AOS-CX 10.09 Virtual Switching Framework (VSF) Guide

6200, 6300 Switch Series

aruba

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Contents

This document describes features of the AOS-CX network operating system. It is intended for administrators responsible for installing, configuring, and managing Aruba switches on a network.

Applicable products

This document applies to the following products:

- Aruba 6200 Switch Series (JL724A, JL725A, JL726A, JL727A, JL728A)
- Aruba 6300 Switch Series (JL658A, JL659A, JL660A, JL661A, JL662A, JL663A, JL664A, JL665A, JL666A, JL667A, JL668A, JL762A)

Latest version available online

Updates to this document can occur after initial publication. For the latest versions of product documentation, see the links provided in [Support and Other Resources](#).

Command syntax notation conventions

Convention	Usage
`example-text`	Identifies commands and their options and operands, code examples, filenames, pathnames, and output displayed in a command window. Items that appear like the example text in the previous column are to be entered exactly as shown and are required unless enclosed in brackets (`[ ]`).
example-text	In code and screen examples, indicates text entered by a user.
Any of the following: ■ `<example-text>` ■ `<example-text>` ■ *example-text* ■ *example-text*	Identifies a placeholder—such as a parameter or a variable—that you must substitute with an actual value in a command or in code: ■ For output formats where italic text cannot be displayed, variables are enclosed in angle brackets (`< >`). Substitute the text—including the enclosing angle brackets—with an actual value. ■ For output formats where italic text can be displayed, variables might or might not be enclosed in angle brackets. Substitute the text including the enclosing angle brackets, if any, with an actual value.
|	Vertical bar. A logical `OR` that separates multiple items from which you can choose only one. Any spaces that are on either side of the vertical bar are included for readability and are not a required part of the command syntax.
`{ }`	Braces. Indicates that at least one of the enclosed items is required.

Convention	Usage
[ ]	Brackets. Indicates that the enclosed item or items are optional.
… or . . .	Ellipsis: ■ In code and screen examples, a vertical or horizontal ellipsis indicates an omission of information. ■ In syntax using brackets and braces, an ellipsis indicates items that can be repeated. When an item followed by ellipses is enclosed in brackets, zero or more items can be specified.

About the examples

Examples in this document are representative and might not match your particular switch or environment.

The slot and port numbers in this document are for illustration only and might be unavailable on your switch.

Understanding the CLI prompts

When illustrating the prompts in the command line interface (CLI), this document uses the generic term `switch`, instead of the host name of the switch. For example:
```
switch>
```
The CLI prompt indicates the current command context. For example:
```
switch>
```
> Indicates the operator command context.
```
switch#
```
> Indicates the manager command context.
```
switch(CONTEXT-NAME)#
```
> Indicates the configuration context for a feature. For example:
```
switch(config-if)#
```
> Identifies the `interface` context.

Variable information in CLI prompts

In certain configuration contexts, the prompt may include variable information. For example, when in the VLAN configuration context, a VLAN number appears in the prompt:
```
switch(config-vlan-100)#
```
When referring to this context, this document uses the syntax:
```
switch(config-vlan-<VLAN-ID>)#
```
Where `<VLAN-ID>` is a variable representing the VLAN number.

Identifying switch ports and interfaces

Physical ports on the switch and their corresponding logical software interfaces are identified using the format:
```
member/slot/port
```

On the 6200 Switch Series

■ *member*: Member number of the switch in a Virtual Switching Framework (VSF) stack. Range: 1 to 8. The primary switch is always member 1. If the switch is not a member of a VSF stack, then member is 1.

- *slot*: Always 1. This is not a modular switch, so there are no slots.
- *port*: Physical number of a port on the switch.

For example, the logical interface `1/1/4` in software is associated with physical port 4 in slot 1 on member 1.

On the 6300 Switch Series

- *member*: Member number of the switch in a Virtual Switching Framework (VSF) stack. Range: 1 to 10. The primary switch is always member 1. If the switch is not a member of a VSF stack, then member is 1.
- *slot*: Always 1. This is not a modular switch, so there are no slots.
- *port*: Physical number of a port on the switch.

For example, the logical interface `1/1/4` in software is associated with physical port 4 on member 1.

Virtual Switching Framework, or VSF, allows network administrators to stack multiple individual switches into a single logical device using standard Ethernet links. VSF stacks provide increased network capacity and improved redundancy, allowing administrators to scale stack size with user and device requirements while simplifying configuration complexity and providing a single point of management access with a shared control plane across all stack members.

- **6200F:** VSF allows stacks to be formed using any combination of SKUs of the 6200 family. Up to 8 member switches will be allowed. Connections between the switches must use 10G links.
- **6300:** VSF allows stacks to be formed using any combination of SKUs of the 6300 family. Up to 10 member switches will be allowed. Connections between the switches must use 10G, 25G, or 50G links. All VSF links in a stack should operate at the same speed.

VSF is enabled by default on all supported switch models and cannot be disabled. Within the stack, one switch (normally the primary, member 1) is the Conductor that runs all control plane software and manages the ASICs of all stack members. Any switch apart from primary can be configured as Standby switch, which maintains a synchronized copy of the Conductor's configuration database and is capable of assuming the Conductor role in the event of a failure of, or loss of connectivity to, the Conductor.

Terminology

Table 1: *Acronyms used in this book*

Term	Definition
VSF	Virtual Switching Framework
L2	Layer 2 of the OSI 7-layer model
L3	Layer 3 of the OSI 7-layer model
SKU	Stock Keeping Unit
FRU	Field Replaceable Unit
ASIC	Application-Specific-Integrated Circuit
L-Agg	Link Aggregation
CLI	Command Line Interface

Table 2: *Role types*

Role	Definition
Primary	The primary member is member ID 1; normally operates as the stack Conductor.
Secondary	User-configurable using any valid member ID other than 1; normally operates as the stack Standby.
Conductor	The Conductor maintains the VSF stack configuration, software images, and control plane.
Standby	The Standby maintains a synchronized copy of the VSF stack configuration from the Conductor; automatically assumes the Conductor role if connectivity is lost to the existing Conductor due to hardware or link failures.
Member	The member switch does not run any networking protocols and has no states. The interfaces on this switch are directly controlled and programmed by the conductor switch.

Connection Topology

VSF supports up to 8 member stacks (for 6200F devices) or 10 member stacks (for 6300 devices) in ring and chain topology.

Ring topology

In a ring topology, each stack member has a VSF link connection to two other members, providing resiliency against link and member switch hardware failures as any single failure does not isolate remaining stack members from each other. Aruba strongly recommends deploying VSF stacks using ring topologies whenever feasible.

Figure 1 *Ring topology*
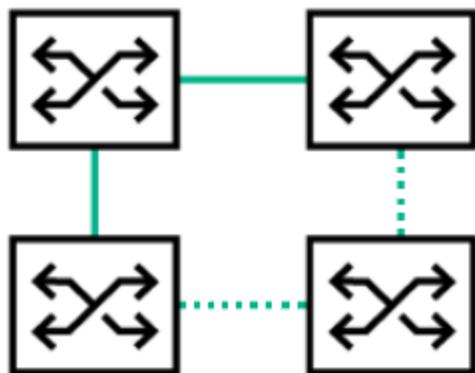
Chain topology

In a chain topology, there is only one path between any two stack members. A VSF link or hardware failure in a chain topology may cause a stack split and result in network disruption; VSF split detection may be used to mitigate this scenario.

