

### Introduction to stack management

Stacking feature is available on 3810M switches. Ring, chain, and mesh topologies are supported these switches. For information on stacking topologies, see the *Installation and Getting Started Guide for AOS-S* corresponding to your switch.

For more information about the supported power supplies on 3810M switches, see the *Power over Ethernet (PoE/PoE+) Planning and Implementation Guide* for your switch.

You cannot stack a 3810M with 5400R switch. You can only stack similar switches (For example, a 3810 with another 3810). When you stack a 3810M running 16.xx software release with another 5400R switch running 15.xx software release, the following error messages are displayed:

- Found switch running an older version of the stacking protocol.  
Upgrade the switch to the same version as the commander or greater to join the stack.
- Received stacking packet with incompatible version.

The above error messages are also displayed when you stack a 3810 running 16.xx software release with another 3810 running 15.xx software release.

When a 3810M switch is upgraded to 16.xx software release and stacked with another 5400R running 16.xx, an error message saying “Found unsupported switch with mac and product type. Connected to switch with mac on stack port” is displayed on both the switches.



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This feature is different from the stacking feature that is implemented on some other networking switches. The other feature is implemented via the front-panel networking cables and it does not have the high bandwidth and redundancy features of the 5400 or 3810M stacking.

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The stacking feature for the 3810M switches allows you to connect up to 10 switches and have them act as a single high-bandwidth switch for both data and management.

One switch in the stack is designated as “Commander” and one switch is elected to be the “Standby”. The other switches are designated “Member”. The Commander is responsible for the overall management of the stack. The Standby provides redundancy for the stack and takes over stack management operations if the Commander fails, or if a Commander failover is forced by an administrator. The Members are not part of the overall stack management, however, they must manage their local subsystems and ports to operate correctly as part of the stack. The Commander and Standby are also responsible for their own local subsystems and ports.

Switch Stack Management (stacking) enables you to use a single IP address and standard network cabling to manage a group of up to 10 total switches in the same IP subnet (broadcast domain). Using stacking for these switches enables you to:

- Simplify management of small workgroups or wiring closets while scaling your network to handle increased bandwidth demand.
- Add switches to your network without having to first perform IP addressing tasks.

- Reduce the number of IP addresses needed in your network.
- Reduce downtime with high availability in the event of a failure.



In the default configuration, stacking is enabled on these switches. However, if a 3810M switch is powered on and it does not have a Stacking Module installed, stacking is disabled. If a Stacking Module is subsequently installed in the switch, stacking must be enabled from the switch CLI (in the configuration context) by entering the following command:

```
switch(config)# stacking enable
```

## Creating a stack

Ways to create a stack include:

- Deterministic method: By the sequence in which the switches are booted. You choose which member becomes Commander.
- Plug-and-go method: Ensure that stacking is enabled on all the switches, and then connect them together in the desired stacking topology. The plug-and-go method lets stacking decide which member is the Commander.

## Using a deterministic method

1. Install a Stacking Module into a 3810M switch and then boot the switch. Follow the procedure described in the Switch Installation and Getting Started Guide corresponding to your switch.



You cannot use a 5400R stacking module on a 3810M switch and vice versa.

2. Make sure that stacking is enabled for the switch:
  - a. Enter the `show stacking` command.
  - b. If stacking is disabled, enter `stacking enable` (in global config context). This command causes the switch to reboot.
3. When the switch finishes booting, enter the `show stacking` command again. The switch now has the status of Commander. It has a Member ID of 1 (one) and a default priority of 128. An example of the `show stacking` output is shown below.

```
switch# show stacking
Stack ID           : NO ID - will merge upon connectivity
MAC Address        : 1cc1de-4d48c0
Stack Topology     : No Stack Formed
Stack Status       : No Stack Formed
Uptime             : 0d 0h 5m
Software Version   : KA.15.03

Mbr
ID  Mac Address           Model                               Pri  Status
---  -
1   1cc1de-4d48c0  HPE J9574A 3810-48G-PoE+-4SFP+ Switch 128  Commander
```

4. To generate a stack ID, enter the following command:

```
switch(config)#stacking set-stack
```

- (Optional) To have this switch retain its function as Commander through stack boots and other situations, you can increase its priority. The switch with the highest priority becomes Commander when all the switches are booted simultaneously. The default priority is 128. The priority can be set to any value between 1 and 255. To increase the switch's stacking priority, enter the following command:

```
switch(config)# stacking member 1 priority 255
```

- (Optional) Preconfigure (provision) the stack for the other switches that become members of the stack. You can assign a member number and a priority by entering the following command for each switch:

```
switch(config)# stacking member N type JxxxxxA [mac MAC-Addr]
```

where:

- N is the stacking member number for the switch.
  - JxxxxxA is the product number of the switch (required). Any of the 3810M models can be installed and can assume this provisioned configuration. If you specify a value for this parameter, then only a switch of this specific model type can assume this provisioned configuration.
  - (Optional) MAC-Addr can be specified if you want a specific switch to assume this provisioned configuration. If this value is entered, then the type value for the switch that has this MAC address must be correct, or a configuration error is logged and the switch is not allowed to join the stack.
- Connect the stacking cables to the module ports for the desired stacking topology. For example, plug port 1 and 2 in a ring.
  - Install Stacking Modules into the other switches that will be members of the stack, but do not boot them yet.



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HPE recommends that you create a mesh topology for maximum throughput and resiliency of the stack. At a minimum, a ring topology must be created. A chain topology is not recommended because any hardware or software failure in the stack results in lost ports, which increases the amount of time for the recovery of full stack operation due to multiple reboots. See the *Installation and Getting Started Guide for AOS-S* for supported topologies corresponding to your switch.

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- Boot the Standby and Member switches. The second switch that is booted becomes the Standby. The remaining switches become Members when booted.
- When all of the switches are booted, enter the `show stacking` command to confirm that the stack is operating correctly. The following example shows four switches in a meshed topology.

### Viewing output for four switches in a mesh topology

```
switch(config)# show stacking
Stack ID       : 00031cc1-de4d48c0
MAC Address    : 1cc1de-4d48c9
Stack Topology : Mesh
Stack Status   : Active
Uptime        : 1d 2h 35m
Software Version : KA.15.05

Mbr
ID  Mac Address      Model                               Pri Status
---  -
1   1cc1de-4d48c0    HPE J9574A 3810-48G-PoE+-4SFP+ Switch 250 Commander
```

2	1cc1de-4d8680	HPE	J9573A	3810-24G-PoE+-2SFP+	Switch	230	Standby
3	1cc1de-4e3180	HPE	J9574A	3810-48G-PoE+-4SFP+	Switch	128	Member
4	78acc0-3c2180	HPE	J9576A	3810-48G-4SFP+	Switch	128	Member

## Using the plug-and-go method

1. Install a Stacking Module into each 3810M switch that will be in the stack, as described in the *Installation and Getting Started Guide* for the switch, but do not connect them together with stacking cables yet.
2. Make sure that stacking is enabled for each switch.
  - a. You can determine this by connecting a console to each switch and entering the command `show stacking` from the switch CLI.
  - b. If stacking is disabled, enter the command `stacking enable`. This command causes the switch to reboot.




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By default, stacking is enabled on all the 3810M switches when a Stacking Module is installed before the switch is powered up for the first time, but if the switches were powered up without a Stacking Module installed, then stacking is disabled.

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If you are connecting stacking cables during/after switch boot, then multiple stacks can form (plug-and-go method).

3. Connect the stacking cables between the switches to form the desired stacking topology, then power on all switches.

When the switches that are stacked together complete booting up, one of the switches is elected as the Commander, one of the switches is elected as the Standby, the remaining switches become Members of the stack, and the stack becomes fully operational.

To find out the roles of the switches in the stack, connect a console to any of the switches and enter the `show stacking` command. You can use the MAC address and other information in the display to determine the roles of each of the switches.

## Stack formation in Enhanced or Standard Secure Mode

To form a stack in Enhanced secure mode, the switch software supports only three scenarios:

### Scenario 1

If independent switches in Standard secure mode are connected to form a stack, the resultant stack is in Standard secure mode.

### Scenario 2

If independent switches in Enhanced secure mode are connected to form a stack, the resultant stack is in Enhanced secure mode.

### Scenario 3

Following are the steps when independent switches in Standard secure mode are connected to form a stack in Enhanced secure mode:

1. Form a stack with one switch as commander and other as standby.

2. Check if the commander switch is of highest priority.

If the priority is not set, use the command:

```
stacking member <member_number> priority <priority_number>
```

3. Execute the command:

```
secure-mode enhanced
```

After reboot, the stack is in Enhanced secure mode.

4. To add switches to the stack, follow the preceding steps.

If the newly added switch is in Standard secure mode, the switch will reboot in Enhanced secure mode to form a stack in Enhanced secure mode.

## Adding a switch to a stack as a new member

Networking stacking allows for switches to be added to the stack while the stack is operational (as long as the maximum number of 10 switches in the stack is not exceeded).

1. Provision the stack for the new switch by entering the following command:

```
switch(config)# stacking member N type JxxxxxA [mac MAC-Addr]
```

where:

- N is the stacking member number for the switch.
- JxxxxxA is the product number of the switch (required). Any of the 3810M models can be installed and assume this provisioned configuration. If you specify a value for this parameter, then only a switch of this specific model type can assume this provisioned configuration.
- (Optional) MAC-Addr can be specified if you want a specific switch to assume this provisioned configuration. If this value is entered, then the type value for the switch that has this MAC address must be correct, or a configuration error is logged and the switch is not allowed to join the stack.

(Optional) You can preconfigure a priority for the member switch by entering this command:

```
switch(config)# stacking <member-ID> priority <1-255>
```

Where:

- <member-ID> is the stacking member number for the switch.
- 1-255 is the priority (but it must be less than the priority assigned to the Commander. The priority for the Standby should be the second highest in the stack. The member switches can be left at the default priority value of 128.)



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You must configure the type and the priority separately.

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When the new switch has been provisioned in the stack, a complete configuration can be applied to the switch even before it is physically connected to the stack, connected to the network, and powered up.

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2. Power on the new switch. The new switch does not become a member of the stack unless stacking has

been enabled on the switch.

3. Install a Stacking Module into the new switch, connect the switch into the stack via the stacking cables, and form the desired stacking topology.

4. When the switch has finished booting, establish a console session with it and, from the config context, issue the command to enable stacking:

```
switch(config)# stacking enable
```

This causes the switch to reboot. When the reboot is complete, the switch is a member of the stack with the attributes that you provisioned for it.

5. Confirm that the switch is now a member of the stack by issuing a `show stacking` command via a console session with any of the switches in the stack. The command output should show that the new switch is a Standby or Member of the stack with the member number and priority that you assigned to it.

When you add the switch to the stack, the following occurs:

- The Stack Revision Number is incremented by one.
- The Commander verifies that the new switch has the same switch software as the other switches in the stack, and downloads the software to the new switch if it does not. When downloading new software, there will be an automatic reboot during this process.
- A stack ID is assigned, even if the switch is later disconnected from the stack.
- The member's console shows a change in hostname as Aruba Stack 3810M. The console is not redirected.
- The OOBM IP address for that member is no longer reachable.
- Ethernet port address is renamed from 1 to 1/1, 2/1,3/1 ... 10/1 depending on the member number or member port number.

