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Stacking

Scope of the document

This article is designed to help network administrators effectively configure, maintain, and troubleshoot switch stacks.

Stacking fundamentals

This section explains stacking and its related concepts, identification methods, and the benefits of managing multiple switches as a single logical device.

Stacking

Stacking is the process of connecting multiple physical network switches together, so they function as a single, logical switch. This is achieved by using stacking-capable switches which have dedicated ports and use dedicated cables to connect to other switches in the stack.

Up to eight stacking-capable switches can be connected through their StackWise ports, using StackWise cables, to form a data stack. This document is focused entirely on this kind of stack. A data stack is also referred to as a switch stack or a device stack.

You can stack up to four switches together through the StackPower ports, using the StackPower cables to form a power stack. So a full eight-switch stack, forms two separate power pools, each sharing power among their four members.

StackPower+

StackPower+ is an upgrade to Cisco's StackPower technology, designed to provide superior power resiliency and efficiency. StackPower+ aggregates PSU capacity from multiple switches into a shared pool and instantly redistributes it during a PSU failure or load spike to keep PoE and system operation uninterrupted. For larger deployments, StackWise 1.6T data stacks can be divided into multiple power stacks (e.g., an eight-member data stack partitioned into two power stacks of four) to maximize power resource utilization across all members.

Key features and deployment:

- Aggregates PSU capacity from multiple switches into a shared power pool, delivering up to 2000W per power stack and supporting up to 19.2KW across multiple stacks.
- Provides automatic power redistribution during PSU failures or load spikes, ensuring uninterrupted PoE and system operation.
- Utilizes new high-capacity stack cables and dedicated rear StackPower ports for greater inter-member power transfer and improved PSU resiliency.
- Enhanced stackport circuitry ensures reliable and balanced power distribution among all members.
- Supports 1+N redundancy and built-in power backup, eliminating the need for external redundant power systems (RPS).
- Enables intelligent, priority-based power allocation and standby management of unused PSUs.
- Each power stack supports up to four switches in a ring topology; larger data stacks (e.g., eight-member StackWise-1.6T) can be divided into multiple power stacks for scalability.
- Both StackPower ports on each switch are actively used for input and output, reducing current per port and improving reliability.
- Power supplies within a pool share the load according to their rated capacity; multiple StackPower pools can exist within a single data stack for flexible deployment.

Cisco StackPower+ supports two primary operating modes:

- Combined/Shared Mode (Default): In this mode, the output of all installed power supply units (PSUs) is pooled together, making the full combined budget available anywhere in the power stack. If a PSU fails, the remaining pooled capacity continues to power the system and PoE loads without interruption, provided the overall budget still covers the demand.
- Redundant Mode (User Configurable): In this mode, the capacity of the largest PSU in the stack is reserved as a backup and is subtracted from the usable power budget. While this lowers the available power for normal operation, it ensures immediate fallback capacity if another PSU fails, providing enhanced reliability.

Benefits of stacking

The following are the benefits of stacking:

- Simplified Management: A stack of switches can be managed as a single entity with a single IP address, reducing administrative overhead compared to managing individual switches.
- Increased Performance and Bandwidth: Stacking aggregates the backplane bandwidth of individual switches, providing higher inter-switch communication speeds and overall network throughput. Cisco C9350 Smart Series Switches can offer up to 1.6 Tbps of stacking bandwidth.
- Enhanced Redundancy and High Availability: If one switch in the stack fails, other members can seamlessly take over its functions, minimizing network downtime.
- Scalability: Network capacity can be easily expanded by adding more switches to the stack as needed, up to the maximum supported members.