Figure 2 *Chain topology*

VSF Behavior

Each stack member must have a unique member ID number. Auto-stacking automatically assigns the lowest available member ID when adding a new member to the stack; if deploying or expanding a stack manually, ensure that each new member is assigned a valid member ID not already in use by an existing stack member, as a member ID conflict will result in the new member failing to join the stack.

- During normal stack operation, the primary member will assume the Conductor role and the secondary member will assume the Standby role during normal operation.
- The primary member is member number 1. This setting is not configurable and 1 is the default. A factory-default switch boots up as a VSF-enabled switch with a member number of 1.
- The secondary member number is user configurable; when auto-stacking is used via the push-button or CLI methods, member 2 is automatically assigned as the secondary. It is recommended that the customer configures a secondary member in the stack, since a stack with a standby offers resiliency and high availability.
- No members other than primary and secondary members can become Conductor or Standby of the stack.

In a standard deployment, uplinks should be from primary and secondary. The management interface from primary and secondary members should be connected to the management network, providing management connectivity to the current conductor.

One Virtual Device

Once the VSF stack is formed, all interconnected switches operate as a single virtual switch with a single control plane. All interfaces of all switches in the stack are available for configuration and management.

Figure 1 *One virtual device example topology*
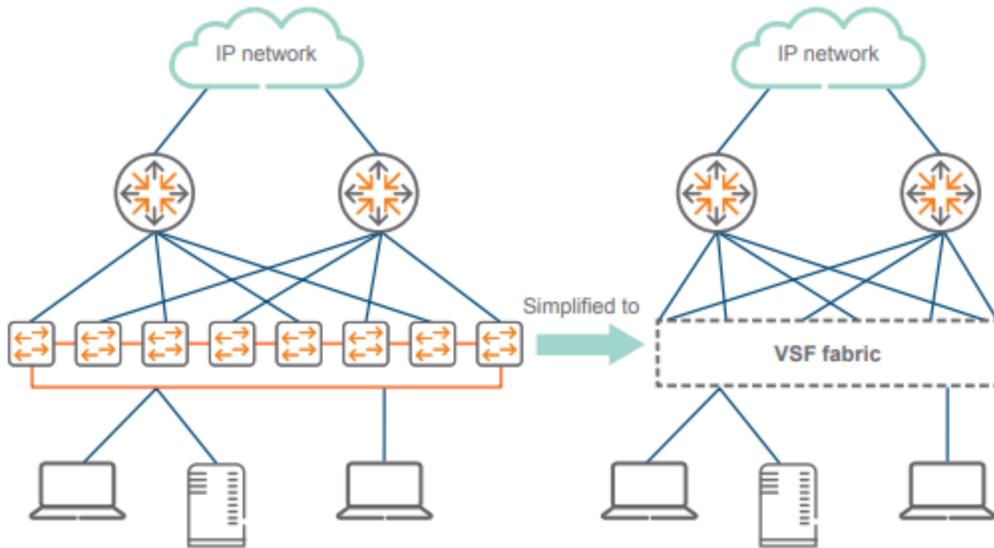
```
switch# show vsf

Force Autojoin              : Disabled
Autojoin Eligibility Status: Not Eligible
MAC Address                : 08:97:34:b0:0e:00
Secondary                  : 2
Topology                   : Chain
Status                     : No Split
Split Detection Method     : None

Mbr MAC Address            Type            Status
ID
--- ------------------     --------------  -----------------
1   08:97:34:b0:0e:00      JL666A          Conductor
2   08:97:34:b1:43:00      JL665A          Standby
3   08:97:34:b7:cc:00      JL663A          Member
4                          JL662A          Not Present
```

Interfaces will be numbered as noted in the following table.

Name	Member Number	Slot	Port
1/1/1	1	1	1
2/1/14	2	1	14
8/1/12	8	1	12

For VSF-capable switches, the slot number is always 1. All interfaces except for those assigned to VSF links are available for normal configuration.

```
switch# show interfaces brief
------------------------------------------------------------------------------------
Port       Native  Mode   Type          Enabled Status  Reason                Speed
           VLAN                                                                (Mb/s)
```

```
--------------------------------------------------------------------------------
1/1/1     10       access SFP+DA3     yes    up                              10000
1/1/2     --       routed --          no     down    No XCVR installed       --
1/1/3     --       routed --          no     down    No XCVR installed       --
1/1/4     --       routed --          no     down    No XCVR installed       --
1/1/5     --       routed --          no     down    No XCVR installed       --
1/1/6     --       routed --          no     down    No XCVR installed       --
...
1/1/33    --       routed --          no     down    No XCVR installed       --
1/1/34    --       routed --          no     down    No XCVR installed       --
1/1/35    --       routed --          no     down    No XCVR installed       --
1/1/36    --       routed --          no     down    No XCVR installed       --
2/1/1     10       access SFP+DA3     yes    up                              10000
2/1/2     --       routed --          no     down    No XCVR installed       --
2/1/3     --       routed --          no     down    No XCVR installed       --
2/1/4     --       routed --          no     down    No XCVR installed       --
...
2/1/35    --       routed --          no     down    No XCVR installed       --
2/1/36    --       routed --          no     down    No XCVR installed       --
```

A single control plane operates for the entire VSF stack.

```
6300(config)# show run
Current configuration:
!
!Version AOS-CX FL.10.07.xxxx
!export-password: default
cli-session
    timeout 0
!
!
!
!
!
!
ssh server vrf default
ssh server vrf mgmt
vsf secondary-member 2
vsf member 1
    type jl666a
    link 1 1/1/26
    link 2 1/1/25
vsf member 2
    type jl666a
    link 1 2/1/25
    link 2 2/1/26
vlan 1
spanning-tree
interface mgmt
    no shutdown
    ip dhcp
interface 1/1/1
    no shutdown
    no routing
    vlan access 1
interface 1/1/2
    no shutdown
    no routing
    vlan access 1
interface 1/1/3
    no shutdown
```

```
    no routing
    vlan access 1
interface 1/1/4
    no shutdown
    no routing
    vlan access 1
interface 1/1/5
    no shutdown
    no routing
    vlan access 1
interface 1/1/6
    no shutdown
    no routing
    vlan access 1

...
...
interface 2/1/1
    no shutdown
    no routing
    vlan access 1
interface 2/1/2
    no shutdown
    no routing
    vlan access 1
interface 2/1/3
    no shutdown
    no routing
    vlan access 1
interface 2/1/4
    no shutdown
    no routing
    vlan access 1
interface 2/1/5
    no shutdown
    no routing
    vlan access 1
interface 2/1/6
    no shutdown
    no routing
    vlan access 1
...
...

!
!
!
!
!
https-server vrf default
https-server vrf mgmt
switch(config)#
```

As shown in this configuration, interfaces of all member switches can be configured from the Conductor.

Once a stack is deployed, the stack configuration is persistent and stored separate from the startup configuration. The user can safely remove the startup configuration with the command `erase startup-configuration` without disturbing the stacking topology. To remove all configurations, including the stacking topology, use the command `erase all zeroize` which will automatically reboot and zeroize all stack members, restoring them to a factory default state.

