



## Commands for the Cisco 6400 NSP

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This chapter describes the commands and tasks specific to the Cisco 6400 node switch processor (NSP) except for show commands, which are described in:

- [Chapter 4, “Show Commands for the Cisco 6400 NSP”](#)
- *ATM and Layer 3 Switch Router Command Reference*, available at [www.cisco.com](http://www.cisco.com) or on the Cisco Documentation CD-ROM.

# aps clear

To clear all of the APS priority requests created by the **aps signal-degrade**, **aps lockout**, **aps force**, and **aps manual** commands, use the **aps clear** EXEC command.

**aps clear atm** *slot/subslot/port*

<b>Syntax Description</b>	<b>slot/subslot/port</b>	Specifies the ATM interface for which you want all APS priority requests cleared.
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<b>Defaults</b>	None
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<b>Command Modes</b>	EXEC configuration
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<b>Usage Guidelines</b>	<p>This command applies to the Cisco 6400 NSP only.</p> <p>The <b>aps clear</b> EXEC command allows you to remove all of the APS priority requests on the named ATM interface.</p>
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**Note**

This command works only if redundancy is configured on the specified interface.

<b>Examples</b>	<p>In the following example, all the current APS priority requests on ATM 2/0/1 are cleared.</p> <pre>Switch# <b>aps clear atm 2/0/1</b></pre>
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<b>Related Commands</b>	<p><a href="#">aps force</a></p> <p><a href="#">aps lockout</a></p> <p><a href="#">aps manual</a></p>
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# aps force

To force an interface to switch to the alternate port within a redundant pair, use the **aps force EXEC** command.

**aps force atm slot/subslot/port from [protection | working]**

Syntax Description		
	<i>slot/subslot/port</i>	Specifies the interface you want to affect.
	<b>from protection</b>	Specifies that you want to switch from the protection port to the working port.
	<b>from working</b>	Specifies that you want to switch from the working port to the protection port.

**Defaults** None

**Command Modes** EXEC mode

**Usage Guidelines** This command applies to the Cisco 6400 NSP only.

Force is a defined APS request priority level. The request succeeds if no higher priority request (lockout is the only higher priority request) is posted. The **aps force** command does not persist over a system restart. The port type named in the command indicates the member of the redundant port pair that you want to switch away from.

For more information about APS priority requests, see the Telcordia GR-253-CORE specification.



**Note**

This command works only if redundancy is configured on the specified interface.

**Examples** The following example shows the ATM 1/1/1 interface being forced to switch from the working port to the protection port within the defined redundant pair.

```
Switch# aps force atm 1/1/1 from working
```

**Related Commands**

- [aps clear](#)
- [aps lockout](#)
- [aps manual](#)

# aps lockout

To lock out the protection port within a redundant pair, use the **aps lockout** EXEC command.

**aps lockout atm** *slot/subslot/port*

<b>Syntax Description</b>	<i>slot/subslot/port</i>	Specifies the interface you want to affect.
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<b>Defaults</b>	None
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<b>Command Modes</b>	EXEC mode
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<b>Usage Guidelines</b>	<p>This command applies to the Cisco 6400 NSP only.</p> <p>Lockout is defined as the highest APS request priority level. The <b>aps lockout</b> command does not persist over a system restart. When the protection port is locked out, only the working port is used for the specified interface.</p>
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For more information about APS priority requests, see the Telcordia GR-253-CORE specification.



**Note**

This command works only if redundancy is configured on the specified interface.

<b>Examples</b>	<p>In the following example, the ATM 1/1/1 interface is forced to use the working port within the defined redundant pair.</p>
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```
Switch# aps lockout atm 1/1/1
```

<b>Related Commands</b>	<p><a href="#">aps clear</a></p> <p><a href="#">aps force</a></p> <p><a href="#">aps manual</a></p>
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# aps manual

To post an APS request that switches an interface to the alternate port within a redundant pair, use the **aps manual EXEC** command.

**aps manual atm** *slot/subslot/port* **from** [**protection** | **working**]

Syntax Description		
	<i>slot/subslot/port</i>	Specifies the interface you want to affect.
	<b>from protection</b>	Specifies that you want to switch from the protection port to the working port.
	<b>from working</b>	Specifies that you want to switch from the working port to the protection port.

**Defaults** None

**Command Modes** EXEC mode

**Usage Guidelines** This command applies to the Cisco 6400 NSP only.

Manual is a defined APS request priority level. The request succeeds if no higher priority request is posted. The **aps manual** command does not persist over a system restart. The port type named in the command indicates the member of the redundant port pair that you want to switch away from.

Table 3-1 lists the priority requests, relevant to the Cisco 6400, that are higher than manual.

*Table 3-1 APS Priority Request*

Priority	Priority request
1	Lockout of protection
2	Forced switch
3	SF - Low priority
4	SD - Low priority
5	Manual switch

For a complete list of priority requests, see Table 5.3 of the Telcordia GR-253-CORE specification.



**Note**

This command works only if redundancy is configured on the specified interface.

**Examples**

In the following example, the ATM 1/1/1 interface is switched from the working port to the protection port within the defined redundant pair, provided that no higher priority request is posted.

Switch# **aps manual atm 1/1/1 from working**

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**Related Commands**

**aps clear**  
**aps force**  
**aps lockout**

# aps mode

To set the APS operational mode on a Cisco 6400 for a pair of redundant ports, use the **aps mode** interface command. To remove the APS operational mode, use the **no associate** command.

**aps mode {linear 1+1 nonreverting unidirectional}**

Syntax Description	<b>linear 1+1 nonreverting unidirectional</b>	Specifies that the APS operation between the two redundant ports for the interface is linear, 1+1, nonreverting, and unidirectional.
Defaults	On	
Command Modes	Interface configuration	
Usage Guidelines	<p>This command applies to the Cisco 6400 NSP only.</p> <p>The linear 1+1 nonreverting unidirectional mode is the only APS mode currently supported on the Cisco 6400.</p> <p>There is only one logical interface for a pair of redundant ports. The APS configuration commands are accepted only on an interface that represents a redundant pair of ports. If the redundancy between ports is removed by using the <b>no associate</b> command, two interface configuration sections are created, but the APS configuration commands are removed from both.</p>	
 Note	<p>The APS mode is enabled by default on all Cisco 6400 OC-3 line cards.</p> <p>The <b>aps mode</b> must be set before the other <b>aps</b> commands can be entered.</p>	
Examples	<p>In the following example, the ATM interface 1/0/0 is configured for linear APS operation.</p> <pre>Switch(config)# interface atm 1/0/0 Switch(config-if)# aps mode linear 1+1 nonreverting unidirectional</pre>	
Related Commands	<a href="#">associate</a>	

# aps signal-degrade

To set the bit-error-rate threshold for signal degrade APS priority posting, use the **aps signal-degrade** interface configuration command. To remove the BER threshold, use the **no** form of this command.

**aps signal-degrade BER threshold** *value*

**no aps signal-degrade BER threshold** *value*

<b>Syntax Description</b>	<b>BER threshold</b>	Specifies the name of the priority request for which you are setting a threshold.
	<i>value</i>	Specifies the value of the threshold, which is 10-x, where x is 5, 6, 7, 8, or 9.
<b>Defaults</b>	None	
<b>Command Modes</b>	Interface configuration	
<b>Usage Guidelines</b>	<p>This command applies to the Cisco 6400 NSP only.</p> <p>For a complete list of priority requests, see Table 5.3 of the Telcordia GR-253-CORE specification.</p>	
<b>Examples</b>	<p>In the following example, the BER threshold for the ATM 1/0/1 interface is set to 9.</p> <pre>Switch(config)# interface atm 1/0/1 Switch(config-if)# aps signal-degrade BER threshold 9</pre>	
<b>Related Commands</b>	<p><b>aps signal-fail</b></p> <p><b>aps mode</b></p> <p><b>snmp-server forwarder</b></p> <p><b>show controllers</b></p>	



# aps signal-fail

To set the bit-error-rate threshold for signal fail APS priority posting, use the **aps signal-fail** interface configuration command. To restore the default BER threshold, use the **no** form of this command.

**aps signal-fail BER threshold** *value*

**no aps signal-fail BER threshold**

Syntax Description	BER threshold	Specifies the name of the priority request for which you are setting a threshold.
	<i>value</i>	Specifies the value of the threshold, which is $10^{-x}$ , where x is 3, 4, or 5.

**Defaults** The default BER threshold is  $10^{-3}$ .

**Command Modes** Interface configuration

**Usage Guidelines** This command applies to the Cisco 6400 NSP only.  
For a complete list of priority requests, see Table 5.3 of the Telcordia GR-253-CORE specification.

**Examples** In the following example, the BER threshold for the ATM 1/0/1 interface is set to 5.