## Removing a switch from the stack

You can remove a switch from the stack to be redeployed in another part of the network. The procedures vary depending on whether the switch is the Commander of the stack or not.

### Removing a Member or the Standby

1. Establish a console session with the stack via direct console cable connection or telnet. If using the console cable, connect it to the Standby.

2. Enter the following command to remove the switch from the stack:

```
switch(config)# stacking member N remove
```

This causes the switch to lose its complete configuration and to be removed from the stack configuration. A subsequent `show stacking` command issued to the stack will show that the removed switch no longer exists in the stack.

3. Power down the removed switch.
4. Disconnect the stacking cables from the removed switch and from the other switches in the stack.

### Replacing a faulty member without losing the configuration

You can replace a faulty member from the stack without affecting the switch configuration using the preconfigure command. The following examples show how to replace a faulty member in a three member stack through two

ways:

■ with MAC address:

```
switch# show stack

Stack ID      : 00011060-4bb60b00

MAC Address   : 10604b-b60b0b
Stack Topology : Ring
Stack Status  : Fragment Active
Split Policy  : One-Fragment-Up
Uptime       : 0d 0h 27m
Software Version : KA.15.13.0013

Mbr
  ID  Mac Address  Model                               Pri Status
  ---  ---  ---  ---  ---  ---  ---
  1   10604b-b60b00 HPE J9574A 3810-48G-PoE+-4SFP+ Switch 128 Commander
  2   10604b-b64d40 HPE J9573A 3810-24G-PoE+-2SFP+ Switch 128 Standby
  3   843497-020cc0 HPE J9587A 3810-24G-PoE+-2XG Switch 128 Member
```

In this example, member-3 is physically removed from the stack. The stack status shows member-3 as "Missing".

```
switch(config)# show stack

Stack ID      : 00011060-4bb60b00

MAC Address   : 10604b-b60b0b
Stack Topology : Chain
Stack Status  : Fragment Active
Split Policy  : One-Fragment-Up
Uptime       : 0d 0h 33m
Software Version : KA.15.13.0013

Mbr
  ID  Mac Address  Model                               Pri Status
  ---  ---  ---  ---  ---  ---  ---
  1   10604b-b60b00 HPE J9574A 3810-48G-PoE+-4SFP+ Switch 128 Commander
  2   10604b-b64d40 HPE J9573A 3810-24G-PoE+-2SFP+ Switch 128 Standby
  3   843497-020cc0 HPE J9587A 3810-24G-PoE+-2XG Switch 128 Missing
```

The MAC address of member-3 is changed by using another member of the same J-number as member-3 (whose MAC address is "843497-029b40"). Use the provisioning command to change the MAC address of member-3.

```
switch(config)# stacking member 3 type J9587A mac-address 843497-029b40

This will save the current configuration. Continue [y/n]? y
switch(config)# show stack

Stack ID      : 00011060-4bb60b00

MAC Address   : 10604b-b60b0b
Stack Topology : Chain
Stack Status  : Fragment Active
Split Policy  : One-Fragment-Up
Uptime       : 0d 0h 33m
Software Version : KA.15.13.0013

Mbr
  ID  Mac Address  Model                               Pri Status
```

```

-----
1  10604b-b60b00 HPE J9574A 3810-48G-PoE+-4SFP+ Switch 128 Commander
2  10604b-b64d40 HPE J9573A 3810-24G-PoE+-2SFP+ Switch 128 Standby
3  843497-029b40 HPE J9587A 3810-24G-PoE+-2XG Switch 128 Not Joined

```

You can see that the “Missing” member is provisioned with the new mac-address without affecting any of the member-3 configurations. In this example, the new unit is connected to the stack and powered ON. The unit boots up and joins as member-3. All the configuration related to member-3 is kept intact and applied.

```

switch(config)# show stack

Stack ID      : 00011060-4bb60b00

MAC Address   : 10604b-b60b0b
Stack Topology : Ring
Stack Status   : Active
Split Policy   : One-Fragment-Up
Uptime        : 0d 0h 33m
Software Version : KA.15.13.0013

Mbr
ID  Mac Address      Model                                     Pri Status
-----
1  10604b-b60b00 HPE J9574A 3810-48G-PoE+-4SFP+ Switch 128 Commander
2  10604b-b64d40 HPE J9573A 3810-24G-PoE+-2SFP+ Switch 128 Standby
3  843497-029b40 HPE J9587A 3810-24G-PoE+-2XG Switch 128 Member

```

- **without MAC address:**

In this example, the MAC address of the faulty member is dropped instead of changing (which is in “Missing” state).

```

switch(config)# stacking member 3 type J9587A
This will save the current configuration. Continue [y/n]? y

switch(config)# show stack

Stack ID      : 00021060-4bb60b00

MAC Address   : 10604b-b60b0a
Stack Topology : Chain
Stack Status   : Fragment Active
Split Policy   : One-Fragment-Up
Uptime        : 0d 0h 29m
Software Version : KA.15.13.0013

Mbr
ID  Mac Address      Model                                     Pri Status
-----
1  10604b-b60b00 HPE J9574A 3810-48G-PoE+-4SFP+ Switch 128 Commander
2  8851fb-cdd3c0 HPE J9575A 3810-24G-2SFP+ Switch 128 Member
3  HPE J9587A 3810-24G-PoE+-2XG Switch 128 Not Joined

```

The new unit (of the same type) is connected to the stack and powered ON. The unit boots up and joins as member-3. All the configuration related to member-3 is kept intact and applied.

```

switch(config)# show stack
Stack ID      : 00011060-4bb60b00

MAC Address   : 10604b-b60b0b
Stack Topology : Ring
Stack Status   : Active
Split Policy   : One-Fragment-Up

```

```
Uptime          : 0d 0h 33m
Software Version : KA.15.13.0013
```

Mbr							
ID	Mac Address	Model			Pri	Status	
1	10604b-b60b00	HPE	J9574A	3810-48G-PoE+-4SFP+ Switch	128	Commander	
2	10604b-b64d40	HPE	J9573A	3810-24G-PoE+-2SFP+ Switch	128	Standby	
3	843497-029b40	HPE	J9587A	3810-24G-PoE+-2XG Switch	128	Member	



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Use the command `stack member <id> remove reboot` to reboot a stack when a stack member is in inconsistent state, and when a failure is also detected.

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## Removing the Commander

1. Establish a console session with the stack via direct console cable connection or telnet. If using the console cable, connect it to a switch other than the Commander

2. Enter the following command to force the Commander status over to the Standby switch:

```
switch(config)# redundancy switchover
```

This results in the Standby switch taking the role of the Commander and a new Standby being selected from the remaining member switches. The former Commander becomes a Member of the stack.

3. To remove the former Commander from the stack:

```
switch(config)# stacking memberNremove
```

where **N** is the member number of the former Commander

4. Power down the removed switch.
5. Disconnect the stacking cables from the removed switch and from the other switches in the stack.

## Renumbering stack members

If you did not provision the stack for the switches when you first created the stack, it is possible that members did not acquire the desired member numbers. The stack members can be renumbered.

A four member stack is used in the following example with switches A, B, C, and D. These switches inadvertently acquired member numbers 1, 3, 2, and 4, respectively. Switch B acquired member number 3 and switch C acquired member number 2. The stack should have A=member 1, B=member 2, C=member 3, and D=member 4.

1. In the global config context, enter the `remove` command option for switch B (member 3) and switch C (member 2):

```
switch(config)# stack member 3 remove
```

```
switch(config)# stack member 2 remove
```

This command clears the MAC address of the member 2 configuration to allow switch C's MAC address to be entered in the next command, without a duplicate MAC address occurring in the stack.

All configurations on the removed member switch are deleted, not just the stacking configuration.

2. Enter the following command:

```
switch(config)# stack member 2 type <J-number> mac-address <B's MAC address>
switch(config)# stack member 3 type <J-number> mac-address <C's MAC address>
```

3. Reboot switch B (new member 2) and then switch C (new member 3).
4. To confirm that each switch now has the desired member number, enter the `show stacking` command.

## Restoring the operation of a stack

Restoring the operation of a stack includes restoring stack operation after disconnecting a power cord or a stacking cable, replacing a failed stack member or a failed stacking module.

### Restoring operation after disconnecting a power cord

If a power cord becomes disconnected from one of the switches in the stack, the stack operation is affected. The stacking status of the switch that lost power is “Missing.” Its record is retained in the stack configuration. The effect of the power loss depends on the role of the switch in the stack.

- If the Commander loses power, the Standby switch takes over as the Commander and one of the member switches in the stack is elected as the new Standby.
- If the Standby loses power, one of the member switches in the stack is elected as the new Standby.
- For any switch that loses power, all the network ports and stacking ports are non-operational until power is restored to the switch and it rejoins the stack. This affects the stacking topology.
- Reconnecting the power cord restores the operation of the switch, however, if the switch was either the Commander or the Standby, then it returns in a different role if the topology has 3 or more members. In a 2-member stack, a Standby that reboots will rejoin as Standby.

### Restoring operation after disconnecting a stacking cable

If a stacking cable becomes disconnected from one of the switches in the stack, the effect depends on the stacking topology that is being used:

- Mesh—The stack topology is temporarily changed to a ring. To recover, simply reconnect the stacking cable; the mesh topology and the previous stack configuration is restored.
- Ring—There is little effect. The stack topology is temporarily changed to a chain topology. To recover, simply reconnect the stacking cable; the ring topology and the previous stack configuration is restored.
- Chain—The following occurs:
  - The smaller section (fragment) of the stack that results from the disconnection becomes `Inactive` (the `Stack Status` value shown in the output of the `show stacking` command is `Inactive`).
  - If the two resulting fragments are the same size, the fragment that contains the Commander will be `Active`, and the other fragment becomes `Inactive`.
  - Both fragments will have a Commander and a Standby selected (if there is more than one switch in each fragment).
  - When the stacking cable is reconnected to reform the chain:
    - The Commander and Standby of the Active fragment retain those roles for the resulting stack. If the original Commander was not in that fragment, then the stack will have a new Commander when the stack is reformed.
    - The switches in the Inactive fragment reboot and assume their new roles in the reformed chain.

## Replacing a failed stack member

If a Stack Member fails, the effect on the stack depends on which member failed.

- If the Commander fails, the Standby switch takes over as the Commander and one of the Member switches in the stack is elected as the new Standby. All network ports and stacking ports on the failed switch become non-operational.
- If the Standby fails, one of the Member switches in the stack is elected as the new Standby. All network ports and stacking ports on the failed switch become non-operational.
- If a Member fails, all network ports and stacking ports on that switch become non-operational.

If a Stack Member fails:

1. Physically remove the Stack Member from the stack.
2. Replace the failed Stack Member.



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Hewlett Packard Enterprise recommends using the same type (product or "J" number) switch as a replacement since all configuration information is retained.

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- If you are using the same type switch as a replacement:
  1. Provision the new switch using the `stacking member N` command.
  2. Reconnect all Ethernet ports as they were on the failed switch.
- If you are using a different type switch as a replacement:
  1. Remove the failed switch from the stack configuration using the `stacking member N remove` command.
  2. Provision the new switch using the `stacking member N` command.
  3. Reconnect Ethernet ports and create a new stack configuration on the new switch.