VSF auto-stacking

VSF auto-stacking feature provides a mechanism to automatically form a stack when the stack members are physically connected in a desired topology. This reduces the number of user intervention touch points to form a VSF stack.

A manual stack formation procedure generally requires the user to explicitly log in to each of the switch, configure the links, renumber it, and then make the physical connection to form a VSF stack of desired size and topology. This is error prone since there are multiple touch-points involved in the whole work-flow for each member. The auto-stacking feature eases this problem by reducing the number of touch-points involved to simple physical connections of the links. A new factory default switch can be added into an existing stack by physically connecting it to a VSF link port on an existing stack member. The new switch will automatically be assigned the lowest available member ID and will automatically reboot. After reboot, the newly added member will join the stack.

There are two major components to the auto-stacking solution:

- Peer discovery—Initiated from the conductor using one of the methods described in Designating conductor switch.
- Auto-join Eligibility—Determined by the configuration state of each stack member. A switch with a factory default configuration is auto-join eligible.

Peer discovery

Auto-stacking peer discovery is a uni-directional process. It starts with the VSF link containing the higher-numbered VSF port, sending a VSF peer discovery protocol packet to a connected peer switch. The peer receives the packet, determines if it is valid, and sends a response with information including its auto-join eligibility, MAC address, and part number. If the peer is auto-join eligible, the VSF member and link configurations are automatically added to the running configuration of the conductor.

Auto-join Eligibility

Auto-join eligibility determines whether a switch will join a VSF stack if connected to a configured VSF link port on an existing stack member. A switch in its factory defaults configuration state is considered to be auto-join eligible. If the auto-join eligible switch is connected to existing stack, it will automatically reboot and join the stack. Once a switch is no longer using a factory default configuration, it is no longer auto-join eligible and will not automatically join an existing stack. A CLI command is available to override this behavior; see Force auto-join support for details. However, user can still manually configure the links, renumber the device to make it part of a stack.

Reserved interfaces for auto-stacking

Based on the product type of a switch, the following two interfaces are reserved for the auto-stacking process:

- 24-port switch models: 25 and 26
- 48-port switch models: 49 and 50

Users can physically connect the switch to an existing stack on one of these reserved auto-stacking interfaces.

The following table shows the list of reserved auto-stacking interfaces based on the product type and platform:

Reserved Interfaces

Platform	SKU Part Number	Ports reserved for Auto-Stacking
6300	JL658A JL660A JL662A JL664A JL666A JL668A	25 and 26
6300	JL659A JL661A JL663A JL665A JL667A JL762A	49 and 50
6200	JL724A JL725A	25 and 26
6200	JL726A JL727A JL728A	49 and 50

Force auto-join support

Only a switch with factory default configuration is considered to be auto-join eligible. In order to support factory express deployments where the user wants to add a switch which is in its non-factory default configuration, the force auto-join configuration support is provided. Use the `vsf force-auto-join` command to force the switch to join the stack automatically. Once the user sets force auto-join in the switch configuration, the switch will be considered as auto-join eligible and will join the stack even though the switch does not have the factory default configuration.

Force auto-join will work only if the switch does not have any pre-existing VSF configurations.

Interoperation

A VSF stack supports any combination of models within a supported switch family:

- 6200F switches, or
- 6300 switches (6300M and 6300F).

> VSF stacking cannot be done with a mixed set of switches. The stack must be made up of *only* 6200 or *only* 6300 switches.

> Firmware versions prior to AOS-CX 10.07 are not interoperable with 10.07 or later versions.

Link aggregation

Link aggregations (L-Agg) may span interfaces across multiple stack members. Load balancing is performed on all interfaces of the L-Agg across the stack and is applicable to both L2 and L3 L-Aggs.

```
interface lag 1
    no shutdown
    no routing
    vlan access 1
    loop-protect
interface lag 2
    no shutdown
    bfd min-transmit-interval 1000
    ip address 192.168.12.7/24
interface 1/1/18
    no shutdown
    lag 1
interface 2/1/18
    no shutdown
    lag 1
interface 1/1/23
    no shutdown
    lag 2
interface 2/1/23
    no shutdown
    lag 2
```

```
switch# show lacp interfaces

State abbreviations :
A - Active         P - Passive       F - Aggregable I - Individual
S - Short-timeout L - Long-timeout N - InSync      O - OutofSync
C - Collecting     D - Distributing
X - State m/c expired              E - Default neighbor state

Actor details of all interfaces:
------------------------------------------------------------------------------
Intf    Aggr        Port  Port  State  System-ID        System Aggr Forwarding
        Name        Id    Pri                           Pri    Key  State
------------------------------------------------------------------------------
1/1/18  lag1                                                        up
```

```
2/1/18   lag1                                                       up
1/1/23   lag2                                                       up
2/1/23   lag2                                                       up


Partner details of all interfaces:
--------------------------------------------------------------------------------
Intf     Aggr        Port Port  State   System-ID          System Aggr
         Name        Id   Pri                              Pri    Key
--------------------------------------------------------------------------------
1/1/18   lag1
2/1/18   lag1
1/1/23   lag2
2/1/23   lag2
```

The following sections describe the prerequisites and procedures to configure a VSF stack.

Stack deployment using auto-stacking

Utilize the VSF auto-stacking feature to quickly deploy pre-cabled stacks with minimal configuration required.

Designating conductor switch

Auto-Stacking feature requires the conductor of the stack to be configured with VSF links. Optionally, secondary or standby device can also be configured.

Following are different methods to designate the conductor:

- Using LED mode button: Physically connect the switches in the desired topology on the reserved VSF link ports and press the LED mode button until the mode changes to **Stk** on a factory default switch. This will automatically configure member 2 as the secondary member and configure the reserved VSF link ports as VSF links 1 and 2. In addition to VSF secondary and link configurations, `ztp force-provision` will also be configured on the conductor switch. The status of stack formation can be verified using Stk LED and Port LEDs states. For more information on LED states, see Stack and Port LED states.

> Auto-Stacking configures the higher-numbered reserved port on member 1 (26 or 50) as VSF link 1, and the lower-numbered reserved port (25 or 49) as VSF link 2, unless explicitly defined in a configuration downloaded by ZTP.

- Using start auto-stacking CLI: Physically connect the switches in a desired topology on the reserved VSF link port and execute the `vsf start-auto-stacking` command to automatically configure links. The command also configures member 2 as secondary. For more information, see Forming a four-member ring setup using auto-stacking command

  Example:

  ```
  switch(config)# vsf start-auto-stacking
  This will configure links and secondary on conductor

  Do you want to continue (y/n)? y
  ```

  For information on interfaces that should be configured as VSF links, refer to the Reserved interfaces for auto-stacking section.

> To use this command, the switch must be in the factory default configuration.

- Using link configuration CLI: Execute the `vsf member` command to configure VSF links on the conductor.
  Example:

```
6300(vsf-member-1)# link 1 1/1/26
6300(vsf-member-1)# link 2 1/1/25
```

> To form an ordered stack, it is recommended to configure higher denomination interface first into VSF link .

