



# High Availability Commands

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## main-cpu

To enter the redundancy main configuration submode and enable the standby switch, use the **main-cpu** command in redundancy configuration mode.

### main-cpu

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

**Command Default** None

**Command Modes** Redundancy configuration (config-red)

Command History	Release	Modification
	Cisco IOS XE Everest 16.6.2	This command was implemented on Cisco Catalyst 9400 Series Switches.

**Usage Guidelines** From the redundancy main configuration submode, use the **standby console enable** command to enable the standby switch.

This example shows how to enter the redundancy main configuration submode and enable the standby switch:

```
Device(config)# redundancy  
Device(config-red)# main-cpu
```

```
Device(config-r-mc) # standby console enable
Device#
```

## mode sso

To set the redundancy mode to stateful switchover (SSO), use the **mode sso** command in redundancy configuration mode.

### mode sso

<b>Syntax Description</b>	This command has no arguments or keywords.
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<b>Command Default</b>	None
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<b>Command Modes</b>	Redundancy configuration
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<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Everest 16.6.2	This command was introduced.

<b>Usage Guidelines</b>	The <b>mode sso</b> command can be entered only from within redundancy configuration mode.
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Follow these guidelines when configuring your system to SSO mode:

- You must use identical Cisco IOS images on the supervisor modules to support SSO mode. Redundancy may not work due to differences between the Cisco IOS releases.
- If you perform an online insertion and removal (OIR) of the module, the switch resets during the stateful switchover and the port states are restarted only if the module is in a transient state (any state other than Ready).
- The forwarding information base (FIB) tables are cleared on a switchover. Routed traffic is interrupted until route tables reconverge.

This example shows how to set the redundancy mode to SSO:

```
Device(config) # redundancy
Device(config-red) # mode sso
Device(config-red) #
```

## policy config-sync prc reload

To reload the standby switch if a parser return code (PRC) failure occurs during configuration synchronization, use the **policy config-sync reload** command in redundancy configuration mode. To specify that the standby switch is not reloaded if a parser return code (PRC) failure occurs, use the **no** form of this command.

```
policy config-sync {bulk | lbl} prc reload
no policy config-sync {bulk | lbl} prc reload
```

<b>Syntax Description</b>	<b>bulk</b> Specifies bulk configuration mode.
	<b>lbl</b> Specifies line-by-line (lbl) configuration mode.

**Command Default** The command is enabled by default.

**Command Modes** Redundancy configuration (config-red)

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Everest 16.6.2	This command was implemented on Cisco Catalyst 9400 Series Switches.

This example shows how to specify that the standby switch is not reloaded if a parser return code (PRC) failure occurs during configuration synchronization:

```
Device(config-red)# no policy config-sync bulk prc reload
```

## redundancy

To enter redundancy configuration mode, use the **redundancy** command in global configuration mode.

### redundancy

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

**Command Default** None

**Command Modes** Global configuration (config)

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Everest 16.6.1	This command was implemented on Cisco Catalyst 9400 Series Switches.

**Usage Guidelines** The redundancy configuration mode is used to enter the main CPU submode, which is used to enable the standby switch.

To enter the main CPU submode, use the **main-cpu** command while in redundancy configuration mode.

From the main CPU submode, use the **standby console enable** command to enable the standby switch.

Use the **exit** command to exit redundancy configuration mode.

This example shows how to enter redundancy configuration mode:

```
Device(config)# redundancy
Device(config-red)#
```

This example shows how to enter the main CPU submode:

```
Device(config)# redundancy
Device(config-red)# main-cpu
Device(config-r-mc)#
```

Related Commands	Command	Description
	<code>show redundancy</code>	Displays redundancy facility information.

## redundancy reload peer

To reload a standby Route Processor (RP) module, use the **redundancy reload peer** command in privileged EXEC mode.

### redundancy reload peer

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

**Command Default** No default behavior or values.

**Command Modes** Privileged EXEC (#)

### Command History

Command History	Release	Modification
	Cisco IOS XE Everest 16.6.1	This command was introduced.