If the replacement switch uses a different version of software, it will be updated automatically to match the software version running on the stack.

## Replacing a failed stacking module

Replacing a failed stacking module is simpler than replacing a Stack Member since the switch configuration itself does not change. In this case, there is no need to re-provision the switch as a member of the stack. After you replace the stacking module, if the switch that experienced the module failure was Commander or Standby, the election of a new Commander and Standby is the same.

## Merging stack fragments

When two fragments have the same stack-id, the merge of the fragments is almost always allowed regardless of the merge policy. The Commander and Standby of the merged stack are selected based on the election rules. All of the switches in the previously inactive fragment or fragments reboot, and then join the Active fragment as Members.

If both fragments are Inactive, then an election process occurs. The two (or more) Commanders in the fragments are compared. The Commander is selected using the following criteria:

1. Highest Stack Rev
2. If the stack rev is the same for both, then choose the switch with the highest configured priority
3. If the priorities are the same for both, then choose the switch with the highest OS revision
4. If the OS revisions are the same, then choose the switch with the longest uptime
5. If the uptimes are the same, then choose the switch with the lowest MAC address

## Modifying the stack topology

You can increase the efficiency and redundancy of the stack by adding stacking cables to create a stacking mesh instead of a ring. This modification can be performed while the switches are powered on and the stack is operating. After connecting the cables, enter the `show stack` command. The `Stack Topology` field value displays the new topology.



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Transitioning between mesh and ring topologies temporarily leaves the stack in an unsupported state (for example, when the stack is only connected to half of the additional ports). If a failure occurs during this time, redundancy is not guaranteed.

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## Downloading new software to the stack

The stack is essentially a single switch with the Commander unit controlling the management functionality, so the process of loading new software is identical to the process for a standalone switch. For example: 3810M. See the *Management and Configuration Guide for AOS-S* for your switch.

After new software is loaded on the Commander, the Commander installs the software on all the stack members. The loading process can take some time.

To load the new software:

1. Load the new software onto the Commander via TFTP or Xmodem.
2. Once the new software is loaded, establish a console session with the stack and enter the following command:

```
switch# boot system
```

This causes the entire stack to be rebooted. Each unit is booted from its image unless you specify otherwise with options to this command. Make sure that you boot from the image to which you downloaded (that is, primary or secondary). If you add a new member to an existing stack, the Commander updates the new switch's software to match the current stack software. Multiple versions of software are not supported across stack members.

3. Confirm that the new software has been loaded on each stack member by entering the `member-context` command for each member. From the stack member context, you can see the switch software version that is running on that switch by entering the `show flash` or `show version` command.

### Syntax:

```
member-context stack-member
```

Sets the CLI context so that subsequent commands apply to the stack member that is specified.

## Monitoring stacking

Use the following commands to monitor the status and configuration of the stack.

### Syntax:

```
show stacking
```

Shows the current state of the stack.

### Viewing show stacking output

```
Switch# show stacking

Stack ID          : 00011cc1-de4d4740

MAC Address       : 1cc1de-4d474b
Stack Topology    : Unknown
Stack Status      : Fragment Active
Split Policy      : All-Fragments-Up
Uptime            : 0d 8h 6m
Software Version  : KA.15.11.0000x

Mbr
ID  Mac Address      Model                               Pri Status
---  -
1   1cc1de-4d4740    HPE J9574A 3810-48G-PoE+-4SFP+ Switch  128 Missing
2   1cc1de-4d7400    HPE J9576A 3810-48G-4SFP+ Switch  128 Commander
3   1cc1de-4ddc00    HPE J9575A 3810-24G-2SFP+ Switch  128 Missing
```

If stacking is disabled on the switch, the `show stacking` command displays this message:

```
Stacking is disabled.
```

Possible values for the various parameters are:

- Stack Topology: Chain, Ring, Mesh, Unknown
- Stack Status: Active, Fragment Active, Fragment Inactive
- Pri (Priority): 1 - 255>
- Status: Commander, Standby, Member, Standby Booting, Booting, Missing, Not Joined, Failed

### Syntax:

```
show stacking detail
```

Shows the same output as the `show stacking` command, but with much more information about each device's stack port and connectivity, CPU state, uptime, and so on.

### Viewing show stacking detail output

```
Switch(config)# show stacking detail

Stack ID          : 00013863-bbc40700

MAC Address       : 3863bb-c40745
Stack Topology    : Mesh
Stack Status      : Active
Split Policy      : One-Fragment-Up
Uptime            : 0d 1h 9m
Software Version  : KB.16.02.0000x
```

```

Name          : Aruba-Stack-3810M
Contact       :
Location      :

Member ID     : 1
Mac Address   : 3863bb-c40700
Type          : JL076A
Model         : JL076A 3810M-40G-8SR-PoE+-1-slot Switch
Priority      : 128
Status        : Commander
ROM Version   : KB.16.01.0005
Serial Number : SG4ZGYZ092
Uptime       : 0d 1h 10m
CPU Utilization : 2%
Memory - Total : 699,207,680 bytes
Free         : 516,210,096 bytes
Stack Ports -
#1 : Active, Peer member 2
#2 : Active, Peer member 3
#3 : Active, Peer member 2
#4 : Active, Peer member 3

Member ID     : 2
Mac Address   : 3863bb-c4c680
Type          : JL076A
Model         : JL076A 3810M-40G-8SR-PoE+-1-slot Switch
Priority      : 128
Status        : Standby
ROM Version   : KB.16.01.0005
Serial Number : SG4ZGYZ082
Uptime       : 0d 1h 9m
CPU Utilization : 0%
Memory - Total : 699,207,680 bytes
Free         : 529,360,468 bytes
Stack Ports -
#1 : Active, Peer member 3
#2 : Active, Peer member 1
#3 : Active, Peer member 3
#4 : Active, Peer member 1

Member ID     : 3
Mac Address   : 3863bb-c4ea80
Type          : JL074A
Model         : JL074A 3810M-48G-PoE+-1-slot Switch
Priority      : 128
Status        : Member
ROM Version   : KB.16.01.0005
Serial Number : SG4ZGYX050
Uptime       : 0d 1h 9m
CPU Utilization : 0%
Memory - Total : 699,207,680 bytes
Free         : 544,222,201 bytes
Stack Ports -
#1 : Active, Peer member 1
#2 : Active, Peer member 2
#3 : Active, Peer member 1
#4 : Active, Peer member 2

```

### Syntax:

```
show stacking member stack-member-list
```

Shows detailed information about switches in the *stack-member-list* only.

## Syntax:

```
show stacking stack-ports memberstack-member
```

Shows the current state of the stacking ports of the specified member. If a member is not specified, the command shows the state of the ports of all physically present devices in the stack.

## Viewing show stacking stack-ports output

```
switch(config)# show stacking stack-ports
      Stack      Peer  Peer
Member Port  State Member Port
-----
1      1      Up    2      1
1      2      Up    3      2
1      3      Up    4      3
1      4      Down  0      0
2      1      Up    1      1
2      2      Up    3      1
2      3      Down  0      0
2      4      Up    4      4
3      1      Up    2      2
3      2      Up    1      2
3      3      Up    4      1
3      4      Down  0      0
4      1      Up    3      3
4      2      Down  0      0
4      3      Up    1      3
4      4      Up    2      4
```

If you specify specific stack members in the command, then the stacking port information for those members displays.

## Troubleshooting stacking

### Troubleshoot OOBM and split stack issues

If all the OOBM ports in the stack are in the same VLAN, you can use the `show oobm` commands to view the current state of all the switches. For example, if you have a five-member chain and member 4 fails or has the power removed, a stack split will occur with an active fragment on members 1-2-3 and an inactive fragment on member 5.

There is one IP address for the active fragment. This can be statically set by assigning an IP address to the global OOBM port.

If the stack splits, you can connect to the Active Fragment using the global OOBM IP address and then enter the `show oobm discovery` command to see if this active fragment has discovered any other members that are connected using the OOBM LAN.

In the following five member chain example, connect using the global IP address of 10.0.11.49. Once logged on, enter the `show stacking` command.

### Viewing stacking member status

```
switch# show stacking

Stack ID          : 00011cc1-de4d87c0

MAC Address       : 1cc1de-4d87e5
Stack Topology    : Chain
```

```
Stack Status      : Fragment
Active Uptime     : 0d 0h 5m
Software Version  : KA.15.03.0000x
```

```
 Mbr
ID  Mac Address      Model                               Pri  Status
---  -
1   1cclde-4d87c0    HPE J9573A 3810-24G-PoE+-2SFP+ Switch 128  Commander
2   1cclde-4dc740    HPE J9573A 3810-24G-PoE+-2SFP+ Switch 128  Member
3   1cclde-4dbd40    HPE J9575A 3810-24G-2SFP+ Switch      128  Standby
4   1cclde-4d79c0    HPE J9576A 3810-48G-4SFP+ Switch      128  Missing
5   1cclde-4da900    HPE J9576A 3810-48G-4SFP+ Switch      200  Missing
```

Enter `show oobm discovery` to see if the members have been discovered using OOBM.

## Viewing oobm discovery

```
switch# show oobm discovery

Active Stack Fragment(discovered) IP Address : 10.0.11.49

 Mbr
ID  Mac Address      Status
---  -
1   1cclde-4d87c0    Commander
2   1cclde-4dc740    Member
3   1cclde-4dbd40    Member

Inactive Stack Fragment(discovered) IP Address : 10.0.10.98

 Mbr
ID  Mac Address      Status
---  -
5   1cclde-4da900    Commander
```

Member 5 is up, but is an inactive fragment. It has an addressable IP address, which can be used to connect to this fragment.

## Connecting to a stack fragment

```
switch# telnet 10.0.10.98 oobm
HPE J9576A 3810-48G-4SFP+ Switch
Software revision KA.15.03.0000x
Copyright (C) 1991-2011 Hewlett-Packard Development Company, L.P.
RESTRICTED RIGHTS LEGEND
Confidential computer software. Valid license from HPE required for possession,
use or copying. Consistent with FAR 12.211 and 12.212, Commercial
Computer Software, Computer Software Documentation, and Technical
Data for Commercial Items are licensed to the U.S. Government under
vendor's standard commercial license.
HEWLETT-PACKARD DEVELOPMENT COMPANY, L.P.
20555 State Highway 249, Houston, TX 77070
```

Enter the `show stacking` command.

## Viewing missing stack members

```
switch# show stacking

Stack Topology      : Chain
Stack Status        : Fragment Inactive
Uptime              : 0d 0h 7m
Software Version    : KA.15.03.0000x
```

Mbr						
ID	Mac Address	Model			Pri	Status
1	1cc1de-4d87c0	HPE J9573A	3810-24G-PoE+-2SFP+	Switch	128	Missing
2	1cc1de-4dc740	HPE J9573A	3810-24G-PoE+-2SFP+	Switch	128	Missing
3	1cc1de-4dbd40	HPE J9575A	3810-24G-2SFP+	Switch	128	Missing
4	1cc1de-4d79c0	HPE J9576A	3810-48G-4SFP+	Switch	128	Missing
5	1cc1de-4da900	HPE J9576A	3810-48G-4SFP+	Switch	200	Commander

Confirm by entering the `oobm discovery` command. Member 4 is down.