- TFTP download: Full stack configuration can be downloaded into the conductor of the stack. The recommendation is to first download the configuration to the startup and then move the startup to the running configuration.
- ZTP download: Full stack configuration can be downloaded into the conductor of the stack from TFTP server using ZTP. Once the configuration has been downloaded and applied, auto-stacking peer discovery proceeds and forms a stack.

  For more information on ZTP, refer to the *Zero Touch Provisioning* chapter in the *Fundamentals Guide*.

> If full stack configuration is downloaded into the conductor through TFTP/ZTP, the physical connections between the switches should be made according to the downloaded configuration.

Auto-stacking using LED mode button

Prerequisites

- All switches must be in the factory default configuration.
- All stack members must be connected in a ring topology on the reserved VSF link ports. For more information, see Reserved interfaces for auto-stacking.
- Operator must be connected to the conductor's USB-C console port or a terminal server connected to the USB-A port via a supported adapter or cable.

Procedure

1. Physically connect the switches in a desired topology on the reserved VSF link ports.
2. Press the LED mode button on the conductor until the mode changes to "Stk". The stack members reboot one after another and join the stack.

During stacking operation, the port LEDs are displayed in three different states:

- Flashing green—Indicates that the member is the conductor.
- Flashing orange—Indicates that the member is rebooting to join the stack or offline due to error condition.
- Solid green—Indicates that the member joined the stack and is operational.

For more information on stacking LED states, refer to the Monitoring Guide.

3. Issue a "show vsf" command to ensure that the stack has successfully formed. Alternatively, you can also verify the stack formation using LED states.

```
6300(config)# show vsf
Force Autojoin              : Disabled
Autojoin Eligibility Status: Not Eligible
MAC Address                : 70:72:cf:ef:b7:f2
Secondary                  : 2
Topology                   : Chain
```

```
Status                    : No Split
Split Detection Method    : None


Mbr Mac Address           type           Status
ID
--- ------------------ -------------- ---------------
1   70:72:cf:ef:b7:f2  JL664A         Conductor
2   90:20:c2:23:67:40  JL664A         Standby
3   90:20:c2:24:71:c0  JL667A         Member
4   38:21:c7:5a:33:40  JL668A         Member
```

Auto-stacking using CLI command

Prerequisites

- All switches must be in the factory default configuration.
- All stack members must be connected in a ring topology on the reserved VSF link ports. For more information, see Reserved interfaces for auto-stacking.
- Operator must be connected to the conductor's USB-C console port or a terminal server connected to the USB-A port via a supported adapter or cable.

Procedure

1. Physically connect the switches in a desired topology on the reserved VSF link ports.
2. Connect to the switch console and log in using the admin user; set a password when prompted.

3 Issue the `vsf start-auto-stacking` from the configuration context to start auto-stacking. The stack members reboot one after another and join the stack.

```
switch(config)# vsf start-auto-stacking
```

4. Issue a "show vsf" command to ensure that the stack has successfully formed. Alternatively, you can also verify the stack formation using LED states.

```
6300(config)# show vsf
Force Autojoin            : Disabled
Autojoin Eligibility Status: Not Eligible
MAC Address               : 70:72:cf:ef:b7:f2
Secondary                 : 2
Topology                  : Chain
Status                    : No Split
Split Detection Method    : None


Mbr Mac Address           type           Status
ID
--- ------------------ -------------- ---------------
1   70:72:cf:ef:b7:f2  JL664A         Conductor
2   90:20:c2:23:67:40  JL664A         Standby
3   90:20:c2:24:71:c0  JL667A         Member
4   38:21:c7:5a:33:40  JL668A         Member
```

Auto-stacking using zero-touch provisioning (ZTP)

Prerequisites

- All switches must be in factory default configuration.
- The conductor switch must be connected to the management network.
- All stack must be connected in a ring topology using SFP using SFP uplink ports with a minimum VSF link speed of 10Gbps.
- A supported ZTP method, such as a TFTP server must be defined by DHCP options.

ZTP auto-stacking via DHCP

AOS-CX uses the following DHCP options to specify network locations and filenames for automatic configuration and software image downloads:

- Option 60: Vendor Class Identifier (VCI).

VCI provided in DHCP request from switch is matched to an Option 43 vendor class defined on the DHCP server to provide configuration filename on TFTP server.

- Option 66: TFTP server name (IPv4 address)
- Option 43: Vendor-specific information
  - suboption 144: Name of the configuration file
  - Sub-option 145: Name of the firmware image file

Use the `show dhcp client vendor-class-identifier` command from the conductor switch to display the VCI string needed to configure the DHCP Option 43 vendor class on the DHCP server

On the DHCP server, configure predefined option 144 for each vendor class that will be used to specify the filename with the ZTP configuration to be downloaded by the stack member.

Optionally, you can also configure option 145 with the filename for an AOS-CX software image that will be downloaded by the conductor for automatic image upgrades.

ZTP auto-stacking is initiated by powering up stack members, with the conductor (member 1) receiving a DHCP address with TFTP config download parameters in DHCP suboption 144. The conductor downloads the ZTP configuration from the TFTP server, which includes configuration for all members. If VSF links are defined and connected, they are used for peer discovery; otherwise, the reserved VSF link ports are configured and used instead.

Once the configuration has been downloaded and applied, auto-stacking peer discovery proceeds and forms a stack.

For more information on ZTP, refer to the Zero Touch Provisioning chapter in the Fundamentals Guide.

Auto-stacking using Aruba CX mobile app

Prerequisites

- All switches must be in the factory default configuration.
- All stack members must be connected in a ring topology.
- Bluetooth adapters are installed in all stack member USB-A ports.
- Supported iOS, iPadOS, or Android mobile device is running the Aruba CX mobile app version 2.0 or later.

Procedure

> Note: Spanning Tree is enabled by default on the 6300 and 6200 switch families, which will prevent a loop from forming when VSF link cables are connected prior to the stack being fully provisioned.

1. On the mobile device with the Aruba CX mobile app installed, first use Bluetooth to discover and connect to the switch that will be the stack primary; each switch should show up in the device list using the format 6x00-SERIAL_NUMBER.

2. Once the device is connected to the switch, launch the Aruba CX app. Within a few seconds, the app should display an active Bluetooth connection to the switch with the message Login Required. Tap the Initial Config button to start the stack configuration.

3. On the Device Login screen, leave the Connection Type as Bluetooth. Enter the username admin and leave the password field blank, then tap the Log In button at the bottom of the screen.

4. On the Initial Config screen, tap the Stack button to begin stack setup. The app will automatically discover all switches that are connected to the primary via VSF link cables, connect to them via Bluetooth, and will display them in the topology view on the screen.

5. To change member IDs or assign a member as the stack secondary, tap the switch in the topology view. Enabling the LED switch for each switch causes the blue UID LED on its front panel to flash; use them to verify that the physical stack layout matches the displayed topology. Select **Configure Members** to apply member IDs and secondary configuration to all switches in the stack, which will cause each member other than the primary to reboot.

6. Once all switches have rebooted and joined the stack, the message Stack Set Up Successful! will be displayed. Select **Configure Stack** to continue.

7. If NetEdit will be used to manage the stack, enter the NetEdit server address, username, and password, then tap **Log In**; if not, then tap Skip.