```
Switch(config)# interface atm 1/0/1
Switch(config-if)# aps signal-fail BER threshold 5
```

**Related Commands**

- [aps signal-degrade](#)
- [aps mode](#)
- [show aps](#)
- [show controllers](#)

# archive tar

To list the contents of a UNIX-style tar archive or to extract its contents, use the **archive tar** privileged EXEC command.

**archive tar /table** *URL*

**archive tar /xtract** *source destination*

Syntax Description	<b>/table</b>	Lists the contents of the tar archive.
	<i>URL</i>	Specifies the location of the tar archive you want to list.
	<b>/xtract</b>	Extracts the contents of the source tar archive to the destination given.
	<i>source</i>	Specifies the source of the tar file you want to extract.
	<i>destination</i>	Specifies the destination of the tar file you want to extract. Usually installed from Flash disk on the NSP.

Defaults None

Command Modes Privileged EXEC

Usage Guidelines This command applies to the Cisco 6400 NSP only.

This command is mostly used to unpack updated Web Console pages. The Cisco 6400 ships with current Web Console HTML pages; however, you should download new or updated pages from time to time. The new pages will be stored in a tar archive that you must unpack with the **archive tar** command before viewing.

Examples The following example shows how to extract files on the TFTP server named *boothost* and install them on the disk located in slot 0 on the NSP:

```
Switch# archive tar /xtract tftp://boothost/6400/c6400s-html.tar disk0:
```

# associate

To group two slots or two subslots for redundant operation, use the **associate** redundancy subcommand. To remove the redundancy, use the **no** form of this command.

```
associate {slot slot [slot] | subslot slot/subslot [slot/subslot]}
```

```
no associate {slot slot [slot] | subslot slot/subslot [slot/subslot]}
```

Syntax Description	slot	Specifies that redundancy is set between two slots.
	subslot	Specifies that redundancy is set between two subslots.
	<i>slot</i>	Specifies the slot or subslot for the member of a redundant pair. You do not need to specify the second member of the pair because only adjacent devices can be configured as redundant.
	<i>slot/subslot</i>	

**Defaults** No redundancy

**Command Modes** Redundancy configuration

**Usage Guidelines** This command can be entered only from the Cisco 6400 NSP.

The **associate** command must be entered in redundancy configuration mode. Redundant pairs consist of the odd-numbered slot and the following even-numbered slot. For example, slots 1 and 2 can be configured as a redundant pair but slots 2 and 3 cannot be configured as a redundant pair. The same applies to redundant subslots. For example, subslots 7/1 and 8/1 can form a redundant pair.

When you use the **associate** command for two slots, it implies that the related subslots are also associated and behave in a redundant manner.

**Examples** In the following example, Cisco 6400 slots 1 and 2 are configured for redundant operation. You need only specify the first member of a redundant pair.

```
Switch(config)# redundancy
Switch(config-r)# associate slot 1
```

**Related Commands** [redundancy](#)  
[show redundancy](#)

# atm input-xlate-table autominblock

To enable automatic determination of minimum Input Translation Table block sizes for all virtual path identifiers (VPI's) populated with permanent virtual circuits (PVC's) and Soft PVC source legs, use the **atm input-xlate-table autominblock** global configuration mode command. To disable autominblock mode, use the **no** form of this command.

**atm input-xlate-table autominblock**

**no atm input-xlate-table autominblock**

**Syntax Description** This command has no arguments or keywords.

**Defaults** Autominblock mode is disabled.

**Command Modes** Global configuration mode

Command History	Release	Modification
	12.1(4)DB	This command was introduced on the Cisco 6400 NSP.
	12.2(13)T	This command was integrated into Cisco IOS Release 12.2(13)T.
	12.3	This command was integrated into Cisco IOS Release 12.3.

**Usage Guidelines** When you enable the autominblock mode on a Node Switch Processor (NSP), the system analyzes all interfaces and determines minimum ITT block sizes for all VPIs populated with PVCs and Soft PVC source legs that can use the ITT ( but a point-to-multipoint leaf would not be included). The autominblock mode also updates the analysis when virtual circuits (VC's) are added or deleted. If you generate the configuration command-line interface (CLI), for example, by using the **more system:running-config** command, **minblock** commands are inserted as appropriate for all VPIs populated with PVCs on all external ATM interfaces.

You can specify a minimum block size for an interface and VPI combination by using the **force** keyword, even when the **autominblock** command is enabled. See the following table for the effect of **minblock** commands in different situations:

Enable autominblock command	Use force keyword	Effect
true	true	The <i>blocksize</i> value is not overridden by automatic analysis.
true	false	The <i>blocksize</i> value can be overridden by automatic analysis.
false	true	The command is accepted.
false	false	The command is not accepted.

**Note**

Enabling the autominblock mode does not alter the usage state of ITT at the moment the command is invoked in a running system. Since ITT memory may have already been allocated, autominblock mode alters only the subsequent behavior of the system.

Similarly, autominblock mode does not eliminate fragmentation generated as a result of VCs configured after the autominblock mode is enabled, but ensures that the software allocates optimal-size blocks on interface flaps subsequent to the definition of a PVC with a maximum VCI.

To ensure that the software subsequently allocates optimal-sized ITT blocks—even after you restart the system—enable the autominblock mode before or after all PVCs are defined. Save the configuration by using the **copy running-config startup-config** command.

You do not need to set up a cross-connect to specify a minimum block through autominblock analysis. Because autominblock analysis considers PVC half legs, you can use these half legs to establish the maximum intended virtual channel identifier (VCI) range, which helps to eliminate the growth of ITT block sizes in the future.

**Note**

When the initial attempt to allocate an ITT block fails and the actual size needed is less than the specified minimum block size, the software retries the allocation by using the actual size.

The system analyzes the ITT needs of VP tunnel subinterfaces and configures the parent physical interface accordingly. Enabling this command mode increases the use of processor and memory resources.

**Examples**

This example shows how to enable autominblock mode:

```
!
atm input-xlate-table autominblock
!
```

**Related Commands**

Command	Description
<a href="#">atm input-xlate-table minblock</a>	Specifies the minimum ITT block size for a specific VPI on an interface.

# atm input-xlate-table autoshrink

To shrink the existing Input Translation Table (ITT) blocks in-place when high numbered virtual circuits (VC's) are deleted, use the **atm input-xlate-table autoshrink** configuration mode command. To disable autoshrink, use the **no** form of this command.

**atm input-xlate-table autoshrink**

**no atm input-xlate-table autoshrink**

**Syntax Description** This command has no arguments or keywords.

**Defaults** Disabled.

**Command Modes** Global configuration mode

## Command History

Release	Modification
12.1(4)DB	This command was introduced on the Cisco 6400 NSP.
12.2(13)T	This command was integrated into Cisco IOS Release 12.2(13)T.
12.3	This command was integrated into Cisco IOS Release 12.3.

## Usage Guidelines

Be careful when enabling this command mode, because it increases the use of processor and memory resources.



### Note

This command cannot override the *blocksize* hints specified by using the **minblock/autominblock** commands.

## Examples

This example shows how to shrink an ITT block in place and release the unrequired ITT resources when high numbered VCs are deleted from the configuration:

```
atm input-xlate-table autoshrink
!
interface atm 1/0/0
  no atm pvc 0 1010
  no atm pvc 0 1011
  exit
!
no atm input-xlate-table autoshrink
```

Related Commands	Command	Description
	<b>atm input-xlate-table minblock</b>	Specifies the minimum ITT block size for a specific virtual path identifier (VPI) on an interface.
	<b>atm input-xlate-table autominblock</b>	Enables automatic determination of minimum ITT block size needed for each VPI populated by PVC and Soft PVC source legs.

## atm input-xlate-table minblock

To specify the minimum Input Translation Table (ITT) block size for a specific virtual path identifier (VPI) on an interface, use the **atm input-xlate-table minblock** interface configuration mode command. To remove the minimum block size specification, use the **no** form of this command.

**atm input-xlate-table minblock vpi** *vpi- value* *blocksize* **force**

**no atm input-xlate-table minblock vpi** *vpi-value*

### Syntax Description

<i>vpi-value</i>	VPI to which the command applies. Values are in the range 0 to 255.
<i>blocksize</i>	Block size rounded up to the smallest power of 2 greater than or equal to the entered value. Values are in the range 32 to 16,384.
<b>force</b>	Indicates a user-entered value that is not overridden by autominblock analysis and is saved in configuration generation.

### Defaults

No minimum block size is specified.

### Command Modes

Interface configuration mode

### Command History

Release	Modification
12.1(4)DB	This command was introduced on the Cisco 6400 NSP.
12.2(13)T	This command was integrated into Cisco IOS Release 12.2(13)T.
12.3	This command was integrated into Cisco IOS Release 12.3.

### Usage Guidelines

Ensure that the block size you specify corresponds to the desired virtual circuit (VC) usage, so that the system resource is not overused. ITT resource is used only when a connection is installed (when both interfaces that the VC transits are up).

This command is particularly useful when you anticipate the needs of switched virtual circuits (SVCs) transiting an interface and VPI, and you want to avoid the fragmentation associated with ITT growth. If the initial ITT block allocation fails and the actual block size needed [to accommodate a specific virtual channel identifier (VCI) ] is less than the specified minimum block size, the software retries the allocation by using the actual size.



#### Note

You cannot use this command on a virtual path (VP) tunnel subinterface. To specify minimum block size for a VP tunnel subinterface, configure this command on the main interface.



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**Examples**

This example shows how to specify minimum block size for VPIs on an interface by manual configuration:

```
!  
interface atm 1/0/0  
    atm input-xlate-table minblock vpi 0 1024 force  
    atm input-xlate-table minblock vpi 1 2048 force  
    atm input-xlate-table minblock vpi 4 1024 force  
exit  
!
```

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**Related Commands**

Command	Description
<a href="#">atm input-xlate-table autominblock</a>	Automatically determines the minimum ITT block size needed for each VPI that is populated by PVC and Soft PVC source legs.

## atm snoop interface atm

To set the current port snooping configuration and actual register values for the highest ATM interface, use the **atm snoop interface atm** interface configuration command.

**atm snoop interface atm** *monitored-port* [**direction** *dir*]

<b>Syntax Description</b>	<i>monitored-port</i> Slot, subslot, and port number for the ATM interface to be monitored. The port can be any port except the NSP ATM 0/0/0 port or the test port.
<i>dir</i>	Specified as receive or transmit and determines the direction of the cell traffic to monitor.

<b>Defaults</b>	Receive
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<b>Command Modes</b>	Interface configuration on the snoop test port.
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<b>Usage Guidelines</b>	<p>The <b>atm snoop interface atm</b> subcommand applies only if the previously specified port is the highest system port residing on card 8 and subcard 1 (which has been shut down). If these conditions are met, the subcommand enables the snoop test port. Cells transmitted from the snoop test port are copies of cells transmitted to or from the monitored port. Transmissions in only one direction are captured.</p>
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When a port is in snoop mode, any prior permanent virtual connections to the snoop test port remain in the down state.

The port number of the test port depends on the card type.

<b>Examples</b>	The following example shows how to configure the highest port in the snoop mode to monitor port card 1, subcard 0, and port 1 in the transmit direction starting from the configuration mode:
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```
Switch(config)# interface atm 8/1/1
Switch(config-if)# shutdown
Switch(config-if)# atm snoop interface atm 1/0/1 direction transmit
Switch(config-if)# no shutdown
```

<b>Related Commands</b>	<b>show atm snoop</b>
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## atm svc-upc-intent

To change the intended UPC mode to use on the cell flow received into the switch fabric for SVCs or destination legs of soft PVCs on an interface, use the **atm svc-upc-intent** command in interface configuration mode. Any change in this parameter is applied to SVCs or soft PVCs subsequently established on the interface. To assign the default value to the parameter, use the **no** form of this command.

```
atm svc-upc-intent [{abr | cbr | vbr-rt | vbr-nrt | ubr}] {tag | pass | drop}
```

```
no atm svc-upc-intent
```

Syntax Description		
	<b>abr</b>   <b>cbr</b>   <b>vbr-rt</b>   <b>vbr-nrt</b>   <b>ubr</b>	(Optional) Specifies the service category: <ul style="list-style-type: none"> <li>• ABR—available bit rate</li> <li>• CBR—constant bit rate</li> <li>• VBR-RT—variable bit rate, real time</li> <li>• VBR-NRT—variable bit rate, non-real time</li> <li>• UBR—unspecified bit rate</li> </ul>
	<b>tag</b>	Cells received on the interface violating the traffic contract have their CLP bit set prior to entering the switching fabric.
	<b>pass</b>	Cells received on the interface are passed to the switching fabric with no change, regardless of their conformance to the traffic contract.
	<b>drop</b>	Cells received on the interface violating the traffic contract are dropped.

**Defaults** Pass for all service categories

**Command Modes** Interface configuration

Command History	Release	Modification
	11.1(4)	This command was introduced on the LS1010.
	12.2(4)B	This command was modified for the Cisco 6400 NSP.
	12.2(13)T	This command was integrated into Cisco IOS Release 12.2(13)T.

**Usage Guidelines** This configuration parameter determines the UPC to use for SVCs and for the destination leg of soft VC and VP. If policing is desired, it should be applied once for traffic entering a network.

**Examples**

In the following example, the intended UPC for SVCs on an interface is set to tagging.

```
Switch(config-if)# atm svc-upc-intent tag
```

In the following example, the UBR traffic on an interface is passed while all other traffic is policed:

```
Switch(config-if)# atm svc-upc-intentubr pass
Switch(config-if)# atm svc-upc-intent cbr tag
Switch(config-if)# atm svc-upc-intent vbr-rt tag
Switch(config-if)# atm svc-upc-intent vbr-nrt tag
Switch(config-if)# atm svc-upc-intent abr drop
```

**Related Commands**

Command	Description
<b>show atm interface</b>	Displays ATM-specific information about an ATM interface.

# auto-ferf

To allow an automatic far end receive failure (**FERF**) to be inserted when an incoming alarm is received, use the **auto-ferf** interface configuration command. To cancel automatic FERF insertion, use the no form of this command.

```
auto-ferf { los | oof | red | ais | lcd }
```

```
no auto-ferf { los | oof | red | ais | lcd }
```

## Syntax Description

los	Loss of signal.
oof	Out of frame.
red	Indicates a major alarm. Does not apply to the DS3 NLC.
ais	Alarm indication signaling.
lcd	Loss of cell delineation.

## Defaults

```
auto-ferf los  
auto-ferf oof  
auto-ferf red  
auto-ferf ais  
auto-ferf lcd (applies to non-plcp mode only)
```

## Command Modes

Interface configuration

## Command History

Release	Modification
12.0(1)DB	This command was introduced Cisco 6400 NSP.
12.2(13)T	This command was integrated into Cisco IOS Release 12.2(13)T.
12.3	This command was integrated into Cisco IOS Release 12.3.

## Usage Guidelines

This command applies to the DS3 interfaces only.

# auto-sync

To automatically synchronize the configuration between the Cisco 6400 primary and secondary redundant NSPs and NRPs, use the **auto-sync** redundancy subcommand. To disable automatic synchronization between redundant NSPs or NRPs, use the **no** form of this command.

**auto-sync** { **startup-config** | **bootvar** | **config-register** | **standard** }

**no auto-sync** { **startup-config** | **bootvar** | **config-register** | **standard** }

## Syntax Description

<b>startup-config</b>	Specifies that the startup configuration be synchronized between the two redundant NSPs.
<b>bootvar</b>	Specifies that the boot variables be synchronized between the two redundant NSPs. Boot variables are ROMMON environment variables used to control the booting process.
<b>config-register</b>	Specifies that the configuration register be synchronized between the two redundant NSPs. The configuration register, stored in NVRAM, contains startup time parameters for the system.
<b>standard</b>	Specifies that all objects be synchronized between the two redundant NSPs. In this case, all objects are the startup configuration, the bootvar, and the configuration register.

## Defaults

No synchronization for individual objects. **Standard** is the default when auto-synchronization is enabled.

## Command Modes

Main-cpu redundancy configuration

## Usage Guidelines

To ensure that the configurations are identical between redundant NSPs or NRPs, you must use the **auto-sync** command. Otherwise, when operation changes from the primary to the secondary device, the operation of the switch or router might change if the configurations differ from one member of the redundant pair to the other.