### Confirming stack member 4 is down

```
switch# show oobm discovery

Inactive Stack Fragment(discovered) IP Address: 10.0.10.98

Mbr
ID   Mac Address   Status
---   -
5    1cc1de-4da900 Commander

Active Stack Fragment(discovered) IP Address: 10.0.11.49

Mbr
ID   Mac Address   Status
---   -
1    1cc1de-4d87c0 Commander
2    1cc1de-4dc740 Member
3    1cc1de-4dbd40 Member
```

## Using fault recovery/troubleshooting tools

Stacking provides tools and logging information to aid in troubleshooting problems specific to stacking. Problems may include:

- Installation/deployment issues
- Problems with initial stack creation
  - Problems with adding or removing members
  - Booting an existing stack
- Stacking failures encountered while running an existing stack

The tools used in troubleshooting problems are:

- Event Log
- Show commands
  - Show stacking
  - Show system
  - Show boot history
- Show tech
- LEDs

## Troubleshooting installation and deployment issues

### Cause

Installation and deployment issues include the initial deployment or creation of a stack, adding additional members or removing members from a stack.

**Problem:**

When using the Deterministic method, one or more of the statically provisioned members did not join the stack.

Possible reasons a switch does not join a stack are:

- The switch being added is already a member of another stack and has a different stack ID.
- The maximum number of switches is already configured.
- The switch being added has been statically provisioned. The MAC address matches, but the switch type does not.
- There is a problem with the stack cable.
- The stack cables are connected in a way that creates an unsupported topology.
- Stack module failure.

**Solution:**

Perform a diagnostic analysis.

## Troubleshooting issues with adding or removing members in the stack

**Cause**

Various problems described below could be causing issues with adding or removing members in the stack.

**Problem:**

Cannot add a new switch to an existing stack.

**Solution:**

Identify root cause. Possible reasons for a member not joining an existing stack are:

- The switch being added has already been a member of another stack and has a different stack ID.
- The maximum number of switches is already configured.
- The switch being added has been statically provisioned, but switch type and MAC address in the configuration do not match the switch being added.
- There is a problem with the stack cable.
- There is a problem with the stack physical cabling (illegal topology).

**Problem:**

The entire stack does not come up after a boot.

**Solution:**

There are several reasons why all members do not join the stack:

- There is a problem with the stack cable.
- Physical cabling was changed.
- Stack booted on incorrect configuration.
- One or more of the switches has a hardware problem (for example, bad power supply, back stacking module, corrupt flash).

### Problem:

One or more of the members keeps rebooting and does not join the stack.

### Possible reasons:

- An unresponsive member.
- Heartbeat loss—a stack that has a member no longer in the stack or a member failing after joining the stack.
- Illegal topology.

### Problem:

After initial boot sequence, the activity and Link LEDs of an interface are not on and the ports are not passing traffic.

### Solutions:

- Identify the “inactive fragment” and provide alternatives for recovery.
- Verify that all OOBMs are connected so that there is uninterrupted access.

### Problem:

After a reboot, the selected Command or Standby are not the expected switches.

### Solutions:

Check to see if the log files provide a reason why the Commander and Standby were chosen and which rule they matched.

## Troubleshooting a strictly provisioned, mismatched MAC address

When switches are strictly provisioned, it is possible to enter an incorrect type or incorrect MAC address. If this occurs, the switch does not match the intended configuration entry and stacking attempts to add this switch as a new “plug-and-go” switch. If the stacking configuration already has 10 switches, then the “plug-and-go” fails.

The following example shows a stack with 9 members. There is a new J9576A switch that is supposed to be member 4; however, the MAC address was mis-typed, therefore, there is an “opening” for a plug-and-go at member 10. It will join as member 10.

1. This shows the stack before boot.

#### Viewing a stack with 9 members

```
switch(stacking)#: show stacking

Stack ID       : 00031cc1-de4d87c0
MAC Address    : 1cc1de-4dc765
Stack Topology : Ring021560
Stack Status   : Active
Uptime        : 0d 0h 56m
Software Version : KA.15.05.0000x

Mbr
ID  Mac Address      Model
---  -
1   1cc1de-4d87c0    HPE J9573A 3810-24G-PoE+-2SFP+ Switch 200 Standby
2   1cc1de-4dc740    HPE J9573A 3810-24G-PoE+-2SFP+ Switch 128 Commander
3   1cc1de-4dbd40    HPE J9575A 3810-24G-2SFP+ Switch 128 Member
4   1cc1de-444444    HPE J9576A 3810-48G-4SFP+ Switch 175 Not Joined
```

```

5  1cc1de-000005 HPE J9576A 3810-48G-4SFP+ Switch 128 Not Joined
6  1cc1de-000006 HPE J9576A 3810-48G-4SFP+ Switch 128 Not Joined
7  1cc1de-000007 HPE J9573A 3810-24G-PoE+-2SFP+ Switch 128 Not Joined
8  1cc1de-000008 HPE J9573A 3810-24G-PoE+-2SFP+ Switch 128 Not Joined
9  1cc1de-000009 HPE J9574A 3810-48G-PoE+-4SFP+ Switch 128 Not Joined

```

2. This shows that, after booting, the switch is joined as member 10.

#### Viewing a member joining the stack

```

switch(config)# show stacking

Stack ID : 00031cc1-de4d87c0
MAC Address : 1cc1de-4dc765
Stack Topology : Mesh
Stack Status : Active
Uptime : 0d 1h 11m
Software Version : KA.15.05.0000x

Mbr
ID  Mac Address      Model
-----
1   1cc1de-4d87c0     HPE J9573A 3810-24G-PoE+-2SFP+ Switch 200 Standby
2   1cc1de-4dc740     HPE J9573A 3810-24G-PoE+-2SFP+ Switch 128 Commander
3   1cc1de-4dbd40     HPE J9575A 3810-24G-2SFP+ Switch 128 Member
4   1cc1de-444444     HPE J9576A 3810-48G-4SFP+ Switch 175 Not Joined
5   1cc1de-000005     HPE J9576A 3810-48G-4SFP+ Switch 128 Not Joined
6   1cc1de-000006     HPE J9576A 3810-48G-4SFP+ Switch 128 Not Joined
7   1cc1de-000007     HPE J9573A 3810-24G-PoE+-2SFP+ Switch 128 Not Joined
8   1cc1de-000008     HPE J9573A 3810-24G-PoE+-2SFP+ Switch 128 Not Joined
9   1cc1de-000009     HPE J9574A 3810-48G-PoE+-4SFP+ Switch 128 Not Joined
10  1cc1de-4d79c0     HPE J9576A 3810-48G-4SFP+ Switch 128 Member

```

To correct this issue:

- a. Write down the correct MAC address.
- b. Remove the member that was added using plug-and-go with the strictly provisioned, mismatched MAC address as shown in the following example.
- c. Update the strictly provisioned entry with the correct MAC address.
- d. Boot the switch.

#### Removing a member and updating the entry with a MAC address

```

switch(config)# stacking member 10 remove reboot

The specified stack member will be removed from the stack and
its configuration will be erased. The resulting configuration
will be saved. The stack member will be rebooted and join as
a new member. Continue [y/n]? Y

switch(config)# stacking member 4 type J9576A mac-address

```

3. This shows that member 4 has joined the stack.

#### Viewing that member 4 joined the stack

```

switch(config)# show stacking

Stack ID      : 00031cc1-de4d87c0

```

```

MAC Address      : 1cc1de-4dc765
Stack Topology   : Mesh
Stack Status     : Active
Uptime          : 0d 1h 19m
Software Version : KA.15.05.0000x

```

```

Mbr
ID  Mac Address      Model
-----
1   1cc1de-4d87c0    HPE J9573A 3810-24G-PoE+-2SFP+ Switch 200 Standby
2   1cc1de-4dc740    HPE J9573A 3810-24G-PoE+-2SFP+ Switch 128 Commander
3   1cc1de-4dbd40    HPE J9575A 3810-24G-2SFP+ Switch 128 Member
4   1cc1de-4d79c0    HPE J9576A 3810-48G-4SFP+ Switch 175 Member
5   1cc1de-000005    HPE J9576A 3810-48G-4SFP+ Switch 128 Not Joined
6   1cc1de-000006    HPE J9576A 3810-48G-4SFP+ Switch 128 Not Joined
7   1cc1de-000007    HPE J9573A 3810-24G-PoE+-2SFP+ Switch 128 Not Joined
8   1cc1de-000008    HPE J9573A 3810-24G-PoE+-2SFP+ Switch 128 Not Joined
9   1cc1de-000009    HPE J9574A 3810-48G-PoE+-4SFP+ Switch 128 Not Joined

```

## Troubleshoot a mismatched stack-ID

This is an example of a stack that has two members with three more members that have been strictly provisioned, following the deterministic method of initial installation.

Viewing a stack with 3 unjoined switches

```

switch(config)# show stack

Stack ID       : 00031cc1-de4d87c0
MAC Address    : 1cc1de-4dc765
Stack Topology : Chain
Stack Status   : Active
Uptime        : 0d 0h 2m
Software Version : KA.15.05.0000x

Mbr
ID  Mac Address      Model
-----
1   1cc1de-4d87c0    HPE J9573A 3810-24G-PoE+-2SFP+ Switch 200 Standby
2   1cc1de-4dc740    HPE J9573A 3810-24G-PoE+-2SFP+ Switch 128 Commander
3   1cc1de-4dbd40    HPE J9575A 3810-24G-2SFP+ Switch 128 Not Joined
4   1cc1de-4d79c0    HPE J9576A 3810-48G-4SFP+ Switch 175 Not Joined
5   1cc1de-4da900    HPE J9576A 3810-48G-4SFP+ Switch 128 Not Joined

```

When powering on switch 3, it does not join the stack.

The stack ports for the new switch appear online, however, the `show stacking` command shows that the switch has not been recognized.

Viewing the switch is not recognized

```

switch(config)# show stacking stack-ports member 1,2

Member 1

Member Stacking Port  State Peer Member  Peer Port
-----
1       1              Down  0              0
1       2              Up    2              1
1       3              Down  0              0
1       4              Down  0              0

Member 2

```

Member	Stacking Port	State	Peer Member	Peer Port
2	1	Up	1	2
2	2	Up	0	0
2	3	Down	0	0
2	4	Down	0	0

The `show stacking` command does not show that the member is “Not Joined.”

A log file indicates that a “topo/hello” was seen from a switch that was not part of the current stack ID. The console of the switch that should have been member 3 shows the following example output.

Viewing output from the “not joined” switch

```
switch(config)# show stacking

Stack ID       : 00011cc1-de4dbd40
MAC Address    : 1cc1de-4dbd64
Stack Topology : Unknown
Stack Status   : Active
Uptime        : 0d 0h 1m
Software Version : KA.15.05.0000x

Mbr
ID  Mac Address      Model                               Pri Status
---
1   1cc1de-4dbd40    HPE J9575A 3810-24G-2SFP+ Switch   128 Commander
```

The output is different if you have an inactive fragment, since this switch can have the configuration from an old stack. In this case, it might be inactive and show ‘missing’ switches from the old configuration. The stack-id value does not match the stack ID of the Stack 3810 stacking factory reset.

```
switch(config)# stacking factory-reset
Configuration will be deleted and device rebooted,continue [y/n]?
Y
```

To join this switch to the other stack, execute the `stacking factory-reset` command to erase all of the stale stacking configuration information. This command automatically reboots the switch and on its subsequent boot, the switch is able to join the new stack.

