Stack Manager and High Availability

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debug platform stack-manager

To enable debugging of the stack manager software, use the **debug platform stack-manager** command in privileged EXEC mode. To disable debugging, use the **no** form of this command.

debug platform stack-manager {**all** | **rpc** | **sdp** | **sim** | **ssm** | **trace**}
no debug platform stack-manager {**all** | **rpc** | **sdp** | **sim** | **ssm** | **trace**}

Syntax Description

all	Displays all stack manager debug messages.
rpc	Displays stack manager remote procedure call (RPC) usage debug messages.
sdp	Displays the Stack Discovery Protocol (SDP) debug messages.
sim	Displays the stack information module debug messages.
ssm	Displays the stack state-machine debug messages.
trace	Traces the stack manager entry and exit debug messages.

Command Default

Debugging is disabled.

Command Modes

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE 3.3SECisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

This command is supported only on stacking-capable switches.

The **undebug platform stack-manager** command is the same as the **no debug platform stack-manager** command.

When you enable debugging on a switch stack, it is enabled only on the stack master. To enable debugging on a stack member, you can start a session from the stack master by using the **session** *switch-number* EXEC command. Enter the **debug** command at the command-line prompt of the stack member. You also can use the **remote command** *stack-member-number LINE* EXEC command on the stack master switch to enable debugging on a member switch without first starting a session.

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

Command History

Release	Modification
Cisco IOS XE 3.3SECisco IOS XE 3.3SE	This command was introduced.

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

Syntax Description

This command has no arguments or keywords.

Command Default

None

Command Modes

Redundancy configuration

Command History

Release	Modification
Cisco IOS XE 3.3SECisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

The **mode sso** command can be entered only from within redundancy configuration mode.

Follow these guidelines when configuring your system to SSO mode:

- You must use identical Cisco IOS images on the switches in the stack 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**

Syntax Description

bulk	Specifies bulk configuration mode.
lbl	Specifies line-by-line (lbl) configuration mode.

Command Default

The command is enabled by default.

Command Modes

Redundancy configuration

Command History

Release	Modification
Cisco IOS XE 3.3SECisco IOS XE 3.3SE	This command was introduced.

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

Command History

Release	Modification
Cisco IOS XE 3.3SECisco IOS XE 3.3SE	This command was introduced.

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)#
```

redundancy config-sync mismatched-commands

To allow the standby switch to join the stack if a configuration mismatch occurs between the active and standby switches, use the **redundancy config-sync mismatched-commands** command in privileged EXEC mode.

redundancy config-sync {**ignore** | **validate**} **mismatched-commands**

Syntax Description

ignore	Ignores the mismatched command list.
validate	Revalidates the mismatched command list with the modified running-configuration.

Command Default

None

Command Modes

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE 3.3SECisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

If the command syntax check in the running configuration of the active switch fails while the standby switch is booting, use the **redundancy config-sync mismatched-commands** command to display the Mismatched Command List (MCL) on the active switch and to reboot the standby switch.

The following is a log entry example for mismatched commands:

```
00:06:31: Config Sync: Bulk-sync failure due to Servicing Incompatibility. Please check
full list of mismatched commands via:
show redundancy config-sync failures mcl
00:06:31: Config Sync: Starting lines from MCL file:
interface GigabitEthernet7/7
! <submode> "interface"
- ip address 192.0.2.0 255.255.255.0
! </submode> "interface"
```

To display all 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 running configuration of the active switch.
2. Revalidate the MCL with a modified running configuration by using the **redundancy config-sync validate mismatched-commands** command.
3. Reload the standby switch.

You can ignore the MCL by doing the following:

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

Note If you ignore the mismatched commands, the out-of-sync configuration at the active switch and the standby switch still exists.

3. Verify the ignored MCL with the **show redundancy config-sync ignored mcl** command.

If SSO mode cannot be established between the active and standby switches because of an incompatibility in the configuration file, a mismatched command list (MCL) is generated at the active switch and a reload into route processor redundancy (RPR) mode is forced for the standby switch.

Note RPR mode is supported on Catalyst 3850 switches as a fallback in case of errors. It is not configurable.

If you attempt to establish an SSO after removing the offending configuration and rebooting the standby switch with the same image, the C3K_REDUNDANCY-2-IOS_VERSION_CHECK_FAIL and ISSU-3-PEER_IMAGE_INCOMPATIBLE messages appear because the peer image is listed as incompatible. You can clear the peer image from the incompatible list with the **redundancy config-sync ignore mismatched-commands** EXEC command while the peer is in a standby cold (RPR) state. This action allows the standby switch to boot in a standby hot (SSO) state when it reloads.

This example shows how to revalidate the mismatched command list with the modified configuration:

```
Device# redundancy config-sync validate mismatched-commands
Device#
```

redundancy force-switchover

To force a switchover from the active switch to the standby switch, use the **redundancy force-switchover** command in privileged EXEC mode on a switch stack.

redundancy force-switchover

Syntax Description

This command has no arguments or keywords.

Command Default

None

Command Modes

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE 3.3SECisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

Use the **redundancy force-switchover** command to manually switch over to the redundant switch. The redundant switch becomes the new active switch that runs the Cisco IOS image, and the modules are reset to their default settings.

The old active switch reboots with the new image and joins the stack.

If you use the **redundancy force-switchover** command on the active switch, the switchports on the active switch to go down.

If you use this command on a switch that is in a partial ring stack, the following warning message appears:

```
Device# redundancy force-switchover
Stack is in Half ring setup; Reloading a switch might cause stack split
This will reload the active unit and force switchover to standby[confirm]
```

This example shows how to manually switch over from the active to the standby supervisor engine:

```
Device# redundancy force-switchover
Device#
```

redundancy reload

To force a reload of one or all of the switches in the stack, use the **redundancy reload** command in privileged EXEC mode.

redundancy reload {**peer** | **shelf**}

Syntax Description

peer	Reloads the peer unit.
shelf	Reboots all switches in the stack.

Command Default

None

Command Modes

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE 3.3SECisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

Before using this command, see the "Performing a Software Upgrade" section of the *Stacking Configuration Guide (Catalyst 3650 Switches)* for additional information.

Use the **redundancy reload shelf** command to reboot all the switches in the stack.

This example shows how to manually reload all switches in the stack:

```
Device# redundancy reload shelf
Device#
```

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

/noverify	(Optional) Specifies to not verify the file signature before the reload.
/verify	(Optional) Verifies the file signature before the reload.
LINE	(Optional) Reason for the reload.
at	(Optional) Specifies the time in hh:mm for the reload to occur.
cancel	(Optional) Cancels the pending reload.
in	(Optional) Specifies a time interval for reloads to occur.
slot	(Optional) Saves the changes on the specified stack member and then restarts it.
stack-member-number	(Optional) Stack member number on which to save the changes. The range is 1 to 9.
standby-cpu	(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 3.3SECisco IOS XE 3.3SE	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
```

session

To access a specific stack member use the **session** command in privileged EXEC mode on the stack master.

session *stack-member-number*

Syntax Description

stack-member-number	Stack member number to access from the active switch. The range is 1 to 9.

Command Default

None

Command Modes

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE 3.3SECisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

When you access the member, its member number is appended to the system prompt.

Use the **session** command from the master to access a member Device

Use the **session** command with **processor 1** from the master or a standalone switch to access the internal controller. A standalone Device is always member 1.

Examples

This example shows how to access stack member 3:

```
Device# session 3
Device-3#
```

show platform stack-manager

To display platform-dependent switch-stack information, use the **show platform stack-manager** command in privileged EXEC mode.

show platform stack-manager {**oir-states** | **sdp-counters** | **sif-counters**} **switch** *stack-member-number*

Syntax Description

oir-states	Displays Online Insertion and Removal (OIR) state information
sdp-counters	Displays Stack Discovery Protocol (SDP) counter information.
sif-counters	Displays Stack Interface (SIF) counter information.
switch *stack-member-number*	Specifies the stack member for which to display stack-manager information.

Command Default

None

Command Modes

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE 3.3SECisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

Use the **show platform stack-manager** command to collect data and statistics for the switch stack.

Use this command only when you are working directly with your technical support representative while troubleshooting a problem. Do not use this command unless your technical support representative asks you to do so.