Roles in a switch stack

A switch stack always includes an active switch, and a standby switch. Each individual stacking-capable switch that is part of a stack is known as a stack member. Each stacking-capable switch in a stack assumes one of three roles:

- Active
 - Controls and manages the entire stack.
 - Handles all configuration, management, and Layer 2/Layer 3 protocol operations.
 - Maintains and updates the stack's configuration files, which include both system and interface settings for each stack member. All configuration is managed through the active switch, with backup copies stored on each member.
 - Relays console access to other stack members as needed.
- Standby
 - Acts as a backup to the active switch and automatically takes over as the active switch if the current active switch fails.
 - Continuously synchronizes with the active switch, maintaining an up-to-date copy of stack configurations.
- Member
 - Forwards data and participates in stack operations as directed by the active switch.
 - Maintains a synchronized copy of configuration files for redundancy purposes.
 - Does not participate in stack management or decision-making processes. You can use **show switch** *stack-member-number*

Stack role scenarios

A switch stack can consist of a single switch, two switches, or three or more switches. In a single-switch stack, the switch operates only as the active switch. In a stack of two switches, one switch is designated as the active and the other as the standby. In stacks with three or more switches, one switch functions as the active, another as the standby, and the remaining switches operate as members.

Identification of a switch stack for administrative purpose: stack member number

This identifier distinguishes each physical switch within the logical device (stack) for management and configuration purposes.

A standalone device is a device stack with one stack member that also operates as the active switch. You can connect one standalone device to another to create a device stack containing two stack members, with one of them as the active switch. You can connect standalone devices to an existing device stack to increase the stack membership.

You can display stack switch members and their switch numbers by using the EXEC command **show switch** along with **show module**.

Identification of a switch stack in the network: bridge ID, MAC address, persistent MAC address

These identifiers are used for network-level identification of the entire stack. For example, during spanning tree operations or when routing protocols are in-use. In the network, a switch stack is identified by its *bridge ID*; and if it is operating as a Layer 3 device, its stack MAC address. The bridge ID and stack MAC address is determined by the MAC address of the active switch.

If the active switch changes, the MAC address of the new active switch determines the new bridge ID and stack MAC address. If the entire switch stack reloads, the switch stack uses the stack MAC address of the active switch.

You can use the persistent MAC address feature to delay changing the stack MAC address when the active switch changes. During this delay period, if the previous active switch rejoins the stack—even as a member and not the active switch—the stack continues to use its original MAC address. If the previous active switch does not return within this time, the stack adopts the MAC address of the new active switch.

By default, the stack MAC address stays with the original switch indefinitely. If the original active switch does not rejoin within this period, the stack MAC address changes to that of the new active switch.

To ensure the stack MAC address never changes, you can configure stack MAC persistency with the **stack-mac persistent timer 0** command in global configuration mode.



Note

If the active switch is removed from a stack configured with indefinite MAC persistency wait time and moved to another stack or booted as standalone, there is a risk of seeing duplicate stack MAC addresses across separate stacks. In this scenario, the user should use the **stack-mac update force EXEC** command to ensure that the stack MAC does not have a stale MAC address of a former member of the stack.

Switch stack membership

This section provides information on the essential concepts and procedures for managing switch stack membership and preparing stack members for integration.

Stack member communication

Hello messages are exchanged among all stack members to monitor their status. If any member (including the active or standby device) doesn't respond, it is either removed from the stack or replaced, with new standby or active devices elected as needed.

Additionally, keepalive messages between the active and standby devices ensure redundancy. If either device fails to respond, the appropriate role is reassigned to maintain stack operation.

Changes in stack membership

This section provides information on how modifications to the composition of a switch stack impact its operation. A change in stack membership occurs when physical switches are added to, removed from, or replaced within an existing switch stack. The behavior of the stack during such changes depends on the role of the specific stack member at that time.

Impact of membership changes on stack operation

Generally, the operation of a switch stack continues uninterrupted during membership changes. However, significant disruptions, such as a stack reload or stack split, can occur under specific circumstances:

- If the active switch is removed or powered off, the standby switch will assume the active role, ensuring continued operation.
- Connecting or disconnecting powered-on standalone switches or existing switch stacks can lead to a stack reload, merge or split.



Note

Adding powered-on switches to an existing stack is not supported. It is always recommended to power down the switch, connect it to the stack, and then power it on. This best practice helps ensure proper stack formation and prevents disruptions.

Managing stack membership changes

Understanding the different types of membership changes and their consequences is crucial for effective stack management and troubleshooting.