8. Choose the desired switch management interface from the dropdown menu; configure the stack hostname, admin password, and management IP interface (static or DHCP); Alternately, you may deploy a custom configuration template (saved on your device or available on a connected file sharing service such as OneDrive, Dropbox, or iCloud Drive) by tapping the interface dropdown menu, and selecting **Import Custom Template...** Once the desired configuration has been selected, tap **Next** to continue.

9. Review the configuration generated by the app or imported from a template; then, tap **Deploy** to apply the configuration to the stack.

10. Once the configuration has been successfully deployed, the connection between the device and the switch (now the stack primary) will turn green, and the message **Device Deployment Successful!** will be displayed. Tap **Done** to return to the app's main page.

Manual configuration

In cases where auto-stacking or the Aruba CX mobile app cannot be used to provision a stack, stack members can be configured manually.

VSF links

The user can specify the interfaces which comprise the VSF links. Refer to link for information about specifying interfaces.

When the interface is configured, any existing configuration is removed, including VLAN memberships, ACL/Quality of Service rules and any speed/duplex/MTU configuration.

Once the interface becomes part of a VSF link, no protocol or feature will be allowed to run on it as it is now part of the fabric.

A VSF link will be a routed interface.

Secondary member

When auto-stacking is used to provision a stack, member 2 is automatically designated as the secondary. A secondary member can be designated from the Conductor using any valid stack member ID other than 1 before or after that member has actually joined the stack.

Member number 1 can never be configured as a secondary member.

An existing non-secondary stack member that is designated as the secondary will reboot and rejoin the stack to assume the Standby role. If a member not present in the stack is designated as the secondary, that member will automatically assume the Standby role without an additional reboot when it subsequently joins the stack.

If a secondary member is already configured and present in the stack, removing the secondary designation will cause that member to reboot and rejoin the stack with the Member role.

Refer to `vsf secondary-member` for information about configuring a secondary member.

In the case of auto-stacking, member 2 is automatically configured as secondary member through LED button press or `vsf start-auto-stacking` command.

Member number

To add a device to a VSF stack, the device must be renumbered to the corresponding member ID. The user can specify the member number of the switch. The default member number is 1.

- For the 6200F device, the default number can be changed to any value from 2 through 8. (The device supports up to 8 members.)
- For 6300 devices, the default number can be changed to any value from 2 through 10. (The device supports up to 10 members.)

Refer to [vsf renumber-to](#) and [Misconfiguration recovery](#) for information about renumbering a member.

Changing the member number causes the switch to reboot and all configuration on the switch is removed.

A switch with a member number other than 1 cannot boot completely unless it has reachability to a VSF conductor switch via VSF link. If a renumbered member is unable to communicate with the conductor switch and is waiting in booting state, the user can:

- Go to a recovery console with a `ctrl+c` sequence and collect the diagnostic information, or
- Reset the VSF configuration.

Member provisioning

VSF allows the user to provision or pre-configure any member before the member is physically added to the stack. Provisioning the member allows the user to complete the required configuration as if the member is present in the stack. When the member eventually joins the stack, it will boot up with the configuration made on the pre-provisioned interfaces.

To provision a member, the part number of the member must be specified. Refer to [type (vsf member)](#) for information about provisioning a member.

If a member tries to join the stack with a different part number to the one provisioned on the Conductor, the renumbered member will be removed from the stack and will reboot with factory defaults.

Access to VSF members

In addition to serial console connections, any stack member can be accessed from any other member using the `member` command.

Refer to [member](#) for information about console connection to a member switch.

Stack management

Consoles

The serial console of the Conductor switch provides a full CLI configuration interface for a user with valid credentials. The serial console of the other stack members, including the Standby, provides a reduced CLI configuration interface, with only a limited set of commands for troubleshooting the stack.

In a standard deployment, connect to the console interface of the conductor and standby switch. This enables the stack conductor console to be reachable after a stack failover to the new Conductor.

> Any switch configuration or monitoring must be performed from the console of the stack Conductor switch only.

Management interface

In a VSF stack, only the management interface on the Conductor switch will be assigned an IP address (configured or assigned by DHCP). The stack allows connectivity to management protocols and Console through the management interface on the Conductor.

Split detection

> For more information, refer to [vsf split-detect](#) .

VSF stack supports split detection utilizing the management interfaces, which requires users to connect the management interfaces of the primary and secondary stack members to the same L2 network.

> It is also possible to connect the management interfaces of primary and secondary directly to one another for split detection.

In the event of a stack split where the primary and secondary members are on opposite sides of the split, if the secondary fragment discovers that the primary fragment is operational via the management port connection, it will bring down all front-plane non-VSF interfaces on the secondary fragment to minimize network disruption due to duplicate MAC or IP addresses.

The interfaces will remain down until the stack is reconnected or the primary fragment goes down. The interfaces of the primary fragment will always remain operational.

A four member VSF with the management interfaces of primary and secondary connected and split-detection enabled.

A split happens between Member 1 and Member 2, with Conductor and Standby in different fragments

The Primary fragment, that is the fragment with Member 1, becomes the "Active Fragment". The Secondary fragment with Members 2 – 4 will become "Inactive Fragment" with Member 2 as Conductor. All the frontplane non-VSF interfaces in the Inactive Fragment will be brought down.

The `show vsf` output in the Primary fragment will look like this:

```
switch# show vsf

Force Autojoin              : Disabled
Autojoin Eligibility Status: Not Eligible
MAC Address                : 08:97:34:b0:0e:00
Secondary                  : 2
Topology                   : Chain
Status                     : Active Fragment
Split Detection Method     : mgmt


Mbr Mac Address            type            Status
ID
--- -------------------- -------------- ---------------
1   38:21:c7:5c:f4:c0    JL668A          Conductor
2                        JL668A          In Other Fragment
3                        JL668A          In Other Fragment
4                        JL668A          In Other Fragment
switch#
switch# show vsf topology
 Conductor
 +---+
 | 1 |
 +---+
switch#
```

The `show vsf` output in the secondary fragment will look like this:

```
switch# show vsf

Force Autojoin              : Disabled
Autojoin Eligibility Status: Not Eligible
MAC Address                : 08:97:34:b0:0e:00
Secondary                  : 2
Topology                   : Chain
```

```
Status                    : Inactive Fragment
Split Detection Method    : mgmt

Mbr Mac Address           type            Status
ID
--- ------------------- -------------- ---------------
1                         JL668A          In Other Fragment
2   38:21:c7:5c:77:40     JL668A          Conductor
3   38:21:c7:5a:a5:80     JL668A          Member
4   38:21:c7:5c:b3:00     JL668A          Member
switch#
switch# show vsf topology
                  Conductor
 +---+     +---+     +---+
 | 4 |1==2| 3 |1==2| 2 |
 +---+     +---+     +---+
switch#
```

Automated image sync

In a VSF environment, all stack members run the same software image. If the user upgrades the software on the Conductor by downloading a new software image using SFTP/TFTP, all members of the stack will simultaneously upgrade.

When forming a stack, if the software version on a member is different from the version of the Conductor, the member will automatically update itself to the same version as the Conductor. The member will reboot itself to run the updated version before joining the stack.

> Automated image sync is not applicable if the conductor is running the firmware version 10.07 or later and the member is booted with firmware version 10.06 or earlier versions and vice-versa.

