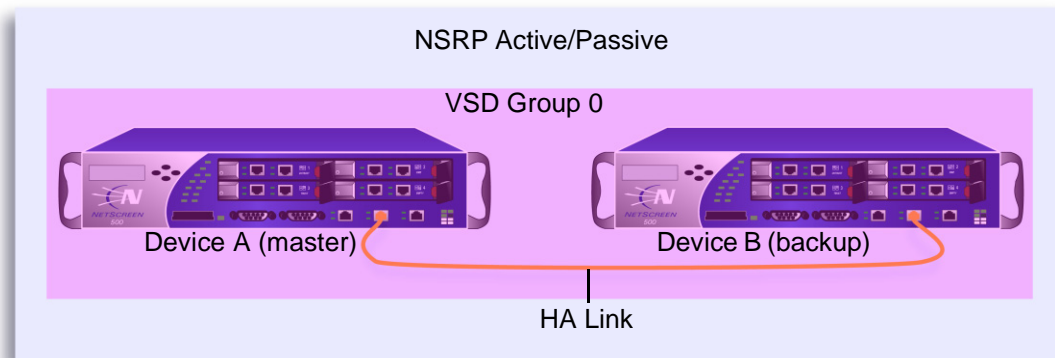
- If you want to upgrade the NetScreen devices using the WebUI, save the image file anywhere on the computer.
- If you want to upgrade the NetScreen devices using the CLI, save the image file to the root TFTP server directory on the computer. If you do not have a TFTP server installed on your computer, you can download one from the Internet. If no TFTP server is available, you can use the WebUI to load the new firmware onto the NetScreen devices.

The ScreenOS 5.0-UP image file is included in the latest ScreenOS 5.0.0 firmware zip file.

## NSRP ACTIVE/PASSIVE CONFIGURATION

In an NSRP configuration where one NetScreen device is the master and active and the other device is the backup and passive, upgrade the backup device first and the master device second. The following illustration shows two NetScreen devices cabled together in a basic NSRP cluster. Device A is the master and device B is the backup and both are part of VSD (Virtual Security Device) group 0.

**Note:** During the upgrade procedure, both devices take turns being master and backup, but in the beginning and the end, device A is master.



Before you begin, please read the requirements to perform an upgrade (see [“Requirements to Upgrade” on page 2](#)). Also make sure that you download both the ScreenOS 5.0.0 firmware and the ScreenOS 5.0-UP interim firmware (see [“Downloading the New Firmware” on page 3](#)).

**Warning:** Do not power off the NetScreen device while it is upgrading to new firmware. Doing so can result in permanent damage to the device.

## Upgrade Procedure

To avoid downtime during the upgrade of two devices in an NSRP active/passive configuration, follow these steps (note that for some of these steps you can only use the CLI as indicated):

- A. Modify NSRP Device Settings
- B. Upgrade Device B to ScreenOS 5.0-UP
- C. Synchronize Device B Manually (CLI only)
- D. Fail Over Device A to Device B (CLI only)
- E. Upgrade Device A to ScreenOS 5.0.0
- F. Synchronize Device A Manually (CLI only)
- G. Fail Over Device B to Device A (CLI only)
- H. Upgrade Device B to ScreenOS 5.0.0
- I. Synchronize Device B Manually (CLI only)

### A. Modify NSRP Device Settings

#### *WebUI*

1. Enable RTO synchronization on each device:
  - Network > NSRP > Synchronization: Select **NSRP RTO Synchronization**, and then click **Apply** to save your setting.
2. Disable the preempt option<sup>1</sup> on each device:
  - Network > NSRP > VSD Group: Clear the **Enable Preempt** check box, and then click **OK** to save your setting.

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1. For more information on the preempt option and NSRP in general, refer to the *NetScreen Concepts & Examples ScreenOS Reference Guide*, Volume 8, "High Availability".

## CLI

1. Enable RTO synchronization on each device:  
**set nsrp rto-mirror sync**
2. Disable the preempt option on each device:  
**unset nsrp vsd-group id 0 preempt**

## B. Upgrade Device B to ScreenOS 5.0-UP

Note that ScreenOS 5.0-UP is an interim firmware and is not designed to operate on a device for an extended period of time. Upgrade to ScreenOS 5.0.0 as soon as you complete the upgrade of the other device from ScreenOS 4.0.X to ScreenOS 5.0.0.