## Examples

The following example shows how to configure automatic synchronization of the startup configuration between redundant NSPs:

```
Switch# redundancy
Switch(config-r)# main-cpu
Switch(config-r-mc)# auto-sync startup-config
```

## Related Commands

**redundancy**  
**main-cpu**

# clear facility-alarm

To clear the external alarm relays or the device memory for the requested alarm level or source reported on a Cisco 6400, use the **clear facility-alarm** EXEC command.

```
clear facility-alarm [major | minor | critical] [source {sec-cpu | pem {0 | 1} | cardtype {slot /
subslot}}]
```

Syntax Description		
<b>major</b>		Specifies that all major alarms be cleared.
<b>minor</b>		Specifies that all minor alarms be cleared.
<b>critical</b>		Specifies that all critical alarms be cleared.
<b>source</b>		Specifies the source of an alarm.
<b>sec-cpu</b>		Specifies the source of the alarm you want to clear as the secondary CPU. There is no other way to clear an alarm on this device.
<b>pem</b>		Specifies the source of the alarm you want to clear as one of the redundant power modules, either 0 or 1. There is no other way to clear an alarm on this device.
<b>cardtype</b> <i>slot/subslot</i>		Specifies the source of the alarm you want to clear as the device installed in the specified slot or subslot. There is no other way to clear an alarm on this device.

**Defaults** If no operator is specified, all external alarms are cleared.

**Command Modes** EXEC

**Usage Guidelines** The **clear facility-alarm** command clears all of the specified external alarm indications. The alarm condition is still posted and can be seen by use of the **show facility-alarm status** command, and the LEDs are still illuminated. To clear the alarm status, you must remove the alarm condition at its source by specifying an alarm source with this command. When a source is specified, the memory of the specified device is cleared, thereby clearing the source of the alarm.

**Examples** In the following example, only the minor alarms are cleared.

```
Switch> clear facility-alarm minor
```

**Related Commands** [debug pmbox](#)  
[show facility-alarm status](#)

# clock source

To select a transmit clock source for a physical device such as a port, use the **clock source** interface configuration command. To return the clock source to the default, use the **no** form of this command.

**clock source** { **free-running** | **loop-timed** | **network-derived** }

**no clock source** { **free-running** | **loop-timed** | **network-derived** }

Syntax Description		
	<b>free-running</b>	The transmit clock is derived from the NSP.
	<b>loop-timed</b>	The transmit clock is derived from the receive (rx) clock.
	<b>network-derived</b>	The transmit clock is derived from the port system clock specified at highest priority when you use the <b>network-clock-select</b> global configuration command.

**Defaults** **loop-timed**

**Command Modes** Interface configuration

Command History	Release	Modification
	12.0(1)DB	This command was introduced on the Cisco 6400 NSP.
	12.2(13)T	This command was integrated into Cisco IOS Release 12.2(13)T.
	12.3	This command was integrated into Cisco IOS Release 12.3.

**Usage Guidelines** This command allows selection of the transmit clock source for a port's physical device. When a transmit clock port is set to **free-running**, the port uses the NSP oscillator for clocking.

**Examples** The following example shows how to enable the loop-timed clocking mode.

```
Switch(config-if)# clock source loop-timed
```

**Related Commands** [framing \(interface configuration\)](#)  
[network-clock-select](#)



# debug config-download

The Cisco 6400 uses a download protocol to download the NRP-2 startup configuration from the NSP. The download protocol and data pass through the NRP-2 PAM mailbox serial interface. To view the configuration download protocol message header types as they are received on the PAM mailbox serial interface, use the **debug config-download EXEC** command. The **no** form of this command disables debugging output.

**debug config-download**

**no debug config-download**

**Syntax Description** This command has no keywords or arguments.

**Defaults** Disabled

Command History	Release	Modification
	12.1(4)DC	This command was introduced on the Cisco 6400 NSP to support the NRP-2.
	12.2(13)T	This command was integrated into Cisco IOS Release 12.2(13)T.
	12.3	This command was integrated into Cisco IOS Release 12.3.

**Examples** In the following example, the **debug config-download** command is used to display configuration download protocol monitoring information:

```
Switch# debug config-download
CDNLD debugging is on
Switch#
00:01:39:CDNLD(6/0):WRR
00:01:39:CDNLD(6/0):DR
00:01:39: do_chksum num_bytes = 610
00:01:39: calc cksum = 0xC405
00:01:39:CDNLD(6/0):DR
```

Related Commands	Command (Entered on the NRP-2)	Description
	NRP-2# <b>debug pmbox rx-path config-download</b>	Displays configuration download messages received by the NRP-2 PAM mailbox serial interface.
	NRP-2# <b>debug pmbox tx-path config-download</b>	Displays configuration download messages transmitted by the NRP-2 PAM mailbox serial interface.

# debug disk-mirror

To display debug messages for IFS call events, disk write events, and disk synchronization events, use the **debug disk-mirror** EXEC command. To disable debugging output, use the **no** form of this command.

**debug disk-mirror**

**no debug disk-mirror**

---

**Syntax Description** This command has no keywords or arguments.

---

**Defaults** Disabled

---

Command History	Release	Modification
	12.1(5)DB	This command was introduced on the Cisco 6400 NSP.
	12.2(13)T	This command was integrated into Cisco IOS Release 12.2(13)T.
	12.3	This command was integrated into Cisco IOS Release 12.3.

---



---

**Examples** The following example shows how to enable debugging for disk mirroring. The example also shows the messages that appear when copying a file to the PCMCIA disks in disk slot 0 of both NSPs:

```
Switch# debug disk-mirror

NSP DISK MIRROR debugging is on
Switch# copy running-config mir-disk0:
...
21:38:06:DISK-MIRROR:enter mfs_open()...
21:38:06:DISK-MIRROR:leave mfs_open()
...
21:38:06:DISK-MIRROR:enter mfs_write()...
21:38:06:DISK-MIRROR:leave mfs_write()
...
21:38:06:DISK-MIRROR:enter mfs_close()...
21:38:06:DISK-MIRROR:leave mfs_close()
```

# debug image-download

The Cisco 6400 uses a download protocol to download the NRP-2 image from the NSP or integrated file system (IFS). The download protocol and data pass through the NRP-2 PAM mailbox serial interface. To view the image download protocol message header types as they are received on the PAM mailbox serial interface, use the **debug image-download EXEC** command. The **no** form of this command disables debugging output.

**debug image-download [tftp]**

**no debug image-download**

Syntax Description	tftp	Also displays TFTP download messages.
--------------------	------	---------------------------------------

Defaults	Disabled
----------	----------

Command History	Release	Modification
	12.1(4)DB	This command was introduced on the Cisco 6400 NSP to support the NRP-2.
	12.2(13)T	This command was integrated into Cisco IOS Release 12.2(13)T.
	12.3	This command was integrated into Cisco IOS Release 12.3.

Related Commands	Command (Entered on the NRP-2)	Description
	NRP-2# <b>debug pmbox rx-path image-download</b>	Displays image download messages received by the NRP-2 PAM mailbox serial interface.
	NRP-2# <b>debug pmbox tx-path image-download</b>	Displays image download messages transmitted by the NRP-2 PAM mailbox serial interface.

# facility-alarm

To enter explicit threshold temperatures for minor and major alarms, use the **facility-alarm** global configuration command. To disable the alarm for the minor or major temperature threshold, use the **no** form of this command.

**facility-alarm** [**intake-temperature** | **core-temperature**] [**minor** { °C}] [**major** { °C}]

**no facility-alarm** [**intake-temperature** | **core-temperature**] [**minor** { °C}] [**major** { °C}]

## Syntax Description

<b>intake-temperature</b>	Specifies the minor and major temperature thresholds for the reading at the intake airflow.
<b>core-temperature</b>	Specifies the minor and major temperature thresholds for the reading at the core of the chassis.
<b>minor</b>	Specifies the temperature threshold for the minor alarm in degrees Celsius. If no value is specified, the threshold is reset to the default value.
<b>major</b>	Specifies the temperature threshold for the major alarm in degrees Celsius. If no value is specified, the threshold is reset to the default value.

## Defaults

Disabled

## Command Modes

Global configuration

## Usage Guidelines

The Cisco 6400 environmental monitoring hardware includes a digital thermometer that measures the intake airflow temperature at the hottest section of the chassis. The minor, major, and critical temperature defaults are empirically determined values that vary depending on the number and type of cards installed in the chassis. The **facility-alarm** command allows you to override the empirically determined default values. The **no** form of this command allows you to disable alarms for the selected alarm type.

Critical alarms cannot be disabled and the threshold cannot be changed. These alarms are defined as those that are triggered just before the system powers itself off.

## Examples

In the following example, a setting is selected for the chassis core temperature at which a major alarm will be triggered.

```
Switch(config)# facility-alarm core-temperature major 105
```

## Related Commands

**clear facility-alarm**  
**show facility-alarm status**

# framing

To select the frame type for the data line, use the **framing** controller interface configuration command.

```
framing { m23adm | m23plcp | cbitadm | cbitplcp }
```

Syntax Description	
<b>m23adm</b>	The framing mode is M23 ADM.
<b>m23plcp</b>	The framing mode is M23 PLCP.
<b>cbitadm</b>	The framing mode is C-Bit ADM.
<b>cbitplcp</b>	The framing mode is C-Bit PLCP.