## Troubleshoot stacking problems using the show logging command

The `show logging` command troubleshoots problems in stacking.

### Syntax

```
show logging <a|b|r|s|t|m|p|e|w|i|d|command|filter|option-str|substring ...]>
```

The options `a|r|substring` can be used in combination with an event class option.

#### a

Instructs the switch to display all recorded log events, which include events from previous boot cycles.

#### b

Display log events as time since boot instead of date/time format.

#### r

Instructs the switch to display recorded log events in reverse order (most recent first.)

#### s

Display AMM and SMM log events.

#### t

Display log events in granularity in 10 milli seconds.

### **command**

Instructs the switch to display command logs.

### **substring**

Instructs the switch to display only those events that match the substring.

The remaining event class options are listed in order of severity - lowest severity first. The output of the command is confined to event classes of equal or higher severity.

Only one of options `d|i|w|e|p|m` can be used in the command at a time.

The `a|r` and substring options may be used in combination with an event class option.

### **m**

Display major type of messages.

### **e**

Display error event class.

### **p**

Display major and error type of messages.

### **w**

Display major, error, and warning type of messages.

### **i**

Display major, error, warning, and information.

### **d**

Display major, error, warning, information, and debug messages.

### **filter**

Display log filter configuration and status information.

### **Option-str**

Filter events shown.

## **show logging example output**

### **Command**

```
switch# Show logging -e
Keys: W=Warning I=Information
M=Major D=Debug E=Error
---- Event Log listing: Events Since Boot ----
M 10/04/13 11:01:21 00686 system: Test - This message was sent in a group 00000
E 10/04/13 11:01:21 00686 system: Test - This message was sent in a group 00001
---- Bottom of Log : Events Listed = 2 ----
```

### **Output**

```
switch# show logging -r -s
I 10/02/00 00:46:56 02558 chassis: ST1-STBY: Stack port 3 is now on-line.
I 10/02/00 00:46:56 02558 chassis: ST2-CMDR: Stack port 2 is now on-line.
```

## **Troubleshooting a strictly provisioned, mismatched type**

When the MAC address matches a strictly provisioned configuration, it either matches the configured type and succeeds, or it does not match the type and fails. This is because the MAC address is unique and you cannot have duplicate MAC addresses.

The log messages indicate that this was the type of failure. The information in the log message helps you correct the configuration.

1. The switch that fails to join automatically reboots. Execute the `show stacking` command to view the mis-configured entry.

Viewing the mis-configured entry

```
switch(config)# show stacking

Stack ID       : 00011cc1-de4d87c0
MAC Address    : 1cc1de-4d87e5
Stack Topology : Mesh
Stack Status   : Active
Uptime        : 4d 0h 2m
Software Version : KA.15.05.0000x

Mbr
ID  Mac Address      Model
-----
1   1cc1de-4d87c0    HPE J9573A 3810-24G-PoE+-2SFP+ Switch 128 Commander
2   1cc1de-4dc740    HPE J9573A 3810-24G-PoE+-2SFP+ Switch 128 Standby
3   1cc1de-4dbd40    HPE J9575A 3810-24G-2SFP+ Switch 128 Member
4   1cc1de-4d79c0    HPE J9576A 3810-48G-4SFP+ Switch 175 Member
5   1cc1de-4da900    HPE J9575A 3810-24G-2SFP+ Switch 128 Not Joined
```

2. The configuration entry for member 5 matches a J9576A switch that will be added, however, it will fail because it is configured as a J9575A switch. failures

The following example shows the log entries with the failure to join the stack.

```
W 10/06/00 03:24:37 03255 stacking: ST2-STBY: Provisioned switch with Member ID
5 removed due to loss of communication
I 10/06/00 03:24:37 02558 chassis: ST2-STBY: Stack port 4 is now on-line.
I 10/06/00 03:24:35 02558 chassis: ST4-MMBR: Stack port 2 is now on-line.
W 10/06/00 03:24:35 03274 stacking: ST1-CMDR: Member 5 (1cc1de-4da900) cannot
join stack due to incorrect product id: J9576A
```

3. You cannot re-type the configuration command with the same MAC address, member ID, and a different J-number. Remove the configuration and then reconfigure this switch member entry.

Removing a stack member and reconfiguring

```
switch(config)# stacking member 5 remove

The specified stack member configuration will be erased. The
resulting configuration will be saved. Continue [y/n]? Y

switch(config)# stacking member 5 type J9576A mac 1cc1de-4da900
This will save the current configuration. Continue [y/n]? Y

Stack ID : 00011cc1-de4d87c0

tty=ansi switch(config)# show stacking
Strictly provisioned: Mis-Matched Type

Stack ID       : 00011cc1-de4d87c0
MAC Address    : 1cc1de-4d87e5
Stack Topology : Mesh
Stack Status   : Active
Uptime        : 4d 0h 35m
Software Version : KA.15.05.0000x
```

Mbr						
ID	Mac Address	Model			Pri	Status
1	1cc1de-4d87c0	HPE J9573A	3810-24G-PoE+-2SFP+	Switch	128	Commander
2	1cc1de-4dc740	HPE J9573A	3810-24G-PoE+-2SFP+	Switch	128	Standby
3	1cc1de-4dbd40	HPE J9575A	3810-24G-2SFP+	Switch	128	Member
4	1cc1de-4d79c0	HPE J9576A	3810-48G-4SFP+	Switch	175	Member
5	1cc1de-4da900	HPE J9576A	3810-48G-4SFP+	Switch	128	Not Joined

#### 4. Boot the switch with the matching MAC/Type.

##### Viewing joined stack members

```
switch(config)# show stacking

Stack ID      : 00011cc1-de4d87c0
MAC Address   : 1cc1de-4d87e5
Stack Topology : Mesh
Stack Status  : Active
Uptime       : 4d 0h 50m
Software Version : KA.15.05.0000x

Mbr
ID  Mac Address  Model
---  -
1   1cc1de-4d87c0 HPE J9573A 3810-24G-PoE+-2SFP+ Switch 128 Commander
2   1cc1de-4dc740 HPE J9573A 3810-24G-PoE+-2SFP+ Switch 128 Standby
3   1cc1de-4dbd40 HPE J9575A 3810-24G-2SFP+ Switch 128 Member
4   1cc1de-4d79c0 HPE J9576A 3810-48G-4SFP+ Switch 175 Member
5   1cc1de-4da900 HPE J9576A 3810-48G-4SFP+ Switch 128 Member
```

## Troubleshooting maximum stack members exceeded

This failure can happen if you have an active stack that has already reached its maximum number of members. It can also happen when the maximum number of switches is reached with a combination of active members and strictly provisioned members.

Since one of the suggested initial deployment techniques is a deterministic method using strictly provisioned entries, this failure example demonstrates what occurs if the maximum number of members is reached by strictly provisioning 10 members. At least one of these configuration entries has an incorrect MAC addresses. Similar to the mismatched MAC address example, the stack attempts to “plug-and-go” to add the switch, however, since the maximum number of membership has already been reached, the switch cannot join the stack.

1. The following example shows the `show stacking` output before the switch attempts to join.

##### Viewing stack members before the join

```
switch(config)# show stacking

Stack ID      : 00031cc1-de4d87c0
MAC Address   : 1cc1de-4dc765
Stack Topology : Mesh
Stack Status  : Active
Uptime       : 0d 1h 27m
Software Version : KA.15.05.0000x

Mbr
ID  Mac Address  Model
---  -
Pri Status
```

```

-----
1  lcc1de-4d87c0 HPE J9573A 3810-24G-PoE+-2SFP+ Switch 200 Standby
2  lcc1de-4dc740 HPE J9573A 3810-24G-PoE+-2SFP+ Switch 128 Commander
3  lcc1de-4dbd40 HPE J9575A 3810-24G-2SFP+ Switch 128 Member
4  lcc1de-4d79c0 HPE J9576A 3810-48G-4SFP+ Switch 175 Member
5  lcc1de-000005 HPE J9576A 3810-48G-4SFP+ Switch 128 Not Joined
6  lcc1de-000006 HPE J9576A 3810-48G-4SFP+ Switch 128 Not Joined
7  lcc1de-000007 HPE J9573A 3810-24G-PoE+-2SFP+ Switch 128 Not Joined
8  lcc1de-000008 HPE J9573A 3810-24G-PoE+-2SFP+ Switch 128 Not Joined
9  lcc1de-000009 HPE J9574A 3810-48G-PoE+-4SFP+ Switch 128 Not Joined
10 lcc1de-00000a HPE J9574A 3810-48G-PoE+-4SFP+ Switch 128 Not Joined
-----

```

- When a switch that does not match the MAC addresses attempts to join, that switch reboots when the maximum configuration is detected. The active stack logs the following:  
W 10/07/00 06:01:11 03253 stacking: ST3-CMDR: Maximum number of switches in the stack has been reached. Cannot add lcc1de-4da900 type J9576A
- The failure can be due to one of the strictly provisioned entries being incorrect. To correct this entry, reboot the switch. If there are already 10 switches in the stack, you cannot add additional switches at this time.

## Troubleshooting a bad cable

Bad cables can cause the stack port to flap or go down completely. If there are an excessive number of port flaps, the port is disabled and the following log message appears:

W 10/06:00 23:23:16 03260 chassis: ST4-CMDR: Stack port 1 disabled due to excessive errors. Check cable. To reenab use 'stacking member 4 stack-port 1 enable'.

- When this occurs, the `show stacking stack-ports` command shows the port with a status of "Disabled".

### Viewing a disabled stack port

```

switch# show stacking stack-ports

```

Member	Stacking	Port State	Peer Member	Peer Port
1	1	Up	5	2
1	2	Up	2	1
1	3	Up	3	3
1	4	Up	4	3
2	1	Up	1	2
2	2	Up	3	1
2	3	Up	4	4
2	4	Up	5	3
3	1	Up	2	2
3	2	Down	0	0
3	3	Up	1	3
3	4	Up	5	4
4	1	Disabled	0	0
4	2	Up	5	1
4	3	Up	1	4
4	4	Up	2	3
5	1	Up	4	2
5	2	Up	1	1
5	3	Up	2	4
5	4	Up	3	4

If the cable failure is more solid, the port is in the DOWN state. The logs show any transition.

```

I 10/07/00 06:01:15 02559 chassis: ST4-STBY: Stack port 3 is now off-line.
I 10/07/00 06:01:16 02559 chassis: ST3-CMDR: Stack port 3 is now off-line.
I 10/07/00 06:01:16 02559 chassis: ST2-MMBR: Stack port 1 is now off-line.
I 10/07/00 06:01:15 02559 chassis: ST5-MMBR: Stack port 2 is now off-line.
I 10/07/00 06:01:15 02558 chassis: ST2-MMBR: Stack port 1 is now on-line.
I 10/07/00 06:01:12 02558 chassis: ST5-MMBR: Stack port 2 is now on-line.
I 10/07/00 06:01:10 02558 chassis: ST4-STBY: Stack port 3 is now on-line.