## WebUI

1. Open a Web browser and log in to device B as the root admin or an admin with read-write privileges.
2. Save the existing configuration (in case a problem occurs and you lose the device configuration):
  - a. Configuration > Update > Config File: Click **Save to File**.
  - b. In the File Download dialog box, click **Save**.
  - c. Navigate to the location where you want to save the configuration file (*cfg.txt*), and then click **Save**.
3. Configuration > Update > ScreenOS/Keys: Select **Firmware Update**.
4. Click **Browse** to navigate to the location of the ScreenOS 5.0-UP image file or type the path to its location in the Load File field.
5. Click **Apply**.

A message box appears with information on the upgrade time.
6. Click **OK** to continue.

The NetScreen device restarts automatically. While it performs its initialization, device B synchronizes the RTOs from device A. This might take a few minutes. The upgrade is complete when the device displays the login page in the browser.
7. Log in to device B. You can verify the ScreenOS firmware version in the Device Information section on the WebUI Home page.

## CLI

1. Using an application such as Telnet or Secure Shell (SSH) or HyperTerminal, log in to device B as the root admin or an admin with read-write privileges.
2. Run the TFTP server on your computer by double-clicking on the TFTP server application.
3. Save the existing configuration by entering the **save config from flash to tftp <ip\_addr> <filename>** command, where the IP address is that of the tftp server and the file name is that of the configuration file. Save the configuration as a precaution in case a problem occurs and you lose the device configuration.
4. Enter **save soft from tftp <ip\_addr> <filename> to flash**, where the IP address is that of your computer and the file name is that of the ScreenOS 5.0-UP image file.
5. When the upgrade is complete, you must reset the NetScreen device. Execute the **reset** command and enter **y** at the prompt to reset the device.

While device B performs its initialization, it synchronizes the RTOs from device A. This might take a few minutes.

6. Log in to device B. You can verify the NetScreen device ScreenOS firmware version by using the **get system** command.

## C. Synchronize Device B Manually (CLI only)

To ensure that all RTOs are properly synchronized, on device B (backup), enter the **exec nsrp sync rto all from peer** CLI command to synchronize the RTOs from device A (master).

## D. Fail Over Device A to Device B (CLI only)

Manually fail over the master device to the backup device:

1. Log in to device A, which is still the master.
2. Fail over device A to device B by entering the following CLI command: **exec nsrp vsd-group 0 mode backup**.

## E. Upgrade Device A to ScreenOS 5.0.0

### WebUI

1. Log in to device A.
2. Save the existing configuration:
  - a. Configuration > Update > Config File: Click **Save to File**.
  - b. In the File Download dialog box, click **Save**.
  - c. Navigate to the location where you want to save the configuration file (*cfg.txt*), and then click **Save**.
3. Configuration > Update > ScreenOS/Keys: Select **Firmware Update**.
4. Click **Browse** to navigate to the location of the ScreenOS 5.0.0 image file or type the path to its location in the Load File field.
5. Click **Apply**.

A message box appears with information on the upgrade time.
6. Click **OK** to continue.

The NetScreen device restarts automatically. While it performs its initialization, device A synchronizes the RTOs from device B. This might take a few minutes. The upgrade is complete when the device displays the login page in the browser.
7. Log in to device A. You can verify the ScreenOS firmware version in the Device Information section on the WebUI Home page.

### CLI

1. Log in to device A.
2. Run the TFTP server on your computer by double-clicking on the TFTP server application.
3. Save the existing configuration by entering the **save config from flash to tftp <ip\_addr> <filename>** command, where the IP address is that of the tftp server and the file name is that of the configuration file. Save the configuration as a precaution in case a problem occurs and you lose the device configuration.

4. Enter **save soft from tftp** *<ip\_addr>* *<filename>* **to flash**, where the IP address is that of your computer and the file name is that of the ScreenOS 5.0.0 image file.
5. When the upgrade is complete, you must reset the NetScreen device. Execute the **reset** command and enter **y** at the prompt to reset the device.