### Usage Guidelines

The **redundancy reload peer** command is used to reset standby RP module when there are any failures, tracebacks, or functionality and behavior mismatches on either one or both active and standby RP modules.

This command does not have an impact on active device operations, assuming a switchover is not required while the standby module is resetting.

### Examples

The following example shows how to manually reload the standby RP module:

```
Device# redundancy reload peer
Reload peer? [confirm] y
Preparing to reload peer
```



**Note** Pressing **enter** or **y** begins the reload. Pressing any other key aborts the reload and returns control to the active RP module.

The following is sample output when a standby RP module is not installed on a router:

```
Device# redundancy reload peer
System is running in SIMPLEX mode, reload anyway? [confirm] n
Peer reload not performed.
```

Command	Description
<code>redundancy</code>	Enters redundancy configuration mode so that the synchronization parameters can be configured.
<code>redundancy reload shelf</code>	Reloads both redundant CPU switch modules.

Command	Description
<b>show redundancy</b>	Displays redundancy facility information.

## redundancy reload shelf

To reload both redundant CPU switch modules, use the **redundancy reload shelf** command in privileged EXEC mode.

### redundancy reload shelf

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

**Command Default** No default behavior or values.

**Command Modes** Privileged EXEC (#)

### Command History

Command History	Release	Modification
	Cisco IOS XE Everest 16.6.1	This command was introduced.

**Usage Guidelines** This command causes both CPU switch modules to reload.

**Examples** The following example shows how to reload the entire shelf:

```
Device# redundancy reload shelf
Reload the entire shelf [confirm] y
Preparing to reload shelf
```

### Related Commands

Command	Description
<b>redundancy</b>	Enters redundancy configuration mode so that the synchronization parameters can be configured.
<b>redundancy reload peer</b>	Resets standby RP module when there are any failures, tracebacks, or functionality and behavior mismatches on either one or both active and standby RP modules.
<b>show redundancy</b>	Displays redundancy facility information.

## reload

To reload the stack member and to apply a configuration change, use the **reload** command in privileged EXEC mode.

**reload** [**/noverify** | **/verify**] [**LINE** | **at** | **cancel** | **in** | **slot** *stack-member-number* | **standby-cpu**]

Syntax Description		
<b>/noverify</b>	(Optional)	Specifies to not verify the file signature before the reload.
<b>/verify</b>	(Optional)	Verifies the file signature before the reload.
<i>LINE</i>	(Optional)	Reason for the reload.
<b>at</b>	(Optional)	Specifies the time in hh:mm for the reload to occur.
<b>cancel</b>	(Optional)	Cancels the pending reload.
<b>in</b>	(Optional)	Specifies a time interval for reloads to occur.
<b>slot</b>	(Optional)	Saves the changes on the specified stack member and then restarts it.
<i>stack-member-number</i>		
<b>standby-cpu</b>	(Optional)	Reloads the standby route processor (RP).

**Command Default** Immediately reloads the stack member and puts a configuration change into effect.

**Command Modes** Privileged EXEC

Command History	Release	Modification
	Cisco IOS XE Everest 16.6.1	This command was introduced.

**Usage Guidelines** If there is more than one switch in the switch stack, and you enter the **reload slot** *stack-member-number* command, you are not prompted to save the configuration.

### Examples

This example shows how to reload the switch stack:

```
Device# reload
System configuration has been modified. Save? [yes/no]: yes
Reload command is being issued on Active unit, this will reload the whole stack
Proceed with reload? [confirm] yes
```

This example shows how to reload a specific stack member:

```
Device# reload slot 6
Proceed with reload? [confirm] y
```

This example shows how to reload a single-switch switch stack (there is only one member switch):

```
Device# reload slot 3
System configuration has been modified. Save? [yes/no]: y
Proceed to reload the whole Stack? [confirm] y
```