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

clients	(Optional) Displays information about the redundancy facility client.
config-sync	(Optional) Displays a configuration synchronization failure or the ignored mismatched command list (MCL). For more information, see show redundancy config-sync, on page 19.
counters	(Optional) Displays information about the redundancy facility counter.
history	(Optional) Displays a log of past status and related information for the redundancy facility.
history reload	(Optional) Displays a log of past reload information for the redundancy facility.
history reverse	(Optional) Displays a reverse log of past status and related information for the redundancy facility.
slaves	(Optional) Displays all slaves in the redundancy facility.
slave-name	(Optional) The name of the redundancy facility slave to display specific information for. Enter additional keywords to display all clients or counters in the specified slave.
clients	Displays all redundancy facility clients in the specified slave.
counters	Displays all counters in the specified slave.
states	(Optional) Displays information about the redundancy facility state, such as disabled, initialization, standby or active.
switchover history	(Optional) Displays information about the redundancy facility switchover history.
domain default	(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 3.3SECisco IOS XE 3.3SE	This command was introduced.

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

```
Device# show redundancy
Redundant System Information :
```

```
------------------------------
       Available system uptime = 6 days, 9 hours, 23 minutes
Switchovers system experienced = 0
              Standby failures = 0
        Last switchover reason = not known

                 Hardware Mode = Simplex
    Configured Redundancy Mode = SSO
     Operating Redundancy Mode = SSO
              Maintenance Mode = Disabled
                Communications = Down      Reason: Simplex mode

Current Processor Information :
------------------------------
               Active Location = slot 1
        Current Software state = ACTIVE
       Uptime in current state = 6 days, 9 hours, 23 minutes
                 Image Version = Cisco IOS Software, IOS-XE Software, Catalyst 3
850 L3 Switch Software (CAT3850-UNIVERSALK9-M), Version 03.08.59.EMD EARLY DEPLO
YMENT ENGINEERING NOVA_WEEKLY BUILD, synced to DSGS_PI2_POSTPC_FLO_DSBU7_NG3K_11
05
Copyright (c) 1986-2012 by Cisco Systems, Inc.
Compiled Sun 16-S
        Configuration register = 0x102

Peer (slot: 0) information is not available because it is in 'DISABLED' state
Device#
```

This example shows how to display redundancy facility client information:

```
Device# show redundancy clients
Group ID =     1
     clientID = 20002    clientSeq =     4    EICORE HA Client
     clientID = 24100    clientSeq =     5    WCM_CAPWAP
     clientID = 24101    clientSeq =     6    WCM RRM HA
     clientID = 24103    clientSeq =     8    WCM QOS HA
     clientID = 24105    clientSeq =    10    WCM_MOBILITY
     clientID = 24106    clientSeq =    11    WCM_DOT1X
     clientID = 24107    clientSeq =    12    WCM_APFROGUE
     clientID = 24110    clientSeq =    15    WCM_CIDS
     clientID = 24111    clientSeq =    16    WCM_NETFLOW
     clientID = 24112    clientSeq =    17    WCM_MCAST
     clientID = 24120    clientSeq =    18    wcm_comet
     clientID = 24001    clientSeq =    21    Table Manager Client
     clientID = 20010    clientSeq =    24    SNMP SA HA Client
     clientID = 20007    clientSeq =    27    Installer HA Client
     clientID =    29    clientSeq =    60    Redundancy Mode RF
     clientID =   139    clientSeq =    61    IfIndex
     clientID =  3300    clientSeq =    62    Persistent Variable
     clientID =    25    clientSeq =    68    CHKPT RF
     clientID = 20005    clientSeq =    74    IIF-shim
     clientID = 10001    clientSeq =    82    QEMU Platform RF

<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 = 0
     tx buffers unavailable = 0
                buffers rx = 0
      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
00:00:00 *my state = INITIALIZATION(2) peer state = DISABLED(1)
00:00:00 RF_EVENT_INITIALIZATION(524) op=0 rc=0
00:00:00 *my state = NEGOTIATION(3) peer state = DISABLED(1)
00:00:01 client added: Table Manager Client(24001) seq=21
00:00:01 client added: SNMP SA HA Client(20010) seq=24
00:00:06 client added: WCM_CAPWAP(24100) seq=5
00:00:06 client added: WCM QOS HA(24103) seq=8
00:00:07 client added: WCM_DOT1X(24106) seq=11
00:00:07 client added: EICORE HA Client(20002) seq=4
00:00:09 client added: WCM_MOBILITY(24105) seq=10
00:00:09 client added: WCM_NETFLOW(24111) seq=16
00:00:09 client added: WCM_APFROGUE(24107) seq=12
00:00:09 client added: WCM RRM HA(24101) seq=6
00:00:09 client added: WCM_MCAST(24112) seq=17
00:00:09 client added: WCM_CIDS(24110) seq=15
00:00:09 client added: wcm_comet(24120) seq=18
00:00:22 RF_STATUS_REDUNDANCY_MODE_CHANGE(405) First Slave(0) op=0 rc=0
00:00:22 RF_STATUS_REDUNDANCY_MODE_CHANGE(405) Slave(6107) op=0 rc=0
00:00:22 RF_STATUS_REDUNDANCY_MODE_CHANGE(405) Slave(6109) op=0 rc=0
00:00:22 RF_STATUS_REDUNDANCY_MODE_CHANGE(405) Slave(6128) op=0 rc=0
00:00:22 RF_STATUS_REDUNDANCY_MODE_CHANGE(405) Slave(8897) op=0 rc=0
00:00:22 RF_STATUS_REDUNDANCY_MODE_CHANGE(405) Slave(8898) op=0 rc=0
00:00:22 RF_STATUS_REDUNDANCY_MODE_CHANGE(405) Slave(8901) op=0 rc=0
00:00:22 RF_EVENT_SLAVE_STATUS_DONE(523) First Slave(0) op=405 rc=0
00:00:22 RF_STATUS_REDUNDANCY_MODE_CHANGE(405) Redundancy Mode RF(29) op=0 rc=0
00:00:22 RF_STATUS_REDUNDANCY_MODE_CHANGE(405) IfIndex(139) op=0 rc=0

<output truncated>
```

