



CHAPTER 5

High Availability NSE Redundancy



Caution

Two NSE-100s, two NSE-150s, or two NPE-G100 configurations are supported on the Cisco 7304 router. You cannot use different processors in the same Cisco 7304 router at the same time.

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Route processing redundancy is a feature currently available on the Cisco 7304 router. With two NSEs installed in a router, the feature provides the most basic level of increased system availability through a “partial bootup” feature on the standby NSE. A “partial bootup” means that when the active NSE fails or a fatal error is detected on the NSE, the standby NSE will complete booting and take control of the line cards. This minimizes the time that the router is in a failed state, thereby increasing system availability. Switchover takes approximately one minute.

Configuration syncing of startup configuration (only) and ROMmon environmental variables are supported.



Note

During a failover, the entire system will lose all functionality for the duration of the restoration; line cards will be reset, and all traffic flowing through the router at the time of failure will be lost.

After a failover, you should replace the failed NSE to maintain high availability.

High Availability System Requirements

To configure high availability (HA) operation with the Cisco 7304, you need two network services engines that are the same model, and the same Cisco IOS release running on both network services engines.

**Note**

It is recommended that both NSEs run the same version of Cisco IOS. It is also recommended that both NSEs have the same physical configuration for optimum availability; memory and CompactFlash Disk configuration should be the same on the active and standby NSEs.

High Availability Commands

The **show redundancy** command is issued on the active NSE and shows redundancy-related information for the active and standby NSEs.

```
Router# show redundancy
Slot 0 NSE (This NSE)   : Active
Slot 2 NSE               : Standby

Redundancy state is REDUNDANCY_PEERSTANDBY_INITED

Standby NSE information:
Standby is up.
Standby has 132096K bytes of memory.
Standby BOOT variable = disk0:c7300-js-mz.ha-031202,1
Standby CONFIG_FILE variable =
Standby BOOTLDR variable = bootdisk:c7300-boot-mz.ha-031202
Standby Configuration register is 0x2002

Standby version:
Cisco Internetwork Operating System Software
IOS (tm) 7300 Software (C7300-JS-M), Released Version 12.1(20020306:160533) ]
Copyright (c) 1986-2002 by cisco Systems, Inc.
Compiled Tue 12-Mar-02 18:27 by biff
```

You can also use the **show c7300** command to show the status of the two NSEs. In this example, two NSE-100s are installed in the Cisco 7304 router.

```
Router# show c7300
Slot   Card Type           Status           Insertion time
----   -
0,1    NSE-100                Active           1d20h ago
2,3    NSE-100                Standby          1d20h ago
4      4OC3-POS               Active           1d20h ago
5      1OC48-POS              Active           1d20h ago
```

System is compliant with hardware configuration guidelines.

All the FPGAs in the system are up-to-date

```
Network IO Interrupt Throttling:
  throttle count=11370, timer count=11370
  active=0, configured=1
  netint usec=3999, netint mask usec=200
```

To force a manual switchover to the standby NSE, use the **redundancy force-switchover** command:

```
Router# redundancy force-switchover

System configuration has been modified. Save? [yes/no]:y
Proceed with switchover to standby NSE? [confirm]n
```

To cause the standby NSE to be reset, use the **hw-module standby {reset | reload}** command:

```
Router# hw-module standby reset
```

```
Proceed with reset of standby NSE? [confirm]n
```

FPGA Upgrades and Failover

If the FPGA versions of the NSE do not match and the router fails over to the standby NSE, you may be required to upgrade the FPGAs on the standby NSE.

For further information on upgrading FPGA, see the *Cisco 7304 FPGA Bundling and Update* document.

GBIC Module, SFP Module, and FE Management Port Addressing

Four Gigabit Ethernet ports are available from the active NSE-100. The slot 0 NSE-100 GBIC ports are 0/0 and 0/1; slot 2 GBIC ports are 2/0 and 2/1.

Four Gigabit Ethernet ports are available for NSE-150. The slot 0 NSE-150 SFP ports are 0, 1, 2, and 3; slot 2 SFP ports are 2/0, 2/1, 2/2, and 2/3.

In an HA-enabled system, the FE management port is 0.

CompactFlash Disk Commands

The following commands are available as part of the remote file system support which causes the file systems on the standby NSE to be visible on the active NSE. In an HA-enabled Cisco 7304 router, the CompactFlash Disks on the standby NSE can be accessed with the following commands (use **copy**, **dir** or other commands before **standby-disk0:**, **standby-bootdisk:**, or **standby-nvram:**).

copy tftp standby-disk0:

copy tftp standby-bootdisk:

copy standby-disk0: tftp

copy standby-bootdisk: tftp

dir standby-bootdisk:

dir standby-disk0:

dir standby-nvram:

Any file system command that takes disk0: or bootdisk: as parameters can also take standby-disk0: and bootdisk: as parameters.