```

- The following example shows member 3, port 2, which should be connected to member 4, port 1. The ports are down because the cable is bad or disconnected.

Viewing that two ports are down due to a bad connection

```

switch# show stacking stack-ports

```

Member	Stacking	Port	State	Peer Member	Peer Port
1	1		Up	5	2
1	2		Up	2	1
1	3		Up	3	3
1	4		Up	4	3
2	1		Up	1	2
2	2		Up	3	1
2	3		Up	4	4
2	4		Up	5	3
3	1		Up	2	2
3	2		Down	0	0
3	3		Up	1	3
3	4		Up	5	4
4	1		Down	0	0
4	2		Up	5	1
4	3		Up	1	4
4	4		Up	2	3
5	1		Up	4	2
5	2		Up	1	1
5	3		Up	2	4
5	4		Up	3	4

- The solution in both cases is to ensure that the cable is firmly connected at both ends. If the problem continues, replace the cable. It is possible that there could be a problem with the stack port itself. In this case, validation of this issue requires the installation of a known good cable to see if that cable also fails. The port state is not UP until both ends of the cable are connected and the cable has been validated as a genuine HPE cable.

To view the statistics on the physical port, execute the `show tech` command in member-context 4. The following examples show the types of information displayed.

Viewing `show tech` output

```

Port Number : 1                               State : Available
Last Event  : Available                       Start Req : 1
NE Present  : 1                               HPID Good : 1
HPID Fails  : 0                               FE Present : 1
Rem Dev Rdy : 1
ESSI Link   : 1                               ESSI Good  : 1
ESSI Fails  : 0                               ESSI TX En : 1
ICL Good    : 1                               ICL Enabled: 1
LP Local RDY: 1                               LP Rem RDY : 1
LP DONE     : 1                               ICL FailCnt: 0 (10 second interval)
ICL FailCnt : 0 (10 minute interval)

```

```

NE Presence HW : 1
FE Presence HW : 1
Rem Dev Rdy HW : 1
Local Dev Rdy HW : 1
Asserted NE Presence HW : 1
Asserted FE Presence HW : 1
Asserted Rem Dev Rdy HW : 1
Phy Frame Errors : 0
Invalid Status Errors : 0
Invalid Packet Type Errors : 0
Incomplete Packet Errors : 0
Checksum Errors : 0
ESSI Flow Out This Port (HW) : 0x2

```

### Viewing trace information for a port

```

Trace for Port 1
[ 0] [Info ] Start Request Received (Empty) [0]
[ 1] [Info ] Waiting for Stack Module Good (Empty) [0]
[ 2] [Info ] Stack Module Good Received (Empty) [0]
[ 3] [Info ] Cable Insertion Detected (Empty) [1]
[ 4] [Info ] Re-enable NE Present Int [487]
[ 5] [Info ] Starting Cable HPID Validation (Inserted) [488]
[ 6] [Info ] Skipping Cable HPID Validation (Inserted) [488]
[ 7] [Info ] Far End Insertion Detected (Valid) [988]
[ 8] [Info ] Polling for ESSI phy link up (Valid) [988]
[ 9] [Info ] ESSI Link Up [9988]
[10] [Info ] ESSI Link Good (Valid) [9988]
[11] [Info ] ESSI Linked at 9988 ms [9988]
[12] [Info ] Remote Device Ready Detected (Valid) [10898]
[13] [Info ] ICL Change Request Enable (Cable Ready) [10898]
[14] [Info ] Detected Remote Ready Drop. (Cable Ready) [12651]
[15] [Info ] ICL Good. Behind. Partner ready. (Cable Ready) [12988]
[16] [Info ] ICL GOOD received at 2091 ms [12988]
[17] [Info ] Partner LP ready. (Cable Ready) [13980]
[18] [Info ] Set Device Ready. (Cable Ready) [13987]
[19] [Info ] ESSI Link Verified [13988]
[20] [Info ] ESSI Able to Transmit (Cable Ready) [13988]
[21] [Info ] ESSI Verified at 3091 ms [13988]
[22] [Info ] Cable Available (Available) [13988]

```

## Troubleshooting when a switch crashes and reboots

### Cause

Although the switch software is highly reliable, a switch in the stack can experience a software issue that results in the crash and reboot of that switch. This crash can happen in the software running on the CPU in the management CPU or on the software running on the CPUs in the interfaces. In either case, crash information is generated and the switch is rebooted.

The resiliency of the stack is determined by the stacking topology, however, in all cases, the interfaces/ports on the switch that crashes are brought down and a reboot of that switch occurs.

The following table describes how the stack reacts to the crashing switch, depending on what role the switch had when the crash occurred. The assumption in this table is that the topology is a resilient topology (that is, a mesh or ring).

Stacking role	Description
Commander	<ul style="list-style-type: none"> <li>The standby takes over as the new Commander</li> </ul>

Stacking role	Description
	<ul style="list-style-type: none"> <li>■ A new standby is elected</li> <li>■ Crashing switch writes core file to local stable storage</li> <li>■ Crashing switch reboots and joins the stack</li> <li>■ Core file and crash information for this switch is available from the Commander</li> </ul>
Standby	<ul style="list-style-type: none"> <li>■ A new standby is elected</li> <li>■ Crashing switch writes core file to local stable storage</li> <li>■ Crashing switch reboots and joins the stack</li> <li>■ Core file and crash information for this switch is available from the Commander</li> </ul>
Member	<ul style="list-style-type: none"> <li>■ Crashing switch writes core file to local stable storage</li> <li>■ Crashing switch reboots and joins the stack</li> <li>■ Core file and crash information for this switch is available from the Commander</li> </ul>

After a switch crashes, you can collect data to help understand why the crash occurred. The information is a combination of crash data, crash log, and core-dump files. The `show tech` command displays logs of events that happened right before the crash.

## Troubleshoot an unexpected Commander or Standby switch selection

When a switch stack is established and a boot/reboot of the stack is performed, the Commander and Standby are selected based on the configured switch priority. There are other rules in the election process that can override this priority.

Viewing the running configuration with priority

```
switch(config)# show running-config

; Stack Configuration Editor; Created on release #:KA.15.05.0000x
; Ver #:01:00:01

hostname "Switch"
stacking
member 1 type "J9573A" mac-address 1cc1de-4d87c0
member 2 type "J9573A" mac-address 1cc1de-4dc740
member 3 type "J9575A" mac-address 1cc1de-4dbd40
member 3 priority 200
member 4 type "J9576A" mac-address 1cc1de-4d79c0
member 4 priority 175
member 5 type "J9576A" mac-address 1cc1de-4da900
exit
```

On a boot of the stack, member 3 becomes a Commander and member 4 becomes a Standby, based on priority. If this were a chain with member 1 at one end of the chain and member 5 at the other end, the number of hops between switches will be part of the election process.

## Managing interactions with other switch features

This section describes about how to manage the interactions with other switch features.



2/1	100/1000T	Yes	Auto	Disable	Auto
2/2	100/1000T	Yes	Auto	Disable	Auto
2/3	100/1000T	Yes	Auto	Disable	Auto
2/4	100/1000T	Yes	Auto	Disable	Auto
.					
.					
.					

Attempting to enter a CLI command for a port on a stack member without using the modified port number format generates a “Module not present...” message such as the following:

```
switch(config)# interface 10
Module not present for port or invalid port: 10
```

## LACP support

LACP trunking can support up to 144 trunks in a stacking configuration, each with up to eight links (ports) per trunk.

## Managing OOBM ports

Each OOBM port of a member is assigned one MAC address from that Member’s manufacturing allocated range. The OOBM port also can be assigned an IP address (IPv4 /v6/DHCP/Manual/Auto-Config/LinkLocal). The Commander’s OOBM IP address (called the Global IP address) is used for managing the Commander through the OOBM port.

After switchover/failover of control from the Commander to the Standby, the OOBM port IP address of the new Commander is the Global IP address. This change in address causes some undesirable behavior (after failover):

- When using DHCP or DHCPv6, the new Commander requests a new lease and typically receives a new network address (IPv4 or IPv6). With OOBM high availability (HA), it will seem as if a new link has come up requesting a network address.
- IPV6 link-local or auto-config addresses will change.

Using a static IP address avoids these issues. During failover, it will be as if the IP address is reconfigured. All ARP entries are updated automatically.

For more information on OOBM operation, see the *Management and Configuration Guide for AOS-S* for your switch.

## Understanding stacking election

### Electing a Commander

When the Commander of the stack is not identified, the stack undergoes a Commander Election process. This occurs when the entire stack is rebooted simultaneously, such as during a building power failure recovery, or when the stack becomes split and the Commander is isolated in the Inactive fragment, requiring the Active fragment to elect a new Commander.

All of the switches go through discovery and election at the same time. There is an election timer that is set for 60 seconds, and if there are no new switches discovered during that timeout period, the switches in the stack enter the election phase.

During the election process, for each group of switches that has the same STACK-ID (they should all be the same), these steps occur:

1. The switches with the highest Stack Revision are discovered.
2. The switch with the highest configured priority is selected as the Commander.
3. If there are switches with the same “highest” priority, the switch that was the previous Commander is selected.
4. If no switches were previous commanders, the switch that was the previous Standby is selected.
5. If none of the above conditions apply, the switch with the lowest MAC Address is selected as the Commander.

## Electing a Standby

The Standby switch is selected by the Commander following the same rules used to elect the Commander. Like the Commander, the Standby switch is not changed unless a failure occurs (for example, the Standby switch fails, or the Commander fails and the Standby becomes the Commander).




---

Since the Commander will update the revision software and set the stack IDs of all the switches, this information will be the same for all Standby switch contenders.

---

The criteria used by the Commander to select the Standby is in this priority order:

1. A switch with the same system revision software as the commander is available. This speeds up the initial boot since the stack will not have to wait for the standby to be updated. (If this were not the case, then the selected Standby would need to be reloaded with the new system and rebooted, resulting in the selection of a new Standby. This process would continue until either the original Standby was rebooted or a Standby was chosen that already had the correct system revision).
2. For all switches with the Commander’s revision software, the switch with the highest priority that is not the current Commander will become the Standby switch.




---

It is possible for the Standby to have a higher priority than the Commander, if the priority of the Standby was increased after the Commander becomes the Commander. (The Commander is not changed unless it fails or is on the Inactive fragment side of a stack that becomes split).

---

3. If there are two or more switches whose priority is equally high, then the Commander will look at the topology of the stack and pick a switch that is the most hops away from the Commander. This will increase the probability that the Commander and Standby switch will be in different stack fragments should a failure occur.
4. If the priorities and hop counts of the contenders are the same, then the switch with the lowest MAC address is selected as the Standby switch.

## Naming conventions for FUP

FUP uses the same naming convention as the expansion module ports in Aruba 2920 switch.

### Naming FUP with stacking enabled

For switches with stacking enabled, the naming convention for FUP is:

1/A1, 1/A2...1/AN, 1/B1/1/B2...1/BN, 2/A1,2/A2...2/AN...10/A1,10/A2...10/AN

**Where:**

N represents number of ports in the flexible module.

A and B represent the flexible module names.

1, 2...10 prefix represents the member number that slot ports belong to.