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

```
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 =  1 -DISABLED
             Mode = Simplex
          Unit ID = 1

  Redundancy Mode (Operational) = SSO
   Redundancy Mode (Configured) = SSO
              Redundancy State = Non Redundant
                     Manual Swact = disabled (system is simplex (no peer unit))

   Communications = Down      Reason: Simplex mode

     client count = 75
   client_notification_TMR = 360000 milliseconds
            keep_alive TMR = 9000 milliseconds
          keep_alive count = 0
      keep_alive threshold = 18
             RF debug mask = 0

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.
bem	Displays a BEM failed command list, and forces the standby switch to reboot.
mcl	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.
prc	Displays a PRC failed command list and forces the standby switch to reboot.
ignored failures mcl	Displays the ignored MCL failures.

Command Default

None

Command Modes

User EXEC

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE 3.3SECisco IOS XE 3.3SE	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
```

show switch

To display information that is related to the stack member or the switch stack, use the **show switch** command in EXEC mode.

show switch [{*stack-member-number* | **detail** | **neighbors** | **stack-ports** [{**summary**}]}]

Syntax Description

stack-member-number	(Optional) Number of the stack member. The range is 1 to 9.
detail	(Optional) Displays detailed information about the stack ring.
neighbors	(Optional) Displays the neighbors of the entire switch stack.
stack-ports	(Optional) Displays port information for the entire switch stack.
summary	(Optional) Displays the stack cable length, the stack link status, and the loopback status.

Command Default

None

Command Modes

User EXEC

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE 3.3SECisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

This command displays these states:

- Initializing—A switch has been just added to the stack and it has not completed the basic initialization to go to the ready state.
- HA Sync in Progress—After the standby is elected, the corresponding switch remains in this state until the synchronization is completed.
- Syncing—A switch that is added to an already existing stack remains in this state until the switch add sequence is complete.
- Ready—The member has completed loading the system- and interface-level configurations and can forward traffic.
- V-Mismatch—A switch in version mismatch mode. Version-mismatch mode is when a switch that joins the stack has a software version that is incompatible with the active switch.
- Provisioned—The state of a preconfigured switch before it becomes an active member of a switch stack. The MAC address and the priority number in the display are always 0 for the provisioned switch.
- Unprovisioned—The state of a switch when the provisioned switch number was unprovisioned using the **no switch** *switch-number* **provision** command.
- Removed—A switch that was present in the stack was removed using the **reload slot** command.