1. Adding a New Stack Member

To add a new switch with minimal disruption, first power off the new switch. Then, connect it to the existing powered-on switch stack via StackWise ports. Finally, power on the new switch. The new switch assumes the role of a stack member and seamlessly integrates into the stack, adopting the stack's configuration. The active switch of the original stack will typically be retained. This is the recommended method for adding members.



Note

Adding a powered-on standalone switch or another powered-on switch stack to an existing powered-on stack is not supported and can disrupt the current stack topology and operation.

2. Removing a Stack Member

To remove a switch with minimal disruption, first power off the desired stack member. Then, disconnect it from the stack. The stack continues operation with one less member, and this method is non-disruptive to the remaining stack members.

If a powered-on stack member is physically disconnected from the stack (stack split), the switch stack can divide into two or more separate switch stacks. Each newly formed stack will retain a copy of the original stack's configuration.

- Warning: This can lead to significant network issues, including:
 - IP address conflicts: If the newly formed separate stacks remain active on the network, they will initially share the same IP addresses as the original stack, leading to conflicts. If you intend for these new stacks to operate separately, their IP addresses must be changed immediately.

- MAC address conflicts: Similarly, MAC address conflicts can occur between members in the newly split stacks. The **stack-mac update force** command can be used to resolve such MAC address conflicts.

To prevent stack splits and associated issues, always power off a stack member before removing it from the stack. If an accidental stack split occurs, power off the newly created stacks and reconnect them to restore the original single logical device.



Note

After removing a switch from an existing stack, the switch will still appear in the output of the **show switch EXEC** command as "Provisioned." Use the global configuration command **no switch switch number provision** and then perform a stack reload to remove the switch from the configuration.

3. Replacing an Existing Stack Member

To replace a switch, power off the old switch and remove it from the stack. Install the new, identical model in its place, ensuring it is powered off. Connect it to the stack, then power it on. If the new switch is assigned the same stack member number as the switch it replaced, it will automatically assume the same configuration and interface-level settings, enabling a smooth replacement process.

Stack member priority value

A stack member priority value is a configurable number ranging from 1 to 15, assigned to each switch within a stack. This value plays a crucial role in determining which switch will be elected as the active switch during stack formation; a higher priority increases the likelihood of a switch becoming the active switch. By default, every member in a stack has a priority of 1.

To change the priority value for a stack member, use the **switch stack-member-number priority new priority-value EXEC** command. Any change to a switch's priority is saved to the configuration database but only takes effect after the switch reboots.

You can display the currently active stack member priority value ((the priority applied during its last bootup) by using the **show switch** in EXEC command. To verify the priority that has been configured and will be applied on the next boot, use the **show platform software bp content config** command.

Election and reelection of roles in a stack

The purpose of election and reelection in a switch stack is to establish and maintain a single, stable point of control (the active switch) and a redundant backup (the standby switch) for the entire logical device. This ensures continuous management, configuration, and traffic forwarding, thereby maintaining network stability and operational continuity.

Election

The election of an active switch is a fundamental process for stack operation, occurring during initial power-on, a full stack reset, or when the current active switch fails. This process ensures continuous management and forwarding capabilities for the entire logical switch.

Eligibility for election

All stack members are eligible to be the active switch or the standby switch. Only stack members that are powered on within the same 180-second timeframe from the initial power-on of the stack will participate in the active switch election and have a chance to become the active switch. Stack members powered on after this window will join the stack as regular members and will not participate in the initial election.

Active switch elections occur under the following conditions:

- When the switch stack is first powered on or reset.
- When powered-on standalone switches are added, switch stacks are merged, or a stack split occurs.
- When the current active switch is reset, removed, powered off, or fails

In each of these scenarios, only stack members that are present and powered on at the time of the election participate in the selection of the new active switch.

Reelection

Reelection refers to the process of selecting an active switch when an election is triggered after an initial election has already occurred. In such scenarios, the existing active switch (if still present and functional) is highly favored to retain its role. However, if a previous active switch was removed or failed and then later becomes available and rejoins the stack, it will not automatically resume its role as the active switch; it will join as a member. This mechanism ensures stability and continuity in stack management by prioritizing the existing active switch where possible.