**Defaults** DS3 default is **cbitplcp**.

**Command Modes** Interface configuration

Command History	Release	Modification
	12.0(1)DB	This command was introduced on the Cisco 6400 NSP.
	12.2(13)T	This command was integrated into Cisco IOS Release 12.2(13)T.
	12.3	This command was integrated into Cisco IOS Release 12.3.

**Usage Guidelines** In the DS3 environment, this subcommand allows selection of DS3 framing mode to M23 ADM, M23 PLCP, C-Bit ADM, or C-Bit PLCP.

**Examples** The following example shows **m23adm** as the frame type:

```
Switch(config-if)# framing m23adm
```

**Related Commands** **show controllers**

# hw-module

## hw-module (image)

To identify the image to download to a specific NRP-2 processor, use the **hw-module (image)** global configuration command. To remove an NRP-2 image specification, use the **no** form of this command.

**hw-module slot slot image image priority priority**

**no hw-module slot slot image image priority priority**

## hw-module (config-register)

To change the configuration register settings for the NRP-2, use the **hw-module (config-register)** global configuration command.

**hw-module slot slot config-register value**

## hw-module (reset)

To simulate removal and insertion of a device installed in the Cisco 6400 chassis, use the **hw-module (reset)** EXEC command.

**hw-module {slot slot | subslot slot/subslot | main-cpu | sec-cpu | nsp {A | B}} reset**

## hw-module (shutdown)

To simulate removal or shutdown of a device installed in the Cisco 6400 chassis, use the **hw-module (shutdown)** global configuration command. The device remains in removed state even through system reloads. To return the device to inserted state in the chassis, use the **no** form of this command.

**hw-module {slot slot | subslot slot/subslot | main-cpu | sec-cpu | nsp {A | B}} shutdown**

**no hw-module {slot slot | subslot slot/subslot | main-cpu | sec-cpu | nsp {A | B}} shutdown**

Syntax Description		
<b>config-register</b>		Specifies a change in the configuration register settings.
<b>image</b>		Specifies an image to assign to selected slot.
<i>image</i>		Any valid integrated file system (IFS), including: <ul style="list-style-type: none"> <li><i>filename</i>—Specifies an image in the “images” directory of the NSP PCMCIA disk.</li> <li><b>disk0:directory/path/filename</b>—Specifies an image on the NSP PCMCIA disk but not in the “images” directory.</li> <li><b>tftp:.../filename</b>—Specifies an image on a TFTP server.</li> </ul>
<b>main-cpu</b>		Specifies that the main CPU should be reset. Allows you to reset the main CPU regardless of the CPU you are currently logged in to.
<b>nsp {A   B}</b>		Specifies the slot (0A or 0B) of the NSP to be reset.
<b>priority</b>		Specifies the priority of the selected image for the slot.
<i>priority</i>		Priority value. The priority range is from 1 (highest) to 4 (lowest).
<b>reset</b>		Simulates card removal and insertion of the specified device.
<b>sec-cpu</b>		Specifies that the secondary CPU should be reset. Allows you to reset the secondary CPU regardless of the CPU you are currently logged into.

<b>shutdown</b>	Simulates shutdown or removal of the designated card from the system. Holds card in shutdown or removed state, even through system reloads.
<i>slot</i> <i>slot/subslot</i>	Specifies the slot or subslot of the device. Slot range is 1-8, subslot range is 0-1.
<i>value</i>	Hexadecimal or decimal value that represents the 16-bit configuration register value that you want to use the next time the router is restarted. The value range is from 0x0000 to 0xFFFF (0 to 65,535 in decimal).  Specific bit values: <ul style="list-style-type: none"> <li>• 0x2101—Default configuration register setting. Combines the behaviors of the 0x2000, 0x0100, and 0x0001 bit values.</li> <li>• 0x2000—If set (as it is by default), ROMMON runs from the image found in BootFROM1, if valid. If clear, ROMMON always runs the ROMMOM image in BootFROM0.</li> <li>• 0x0100—Break or abort has no effect.</li> <li>• 0x0001—NRP-2 boots the image specified with the <b>hw-module (image)</b> command.</li> <li>• 0x0000—NRP-2 boots to ROMMON.</li> </ul>

**Defaults****hw-module (image)**

No image identified

**hw-module (config-register)**

Configuration register value is 0x2101

**hw-module (reset)**

No default behavior or values

**hw-module (shutdown)**

Shutdown disabled

**Command Modes**

Global configuration

The **reset** version of this command can be used in EXEC mode.**Command History**

Release	Modification
11.2 GS	This command was introduced.
11.3(6)AA	This command was implemented on the Cisco AS5800.
12.0(1)DB	This command was implemented on the Cisco 6400 NSP.
12.0(9)SL	This command was implemented on the Cisco 10000 Edge Services Router (ESR).
12.0(1a)W5(5b)	This command was implemented on the Catalyst 8540 Multiservice ATM Switch Router (MSR), Catalyst 8510 MSR, and LightStream 1010 ATM switch router.

Release	Modification
12.1(4)DB	The <b>image</b> and <b>config-register</b> versions of this command were introduced on the Cisco 6400 NSP to support the NRP-2.
12.2(13)T	This command was integrated into Cisco IOS Release 12.2(13)T.
12.3	This command was integrated into Cisco IOS Release 12.3.

### Usage Guidelines

#### hw-module (image)

Enter at least one instance of this command for each NRP-2 in the Cisco 6400 system. Without the command in the NSP configuration, the NRP-2 attempts to load the default image (c6400r2sp-g4p5-mz) from the NSP disk0:/images/ directory. If the image cannot be located, the NRP-2 is not able to boot.

Cisco recommends that you store all NRP-2 images on the NSP PCMCIA “disk0:/images” directory, but you can also store NRP-2 images on any integrated file system (IFS) device, including disk1 and TFTP, FTP, or rcp servers.

For images in the disk0:/images directory, you can use a shortened **no** version of the command to remove an NRP-2 image specification: **no hw-module filename**.

The **hw-module (image)** command performs the same function for the NRP-2 as the **boot system** global configuration command does for the NRP-1. Because NRP-2 boot information is stored on the NSP, the **hw-module (image)** command is entered on the NSP.



#### Note

The **boot system** global configuration command is not supported on the NRP-2.

#### hw-module (config-register)

This command enables you to change the NRP-2 configuration register settings.

The **hw-module (config-register)** command performs the same function for the NRP-2 as the **config register** global configuration and **confreg** ROMMON mode commands do for the NRP-1. Because the NRP-2 ROM state information is stored on the NSP, the **hw-module (config-register)** command is entered on the NSP.



#### Note

The **config register** global configuration and **confreg** ROMMON mode commands are not supported on the NRP-2.

#### hw-module (reset)

This is the only version of the **hw-module** command that can be entered in EXEC mode. It can be used to reload the specified device from the NSP.

#### hw-module (shutdown)

This command keeps the selected card offline, even through system reloads.



---

**Examples****hw-module (image)**

In the following example, the NRP-2 in slot 2 of the Cisco 6400 chassis has three images assigned with different priorities, while the NRP-2 in slot 3 has only one image assigned:

```
Switch(config)# hw-module slot 2 image c6400r2sp-g4p5-mz.DC priority 2
Switch(config)# hw-module slot 2 image tftp://10.1.1.1/c6400r2sp-g4p5-mz.DC priority 3
Switch(config)# hw-module slot 2 image disk0:MyDir/c6400r2sp-g4p5-mz.DC priority 4
Switch(config)# hw-module slot 3 image c6400r2sp-g4p5-mz.DC priority 2
```

**Timesaver**

---

If you don't use all the priority values for NRP-2 images, consider leaving priority 1 free for new or temporary images.