## Naming FUP in standalone

For switches with stacking disabled (standalone), the naming convention for FUP is:

A1, A2, A3...AN, B1, B2...BN

**Where:**

N represents number of ports in the flexible module.

A and B represent the flexible module names.

## Flexible Uplink Modules



---

When running KB software, support for flexible uplink modules is available only on 3810M switches.

---

The uplink speed and capacity can be changed by adding or removing the uplink modules. These Flexible Uplink Port (FUP) Modules are supported only on switches that support the JL079A, JL078A, JL083A, or JL081A modules. The speed and the number of ports depend on the selected uplink module.

All physically inserted flexible modules are auto-detected when you boot a 3810M switch with the default configuration (factory reset).

**Flexible Ports**

The following types of flexible modules are supported on the 3810M switch series:

- Aruba 3810M 2QSFP+ 40GbE Module (JL079A)
- Aruba 3810M 1-port QSFP+ 40GbE Module (JL078A)
- Aruba 3810M 4-port 100M/1G/10G SFP+ MACsec Module (JL083A)



---

Only copper and fibre optic media types are supported. Auto media selection, such as detecting 1G SFP in 10G SFP+ FlexPort, is also supported on 4x10G SFP+ FlexPort.

---

- Aruba 3810M 4 HPE Smart Rate PoE+ Module (JL081A)

## Provisioning FUP

Use the CLI commands to provision the FUP for both standalone and with stacking enabled.

### Provisioning FUP with stacking enabled

Use the CLI command to provision an FUP for an already provisioned or an existing member configured with the specified flexible module type defined by the corresponding J-number.

**Syntax**

```
stacking member <stack-member> flexible-module < SLOT-ID > type < J-NUMBER >
```

**Description**

Specifies the stack member to be configured.

**Parameters**

- stack-member

Specify the `stack-member` in the range 1-10.

- SLOT-ID

Specify an alphabetic device slot identifier, such as A or B.

- J-NUMBER

Configure the type of the flexible module to be provisioned.

JL078A

JL079A

JL081A

JL083A

Preconfigure a flexible module before installing, as it allows the ports to be preconfigured and ready to use. If the modules are not preconfigured, the default configuration is used. If a module other than the preconfigured module type is inserted, the module is not activated.

### Example output

```
switch(config)# stacking member
<1-10>                               Enter a stack member-ID for the 'member'
                                       command/parameter.
switch(config)# stacking member 1
flexible-module                       Pre-configure a flexible module before installation.
priority                              Assigns a priority to the specified stack member.
remove                                Erases the stack member's configuration.
shutdown                              Shut down the specified stack member.
type                                  Configure the family of the switch being provisioned.
switch(config)# stacking member 1 flexible-module
SLOT-ID                               Enter an alphabetic device slot identifier.
switch(config)# stacking member 1 flexible-module A
remove                                Erases the flexible module configuration.
type                                  Configure the type of the flexible module being
                                       provisioned.
switch(config)# stacking member 1 flexible-module A type
JL078A
JL079A
JL083A
switch(config)# stacking member 1 flexible-module A type JL083A
switch(config)# show run
```

Running configuration:

```
; Stack_KB Configuration Editor; Created on release #KB.16.01.0000x
; Ver #0b:7c.59.f4.7b.ff.ff.fc.ff.ff.3f.ef:8d

stacking
  member 1 type "JL071A" mac-address 9457a5-8c5600
  member 1 flexible-module A type JL083A
  member 2 type "JL075A" mac-address 5065f3-12ef00
  exit
hostname "Switch"
no rest-interface
snmp-server community "public" unrestricted
oobm
  ip address dhcp-bootp
  member 1
    ip address dhcp-bootp
  exit
  member 2
```

```

        ip address dhcp-bootp
        exit
    exit
vlan 1
    name "DEFAULT_VLAN"
    untagged 1/1-1/24,1/A1-1/A4,2/1-2/16
    ip address dhcp-bootp
    exit

```

## Provisioning FUP with stacking disabled

Use the CLI command to provision an FP module in a standalone environment, with the specified flexible module type defined by the corresponding J-number. Preconfigure a flexible module before installing, as it allows the ports to be preconfigured and ready to use. If the modules are not preconfigured, the default configuration is used. If a module other than the preconfigured module type is inserted, the module is not activated.

### Syntax

```
flexible-module <SLOT-ID> {type <J-NUMBER>}
```

### Description

Specify a flexible module to be configured.

### Parameters

- **SLOT-ID**  
Specify an alphabetic device slot identifier, such as A or B.
- **J-NUMBER**  
Configure the type of the flexible module to be provisioned.  
JL078A  
JL079A  
JL081A  
JL083A

### Example output

```

switch(config)# show run

Running configuration:

; JL071A Configuration Editor; Created on release #KB.16.01.0000x
; Ver #0b:7c.59.f4.7b.ff.ff.fc.ff.ff.3f.ef:8d

hostname "Aruba-3810M-24GT-1s"
module 1 type jl071x
snmp-server community "public" unrestricted
oobm
    ip address dhcp-bootp
    exit
vlan 1
    name "DEFAULT_VLAN"
    untagged 1-24
    ip address dhcp-bootp
    exit

switch(config)# flexible-module A
remove          Erases the flexible module configuration.
type            Configure the type of the flexible module being
                provisioned.

```

```

switch(config)# flexible-module A type
JL078A
JL079A
JL083A
switch# flexible-module A type JL078A
switch(config)# show run

Running configuration:

; JL071A Configuration Editor; Created on release #KB.16.01.0000x
; Ver #0b:7c.59.f4.7b.ff.ff.fc.ff.ff.3f.ef:8d

hostname "Aruba-3810M-24GT-1s"
module 1 type jl071x
flexible-module A type JL078A
snmp-server community "public" unrestricted
oobm
  ip address dhcp-bootp
  exit
vlan 1
  name "DEFAULT_VLAN"
  untagged 1-24,A1
  ip address dhcp-bootp
  exit

```

## Unprovisioning FUP

Use the CLI commands to remove the configured FUP for both standalone and with stacking enabled.

### Unprovisioning FUP with stacking enabled

Use the CLI command to remove a provisioned FP module.

#### Syntax

```
stacking member <STACK-MEMBER> flexible-module <SLOT-ID> remove
```

#### Description

Specify a flexible module to be removed.

#### Parameters

- **stack-member**  
Specify the `stack-member` in the range 1-10.
- **SLOT-ID**  
Specify an alphabetic device slot identifier, such as A or B.

#### Example output

```

switch(config)# show run

Running configuration:

; Stack_KB Configuration Editor; Created on release #KB.16.01.0000x
; Ver #0b:7c.59.f4.7b.ff.ff.fc.ff.ff.3f.ef:8d

stacking
  member 1 type "JL071A" mac-address 9457a5-8c5600

```

```

member 1 flexible-module A type JL083A
member 2 type "JL075A" mac-address 5065f3-12ef00
exit
hostname "Switch"
no rest-interface
snmp-server community "public" unrestricted
oobm
  ip address dhcp-bootp
  member 1
    ip address dhcp-bootp
  exit
  member 2
    ip address dhcp-bootp
  exit
exit
vlan 1
  name "DEFAULT_VLAN"
  untagged 1/1-1/24,1/A1-1/A4,2/1-2/16
  ip address dhcp-bootp
  exit
switch(config)# stacking member 1 flexible-module A remove
switch(config)# show run

Running configuration:

; Stack_KB Configuration Editor; Created on release #KB.16.01.0000x
; Ver #0b:7c.59.f4.7b.ff.ff.fc.ff.ff.3f.ef:8d

stacking
  member 1 type "JL071A" mac-address 9457a5-8c5600
  member 2 type "JL075A" mac-address 5065f3-12ef00
  exit
hostname "Switch"
no rest-interface
snmp-server community "public" unrestricted
oobm
  ip address dhcp-bootp
  member 1
    ip address dhcp-bootp
  exit
  member 2
    ip address dhcp-bootp
  exit
exit
vlan 1
  name "DEFAULT_VLAN"

```

## Unprovisioning FUP with stacking disabled

Use the CLI command to remove an already provisioned FP module and its associated configurations.

### Syntax

```
flexible-module <SLOT-ID> {type <J-NUMBER> | remove}
```

### Description

Specify a flexible module, for which configuration has to be removed.

### Parameters

**SLOT-ID**

Specify an alphabetic device slot identifier, such as A or B.

### Example output

```
switch(config)# show run

Running configuration:

; JL071A Configuration Editor; Created on release #KB.16.01.0000x
; Ver #0b:7c.59.f4.7b.ff.ff.fc.ff.ff.3f.ef:8d

hostname "Aruba-3810M-24GT-1s"
module 1 type j1071x
flexible-module A type JL078A
snmp-server community "public" unrestricted
oobm
  ip address dhcp-bootp
  exit
vlan 1
  name "DEFAULT_VLAN"
  untagged 1-24,A1
  ip address dhcp-bootp
  exit
switch(config)# flexible-module A remove
switch(config)# show run

Running configuration:

; JL071A Configuration Editor; Created on release #KB.16.01.0000x
; Ver #0b:7c.59.f4.7b.ff.ff.fc.ff.ff.3f.ef:8d

hostname "Aruba-3810M-24GT-1s"
module 1 type j1071x
snmp-server community "public" unrestricted
oobm
  ip address dhcp-bootp
  exit
vlan 1
  name "DEFAULT_VLAN"
  untagged 1-24
  ip address dhcp-bootp
  exit
```

## Saving power by turning off FUPs

Use the CLI commands to save power by turning `off` unutilized FUPs.

## Saving power by turning off FUP with stacking enabled

Use the CLI command to power `off` the flexible module for a stacking member to save power.

### Syntax

```
savepower flexible-module <SLOT-ID> member <STACK-MEMBER>
```

### Description

Power flexible modules `off`.

### Parameters

`SLOT-ID`

Specify an alphabetic device slot identifier, such as A or B.

**stack-member**

Specify the `stack-member` to be configured in the range 1-10.



---

You cannot configure savepower for flexible modules on a preprovisioned stack member. Also, configuring LED status for flexible modules is not supported.

---

## Example output

```
switch# show modules

Status and Counters - Module Information

Stack ID       : 00045065-f3121480

Member
ID   Slot   Module Description                Serial Number   Status
-----
1    A       HPE JL083A 4p 10GbE SFP+ Module   SG5ZGZ6219     Up
1    Stack... HPE JL084A 4p Stacking Module     SG5ZGZ7440     Up
2    Stack... HPE JL084A 4p Stacking Module     SG5ZGZ7492     Up

switch(config)# savepower flexible-module a member 1
This command will shut down the specified modules. Ports on those
modules will no longer pass traffic and any management traffic to
ports on those modules will be interrupted. This command may take
up to 2 minutes to power down all specified modules. Please use the
event log to monitor progress.

Continue (y/n)? y

switch(config)# show modules

Status and Counters - Module Information

Stack ID       : 00045065-f3121480

Member
ID   Slot   Module Description                Serial Number   Status
-----
1    A       HPE Expansion Module              Save...
1    Stack... HPE JL084A 4p Stacking Module     SG5ZGZ7440     Up
2    Stack... HPE JL084A 4p Stacking Module     SG5ZGZ7492     Up

switch(config)# show run

Running configuration:

; Stack_KB Configuration Editor; Created on release #KB.16.01.0000x
; Ver #0a:59.f4.7b.ff.ff.fc.ff.ff.3f.ef:f0

stacking
 member 1 type "JL076A" mac-address 5065f3-121480
 member 1 flexible-module A type JL083A
 member 2 type "JL074A" mac-address 5065f3-12bc80
 exit
hostname "Switch"
no rest-interface
snmp-server community "public" unrestricted
oobm
 ip address dhcp-bootp
```

```

member 1
  ip address dhcp-bootp
  exit
member 2
  ip address dhcp-bootp
  exit
exit
vlan 1
  name "DEFAULT_VLAN"
  untagged 1/1-1/48,1/A1-1/A4,2/1-2/48
  ip address dhcp-bootp
  exit
savepower flexible-module A member 1

```

## Saving power by turning off FUPs with stacking disabled

Use the CLI command to turn `off` a flexible module with stacking disabled to save power. The flexible module configuration remains unchanged during a savepower operation.