- Sync not started—When multiple switches are added to an existing stack together, the active switch adds them one by one. The switch that is being added is in the Syncing state. The switches that have not been added yet are in the Sync not started state.
- Lic-Mismatch—A switch has a different license level than the active switch.

A typical state transition for a stack member (including an active switch) booting up is Waiting > Initializing > Ready.

A typical state transition for a stack member in version mismatch (VM) mode is Waiting > Ver Mismatch.

You can use the **show switch** command to identify whether the provisioned switch exists in the switch stack. The **show running-config** and the **show startup-config** privileged EXEC commands do not provide this information.

The display also includes stack MAC-persistency wait-time if persistent MAC address is enabled.

Examples

This example shows how to display summary stack information:

```
Device# show switch
Switch/Stack Mac Address : 6400.f124.e900
                                            H/W   Current
Switch#   Role    Mac Address     Priority Version  State
-----------------------------------------------------------
 1       Member   0000.0000.0000     0      0       Provisioned
 2       Member   0000.0000.0000     0      0       Removed
*3       Active   6400.f124.e900     2      0       Ready
 8       Member   0000.0000.0000     0      0       Unprovisioned
```

This example shows how to display detailed stack information:

```
Device# show switch detail
Switch/Stack Mac Address : 2037.06ce.3f80 - Local Mac Address
Mac persistency wait time: Indefinite
                                           H/W   Current
Switch#   Role   Mac Address     Priority Version  State
-----------------------------------------------------------
*1       Active 2037.06ce.3f80     1      0       Ready
 2       Member 0000.000.0000      0      0       Provisioned
 6       Member 2037.06ce.1e00     1      0       Ready

           Stack Port Status             Neighbors
Switch#   Port 1     Port 2           Port 1   Port 2
-----------------------------------------------------------
  1       Ok         Down             6        None
  6       Down       Ok               None       1
```

This example shows how to display the member 6 summary information:

```
Device# show switch 6
Switch#  Role      Mac Address     Priority     State
-----------------------------------------------------------
 6       Member     0003.e31a.1e00     1         Ready
```

This example shows how to display the neighbor information for a stack:

```
Device# show switch neighbors
  Switch #    Port A       Port B
  --------    ------       ------
      6        None           8
```

```
      8          6            None
```

This example shows how to display stack-port information:

```
Device# show switch stack-ports
  Switch #    Port A       Port B
  --------    ------       ------
    6           Down         Ok
    8            Ok          Down
```

This example shows the output for the **show switch stack-ports summary** command. The table that follows describes the fields in the display.

Table 1: Show switch stack-ports summary Command Output

Field	Description
Switch#/Port#	Member number and its stack port number.
Stack Port Status	Status of the stack port. • Absent—No cable is detected on the stack port. • Down—A cable is detected, but either no connected neighbor is up, or the stack port is disabled. • OK—A cable is detected, and the connected neighbor is up.
Neighbor	Switch number of the active member at the other end of the stack cable.
Cable Length	Valid lengths are 50 cm, 1 m, or 3 m. If the switch cannot detect the cable length, the value is *no cable*. The cable might not be connected, or the link might be unreliable.
Link OK	Whether the stack cable is connected and functional. There may or may not be a neighbor connected on the other end. The *link partner* is a stack port on a neighbor switch. • No—There is no stack cable connected to this port or the stack cable is not functional. • Yes—There is a functional stack cable connected to this port.
Link Active	Whether a neighbor is connected on the other end of the stack cable. • No—No neighbor is detected on the other end. The port cannot send traffic over this link. • Yes—A neighbor is detected on the other end. The port can send traffic over this link.
Sync OK	Whether the link partner sends valid protocol messages to the stack port. • No—The link partner does not send valid protocol messages to the stack port. • Yes—The link partner sends valid protocol messages to the port.
# Changes to LinkOK	The relative stability of the link. If a large number of changes occur in a short period of time, link flapping can occur.

Field	Description
In Loopback	Whether a stack cable is attached to a stack port on the member. • No— At least one stack port on the member has an attached stack cable. • Yes—None of the stack ports on the member has an attached stack cable.

stack-mac persistent timer

To enable the persistent MAC address feature, use the **stack-mac persistent timer** command in global configuration mode on the switch stack or on a standalone switch. To disable the persistent MAC address feature, use the **no** form of this command.

stack-mac persistent timer [{**0***time-value*}]
no stack-mac persistent timer

Syntax Description

0	(Optional) Continues using the MAC address of the current active switch indefinitely, even after a new active switch takes over.
time-value	(Optional) Time period in minutes before the stack MAC address changes to that of the new active switch. The range is 1 to 60 minutes.