---

**hw-module (config-register)**

In the following example, the configuration register setting causes the NRP-2 in slot 4 to boot only to ROMMON mode:

```
Switch(config)# hw-module slot 4 config-register 0x0
```

In the following example, the configuration register setting causes the NRP-2 in slot 2 to boot the image specified with the **hw-module (image)** command:

```
Switch(config)# hw-module slot 2 config-register 0x1
```

**hw-module (reset)**

In the following example, the device in slot 5 is reset:

```
Switch# hw-module slot 5 reset
*Sep 28 22:30:56.590:%NSP_OIR-6-FULL_CREM:Card NRP2 removed from slot:5
*Sep 28 22:30:58.510:%NSP_OIR-6-FULL_CINS:Card NRP2 inserted into slot:5
*Sep 28 22:30:58.510:%NSP_OIR-6-FULL_ONLINE:Card NRP2, slot:5, being brought online
```

In the following example, the NSP in slot 0A is reset:

```
Switch# hw-module nsp A reset
```

**hw-module (shutdown)**

In the following example, the device in slot 4 is shutdown:

```
Switch(config)# hw-module slot 4 shutdown
```

# interface

To configure an interface type and enter interface configuration mode, use the **interface** global configuration command.

```
interface type slot/subslot/port
```

```
interface type number
```

To configure a subinterface, use the interface global configuration command.

```
interface type slot/subslot/port.vpt#
```

```
interface type slot/subslot/port.subinterface# [multipoint | point-to-point]
```

Syntax Description	Parameter	Description
	<i>type</i>	Type of interface to be configured. Refer to <a href="#">Table 3-2</a> for a list of keywords.
	<i>number</i>	Integer used to identify the interface.
	<i>slot</i>	Interface slot number. The numbers are assigned at the factory at the time of installation or when the card is added to a system. The number can be displayed with the <b>show interface</b> command. The slots are numbered from left to right.
	<i>subslot</i>	Backplane subslot number. The value can be <b>0</b> or <b>1</b> .
	<i>port</i>	Port number of the interface.
	<i>.vpt</i>	Virtual path tunnel number for subinterface on physical ATM ports.
	<i>.subinterface</i>	Subinterface number in the range 1 to 4,294,967,293. The number that precedes the period (.) must match the subinterface number.
	<b>multipoint</b>	Specifies a multipoint subinterface. This option applies only to the interface ATM 0/0/0.
	<b>point-to-point</b>	Specifies a point-to-point subinterface. The default is <b>multipoint</b> . This option applies only to the interface ATM 0/0/0.

**Command Modes** Global configuration

**Usage Guidelines** For information or output for the **NRP interface atm** command, refer to the *Cisco IOS 12.0 Wide-Area Networking Command Reference*.

**Table 3-2 Interface Type Keywords**

Keyword	Interface Type
<b>async</b>	Auxiliary port line used as an asynchronous interface.
<b>atm</b>	ATM interface.
<b>bvi</b>	Bridge-group virtual interface.
<b>cbr</b>	CBR interface.
<b>dialer</b>	Dialer interface.

Table 3-2 Interface Type Keywords (continued)

Keyword	Interface Type
<b>ethernet</b>	Ethernet IEEE 802.3 interface.
<b>group-async</b>	Master asynchronous interface.
<b>lex</b>	Lex interface.
<b>loopback</b>	Software-only loopback interface that emulates an interface that is always running. It is a virtual interface supported on all platforms. The <i>interface number</i> is the number of the loopback interface you want to create or configure. There is no limit on the number of loopback interfaces you can create.
<b>null</b>	Null interface.
<b>tunnel</b>	Tunnel interface, used to declare a TSP tunnel interface. The tunnel interface number is in the range 0 to 65535.
<b>virtual-template</b>	Virtual template interface.
<b>virtual-tokenring</b>	Virtual Token Ring interface.
<b>vlan</b>	Catalyst 5000 VLAN interface.

### Examples

The following example shows the start of the ATM interface on slot 1, subslot 0, and port 1 configuration using the **interface** global configuration command:

```
Switch(config)# interface atm 1/0/1
Switch(config-if)#
```

In the following example, a VP tunnel is created with VPI 50 on slot 1, subslot 0, and port 1. The subinterface configuration mode is entered for the VP tunnel, by using the **interface** global configuration command:

```
Switch(config)# interface atm 1/0/1
Switch(config-if)# atm pvp 50
Switch(config-if)# interface atm 1/0/1.50
Switch(config-subif)#
```

In the following example, configuration begins on the NRP interface ATM 0/0/0, by using the **interface** global configuration command:

```
Router(config)# interface atm 0/0/0
Router(config-if)#
```

In the following example, the **interface** global configuration command is used to create a point-to-point subinterface on the NRP ATM 0/0/0 interface and enter the subinterface configuration mode:

```
Router(config)# interface atm 0/0/0.1 point-to-point
Router(config-subif)#
```

In the following example, configuration of the BVI 1 interface on the NSP begins by using the **interface** global configuration command:

```
Switch(config)# interface bvi 1
Switch(config-if)#
```

### Related Commands

**show interface**

# ip address

To set a primary or secondary IP address for an interface or to use DHCP to set the interface address, use the **ip address** interface configuration command. To remove an IP address or disable IP processing, use the **no** form of this command.

**ip address** [*ip-address mask* [**secondary**] | **negotiated**]

**no ip address** [*ip-address mask* [**secondary**] | **negotiated**]

Syntax Description	
<i>ip-address</i>	IP address.
<i>mask</i>	Mask for the associated IP subnet.
<b>secondary</b>	Specifies that the configured address is a secondary IP address. If this keyword is omitted, the configured address is the primary IP address.
<b>negotiated</b>	Specifies the use of DHCP to obtain the IP address, subnet mask, and default route.

**Defaults** Negotiated.

**Command Modes** Interface configuration

**Usage Guidelines** The **negotiated** (default) option for this command allows the system to act as a DHCP client and automatically set the IP address, subnet mask, and default route for the specified interface. On the NSP, this command applies only to the Ethernet 0/0/0 and ATM 0/0/0 interfaces.

You can disable IP processing on a particular interface by removing its IP address with the **no ip address** command. If the switch detects another host using one of its IP addresses, it prints an error message on the console.

The optional keyword **secondary** allows you to specify an unlimited number of secondary addresses. Secondary addresses are treated like primary addresses, except the system never generates datagrams other than routing updates using the secondary source addresses. IP broadcasts and ARP requests are handled properly, as are interface routes in the IP routing table.

Secondary IP addresses can be used in a variety of situations. The following are the most common applications:

- There might not be enough host addresses for a particular network segment. For example, your subnetting allows up to 254 hosts per logical subnet, but on one physical subnet you need to have 300 host addresses. Using secondary IP addresses on the switches, you can have two logical subnets using one physical subnet.
- Two subnets of a single network might otherwise be separated by another network. This situation is not permitted when subnets are in use. In these instances, the first network is *extended*, or layered on top of the second network by means of secondary addresses.

**Note**

If any switch on a network segment uses a secondary address, all other switches on that same segment must also use a secondary address from the same network or subnet. Inconsistent use of secondary addresses on a network segment can very quickly cause routing loops.

**Examples**

In the following example, 172.31.1.27 is the primary address and 192.168.7.17 and 192.168.8.17 are secondary addresses for Ethernet interface 0/0/0:

```
Switch(config)# interface ethernet 0/0/0
Switch(config-if)# ip address 172.31.1.27 255.255.255.0
Switch(config-if)# ip address 192.168.7.17 255.255.255.0 secondary
Switch(config-if)# ip address 192.168.8.17 255.255.255.0 secondary
```

**Related Commands**

**show interface**

# lbo

To set the line buildout to various lengths, use the **lbo** interface configuration command. For the DS3 NLC, the syntax is:

**lbo {short | long}**

Syntax Description	short	Sets the line buildout up to 255 feet.
	long	Sets the line buildout to more than 255 feet.

**Defaults** The default is **short**.

**Command Modes** Interface configuration

Command History	Release	Modification
	12.0(1)DB	This command was introduced on the Cisco 6400 NSP.
	12.2(13)T	This command was integrated into Cisco IOS Release 12.2(13)T.
	12.3	This command was integrated into Cisco IOS Release 12.3.

**Usage Guidelines** The **lbo** command applies on DS3 interfaces only.

**Examples** The following example illustrates how to set the line buildout to more than 255 feet for a DS3 NLC:  
Switch(config-if)# **lbo long**

# main-cpu

To switch to the **main-cpu** submode of the redundancy mode, use the **main-cpu** redundancy command.

**main-cpu**

---

**Syntax Description** This command has no arguments or keywords.

---

**Command Modes** Redundancy

---

**Usage Guidelines** After you enter the main-cpu submode, you can use the **auto-sync** command to synchronize the configuration between the primary and secondary route processors based on the primary configuration. In addition, you can use all of the redundancy commands that are applicable to the main CPU.

---

**Examples** The following example shows how to switch to the main-cpu submode of redundancy mode.

```
Switch(config)# redundancy  
Switch(config-r)# main-cpu  
Switch(config-r-mc)#
```

---

**Related Commands**

- [aps mode](#)
- [auto-sync](#)
- [redundancy](#)
- [show redundancy](#)

# mirror

To enable PCMCIA disk mirroring or specify mirroring characteristics, use the **mirror** main-cpu configuration command. To disable PCMCIA disk mirroring, use the **no** form of this command.