Active Switch Election Factors

An active switch is elected or reelected based on these factors, applied in the following order:

1. The switch that is currently the active switch.
 - The existing active switch is strongly favored to retain its role during reelection events, provided it remains operational and part of the stack.
2. The switch with the highest stack member priority value.
 - Assigning a higher priority (a configurable value from 1 to 15, with a default of 1) to a preferred switch helps ensure that it is favored during election processes.
3. The switch with the shortest start-up time.
 - Among eligible switches that are powered on within the 180-second window and have the same priority, the switch that completes its boot process first will be selected.
4. The switch with the numerically lowest MAC address value.
 - This serves as the final tie-breaker if all other factors are equal.

The factors for electing or reelecting a new standby switch are the same as those for the active switch election, and these criteria are applied to all participating switches except the active switch. The switch with the next highest precedence after the active switch will become the standby.

Advanced stack configuration and provisioning

This section provides information on the essential concepts and procedures for managing switch stack membership, 1:1 redundancy and preparing stack members for integration.

Settings that are applied following stack membership changes

Configuration files define how a switch stack operates. These files contain two types of settings that are applied after stack membership changes:

- **System-level (global) settings:** These settings (such as IP addressing, STP, VLANs, and SNMP) always apply to the entire stack. When a stack member is added or removed, the system-level settings of the current stack are applied automatically to all members, including any new switches that join.
- **Interface-specific settings:** These settings (such as port descriptions, VLAN tasks on specific interfaces) are tied to each stack member's unique member number. When a switch joins the stack or replaces an existing member, the following applies:
 - The switch automatically applies any interface-specific settings that exist for its member number.
 - If no interface configuration exists for the stack member number, the switch uses default interface settings.



Note

These behaviors are automatic and cannot be changed by the user. This information is for reference when managing stack membership changes.

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Offline provisioning

Offline Provisioning is a feature that enables network administrators to pre-configure a new switch—specifying its stack number, switch type, and interface settings—before physically adding it to an existing switch stack. These settings, known as the provisioned configuration, are stored on the active switch. The switch intended to receive this configuration is called the provisioned switch.

Offline Provisioning consists of two main parts:

- **Offline (Pre) Provisioning:** Administrators can pre-configure a switch on the active device before physically adding it to the stack. All interfaces and settings are created in advance. Once the switch is connected, the pre-provisioned configurations are automatically applied.
- **Auto Provisioning :** This process requires no user intervention. When a new switch is added to the stack, interface configurations are automatically generated, and the active device creates the appropriate switch provision command for the new switch.

While the stack will display interface configurations for a provisioned switch in its running configuration, these settings will remain non-operational—and may not appear in feature-specific show commands such as **show interface status** until the provisioned switch becomes active within the stack. The provisioned configuration is kept in the running configuration even if the provisioned switch is not currently present in the stack, and can be saved to the startup configuration for persistence across reloads.

Offline provisioning configuration

To manually create a provisioned configuration for a new switch, you use the **switch stack-member-number provision type** in global configuration command.

Important Considerations for Provisioning:

- **Matching Member Number:** Before adding the provisioned switch to the stack, its own stack member number must be changed to match the `<stack-member-number>` specified in the provisioned configuration.
- **Matching Switch Type:** The `<switch-type>` (e.g., product ID) specified in the provisioned configuration command must precisely match the actual model type of the physical switch being added.

To save the provisioned configuration to the startup configuration file, use either the **copy running-config startup-config** command or **write** command in privileged EXEC command.

The startup configuration file ensures that the switch stack can reload and can use the saved information whether or not the provisioned switch is part of the switch stack.

1:1 Redundancy

1:1 Redundancy allows you to designate specific switches in a stack as the active and standby members. This mode enhances stack resiliency by ensuring a dedicated standby switch is always ready to take over if the active switch fails. The existing member switches remain in the same state.