Reboot

An individual stack member can be rebooted from a CLI command.

- The member will reboot and re-join the stack, with the same role that it had prior to the reboot.
- If the stack topology is a ring, no traffic disruption is expected on any other stack members when a single member is rebooted.
- If the stack topology is a chain, rebooting a member may cause a stack split, resulting in members being unreachable from the conductor. This result can cause significant disruption of the stack, so use this option with caution.
- If the member is the stack Standby, there will be no Standby in the stack until the member reboots and re-joins the stack. At this point, the member will again have the role of Standby.
- If the member is the stack Conductor, the command will trigger a failover and the Standby switch will take over as Conductor of the stack.
- If the Standby is unavailable at the time of conductor reboot, the whole stack will reboot.

The whole stack can also be rebooted by using the `boot system` command.

- All members will reboot and the stack will re-form.
- Traffic will be disrupted for the duration of the reboot.

Refer to vsf member reboot for information about rebooting a member.

Member addition with auto-stacking

A new factory default switch can be added into an existing stack by physically connecting it to a given member of the stack on the auto-stacking reserved interfaces. The newly added member will be automatically assigned with member ID and go for a reboot. After reboot, the newly added member will join the stack.

For more information auto-stacking reserved interfaces, [Reserved interfaces for auto-stacking](#).

Member addition without auto-stacking

A member can be added to the stack to augment an existing stack. The member being added can be a factory-default switch or a switch with pre-existing configuration.

1. Configure interfaces to VSF links on the member being added.
2. Renumber the member being added.

> The member will not join the stack if there is a member number conflict.

3. Renumbering will cause a reboot of the switch.
4. Connect the configured VSF links to a previously configured VSF link on the stack.
5. The member joins the stack, with default configuration on its interfaces. Any previous configuration on the member will be lost.

Member replacement with auto-stacking

Disconnect all the physical connections of the member that will be replaced and connect the new replacement member to the same interfaces as the switch being replaced. The new member joins the stack, with the same configuration as the member it is replacing.

> The replacement member must be of the same part number as the switch being replaced.

Member replacement without auto-stacking

The replacement member must be of the same part number as the switch being replaced.

1. Power off or disconnect all physical connections of the member that will be replaced.
2. Configure interfaces to VSF links on the replacement member. These interfaces **must** match the interfaces configured on the switch being replaced.
3. Renumber the replacement member to the same number as the switch being replaced.
4. Renumbering will cause a reboot of the switch.
5. Connect the replacement member to the stack.
6. The member joins the stack, with the same configuration as the member it is replacing.

Member removal

A member can be removed from a running stack. All configuration associated with the member will be removed.

If the member is physically present in the stack at the time it is removed, all VSF configurations on that member will be erased and it will lose its identity as a member of the stack from which it was removed. The member will come back as member 1 with factory default configuration.

It is not advisable to remove the member that is the conductor of the stack. If the conductor has to be removed, the recommendation is to switch over and wait for the old conductor to come up as standby before removing it.

Refer to the `vsf member` command for information about removing a member.

Though it is not recommended as it can cause traffic outages, if an active member needs to be removed from a stack, member must be physically removed after issuing `no vsf member` command. Else, the member will join the stack back through auto-stacking. Alternatively, the links can be disabled first and the member can be removed from the conductor. The removed member must be reset to factory-default once it boots to recovery.

Stack and Port LED states

The following table describes the different states of stack **Stk** LED.

Table 1: *Stk LED States*

State	Meaning
On - Green	Stacking Mode is selected.
On - Amber	Stacking Mode is selected and stacking-related error has occurred.
Slow flash Amber	Stacking Mode is not selected but still stacking-related error has occurred.
Off	Stacking mode is not selected.

The following table describes the different states of Port LED based on stack configurations and role of the members in the stack.

Table 2: *Port LED States*

State	Meaning
On - Green	Current Stack Member and is operational. For example, if Port 3 is on green, this indicates that the current chassis is member 3 in the stack.
Half-bright green	Total members in the Stack. Except port LEDs indicating the conductor and current member, all other ports LEDs glow half-bright green.
Slow flash green	Conductor of the Stack. In a six-member stack, one of the six port LEDs glows slow flashing green indicating that unit in the stack is the conductor. For example, if Stack Member 4 is the conductor, Port 4 LED glow slow flashing green.
On- Amber	The stack member is not reachable or in booting condition. When the member is fully booted and joined the stack successfully, then LED glows solid green.
Slow flash amber	The stack member is in a known fault condition. Only the global Status LED of faulted member glows slow flash amber.
Off	The stack Member does not exist in the stack.

The following sections describe the prerequisites and procedures to configure a VSF stack.

Forming a four-member ring setup using auto-stacking command

Prerequisites

- All switches must be in the factory default configuration.
- All stack members must be connected in a desired topology on the reserved VSF link ports. For more information, see Reserved interfaces for auto-stacking.

In the following procedure, the `vsf start-auto-stacking` command is used to form a four-member stack with the ring topology:

Figure 1 *Four-member ring setup*
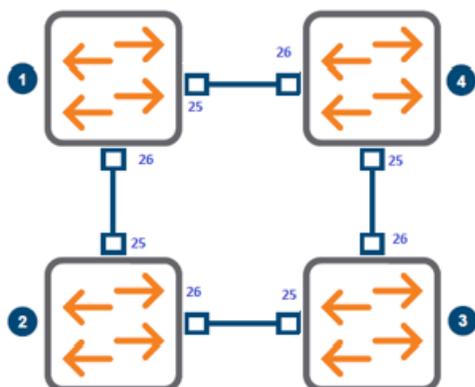
Procedure

1. Rack up all the four switches and physically connect them on the reserved auto-stacking interfaces in a ring setup . For more information on reserved interfaces, see

   Alternatively, you can also add members one after another.

2. Designate the first switch of the rack using the `vsf start-auto-stacking` command as the conductor. The links and secondary member will be automatically configured on the conductor.

   ```
   switch(config)# vsf start-auto-stacking
   ```

   Since the switches are already physically connected, starting with the second switch, each switch in the stack reboots automatically and join the stack one after another automatically. The running configuration will appear as shown below:

```
6300# show run
Current configuration:
!
!Version AOS-CX FL.10.07.xxxx
!export-password: default
cli-session
    timeout 0
!
!
!
!
!
!
ssh server vrf default
ssh server vrf mgmt
vsf secondary-member 2
vsf member 1
    type jl668a
    link 1 1/1/26
    link 2 1/1/25
vsf member 2
    type jl668a
    link 1 2/1/25
    link 2 2/1/26
vsf member 3
    type jl668a
    link 1 3/1/26
    link 2 3/1/25
vsf member 4
    type jl668a
    link 1 4/1/25
    link 2 4/1/26
```

3. Issue a "show vsf" command to ensure that the ring has successfully formed. You can also verify stack formation using different LED states. For more information on LED states, Stack and Port LED states.

```
6300(config)# show vsf
Force Autojoin           : Disabled
Autojoin Eligibility Status: Not Eligible
MAC Address              : 70:72:cf:ef:b7:f2
Secondary               : 2
Topology                : Ring
Status                  : No Split
Split Detection Method   : None


Mbr Mac Address          type            Status
ID
--- ------------------- -------------- ---------------
1   70:72:cf:ef:b7:f2   JL668A          Conductor
2   90:20:c2:23:67:40   JL668A          Standby
3   90:20:c2:24:71:c0   JL668A          Member
4   38:21:c7:5a:33:40   JL668A          Member
```

Forming a four-member chain setup using link configuration command with auto-join

Manual configuration of a VSF stack requires the user to individually configure each switch in the stack.