**mirror** [**all** | **threshold** *size*]

**no mirror**

Syntax Description	all	(Optional) Specifies that all files will be mirrored blindly (without comparing file names, sizes, and time stamps).
	<b>threshold</b>	(Optional) Specifies to blindly copy files smaller than the file size threshold.
	<i>size</i>	(Optional) Threshold size in megabytes (MB).

**Defaults** Enabled with file threshold size of 0 MB

**Command Modes** Main-cpu configuration

Command History	Release	Modification
	12.1(5)DB	This command was introduced on the Cisco 6400 NSP.
	12.2(13)T	This command was integrated into Cisco IOS Release 12.2(13)T.
	12.3	This command was integrated into Cisco IOS Release 12.3.

**Usage Guidelines** When you enter the **no mirror** command, any mirroring characteristics that were previously specified with the **all** and **threshold** keywords are permanently removed.

If disk synchronization is in progress when you enter the **no mirror** command, a prompt warns you that disk synchronization will terminate. You can either proceed with or cancel your disable request.

Press **Return** to proceed with disabling disk mirroring and terminating the unfinished disk synchronization:

```
Switch(config-r-mc)# no mirror
```

- Disk synch will terminate. Proceed with disable? [confirm] <Cr>  
Switch(config-r-mc)#  
21:35:19:%DISKMIRROR-6-FINISH:Disk Sync Finished (0 files synced; 6 failed)  
Switch(config-r-mc)#

Type **no** to cancel the **no mirror** command and to allow disk synchronization to continue:

```
Switch(config-r-mc)# no mirror
```

- Disk synch will terminate. Proceed with disable? [confirm] no  
Switch(config-r-mc)#



**Examples**

In the following example, PCMCIA disk mirroring is disabled:

```
!
redundancy
main-cpu
auto-sync standard
→ no mirror
!
```

In the following example, PCMCIA disk mirroring is enabled and set to copy all files blindly:

```
!
redundancy
main-cpu
auto-sync standard

mirror all
!
```

In the following example, PCMCIA disk mirroring is enabled with a specified files size threshold of 2 MB:

```
!
redundancy
main-cpu
auto-sync standard

mirror threshold 2
!
```

**Related Commands**

Command	Description
<b>redundancy sync</b>	Copies the data from one PCMCIA disk to its mirror disk.
<b>show redundancy sync-status</b>	Displays status of disk mirroring and disk synchronization.

# network-clock-select

Use the **network-clock-select** global configuration command to specify selection priority for the clock sources. Use the **no** form of this command to cancel the network clock selection.

```
network-clock-select {priority {ATM slot/subslot/port | BITS | system} | BITS {E1 | T1} | revertive}
```

```
no network-clock-select {priority {ATM slot/subslot/port | BITS | system} | BITS {E1 | T1} | revertive}
```

## Syntax Description

<i>priority</i>	Specifies the priority, between 1 (highest) and 4.
<b>ATM</b>	ATM interface on NSP.
<i>slot/subslot/port</i>	Specifies the slot, subslot, and port number of the ATM interface.
<b>BITS</b>	Selects the BITS input as the network clock source.
<b>system</b>	The free running local clock oscillator on the NSP-S3B.
<b>E1</b>	Configures the BITS port as E1.
<b>T1</b>	Configures the BITS port as T1.
<b>revertive</b>	Automatic switchover to highest priority clock source when available.

## Defaults

System clock is the priority 5 clock source.

## Command Modes

Global configuration

## Command History

Release	Modification
11.1 CA	This command was introduced for ATM-CES interfaces.
11.2	This command was introduced for the LightStream 1010.
12.0	This command was modified for the Catalyst 8510 MSR, Catalyst 8540 MSR, and LightStream 1010.
12.0(7) DB	This command modified for the Cisco 6400 NSP-S3B .
12.2(13)T	This command was integrated into Cisco IOS Release 12.2(13)T.

## Usage Guidelines

You can specify up to four clock priorities. If the **network-clock-select revertive** command is used, the highest priority active interface in the router supplies the primary reference source to all other interfaces that require network clock synchronization services.

The fifth priority is always the system, or local clock oscillator on the NSP. You cannot configure the priority 5 clock source.

---

**Examples**

The following example shows how to configure the network clock as revertive and assign clock sources to each available priority:

```
Switch(config)# network-clock-select revertive
Switch(config)# network-clock-select bits e1
Switch(config)# network-clock-select 1 bits
Switch(config)# network-clock-select 2 ATM1/0/0
Switch(config)# network-clock-select 3 ATM5/0/0
Switch(config)# network-clock-select 4 ATM7/0/0
```

---

**Related Commands**

Command	Description
<b>show network-clocks</b>	Displays network clock status.

## nrps

To telnet from the NSP to the NRP-2, use the **nrps** EXEC command alias.

**nrps***slot*

<b>Syntax Description</b>	<i>slot</i> Slot number of the NRP-2 to which you want to telnet. Valid values are 1 to 8.
<b>Defaults</b>	No default behavior or values.
<b>Command Modes</b>	EXEC (alias)
<b>Command History</b>	Not applicable for command aliases
<b>Usage Guidelines</b>	<p>This is a command alias that telnets to the NRP-2.</p> <p>You need to set the VTY line password before you can telnet to the NRP-2.</p>
<b>Examples</b>	<p>In the following example, the user telnets from the NSP to the NRP-2 in slot 4 of the Cisco 6400 chassis, enters privileged EXEC mode, and then exits the Telnet session.</p> <pre>NSP# <b>nrps4</b> Trying 10.4.0.2 ... Open  Router&gt; <b>enable</b> Router# <b>exit</b>  [Connection to 10.4.0.2 closed by foreign host] NSP#</pre>

# redundancy

To configure two full-height slots, two half-height slots, or the main CPU for redundant operation, use the **redundancy** global configuration command. The **redundancy** command starts a configuration submode, where the redundant configuration is specified.

## redundancy

---

**Syntax Description**

None

---

**Defaults**

Disabled

---

**Command Modes**

Global configuration

---

**Usage Guidelines**

The **redundancy** command starts a configuration submode for setting slot and subslot redundancy. The exact redundancy implementation between a pair of redundant entities is a property of the objects actually installed in the chassis.

Only adjacent (odd and even) slot pairs can be configured for redundancy. When a slot is configured for redundancy, both the subslots, if there are any, are automatically configured for redundancy. When subslots are configured for redundancy, all ports on the two subslots are redundant.

---

**Examples**

The following example shows how to configure the two Cisco 6400 NRPs installed in slots 1 and 2 for redundant operation:

```
Switch(config)# redundancy  
Switch(config-r)# associate slot 1
```

---

**Related Commands**

[aps mode](#)  
[main-cpu](#)  
[redundancy force-failover](#)  
[show redundancy](#)

# redundancy force-failover

To force the current primary and secondary devices in a redundant pair to change roles, use the **redundancy force-failover** EXEC command.

**redundancy force-failover** { *slot* | *slot/subslot* | *slot/subslot* | **main-cpu** }

Syntax Description	<i>slot</i>	Specifies the slot or subslot for one member of a redundant pair, where the primary/secondary relationship between the two entities is reversed.
	<i>slot/subslot</i>	Specifies the slot or subslot for one member of a redundant pair, where the primary/secondary relationship between the two entities is reversed.
	<b>main-cpu</b>	Specifies that the primary/secondary relationship between the two available NSPs be reversed.

Defaults Disabled

Command Modes EXEC

**Usage Guidelines** The **redundancy force-failover** command can be used to force a change in the primary/secondary relationship required for software and hardware upgrade situations. This command has no effect on interfaces that are running in SONET linear 1+1 nonreverting unidirectional APS mode. To reverse the roles of two redundant ports, use the **aps force** command.

This command does not generate an alarm (as a hardware reset would).

**Examples** In the following example, the primary/secondary relationship is reversed between the router card in slot 2 and its redundant partner. The other slot in the redundant pair is not specified in this command. You can use the **show redundancy** command to view the configured redundant pairs.

```
Switch# redundancy force-failover slot 2
```

**Related Commands** [redundancy](#)  
[show redundancy](#)

# redundancy sync

To initiate disk synchronization, or copy the data from one PCMCIA disk to another, use the **redundancy sync** EXEC command.

**redundancy sync** [**disk0** | **disk1** | **local**] [**reverse**] [**all**]

Syntax Description	Parameter	Description
	<b>disk0</b>	Specifies the PCMCIA disks in slot 0 of the redundant NSPs.
	<b>disk1</b>	Specifies the PCMCIA disks in slot 1 of the redundant NSPs.
	<b>local</b>	Copies data from disk0: to disk1: in the primary NSP.
	<b>reverse</b>	Specifies reverse synchronization (copies data from the secondary NSP to the primary NSP).
	<b>all</b>	Specifies to copy all files blindly (without comparing file names, sizes, and time stamps).