While device A performs its initialization, it synchronizes the RTOs from device B. This might take a few minutes.

6. Log in to device A. You can verify the NetScreen device ScreenOS firmware version by using the **get system** command.

#### F. Synchronize Device A Manually (CLI only)

To ensure that all RTOs are properly synchronized, on device A (backup), enter the **exec nsrp sync rto all from peer** CLI command to synchronize the RTOs from device B (master).

#### G. Fail Over Device B to Device A (CLI only)

Manually fail over device B, which is currently the master, to device A by entering the following CLI command: **exec nsrp vsd-group 0 mode backup**.

#### H. Upgrade Device B to ScreenOS 5.0.0

To upgrade device B to ScreenOS 5.0.0, follow the procedure in step “[E. Upgrade Device A to ScreenOS 5.0.0](#)” on page 9. Remember, however, that you must log in to device B and upgrade device B instead of upgrading device A.

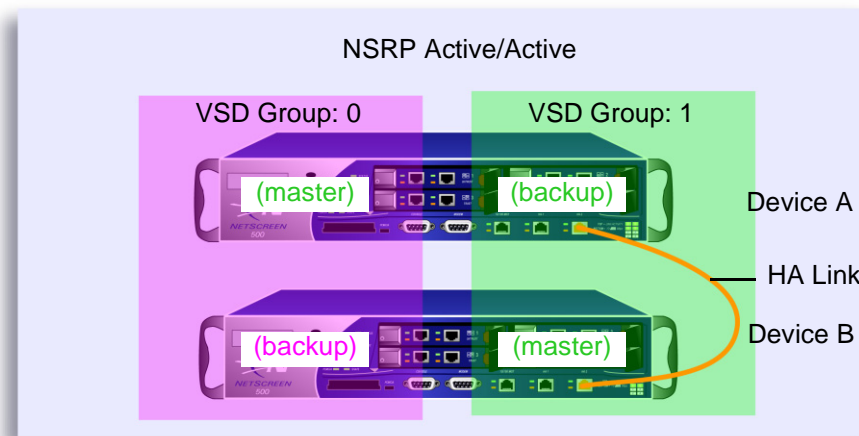
#### I. Synchronize Device B Manually (CLI only)

To ensure that all RTOs are properly synchronized, on device B (backup), enter the **exec nsrp sync rto all from peer** CLI command to synchronize the RTOs from device A (master).

## NSRP ACTIVE/ACTIVE CONFIGURATION

This upgrade section applies to an NSRP configuration where you paired two NetScreen devices into two Virtual Security Devices (VSD) groups, with each physical device being the master in one group and the backup in the other. To upgrade, you must first fail over one of the devices so that only one physical device is master of both VSD groups. You then upgrade the backup device first and the master device second.

The following illustrates a typical NSRP active/active configuration where device A is the master of VSD 0 and the backup for VSD 1, and device B is the master of VSD 1 and the backup for VSD 0. If your configuration contains more than two VSDs, make sure that you fail over every VSD to one physical device following the same procedure described below.



Before you begin, please read the requirements to perform an upgrade (see [“Requirements to Upgrade” on page 2](#)). Also make sure that you download both the ScreenOS 5.0.0 firmware and the ScreenOS 5.0-UP interim firmware (see [“Downloading the New Firmware” on page 3](#)).

**Warning:** Do not power off the NetScreen device while it is upgrading to new firmware. Doing so can result in permanent damage to the device.

## Upgrade Procedure

To avoid downtime during the upgrade of two devices in an NSRP active/active configuration, follow these steps (note that for some of these steps you can only use the CLI as indicated):

- A. Modify NSRP Device Settings
- B. Fail Over Device B in VSD 1 to Device A in VSD 1 (CLI only)
- C. Upgrade Device B to ScreenOS 5.0-UP
- D. Synchronize Device B Manually (CLI only)
- E. Fail Over Device A to Device B (CLI only)
- F. Upgrade Device A to ScreenOS 5.0.0
- G. Synchronize Device A Manually (CLI only)
- H. Fail Over Device B to Device A (CLI only)
- I. Upgrade Device B to ScreenOS 5.0.0
- J. Synchronize Device B Manually (CLI only)
- K. Fail Over Device A in VSD 1 to Device B in VSD 1 (CLI only)