# show redundancy

To display redundancy facility information, use the **show redundancy** command in privileged EXEC mode

```
show redundancy [{clients | config-sync | counters | history [{reload | reverse}]] | slaves[slave-name]
{clients | counters} | states | switchover history [domain default]]]
```

Syntax Description	
<b>clients</b>	(Optional) Displays information about the redundancy facility client.
<b>config-sync</b>	(Optional) Displays a configuration synchronization failure or the ignored mismatched command list (MCL).
<b>counters</b>	(Optional) Displays information about the redundancy facility counter.
<b>history</b>	(Optional) Displays a log of past status and related information for the redundancy facility.
<b>history reload</b>	(Optional) Displays a log of past reload information for the redundancy facility.
<b>history reverse</b>	(Optional) Displays a reverse log of past status and related information for the redundancy facility.
<b>slaves</b>	(Optional) Displays all standby switches in the redundancy facility.
<i>slave-name</i>	(Optional) The name of the redundancy facility standby switch to display specific information for. Enter additional keywords to display all clients or counters in the specified standby switch.
<b>clients</b>	Displays all redundancy facility clients in the specified secondary switch.
<b>counters</b>	Displays all counters in the specified standby switch.
<b>states</b>	(Optional) Displays information about the redundancy facility state, such as disabled, initialization, standby or active.
<b>switchover history</b>	(Optional) Displays information about the redundancy facility switchover history.
<b>domain default</b>	(Optional) Displays the default domain as the domain to display switchover history for.

**Command Default** None

**Command Modes** Privileged EXEC (#)

Command History	Release	Modification
	Cisco IOS XE Everest 16.6.1	This command was implemented on Cisco Catalyst 9400 Series Switches.

This example shows how to display information about the redundancy facility:

```
Device# show redundancy
```

```

Redundant System Information :
-----
    Available system uptime = 6 days, 5 hours, 28 minutes
Switchovers system experienced = 0
    Standby failures = 0
    Last switchover reason = none

    Hardware Mode = Duplex
Configured Redundancy Mode = sso
Operating Redundancy Mode = sso
    Maintenance Mode = Disabled
    Communications = Up

Current Processor Information :
-----
    Active Location = slot 5
    Current Software state = ACTIVE
    Uptime in current state = 6 days, 5 hours, 28 minutes
    Image Version = Cisco IOS Software, Catalyst L3 Switch Software
(CAT9K_IOSXE), Experimental Version 16.x.x [S2C-build-v16x_throttle-4064-/
nobackup/mcpre/BLD-BLD_V16x_THROTTLE_LATEST 102]
Copyright (c) 1986-201x by Cisco Systems, Inc.
Compiled Mon 07-Oct-xx 03:57 by mcpre
    BOOT = bootflash:packages.conf;
    Configuration register = 0x102

Peer Processor Information :
-----
    Standby Location = slot 6
    Current Software state = STANDBY HOT
    Uptime in current state = 6 days, 5 hours, 25 minutes
    Image Version = Cisco IOS Software, Catalyst L3 Switch Software
(CAT9K_IOSXE), Experimental Version 16.x.x [S2C-build-v16x_throttle-4064-/
nobackup/mcpre/BLD-BLD_V16x_THROTTLE_LATEST_20191007_000645 102]
Copyright (c) 1986-201x by Cisco Systems, Inc.
Compiled Mon 07-Oct-xx 03:57 by mcpre
    BOOT = bootflash:packages.conf;
    CONFIG_FILE =
    Configuration register = 0x102
Device#