The following are prerequisites for 1:1 redundancy:

- All the switches in the stack must be running the same license level as the active switch.
- All the switches in the stack must be running compatible software versions.

To verify the current stack mode on a switch, enter the **show switch stack-mode** command in privileged EXEC mode.

The output displays detailed status of the currently running stack mode.

```
Device# show switch stack-mode
Switch  Role    Mac Address      Version  Mode    Configured  State
-----
1       Member  3c5e.c357.c880           1+1 '    Active'    Ready
*2      Active  547c.69de.cd00    V05     1+1 '    Standby'   Ready
3       Member  547c.6965.cf80    V05     1+1 '    Member'    Ready
```

The `Mode` field indicates the current stack mode.

The `Configured` field refers to the switch state expected after a reboot.

Single quotation marks (') indicate that the stack mode has been changed.

Prerequisites for stacking

- All the switches in the stack must be running the same license level as the active switch.
- All the switches in the switch stack must be running compatible software versions.

Restrictions for stacking

- Up to eight stacking-capable switches can be connected through their StackWise ports, using StackWise cables, to form a data stack.
- Only homogenous stacking is supported, that is, a stack of Cisco C9350 Series Smart Switches stack with only Cisco C9350 Series Smart Switches as stack members.

Feature history table

This table provides release and related information for the features explained in this article.

These features are available in all the releases subsequent to the one they were introduced in, unless noted otherwise.

Release	Feature Name and Description	Supported Platform
Cisco IOS XE 17.18.1	Stacking: Stacking allows multiple physical switches to connect and operate as a single, unified logical switch for simplified management and scalability.	Cisco C9350 Series Smart Switches

Deploy, manage and monitor switch stacks

This section provides information on deployment, management and monitoring switch stacks.

Deploying switch stacks

Stacking connects multiple physical network switches, enabling them to function as a single logical switch by using stacking-capable devices with dedicated ports and cables for interconnection.

- No software configuration is required for stacking.
- Before you install a Cisco 9350 Series Smart Switch, decide on your data stack and StackPower requirements. For a data stack, you need either 0.5, 1.5 meter or 3 meter StackWise cables.

For more information, see [Cisco 9350 Series Switches - Preparing for Installation](#)

Enabling 1:1 redundancy stack mode

Follow these steps to enable the 1:1 redundancy stack mode, and set a switch as the active switch in a stack, or as the standby:

Procedure

	Command or Action	Purpose
Step 1	enable Example: Device > enable	Enables privileged EXEC mode. Enter your password if prompted.
Step 2	switch switch-number role {active standby} Example: Device# switch 1 role active	Changes stack mode to 1:1 mode and designates the switch as active or standby.

Disabling 1:1 redundancy stack mode

On a switch where 1:1 redundancy is enabled, follow these steps to disable the feature. This changes the stack mode to N+1:

	Command or Action	Purpose
Step 1	enable Example: Device > enable	Enables privileged EXEC mode. Enter your password if prompted.

	Command or Action	Purpose
Step 2	switch clear stack-mode Example: Device# switch clear stack-mode	Changes stack mode to 1:1 mode and designates the switch as active or standby.

Managing switch stacks

The entire switch stack (including all member interfaces), are managed through the active switch, which is the single point of control. Network administrators can perform management operations using the CLI, SNMP, or any other supported network management applications. Individual stack members cannot be managed separately. All management must be conducted via the active switch. SNMP can be used to manage network features on the stack, but only for those features that the switch's supported MIBs include. There are no supported MIBs for stacking-specific functions like, switch stack membership and active switch election.

While the basic operation of a switch stack requires no specific global software configuration beyond physical connection, the active switch serves as the central point for configuring both global features that apply to the entire stack and interface-level settings for individual stack members.

Global settings affect the behavior of the entire switch stack. An example of a global configuration is setting the persistent MAC address timer, which controls how long the stack retains the MAC address of a previous active switch after a switchover.

Although individual stack members cannot be managed separately in terms of their own control plane, the active switch allows for specific configurations or operations to be applied to individual members. This includes setting properties like a member's priority or provisioning a new switch before it joins the stack.