### Syntax

```
savepower flexible-module <SLOT-ID>
```

### Description

Power flexible modules `off`.

### Option

SLOT-ID

Specify an alphabetic device slot identifier, such as A or B.

### Example output

```

switch# show modules

Status and Counters - Module Information

Chassis: Switch      JL075A      Serial Number:  SG5ZGY143

Slot  Module Description                               Serial Number    Status
-----
A      HPE JL083A 4SFP+ Module                               SG5ZGZ6184      Up
B      HPE JL083A 4SFP+ Module                               SG5ZGZ6219      Up
St... HPE JL084A 4-port Stacking Module                   SG5ZGZ7603      Up

switch# show run

Running configuration:

; JL075A Configuration Editor; Created on release #KB.16.01.0000x
; Ver #0c:01.7c.59.f4.7b.ff.ff.fc.ff.ff.3f.ef:

hostname "Switch"
module 1 type jl075x
module 2 type jl075y
module 3 type jl075z
flexible-module A type JL083A
flexible-module B type JL083A
no rest-interface
snmp-server community "public" unrestricted
oobm

```

```

ip address dhcp-bootp
exit
vlan 1
name "DEFAULT_VLAN"
untagged 1-16,A1-A4,B1-B4
ip address dhcp-bootp
exit

switch(config)# savepower flexible-module B
This command will shut down the specified modules. Ports on those
modules will no longer pass traffic and any management traffic to
ports on those modules will be interrupted. This command may take
up to 2 minutes to power down all specified modules. Please use the
event log to monitor progress.

Continue (y/n)? y
switch(config)# show run

Running configuration:

; JL075A Configuration Editor; Created on release #KB.16.01.0000x
; Ver #0c:01.7c.59.f4.7b.ff.ff.fc.ff.ff.3f.ef:

hostname "Switch"
module 1 type j1075x
module 2 type j1075y
module 3 type j1075z
flexible-module A type JL083A
flexible-module B type JL083A
no rest-interface
snmp-server community "public" unrestricted
oobm
ip address dhcp-bootp
exit
vlan 1
name "DEFAULT_VLAN"
untagged 1-16,A1-A4,B1-B4
ip address dhcp-bootp
exit
savepower flexible-module B

switch# show modules

Status and Counters - Module Information

Chassis: 3810M-16SFP+-2-slot JL075A          Serial Number: SG5ZGY143

Slot  Module Description                      Serial Number  Status
-----
A      HPE JL083A 4SFP+ Module                     SG5ZGZ6184    Up
B      HPE JL083A 4SFP+ Module                     SG5ZGZ6219    Save...
St...  HPE JL084A 4-port Stacking Module           SG5ZGZ7603    Up

```

## Disabling savepower by turning on FUPs

Use the CLI commands to power on FUPs in savepower status.

## Turning ON FUPs in savepower status with stacking enabled

### Syntax

```
no savepower flexible-module <SLOT-ID> member <STACK-MEMBER>
```

## Description

Disable save power for FUP in a stack.

## Parameters

- **SLOT-ID**  
Specify an alphabetic device slot identifier, such as A or B.
- **stack-member**  
Specify the `stack-member` to be configured in the range 1-10.

## Example output

```
switch(config)# no savepower flexible-module B member 2
switch(config)# show modules
  Chassis: Switch      JL075A      Serial Number:  SG5ZGY143

Slot  Module Description                               Serial Number      Status
-----
A     HPE JL083A 4SFP+ Module                            SG5ZGZ6184        Up
B     HPE JL083A 4SFP+ Module                            SG5ZGZ6219        Up
St... HPE JL084A 4-port Stacking Module                  SG5ZGZ7603        Up
```

## Turning ON FUPs in savepower status with stacking disabled

### Syntax

```
no savepower flexible-module <SLOT-ID>
```

### Description

Disable save power for a standalone FUP.

### Option

**SLOT-ID**

Specify an alphabetic device slot identifier, such as A or B.

### Example output

```
switch(config)# no savepower flexible-module
SLOT-ID          Enter an alphabetic device slot identifier.
switch(config)# no savepower flexible-module A
switch(config)# show modules

Status and Counters - Module Information

  Chassis: Switch      JL076A      Serial Number:  SG4ZGYZ090

Slot  Module Description                               Serial Number      Status
-----
A     HPE JL079A 2QSFP+ 40GbE Module                            Up
```

## Online Insertion and Removal (OIR)

The following modules support Online Insertion and Removal method:

- Aruba 3810M 2QSFP+ 40GbE Module (JL079A)
- Aruba 3810M 1QSFP+ 40GbE Module (JL078A)
- Aruba 3810M 4SFP+ MACsec Module (JL083A)
- Aruba 3810M 4 Smart Rate PoE+ Module (JL081A)

The following are the various terminologies used in OIR:

### Hard Online Insertion

Inserting a flexible module into an empty flexible module slot when the system is running. This operation is also called as Hot-Insert.

### Hard Online Removal

Extracting the flexible module from the switch when the system is running. This operation is also called as Hot-Removal.

### Hard Online Removal followed by a Hard Online Insertion

Extracting the flexible module, and then inserting a flexible module either with a similar or different configuration type. This operation is also called as Hot-Swap.

### Soft Online Insertion

Use the provisioning flexible module command.

### Soft Online Removal

Use the unprovisioning flexible module command.

## Changing flexible modules on a running stack

You can change a flexible module in a running stack under the following scenarios:

- [Inserting a flexible module into a running stack on page 349](#)
- [Booting with flexible module configuration, no flexible modules inserted on page 350](#)
- [Removing the flexible modules on page 350](#)
- [Replacing a flexible module on page 350](#)

There are various options available for each of the above scenarios that helps resolve troubleshooting issues.

### Inserting a flexible module into a running stack

You can boot a stack or standalone either with the default or flexible module configuration under various scenarios such as:

#### Scenario 1

A stack or standalone booted with the default configuration, but flexible modules are not inserted at the time of boot. Hot-Insert a flexible module compatible with the 3810M SKU. The flexible modules are booted and the flexible ports are available for use. The `show modules` command displays the flexible module status as `UP`.

#### Scenario 2

A stack or standalone booted with the flexible module configuration, but flexible modules are not inserted at the time of boot. Hot-Insert a flexible module of the same type as configured. The flexible modules are booted and flexible ports are available for use. The `show modules` command displays the status of flexible module as `UP`.

#### Scenario 3

A stack or standalone booted with the flexible module configuration, but flexible modules are not inserted at the time of boot. Hot-Insert a flexible module other than the configured. The `show modules` command displays

`Failed`

State in the output due to a mismatch. RMON has a log entry for `Misconfigured` module. The flexible ports are unavailable for use.

#### Scenario 4

A stack or standalone booted with the flexible module configuration, and same type of flexible modules inserted as configured at the time of boot. The flexible modules are booted and the flexible ports are available for use. The `show modules` command displays status of flexible module as `UP`.

#### Scenario 5

A stack or standalone booted with flexible module configuration and flexible modules other than the configured are inserted at the time of boot. The `show modules` command displays `Failed State` in the output due to a mismatch. RMON has a log entry for `Misconfigured` module. The flexible ports are unavailable for use.

## Booting with flexible module configuration, no flexible modules inserted

### Procedure

Boot a stack or standalone with the flexible module configuration and no flexible modules inserted at the time of boot. Use the `unprovision` command to remove the existing flexible module, and then Hot-Insert a flexible module that is compatible with 3810M SKU. The flexible modules are booted and the flexible ports are available for use. The `show modules` displays the status of inserted flexible module as `UP`.

## Removing the flexible modules

The following scenarios are available when you boot a stack or standalone with the flexible module configuration, followed by removing flexible modules of either same or different type than configured:

#### Scenario 1

Perform a Hot-Removal of the inserted flexible module. The `show modules` command displays the status of flexible module as `Unknown`.

#### Scenario 2

Perform a Hot-Removal of the inserted flexible module followed by a Hot-Insert of either same or different type. The flexible ports are unavailable for use.



---

Hewlett Packard Enterprise recommends unprovisioning or provisioning flexible modules as Hot-Swap is not supported in the current release.

---

## Replacing a flexible module

Although, Hot-Swap is not supported in the current release, you can still replace a flexible module on a running stack or standalone. To make the flexible module operational, follow these steps:

### Procedure

1. Run the `unprovision` command.
2. Perform a Hot-Removal of the installed flexible module.
3. Hot-Insert a flexible module of any supported type.

The flexible modules are booted and the flexible ports are available for use. The `show modules` command displays the status of inserted flexible module as `UP`.

# Saving power for FUPs

You can save power by turning `off` the unused flexible modules under the following scenarios:

## Procedure

1. [Booting a switch with no inserted flexible modules, and with or without flexible module configuration on page 351](#)
2. [Changing flexible modules in savepower status in a running stack on page 351](#)
3. [Booting a switch with flexible modules inserted, and flexible modules in savepower status on page 352](#)

## Booting a switch with no inserted flexible modules, and with or without flexible module configuration

The following are the various scenarios:

### Scenario 1

The `savepower` command is executed, but the `show modules` does not display the flexible modules.

### Scenario 2

Insert a flexible module, and then execute `savepower`. The flexible modules are powered `off`. The `show modules` displays the flexible modules status as `savepower`.

### Scenario 3

Insert a flexible module, execute `savepower`, and then run `no savepower`. The flexible modules are powered on again.

### Scenario 4

Execute `savepower`, and then perform Hot-Insert. The `show modules` displays the flexible modules status as `savepower`, but flexible ports are unavailable for use.

## Changing flexible modules in savepower status in a running stack

### Scenario 1

Unprovision the flexible module. The `show modules` does not display the flexible modules.

### Scenario 2

Perform a Hot-Removal of the flexible module. The `show modules` displays the flexible modules status as `Unknown`. The `savepower` configuration is retained for the slot.



---

In a stacking environment, execute `member remove` on which the `savepower` command is issued. The `show modules` does not display the flexible modules. The `savepower` command is cleared from the configuration.

---

### Scenario 3

Execute `savepower`, and then perform Hot-Insert. The `show modules` displays the flexible modules status as `savepower`, but flexible ports are unavailable for use.

## Booting a switch with flexible modules inserted, and flexible modules in savepower status

The `show modules` displays the flexible modules status as `savepower`. The flexible ports are unavailable for use.