```

This example shows how to display redundancy facility client information:

```
Device# show redundancy clients
```

```

Group ID =      1
clientID = 29      clientSeq = 60      Redundancy Mode RF
clientID = 139     clientSeq = 62      IfIndex
clientID = 25      clientSeq = 71      CHKPT RF
clientID = 10001   clientSeq = 85      QEMU Platform RF
clientID = 77      clientSeq = 87      Event Manager
clientID = 1340    clientSeq = 104     RP Platform RF
clientID = 1501    clientSeq = 105     CWAN HA
clientID = 78      clientSeq = 109     TSPTUN HA
clientID = 305     clientSeq = 110     Multicast ISSU Consolidation RF
clientID = 304     clientSeq = 111     IP multicast RF Client
clientID = 22      clientSeq = 112     Network RF Client
clientID = 88      clientSeq = 113     HSRP
clientID = 114     clientSeq = 114     GLBP
clientID = 225     clientSeq = 115     VRRP
clientID = 4700    clientSeq = 118     COND_DEBUG RF
clientID = 1341    clientSeq = 119     IOSXE DPIDX
clientID = 1505    clientSeq = 120     IOSXE SPA TSM
clientID = 75      clientSeq = 130     Tableid HA

```



```
clientID = 501      clientSeq = 137      LAN-Switch VTP VLAN
```

<output truncated>

The output displays the following information:

- clientID displays the client's ID number.
- clientSeq displays the client's notification sequence number.
- Current redundancy facility state.

This example shows how to display the redundancy facility counter information:

```
Device# show redundancy counters
```

```
Redundancy Facility OMs
  comm link up = 0
  comm link down = 0

  invalid client tx = 0
  null tx by client = 0
  tx failures = 0
  tx msg length invalid = 0

  client not rxing msgs = 0
  rx peer msg routing errors = 0
  null peer msg rx = 0
  errored peer msg rx = 0

  buffers tx = 135884
  tx buffers unavailable = 0
  buffers rx = 135109
  buffer release errors = 0

  duplicate client registers = 0
  failed to register client = 0
  Invalid client syncs = 0
```

```
Device#
```

This example shows how to display redundancy facility history information:

```
Device# show redundancy history
```

```
00:00:04 client added: Redundancy Mode RF(29) seq=60
00:00:04 client added: IfIndex(139) seq=62
00:00:04 client added: CHKPT RF(25) seq=71
00:00:04 client added: QEMU Platform RF(10001) seq=85
00:00:04 client added: Event Manager(77) seq=87
00:00:04 client added: RP Platform RF(1340) seq=104
00:00:04 client added: CWAN HA(1501) seq=105
00:00:04 client added: Network RF Client(22) seq=112
00:00:04 client added: IOSXE SPA TSM(1505) seq=120
00:00:04 client added: LAN-Switch VTP VLAN(501) seq=137
00:00:04 client added: XDR RRP RF Client(71) seq=139
00:00:04 client added: CEF RRP RF Client(24) seq=140
00:00:04 client added: MFIB RRP RF Client(306) seq=150
00:00:04 client added: RFS RF(520) seq=163
00:00:04 client added: klib(33014) seq=167
00:00:04 client added: Config Sync RF client(5) seq=168
00:00:04 client added: NGWC FEC Rf client(10007) seq=173
00:00:04 client added: LAN-Switch Port Manager(502) seq=190
00:00:04 client added: Access Tunnel(530) seq=192
```

```
00:00:04 client added: Mac address Table Manager(519) seq=193
00:00:04 client added: DHCP(100) seq=238
00:00:04 client added: DHCPD(101) seq=239
00:00:04 client added: SNMP RF Client(34) seq=251
00:00:04 client added: CWAN APS HA RF Client(1502) seq=252
00:00:04 client added: History RF Client(35) seq=261
```

<output truncated>

This example shows how to display information about the redundancy facility standby switches:

```
Device# show redundancy slaves

Group ID = 1
Slave/Process ID = 6107 Slave Name = [installer]
Slave/Process ID = 6109 Slave Name = [eicored]
Slave/Process ID = 6128 Slave Name = [snmp_subagent]
Slave/Process ID = 8897 Slave Name = [wcm]
Slave/Process ID = 8898 Slave Name = [table_mgr]
Slave/Process ID = 8901 Slave Name = [iosd]
```