Figure 1 *Four-member chain setup*
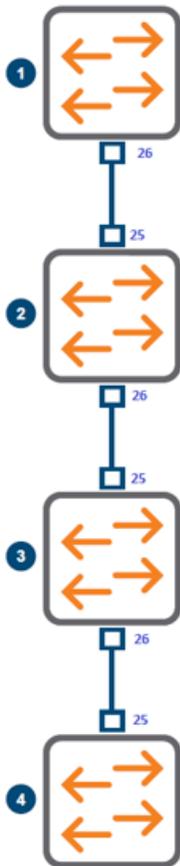
Procedure

1. Execute the following command on the member 1:

```
switch# configure
switch(config)# vsf member 1
switch(vsf-member-1)# link 1 1/1/26
switch(config)# vsf member 2
```

2. Physically connect member 2 to member 1 on the auto-stacking reserved interfaces. For example, if part number of the switch is JL659A, then reserved auto-stacking interfaces are 25 and 26. Once the physical connections are made, member 2 will reboot automatically and join the stack as standby switch with member 1 as the conductor . The running configuration on the conductor when member 2 join the stack will appear as shown below:

```
vsf secondary-member 2
vsf member 1
 type jl659a
 link 1 1/1/26
vsf member 2
 type jl661a
 link 1 2/1/25
```

> The conductor's VSF link must be connected to interface of higher value. For example, when you are connecting member 2 to member 1 , you must connect interface 26 of member 1 to interface 25 of member 2. Otherwiswe, the member 2 will not join in auto-stacking.

3. Physically connect member 3 to member 2 on the auto-stacking reserved interfaces. The member 3 will reboot automatically and join the stack as member.
4. Repeat the step 3 for stack member 4. Once the auto-stacking process is complete, member 4 will reboot automatically and join the stack as member 4. This forms a chain topology.
5. Issue a "show vsf" command to ensure that the ring has successfully formed. You can also verify the stack formation using LED states. For more information on LED states, Stack and Port LED states.

```
6300(config)# show vsf
Force Autojoin           : Disabled
Autojoin Eligibility Status: Not Eligible
MAC Address              : 70:72:cf:ef:b7:f2
Secondary                : 2
Topology                 : Chain
Status                   : No Split
Split Detection Method   : None


Mbr Mac Address          type           Status
ID
--- ------------------- -------------- ---------------
1   70:72:cf:ef:b7:f2   JL659A         Conductor
2   90:20:c2:23:67:40   JL661A         Standby
3   90:20:c2:24:71:c0   JL668A         Member
4   38:21:c7:5a:33:40   JL668A         Member
```

> If full stack configuration is downloaded into the conductor through TFTP/ZTP, the physical connections between the switches should be made according to the downloaded configuration.

Forming an eight-member ring setup manually using link configuration without auto-stacking

Manual configuration of a VSF stack requires the user to individually configure each switch in the stack. This process provides the best control for the user to configure VSF member number and links.

Figure 1 *Eight-member ring setup*
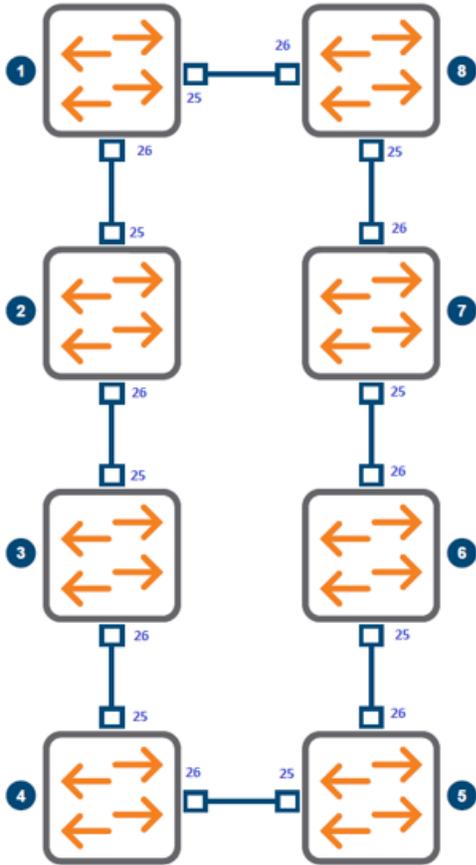
Procedure

To form an eight-member ring setup as shown, do not make the connections initially. Connect the ports only after each device is fully configured.

1. Log in to the first device, numbered 1.
   a. The default member number is 1, so no member number change is required.
   b. At the prompt, enter the following commands:

   ```
   switch# configure
   switch(config)# vsf member 1
   switch(vsf-member-1)# link 1 1/1/25
   switch(vsf-member-1)# link 2 1/1/26
   ```

   c. The preceding sequence of commands will configure the links for member 1.
   d. Ports 25 and 26 are configured as link 1 and 2 respectively.
2. Log in to the second device, numbered 2.
   a. Execute the following commands.

   ```
   switch# configure
   switch (config)# vsf member 1
   switch(vsf-member-1)# link 1 1/1/25
   switch(vsf-member-1)# link 2 1/1/26
   switch(vsf-member-1)# exit
   switch(config)# vsf renumber-to 2
   ```

```
This will save the VSF configuration and reboot the switch.
Do you want to continue (y/n)? y
```

    b. The preceding sequence of commands will configure the links on member 2.

    c. The default member number is "1". The command "vsf renumber-to" changes this member number.

    d. Links are configured **before** renumbering, and the member identifier in the interface name is "1" at this point.

    e. The switch will reboot after executing the renumber command.

3. Physically connect member 2 to member 1 as shown in the figure.

    a. This action will cause member 2 to join the stack, with member 1 as the conductor.

    b. This result can be verified by executing "show vsf" on member 1.

4. Repeat steps 2 and 3, for each stack member 3 through 8.

    a. Be sure to specify the member number correctly on each member.

    b. If a member number conflict is detected, the member will NOT join the stack.