Switch stack configuration scenarios

Most of these switch stack configuration scenarios assume that at least two devices are connected through their StackWise ports.

Table 1: Configuration Scenarios

Scenario	Action	Result
Active switch election specifically determined by the stack member priority value	1. Connect two switches through their StackWise ports. 2. Use the switch stack-member-number priority new-priority-number EXEC command to set one stack member with a higher member priority value. 3. Restart both member switches at the same time.	The stack member with the higher priority value is elected active switch.
Active switch election specifically determined by the MAC address	Assuming that both member switches have the same priority value and restart both member switches at the same time.	The stack member with the lower MAC address is elected active switch. Switch with lower MAC address will become standby.
Add a stack member	1. Power off the new switch. 2. Through their StackWise ports, connect the new switch to a powered-on switch stack. 3. Power on the new switch.	The new switch is added to the switch stack.

Scenario	Action	Result
Add eight member switches	- Through their StackWise ports, connect eight devices. - Power on all devices.	Two devices become active and standby respectively and all other 6 members become members.
Enable 1:1 Redundancy Stack Mode	Use the switch switch-number role active command to assign the active switch. Use the switch switch-number role standby command to assign the standby switch. Example: Device# switch 1 role active Device# switch 2 role standby Confirm each operation when prompted and reboot the stack to activate 1:1 mode.	The stack operates in 1:1 redundancy mode, with switch 1 as active and switch 2 as standby. Only these designated switches participate as active and standby after reboot.
Disable 1:1 Redundancy (return to N+1 mode)	Use the switch clear stack-mode command. Example: Device# switch clear stack-mode Confirm each operation when prompted and reboot the stack to activate N:1 mode.	The stack reverts to N+1 redundancy mode, removing the dedicated active and standby role assignments.

Monitoring the device stack

Table 2: Commands for Displaying Stack Information

Command	Description
show switch	Displays summary information about the stack, including the status of provisioned switches and switches in version-mismatch mode.
show switch [stack-member-number]	Displays information about a specific member.
show module	Displays summary information about the stack.
show switch detail	Displays detailed information about the stack.
show switch neighbors	Displays the stack neighbors.
show switch stack-ports [summary]	Displays port information for the stack. Use the summary keyword to display the stack cable length, the stack link status, and the loopback status.
show switch stack-ports [detail]	Displays the stack link status and information for each stack member. Use the detail keyword to display the stack interface status, errors, drops, packet transmission and bandwidth details.

Command	Description
show redundancy	Displays the redundant system and the current processor information. The redundant system information includes the system uptime, standby failures, switchover reason, hardware, configured and operating redundancy mode. The current processor information displayed includes the active location, the software state, the uptime in the current state and so on.
show redundancy state	Displays all the redundancy states of the active and standby devices.

For more information on stacking commands, see the [command reference guide](#).

Troubleshoot and resolve stacking issues

This section provides guidance on diagnosing and resolving common issues encountered in switch stacks, from physical connectivity problems to unexpected operational behaviors.

Table 3: Common stack issues and resolutions

Scenario	Symptoms	Diagnosis	Resolution
Physical Connectivity Issues			
Partial Stack Ring (Single Cable Disconnection)	Console/Syslog messages: %STACKMGR-4STACK_LINK_CHANGE for affected ports (one end DOWN, other end DOWN). show switch stack-ports summary output: One port shows Absent (no cable detected), and its neighbor's port shows DOWN (cable detected, but link down). Reduced stack bandwidth (operates at half bandwidth).	A stack cable has been physically disconnected from one end, or the cable/port is faulty, breaking the full ring topology.	Inspect the physical connection of the stack cables. Reconnect the disconnected cable securely. Verify the link status using show switch stack-ports summary. If the issue persists, test with a known good cable or try a different stack port.