Device#

This example shows how to display information about the redundancy facility state:

```
Device# show redundancy states

my state = 13 -ACTIVE
peer state = 8 -STANDBY HOT
Mode = Duplex
Unit = Primary
Unit ID = 5

Redundancy Mode (Operational) = sso
Redundancy Mode (Configured) = sso
Redundancy State = sso
Maintenance Mode = Disabled
Manual Swact = enabled
Communications = Up

client count = 115
client_notification_TMR = 30000 milliseconds
RF debug mask = 0x0
```

Device#

## show redundancy config-sync

To display a configuration synchronization failure or the ignored mismatched command list (MCL), if any, use the **show redundancy config-sync** command in EXEC mode.

```
show redundancy config-sync {failures {bem | mcl | prc} | ignored failures mcl}
```

Syntax Description	failures	Displays MCL entries or best effort method (BEM)/Parser Return Code (PRC) failures.
--------------------	----------	---

<b>bem</b>	Displays a BEM failed command list, and forces the standby switch to reboot.
<b>mcl</b>	Displays commands that exist in the switch's running configuration but are not supported by the image on the standby switch, and forces the standby switch to reboot.
<b>prc</b>	Displays a PRC failed command list and forces the standby switch to reboot.
<b>ignored failures mcl</b>	Displays the ignored MCL failures.

**Command Default** None

**Command Modes** User EXEC  
Privileged EXEC

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Everest 16.6.2	This command was introduced.

**Usage Guidelines** When two versions of Cisco IOS images are involved, the command sets supported by two images might differ. If any of those mismatched commands are executed on the active switch, the standby switch might not recognize those commands, which causes a configuration mismatch condition. If the syntax check for the command fails on the standby switch during a bulk synchronization, the command is moved into the MCL and the standby switch is reset. To display all the mismatched commands, use the **show redundancy config-sync failures mcl** command.

To clean the MCL, follow these steps:

1. Remove all mismatched commands from the active switch's running configuration.
2. Revalidate the MCL with a modified running configuration by using the **redundancy config-sync validate mismatched-commands** command.
3. Reload the standby switch.

Alternatively, you could ignore the MCL by following these steps:

1. Enter the **redundancy config-sync ignore mismatched-commands** command.
2. Reload the standby switch; the system transitions to SSO mode.



**Note** If you ignore the mismatched commands, the out-of-synchronization configuration on the active switch and the standby switch still exists.

3. You can verify the ignored MCL with the **show redundancy config-sync ignored mcl** command.

Each command sets a return code in the action function that implements the command. This return code indicates whether or not the command successfully executes. The active switch maintains the PRC after executing a command. The standby switch executes the command and sends the PRC back to the active switch. A PRC failure occurs if these two PRCs do not match. If a PRC error occurs at the standby switch either

during bulk synchronization or line-by-line (LBL) synchronization, the standby switch is reset. To display all PRC failures, use the **show redundancy config-sync failures prc** command.

To display best effort method (BEM) errors, use the **show redundancy config-sync failures bem** command.

This example shows how to display the BEM failures:

```
Device> show redundancy config-sync failures bem
BEM Failed Command List
-----

The list is Empty
```

This example shows how to display the MCL failures:

```
Device> show redundancy config-sync failures mcl
Mismatched Command List
-----

The list is Empty
```

This example shows how to display the PRC failures:

```
Device# show redundancy config-sync failures prc
PRC Failed Command List
-----

The list is Empty
```

## standby console enable

To enable access to the standby console switch, use the **standby console enable** command in redundancy main configuration submode. To disable access to the standby console switch, use the **no** form of this command.

**standby console enable**  
**no standby console enable**

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

**Command Default** Access to the standby console switch is disabled.

**Command Modes** Redundancy main configuration submode

Command History	Release	Modification
	Cisco IOS XE Everest 16.6.1	This command was introduced.

**Usage Guidelines** This command is used to collect and review specific data about the standby console. The command is useful primarily for Cisco technical support representatives troubleshooting the switch.

This example shows how to enter the redundancy main configuration submode and enable access to the standby console switch:

```
Device(config)# redundancy  
Device(config-red)# main-cpu  
Device(config-r-mc)# standby console enable  
Device(config-r-mc)#
```

standby console enable