## Defaults

With no keywords entered, this command copies data from disk0: of the primary NSP to disk0: of the secondary NSP. The system compares files between the PCMCIA disks and does not copy files with matching file names, sizes, and time stamps.

## Command Modes

EXEC

## Command History

Release	Modification
12.1(5)DB	This command was introduced on the Cisco 6400 NSP.
12.2(13)T	This command was integrated into Cisco IOS Release 12.2(13)T.
12.3	This command was integrated into Cisco IOS Release 12.3.

## Usage Guidelines

By default, when performing disk synchronization (either through disk mirroring or user initiation), the system compares files between the PCMCIA disks. The system does not copy files with matching file names, sizes, and time stamps. The **all** keyword specifies to copy all files without comparison.

Without the **all** keyword, and if the **mirror** main-cpu configuration command is configured with a file threshold size, only files smaller than the threshold will be copied without comparison.

## Examples

The following example shows PCMCIA disk synchronization:

```
Switch# redundancy sync disk0
```

```
00:29:52:%DISKMIRROR-6-PROGRS:Disk Sync in Progress (disk0 to sec-disk0, 0%)
Switch#
```

The following example shows reverse disk synchronization:

```
Switch# redundancy sync disk0 reverse
```

## ■ redundancy sync

```
00:32:13:%DISKMIRROR-6-PROGRS:Disk Sync in Progress (sec-disk0 to disk0, 0%)
Switch#
```

The following example shows local disk synchronization:

```
Switch# redundancy sync local
```

```
00:32:13:%DISKMIRROR-6-PROGRS:Disk Sync in Progress (disk0 to disk1, 0%)
Switch#
```

---

**Related Commands**

Command	Description
<a href="#">mirror</a>	Enables PCMCIA disk mirroring.
<b>show redundancy sync-status</b>	Displays status of disk mirroring and disk synchronization.



# snmp-server forwarder

To enable the SNMPv3 proxy forwarder, use the **snmp-server forwarder** global configuration command. To disable the proxy forwarder, use the **no** form of this command.

**snmp-server forwarder**

**no snmp-server forwarder**

**Syntax Description** This command has no arguments or keywords.

**Defaults** Disabled

**Command Modes** Global configuration

Command History	Release	Modification
	12.1(4)DB	This command was introduced on the Cisco 6400 NSP to support the NRP-2.
	12.2(13)T	This command was integrated into Cisco IOS Release 12.2(13)T.
	12.3	This command was integrated into Cisco IOS Release 12.3.

**Usage Guidelines** The SNMPv3 Proxy Forwarder feature enables all NSP and NRP-2 components of the Cisco 6400 system to be managed as one functional entity. With the Proxy Forwarder feature enabled, the NSP:

- Forwards all SNMPv3 formatted messages (such as manager requests to get or set data) destined for the NRP-2s
- Routes the SNMPv3 formatted traps from NRP-2s to the NSP combined Network Management Ethernet (NME) interface

When the NSP and NRP-2 are properly configured for SNMPv3 and the Proxy Forwarder feature, both the NSP and NRP-2 automatically generate a series of SNMP commands. Do not modify or delete the automatically generated commands; doing so might prevent SNMP from working properly.

**Examples** In the following example, the NSP is configured to act as the proxy forwarder:

```
snmp-server group usmgrp v3 noauth
snmp-server user usmsr usmgrp v3
→ snmp-server forwarder
snmp-server host 10.100.100.100 vrf 6400-private version 3 noauth trapusr
```

The previous commands cause the NSP to automatically generate the following commands:

```
snmp-server engineID remote 10.3.0.2 vrf 6400-private 80000009030000107BA9C7A0
snmp-server user trapusr trapusr v3
snmp-server user trapusr trapusr remote 10.3.0.2 vrf 6400-private v3
snmp-server user usmsr usmgrp remote 10.3.0.2 vrf 6400-private v3
snmp-server group trapusr v3 noauth notify *tv.FFFFFFFF.FFFFFFFF
```



In the following example, the NRP-2 is configured to allow the NSP to act as the proxy forwarder:

```
snmp-server group usmgrp v3 noauth
snmp-server user usmusr usmgrp v3
snmp-server enable traps
snmp-server host 10.3.0.1 vrf 6400-private version 3 noauth trapusr
```

The previous commands cause the NRP-2 to automatically generate the following commands:

```
snmp-server user trapusr trapusr v3
snmp-server group trapusr v3 noauth notify *tv.FFFFFFFF.FFFFFFFF
snmp-server enable traps snmp authentication linkdown linkup coldstart
snmp-server enable traps config
snmp-server enable traps syslog
snmp-server enable traps bgp
snmp-server enable traps ipmulticast
snmp-server enable traps rsvp
snmp-server enable traps frame-relay
snmp-server enable traps rtr
```

### Related Commands

The SNMPv3 Proxy Forwarder feature requires the NSP and NRP-2 to be configured by using specific options in the **snmp-server** global configuration commands:

NSP Command	Description
<b>snmp-server group</b> <i>groupname</i> <b>v3 noauth</b>	Configures a new SNMPv3 group.
<b>snmp-server user</b> <i>username groupname</i> <b>v3</b>	Configures a new user to the SNMPv3 group.
<b>snmp-server host</b> <i>host-address vrf 6400-private version 3 noauth username</i>	Specifies the recipient of NRP-2 SNMPv3 trap messages.

NRP-2 Command	Description
<b>snmp-server group</b> <i>groupname</i> <b>v3 noauth</b>	Configures a new SNMPv3 group. Make sure that the <i>groupname</i> matches that entered on the NSP.
<b>snmp-server user</b> <i>username groupname</i> <b>v3</b>	Configures a new user to an SNMPv3 group. Make sure that the <i>username</i> and <i>groupname</i> match those entered on the NSP.
<b>snmp-server enable traps</b> [ <b>config</b>   <b>syslog</b>   <b>bgp</b>   <b>ipmulticast</b>   <b>rsvp</b>   <b>frame-relay</b>   <b>rtr</b>   <b>snmp authentication linkdown linkup coldstart</b> ]	Enables the NRP-2 to send traps. Optionally, you can select from specific types of traps.
<b>snmp-server host</b> <b>10.nrp2-slot.0.1 vrf 6400-private version 3 noauth</b> <i>username</i>	Specifies the NSP as the recipient of SNMPv3 trap messages. The <b>10.nrp2-slot.0.1</b> IP address is the private address for the internal NSP interface to the NRP-2 PAM mailbox serial interface.

## tag-switching advertise-local-tags

To control which tags are advertised and to which nodes they are advertised, use the **tag-switching advertise-local-tags** global configuration command. To disable advertisement of tags, use the **no** form of this command.

**tag-switching advertise-local-tags** [**for** *access-list-num* [**to** *access-list-num*] ]

**no tag-switching advertise-local-tags** [**for** *access-list-num* [**to** *access-list-num*] ]

### Syntax Description

**for** *access-list-num* Specifies an access list of prefixes that should be advertised.  
**to** *access-list-num* Specifies an IP access list of TDP peer prefixes that should receive advertisements.

### Defaults

For all tags and to all peers

### Command Modes

Global configuration

### Usage Guidelines

Multiple **tag-switching advertise-local-tags** commands can be used. When multiple commands are entered, their effect is combined to determine an overall specification of how locally allocated tags are advertised.

### Examples

In the following example, the router is configured to advertise all locally assigned tags to all TDP neighbors. The assumption is that before the command is entered, the default of no tag advertisement is in effect:

```
Switch(config)# tag-switching advertise-local-tags
```

In the following example, the router is configured to advertise tags for networks 10.101.0.0 and 10.221.0.0 to all TDP neighbors. The assumption is that before the commands are entered, the default of no tag advertisement is in effect:

```
Switch(config)# access-list 1 permit 10.101.0.0 0.0.255.255
Switch(config)# access-list 4 permit 10.221.0.0 0.0.255.255
Switch(config)# tag-switching advertise-local-tags for 1
Switch(config)# tag-switching advertise-local-tags for 4
```

In the following example, the router is configured to advertise all tags to all TDP neighbors except neighbor 10.101.0.8. The assumption is that before the commands are entered, the default of no tag advertisement is in effect:

```
Switch(config)# access-list 1 permit any
Switch(config)# access-list 2 deny 10.101.0.8
Switch(config)# tag-switching advertise-local-tags
Switch(config)# tag-switching advertise-local-tags for 1 to 2
```