Scenario	Symptoms	Diagnosis	Resolution
Stack Split (Multiple Cable Disconnections)	Console/Syslog messages: Multiple %STACKMGR4STACK_LINK_CHANGE messages. show switch stack-ports summary output: Multiple Absent or Down ports, leading to disconnected segments. The original single stack divides into two or more independent logical stacks, each with its own active switch. Potential IP/MAC address conflicts if new stacks remain on the network.	Multiple critical stack cables have been disconnected, breaking the stack ring into isolated segments. This often occurs if two or more cables are disconnected from a single switch, or if cables are disconnected in a way that severs the ring.	Identify the newly formed stacks (e.g., using show switch on each segment). If splitting was unintentional: 1. Power off the switches in the newly created, unwanted switch stacks. 2. Reconnect all original stack cables to re-form the single stack. 3. Power on the switches. If splitting was intentional (e.g., splitting a stack): Change the IP addresses and resolve any MAC address conflicts (stack-mac update force) on the newly created stacks before connecting them to the network.
Disconnected End of a Stack Cable	Console/Syslog messages: %STACKMGR4STACK_LINK_CHANGE show switch stack-ports summary output: The port where the cable is disconnected shows Absent and No cable. The port on the other switch (where the cable is still connected) shows Down, but Cable Length is detected (e.g., 50 cm).	A stack cable has been physically removed from one of the two connected stack ports. The Down status on the connected end confirms the cable is present but the link is not established.	Physically inspect and re-secure the connection of the stack cable at the Absent port. Verify the link status using show switch stack-ports summary.
Bad Connection / Unreliable Link Between Stack Ports	show switch stack-ports summary shows both connected ports as Down, but Cable Length is detected (e.g., 50 cm). Link OK, Link Active, and Sync OK values are No. Potentially, In Loopback value is Yes.	The cable is physically connected, and its length is detected, but the electrical connection is unreliable (e.g., faulty cable, damaged connector pins, or a problematic stack port).	Replace the stack cable with a known good one. If the issue persists, try connecting to different stack ports on both switches if available. If the problem follows a specific port regardless of the cable, the port itself may be faulty.

Scenario	Symptoms	Diagnosis	Resolution
Stack Port and Cable Functionality Test (Physical Loopback)	N/A (This is a diagnostic procedure, not a problem symptom).	N/A (This is a diagnostic procedure).	Purpose: To test if a switch's stack ports are functional and if a specific stack cable is working properly. Procedure: 1. Take a standalone switch (or remove a switch from the stack). 2. Connect a stack cable between its two stack ports (e.g., Port 1 to Port 2 on the same switch) 3. Execute show switch stack-ports summary 4. Expected Output: Both stack ports should show OK status, with the Neighbor column indicating the switch itself (e.g., 2 for Switch 2). Link OK, Link Active, and Sync should be Yes 5. Interpretation: If the output matches expectations, the stack ports and the cable used for the loopback are functional.
Standalone Switch (No Stack Connectivity)	show switch stack-ports summary output shows both stack ports as Absent with No cable detected.	The switch is not physically connected to any other switches via stack cables.	This is typically an expected state for a standalone switch. If the intention was for it to be part of a stack, ensure stack cables are correctly connected and powered on.

Scenario	Symptoms	Diagnosis	Resolution
Unstable/Flapping Stack Port	Frequent <code>STACKMGR4STACK_LINK_CHANGE</code> messages for a specific stack port (link rapidly going up and down). Potential instability or reduced bandwidth in the stack ring.	Faulty stack cable, problematic stack port, or external interference causing link instability.	Temporary Workaround: Disable the flapping stack port to stabilize the stack ring. switch stack-member-number stack port port-number disable Note: This will reduce stack bandwidth (half-duplex operation if it breaks the ring). Only one port can be disabled if the stack is in a full-ring state. Permanent Fix: Investigate the root cause (replace cable, test port, check environment). Re-enable: Once the underlying issue is resolved, re-enable the port: switch stack-member-number stack port port-number enable
Operational Issues			
Active Switch Failure	Original active switch becomes unresponsive or powers off. A new active switch is elected. Brief network disruption may occur during election if standby is not ready or if there's no standby.	The active switch was removed, powered off unexpectedly, or experienced a hardware/software failure.	If the failure was intentional (e.g., maintenance), ensure a standby switch is present and healthy before removing the active. If unintentional, diagnose the root cause of the active switch failure (e.g., power, hardware, software crash). The standby switch will take over, ensuring continued operation.