### A. Modify NSRP Device Settings

#### *WebUI*

1. Enable RTO synchronization on each device:
  - Network > NSRP > Synchronization: Select **NSRP RTO Synchronization**, and then click **Apply** to save your setting.
2. Disable the preempt option<sup>2</sup> of each VSD group on each device:
  - Network > NSRP > VSD Group > Edit (for VSD Group ID 0): Clear the **Enable Preempt** check box, and then click **OK** to save your setting.
  - Repeat this step for VSD group 1.

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2. For more information on the preempt option and NSRP in general, refer to the *NetScreen Concepts & Examples ScreenOS Reference Guide*, Volume 8, "High Availability".

## CLI

1. Enable RTO synchronization on each device:  
**set nsrp rto-mirror sync**
2. Disable the preempt option<sup>3</sup> of each VSD group on each device:  
**unset nsrp vsd-group id 0 preempt**  
**unset nsrp vsd-group id 1 preempt**

### B. Fail Over Device B in VSD 1 to Device A in VSD 1 (CLI only)

Manually fail over the master device B in VSD group 1 to the backup device A in VSD group 1:

1. Using an application such as Telnet or Secure Shell (SSH) or HyperTerminal, log in to device B as the root admin or an admin with read-write privileges.
2. Enter the following CLI commands: **exec nsrp vsd-group 1 mode backup**.

This command forces device B to step down and device A to immediately assume mastership of VSD 1. At this point, device A is the master of both VSD 0 and 1 and device B is the backup for both VSD 0 and 1.

### C. Upgrade Device B to ScreenOS 5.0-UP

Note that ScreenOS 5.0-UP is an interim firmware and is not designed to operate on a device for an extended period of time. Upgrade to ScreenOS 5.0.0 as soon as you complete the upgrade of the other device from ScreenOS 4.0.X to ScreenOS 5.0.0.

## WebUI

1. Open a Web browser and log in to device B as the root admin or an admin with read-write privileges.
2. Save the existing configuration (in case a problem occurs and you lose the device configuration):
  - a. Configuration > Update > Config File: Click **Save to File**.
  - b. In the File Download dialog box, click **Save**.

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3. For more information on the preempt option and NSRP in general, refer to the *NetScreen Concepts & Examples ScreenOS Reference Guide*, Volume 8, "High Availability".

- c. Navigate to the location where you want to save the configuration file (*cfg.txt*), and then click **Save**.
3. Configuration > Update > ScreenOS/Keys: Select **Firmware Update**.
4. Click **Browse** to navigate to the location of the ScreenOS 5.0-UP image file or type the path to its location in the Load File field.
5. Click **Apply**.

A message box appears with information on the upgrade time.
6. Click **OK** to continue.

The NetScreen device restarts automatically. While it performs its initialization, device B synchronizes the RTOs from device A. This might take a few minutes. The upgrade is complete when the device displays the login page in the browser.
7. Log in to device B. You can verify the ScreenOS firmware version in the Device Information section on the WebUI Home page.

## CLI

1. Using an application such as Telnet or Secure Shell (SSH) or HyperTerminal, log in to device B as the root admin or an admin with read-write privileges.
2. Run the TFTP server on your computer by double-clicking on the TFTP server application.
3. Save the existing configuration by entering the **save config from flash to tftp <ip\_addr> <filename>** command, where the IP address is that of the tftp server and the file name is that of the configuration file. Save the configuration as a precaution in case a problem occurs and you lose the device configuration.
4. Enter **save soft from tftp <ip\_addr> <filename> to flash**, where the IP address is that of your computer and the file name is that of the ScreenOS 5.0-UP image file.
5. When the upgrade is complete, you must reset the NetScreen device. Execute the **reset** command and enter **y** at the prompt to reset the device.

While device B performs its initialization, it synchronizes the RTOs from device A. This might take a few minutes.
6. Log in to device B. You can verify the NetScreen device ScreenOS firmware version by using the **get system** command.