Command Default

Persistent MAC address is disabled. The MAC address of the stack is always that of the first active switch.

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE 3.3SECisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

By default, the stack MAC address will always be the MAC address of the first active switch, even if a new active switch takes over. The same behavior occurs when you enter the **stack-mac persistent timer** command or the **stack-mac persistent timer 0** command.

When you enter the **stack-mac persistent timer** command with a *time-value*, the stack MAC address will change to that of the new active switch after the period of time that you entered whenever a new switch becomes the active switch. If the previous active switch rejoins the stack during that time period, the stack retains its MAC address for as long as the switch that has that MAC address is in the stack.

If the whole stack reloads the MAC address of the active switch is the stack MAC address.

Note If you do not change the stack MAC address, Layer 3 interface flapping does not occur. This also means that a foreign MAC address (a MAC address that does not belong to any of the switches in the stack) could be the stack MAC address. If the switch with this foreign MAC address joins another stack as the active switch, two stacks will have the same stack MAC address. You must use the **stack-mac update force** command to resolve the conflict.

Examples

This example shows how to enable a persistent MAC address:

```
Device(config)# stack-mac persistent timer
```

You can verify your settings by entering the **show running-config** privileged EXEC command. If enabled, **stack-mac persistent timer** is shown in the output.

stack-mac update force

To update the stack MAC address to the MAC address of the active switch, use the **stack-mac update force** command in EXEC mode on the active switch.

stack-mac update force

Syntax Description

This command has no arguments or keywords.

Command Default

None

Command Modes

User EXEC

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE 3.3SECisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

By default, the stack MAC address is not changed to the MAC address of the new active switch during a high availability (HA) failover. Use the **stack-mac update force** command to force the stack MAC address to change to the MAC address of the new active switch.

If the switch with the same MAC address as the stack MAC address is currently a member of the stack, the **stack-mac update force** command has no effect. (It does not change the stack MAC address to the MAC address of the active switch.)

Note If you do not change the stack MAC address, Layer 3 interface flapping does not occur. It also means that a foreign MAC address (a MAC address that does not belong to any of the switches in the stack) could be the stack MAC address. If the switch with this foreign MAC address joins another stack as the active switch, two stacks will have the same stack MAC address. You must use the **stack-mac update force** command to resolve the conflict.

This example shows how to update the stack MAC address to the MAC address of the active switch:

```
Device> stack-mac update force
Device>
```

You can verify your settings by entering the **show switch** privileged EXEC command. The stack MAC address includes whether the MAC address is local or foreign.

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 3.3SECisco IOS XE 3.3SE	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)#
```

switch stack port

To disable or enable the specified stack port on the member, use the **switch** command in privileged EXEC mode on a stack member.

switch *stack-member-number* **stack port** *port-number* {**disable** | **enable**}

Syntax Description

stack-member-number	Current stack member number. The range is 1 to 9.
stack port *port-number*	Specifies the stack port on the member. The range is 1 to 2.
disable	Disables the specified port.
enable	Enables the specified port.

Command Default

The stack port is enabled.

Command Modes

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE 3.3SECisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

A stack is in the full-ring state when all members are connected through the stack ports and are in the ready state.

The stack is in the partial-ring state when the following occurs:

- All members are connected through their stack ports but some are not in the ready state.
- Some members are not connected through the stack ports.

Note Be careful when using the **switch** *stack-member-number* **stack port** *port-number* **disable** command. When you disable the stack port, the stack operates at half bandwidth.

If you enter the **switch** *stack-member-number* **stack port** *port-number* **disable** privileged EXEC command and the stack is in the full-ring state, you can disable only one stack port. This message appears:

```
Enabling/disabling a stack port may cause undesired stack changes. Continue?[confirm]
```

If you enter the **switch** *stack-member-number* **stack port** *port-number* **disable** privileged EXEC command and the stack is in the partial-ring state, you cannot disable the port. This message appears:

```
Disabling stack port not allowed with current stack configuration.
```

Examples

This example shows how to disable stack port 2 on member 4:

```
Device# switch 4 stack port 2 disable
```

switch priority

To change the stack member priority value, use the **switch priority** command in EXEC mode on the active switch.

switch *stack-member-number* **priority** *new-priority-value*

Syntax Description

stack-member-number	Current stack member number. The range is 1 to 9.
new-priority-value	New stack member priority value. The range is 1 to 15.

Command Default

The default priority value is 1.

Command Modes

User EXEC

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE 3.3SECisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

The new priority value is a factor when a new active switch is elected. When you change the priority value the active switch is not changed immediately.

Examples

This example shows how to change the priority value of stack member 6 to 8:

```
Device# switch 6 priority 8
Changing the Switch Priority of Switch Number 6 to 8
Do you want to continue?[confirm]
```

switch provision

To supply a configuration to a new switch before it joins the switch stack, use the **switch provision** command in global configuration mode on the active switch. To delete all configuration information that is associated with the removed switch (a stack member that has left the stack), use the **no** form of this command.

switch *stack-member-number* **provision** *type*
no switch *stack-member-number* **provision**

Syntax Description

stack-member-number	Stack member number. The range is 1 to 9.
type	Switch type of the new switch before it joins the stack.

Command Default

The switch is not provisioned.

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE 3.3SECisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

For *type*, enter the model number of a supported switch that is listed in the command-line help strings.

To avoid receiving an error message, you must remove the specified switch from the switch stack before using the **no** form of this command to delete a provisioned configuration.

To change the switch type, you must also remove the specified switch from the switch stack. You can change the stack member number of a provisioned switch that is physically present in the switch stack if you do not also change the switch type.

If the switch type of the provisioned switch does not match the switch type in the provisioned configuration on the stack, the switch stack applies the default configuration to the provisioned switch and adds it to the stack. The switch stack displays a message when it applies the default configuration.

Provisioned information appears in the running configuration of the switch stack. When you enter the **copy running-config startup-config** privileged EXEC command, the provisioned configuration is saved in the startup configuration file of the switch stack.

Caution When you use the **switch provision** command, memory is allocated for the provisioned configuration. When a new switch type is configured, the previously allocated memory is not fully released. Therefore, do not use this command more than approximately 200 times, or the switch will run out of memory and unexpected behavior will result.

Examples

This example shows how to provision a switch with a stack member number of 2 for the switch stack. The **show running-config** command output shows the interfaces associated with the provisioned switch.

```
Device(config)# switch 2 provision WS-xxxx
Device(config)# end
```

```
Device# show running-config | include switch 2
!
interface GigabitEthernet2/0/1
!
interface GigabitEthernet2/0/2
!
interface GigabitEthernet2/0/3
<output truncated>
```

You also can enter the **show switch** user EXEC command to display the provisioning status of the switch stack.

This example shows how to delete all configuration information about stack member 5 when the switch is removed from the stack:

```
Device(config)# no switch 5 provision
```

You can verify that the provisioned switch is added to or removed from the running configuration by entering the **show running-config** privileged EXEC command.

switch renumber

To change the stack member number, use the **switch renumber** command in EXEC mode on the active switch.

switch *current-stack-member-number* **renumber** *new-stack-member-number*

Syntax Description

current-stack-member-number	Current stack member number. The range is 1 to 9.
new-stack-member-number	New stack member number for the stack member. The range is 1 to 9.

Command Default

The default stack member number is 1.

Command Modes

User EXEC

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE 3.3SECisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

If another stack member is already using the member number that you just specified, the active switch assigns the lowest available number when you reload the stack member.

Note If you change the number of a stack member, and no configuration is associated with the new stack member number, that stack member loses its current configuration and resets to its default configuration.

Do not use the **switch** *current-stack-member-number* **renumber** *new-stack-member-number* command on a provisioned switch. If you do, the command is rejected.

Use the **reload slot** *current stack member number* privileged EXEC command to reload the stack member and to apply this configuration change.

Examples

This example shows how to change the member number of stack member 6 to 7:

```
Device# switch 6 renumber 7
WARNING:Changing the switch number may result in a configuration change for that switch.
The interface configuration associated with the old switch number will remain as a provisioned
 configuration.
Do you want to continue?[confirm]
```