Scenario	Symptoms	Diagnosis	Resolution
Stack Member Number Conflict	When two switches with the same stack member number are connected, one will be renumbered. show switch command will reveal the renumbered stack member.	Two or more switches with identical stack member numbers attempt to join or merge into the same stack.	The switch with the higher priority value retains its stack member number. The other stack member is automatically assigned a new, available stack member number. To avoid conflicts and control numbering, configure unique member numbers or use offline provisioning before adding switches. If a conflict occurs, verify the new number with show switch and update configurations as needed.
Rejoining a Split Stack	A single stack has unexpectedly split into two or more separate logical stacks (splitting). Each new stack has its own active switch. Potential IP address or MAC address conflicts on the network.	Physical removal of powered-on stack members, causing the stack to logically divide. This is an unintended splitting.	Purpose: To re-form a single logical stack after unintentional splitting. Procedure: 1. Power off the switches in the newly created, unwanted switch stacks. 2. Reconnect them to the original switch stack through their stack ports. 3. Power on the switches.

Scenario	Symptoms	Diagnosis	Resolution
Safe Re-enablement of a Disabled Stack Port During Member Replacement	A stack port was previously disabled (e.g., due to flapping). A member connected via this port was removed and replaced. Attempting to re-enable the port using switch <i>stack-member-number</i> stack port <i>port-number</i> enable or power on the new member in the wrong sequence might cause one of the switches to reload.	Improper sequencing of operations when re-enabling a disabled stack port and bringing a new member online, which can lead to state inconsistencies and trigger a reload.	Purpose: To safely re-enable a disabled stack port and integrate a replaced member without causing unintended reloads. Procedure: 1. Disconnect the stack cable between the disabled port (e.g., Port 1 on Switch 1) and the replaced switch (e.g., Port 2 on the new Switch 4). 2. Remove the new Switch 4 from the stack (if it was already connected). 3. Add the switch to replace Switch 4 and assign it its intended switch-number (if not already done). 4. Reconnect the stack cable between Port 1 on Switch 1 and Port 2 on the new Switch 4. 5. Re-enable the disabled port on the <i>existing</i> stack: <pre>switch 1 stack port 1 enable</pre> (assuming Switch 1's port 1 was disabled). 6. Power on the new Switch 4. Note: If Switch 4 is powered on before enabling the Port 1 on Switch 1, one of the switches might reload. If this happens, you might need to enter switch 1 stack port 1 enable and switch 4 stack port 2 enable to bring up the link.

Switch stack administration and operations

Example: enabling the persistent mac address feature

This example shows how to configure the persistent MAC address feature for a 7-minute time delay and to verify the configuration:

```

Device(config)# stack-mac persistent timer 7
WARNING: The stack continues to use the base MAC of the old active
WARNING: as the stack-MAC after a active switchover until the MAC
WARNING: persistency timer expires. During this time the Network
WARNING: Administrators must make sure that the old stack-mac does
WARNING: not appear elsewhere in this network domain. If it does,
WARNING: user traffic may be blackholed.
Device(config)# end
Device# show switch
Switch/Stack Mac Address : 0016.4727.a900
Mac persistency wait time: 7 mins

```

Switch#	Role	Mac Address	Priority	H/W Version	Current State
*1	Active	0016.4727.a900	1	P2B	Ready

Example: provisioning a new member for a switch stack

The **show running-config module 2** command output shows the interfaces associated with the provisioned switch:

```

Device(config)# switch 2 provision switch_PID
Device(config)# end

Device# show running-config|include prov
switch 1 provision c9350-48hx
switch 2 provision c9350-48hx
switch 3 provision c9350-48hx
switch 4 provision c9350-48hx
switch 5 provision c9350-48hx
switch 6 provision c9350-24u
switch 7 provision c9350-24u
switch 8 provision c9350-48u

```