#### D. Synchronize Device B Manually (CLI only)

To ensure that all RTOs are properly synchronized, on device B (backup), enter the **exec nsrp sync rto all from peer** CLI command to synchronize the RTOs from device A (master).

#### E. Fail Over Device A to Device B (CLI only)

Manually fail over device A completely to device B:

1. Log in to device A.
2. Fail over device A in VSD 0 and VSD 1 by entering the following CLI commands:

```
exec nsrp vsd-group 0 mode backup
```

```
exec nsrp vsd-group 1 mode backup
```

At this point, device B is the master of both VSD 0 and 1, and device A is the backup for both VSD 0 and 1.

#### F. Upgrade Device A to ScreenOS 5.0.0

##### *WebUI*

1. Log in to device A.
2. Save the existing configuration:
  - a. Configuration > Update > Config File: Click **Save to File**.
  - b. In the File Download dialog box, click **Save**.
  - c. Navigate to the location where you want to save the configuration file (*cfg.txt*), and then click **Save**.
3. Configuration > Update > ScreenOS/Keys: Select **Firmware Update**.
4. Click **Browse** to navigate to the location of the ScreenOS 5.0.0 image file or type the path to its location in the Load File field.
5. Click **Apply**.

A message box appears with information on the upgrade time.

6. Click **OK** to continue.

The NetScreen device restarts automatically. While it performs its initialization, device A synchronizes the RTOs from device B. This might take a few minutes. The upgrade is complete when the device displays the login page in the browser.

7. Log in to device A. You can verify the ScreenOS firmware version in the Device Information section on the WebUI Home page.

## CLI

1. Log in to device A.
2. Run the TFTP server on your computer by double-clicking on the TFTP server application.
3. Save the existing configuration by entering the **save config from flash to tftp <ip\_addr> <filename>** command, where the IP address is that of the tftp server and the file name is that of the configuration file. Save the configuration as a precaution in case a problem occurs and you lose the device configuration.
4. Enter **save soft from tftp <ip\_addr> <filename> to flash**, where the IP address is that of your computer and the file name is that of the ScreenOS 5.0.0 image file.
5. When the upgrade is complete, you must reset the NetScreen device. Execute the **reset** command and enter **y** at the prompt to reset the device.

While device A performs its initialization, it synchronizes the RTOs from device B. This might take a few minutes.

6. Log in to device A. You can verify the NetScreen device ScreenOS firmware version by using the **get system** command.

## G. Synchronize Device A Manually (CLI only)

To ensure that all RTOs are properly synchronized, on device A (backup), enter the **exec nsrp sync rto all from peer** CLI command to synchronize the RTOs from device B (master).

## H. Fail Over Device B to Device A (CLI only)

Manually fail over device B completely to device A. Follow the procedure in step “E. Fail Over Device A to Device B (CLI only)” on page 15, except that you login in to device B and fail over device B instead of failing over device A.

At this point, device A is the master of both VSD 0 and 1 and device B is the backup for both VSD 0 and 1.

## I. Upgrade Device B to ScreenOS 5.0.0

To upgrade device B to ScreenOS 5.0.0, follow the procedure in step “F. Upgrade Device A to ScreenOS 5.0.0” on page 15. Remember, however, that you must log in to device B and upgrade device B instead of upgrading device A.

## J. Synchronize Device B Manually (CLI only)

To ensure that all RTOs are properly synchronized, on device B (backup), enter the **exec nsrp sync rto all from peer** CLI command to synchronize the RTOs from device A (master).

## K. Fail Over Device A in VSD 1 to Device B in VSD 1 (CLI only)

As the final step, reinstate the NSRP active/active configuration on the two NetScreen devices.

1. Log in to device A.
2. Fail over master device A in VSD 1 to backup device B in VSD 1 by issuing the following CLI command (providing that you previously disabled the preempt option<sup>4</sup> on the devices before you began upgrading):  
**exec nsrp vsd-group 1 mode backup.**

At this point, device A is the master of VSD 0 and the backup for VSD 1, and device B is the master of VSD 1 and the backup for VSD 0.

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4. For more information on the preempt option and NSRP in general, refer to the *NetScreen Concepts & Examples ScreenOS Reference Guide*, Volume 8, “High Availability”.