5. Once member 8 has successfully joined the stack, connect member 8 link 2 to member 1 link 1, to complete the ring.

Issue a `show vsf` command to ensure that the ring has successfully formed.

```
switch# show vsf

Force Autojoin            : Disabled
Autojoin Eligibility Status: Not Eligible
MAC Address               : 38:21:c7:5d:d0:c0
Secondary                 :
Topology                  : Ring
Status                    : Active Fragment
Split Detection Method    : None

Mbr Mac Address           type            Status
ID
--- ------------------- -------------- ---------------
1   38:21:c7:5d:d0:c0   JL668A          Conductor
2   38:21:c7:6a:10:c0   JL668A          Member
3   38:21:c7:5c:15:80   JL668A          Member
4   38:21:c7:5a:61:40   JL668A          Member
5   38:21:c7:62:66:00   JL668A          Member
6   38:21:c7:58:22:40   JL668A          Member
7   38:21:c7:5a:9c:00   JL668A          Member
8   38:21:c7:63:a5:00   JL668A          Member
```

6. The preceding steps will form an eight-member stack without a standby. To make any member the standby (for example, member 8), use the secondary command:

    a. From the primary VSF member, configure member 8 as VSF secondary member:

```
swtich(config)# vsf secondary-member 8
This will save the configuration and reboot the specified switch.
Do you want to continue (y/n)? y

switch(config)#
```

b. This action will reboot member 8 and it will rejoin as standby.

```
switch# show vsf

Force Autojoin              : Disabled
Autojoin Eligibility Status: Not Eligible
MAC Address                : 38:21:c7:5d:d0:c0
Secondary                  : 8
Topology                   : Ring
Status                     : Active Fragment
Split Detection Method     : None

Mbr Mac Address         type            Status
ID
--- ------------------- --------------- ----------------
1   38:21:c7:5d:d0:c0   JL668A          Conductor
2   38:21:c7:6a:10:c0   JL668A          Member
3   38:21:c7:5c:15:80   JL668A          Member
4   38:21:c7:5a:61:40   JL668A          Member
5   38:21:c7:62:66:00   JL668A          Member
6   38:21:c7:58:22:40   JL668A          Member
7   38:21:c7:5a:9c:00   JL668A          Member
8   38:21:c7:63:a5:00   JL668A          Standby
```

7. Alternatively, before adding member 8 to the stack, pre-configure the secondary as 8 and then renumber device 8. This action will ensure that device 8 will join the stack directly as standby.

vsf member

```
vsf member <MEMBER-ID>
no vsf member <MEMBER-ID>
```

Description

Creates VSF member context in the switch for the specified member.

The `no` form of this command removes the specified member from the stack. All configuration associated with the member, as well as the subsystems and interfaces of the member will also be removed.

If the member is physically present in the stack at the time it is removed, it will reboot with the default configuration and lose its identity as a member of the stack from which it was removed.

> When a physically present member is removed, it may cause the stack to split.

Parameter	Description
<MEMBER-ID>	VSF member identifier. ■ Range for 6200F devices: 1 to 8. ■ Range for 6300 devices: 1 to 10.

Examples

Configuring a VSF member:

```
switch(config)# vsf member 2
switch(vsf-member-2)#
```

Removing a non-conductor member from the stack:

```
switch(config)# no vsf member 2
The specified switch will be unconfigured and rebooted
Do you want to continue (y/n)? y
```

> Removing the running conductor should be done with caution as it can make the stack unusable if there is no standby.

Command History

Release	Modification
10.07 or earlier	--

Command Information

Platforms	Command context	Authority
6200 6300	`config`	Administrators or local user group members with execution rights for this command.

member

```
member <MEMBER-ID>
```

Description

Connects to the specified member in a VSF environment.

Parameter	Description
<MEMBER-ID>	VSF member ID. ■ Range for 6200F devices: 1-8. ■ Range for 6300 devices: 1-10.

Examples

VSF stack is formed with two members:

```
switch# member 2
admin@172.17.17.2's password:

Last login: 2019-09-30 11:42:17 from the console
User "admin" has logged in 1 time in the past 30 days
member-2#
```

Member to self:

```
switch# member 1
Already on member id 1
```

VSF stack is not formed and member not available:

```
switch# member 2
No stack role for member id 2
```

Command History

Release	Modification
10.07 or earlier	--

Command Information

Platforms	Command context	Authority
6200 6300	Manager (#)	Administrators or local user group members with execution rights for this command.

type (vsf member)

```
type <TYPE>
no type <TYPE>
```

Description

Configures the part number of the VSF member being provisioned. After provisioning, the interfaces of the member are available for configuration.

When the member eventually joins the stack, it will boot up with the configuration made on the pre-provisioned interfaces.

To provision a member, the member number and the part number of the member must be specified.

The `no` form of this command removes the configuration for the part number of the VSF member provisioned.

Parameter	Description
`<TYPE>`	The part number of the member being provisioned. Required.

Examples

Configuring the part number of a VSF member:

```
switch(vsf-member-2)#
  type  The part number of the member being provisioned

switch(vsf-member-2)# type ?
  jl658a  6300M 24SFP+ /4SFP56 Switch
  jl659a  6300M 48SR PoE CLS 6 /4SFP56 Switch
  jl660a  6300M 24SR PoE CLS 6 /4SFP56 Switch
  jl661a  6300M 48G PoE CLS 4 /4SFP56 Switch
  jl662a  6300M 24G PoE CLS 4 /4SFP56 Switch
  jl663a  6300M 48G /4SFP56 Switch
  jl664a  6300M 24G /4SFP56 Switch
  jl665a  6300F 48G PoE CLS 4 /4SFP56 Switch
  jl666a  6300F 24G PoE CLS 4 /4SFP56 Switch
  jl667a  6300F 48G /4SFP56 Switch
  jl668a  6300F 24G /4SFP56 Switch
  jl762a  6300M 48G 4SFP56 Pwr2Prt Switch

switch(vsf-member-2)# type jl662a

switch(vsf-member-2)# show running-config
Current configuration:
!
!Version AOS-CX
!
!
!
```

```
!
ssh maximum-auth-attempts 6
!
!
!
!
!
vlan 1
vsf member 1
    type jl661a
exit
vsf member 2
    type jl662a
exit
```

Command History

Release	Modification
10.07 or earlier	--

Command Information

Platforms	Command context	Authority
6200 6300	`vsf-member-<ID>`	Administrators or local user group members with execution rights for this command.

link

```
link <LINK-ID> [<IFRANGE>]
no link <LINK-ID> [<IFRANGE>]
```

Description

Creates or modifies a VSF link. The user can specify the physical interfaces that make up the VSF link.

Once an interface is part of a VSF link, all existing configuration on the interface is removed and the interface will operate as a VSF interface. At least one interface must be specified for the creation of a VSF link. VSF interfaces carry VSF traffic and can only be connected to other VSF interfaces.

The `no` form of the command can be used to remove interfaces from a link or remove the link completely.

When configuration is removed from a link, it may cause the stack to split.

Parameter	Description
`<LINK-ID>`	The VSF link number. Range: 1 to 2.
`<IFRANGE>`	The interface identifier range. .

Examples

Creating and modifying VSF links:

```
switch(vsf-member-1)# link
<1-2>            VSF Link number
switch(vsf-member-1)# link  1
 IFRANGE        Interface identifier range
 <cr>
switch(vsf-member-1)# link 1 1/1/49-1/1/50
 <cr>
switch(vsf-member-1)# link 2 1/1/52
 <cr>
switch(vsf-member-1)# link 1 1/1/51
 <cr>

switch(vsf-member-1)# show running-config
Current configuration:
!
!Version AOS-CX SL.10.02.0020-741-g11104d6~dirty
!
!
!
!
ssh maximum-auth-attempts 6
!
!
!
!
!
vlan 1
interface 1/1/49
    no shutdown
interface 1/1/50
    no shutdown
interface 1/1/51
    no shutdown
interface 1/1/52
    no shutdown
vsf member 1
    type jl661a
    link 1 1/1/49-1/1/51
    link 2 1/1/52
exit

switch(vsf-member-1)# no link 1 1/1/47
Port 1/1/47 does not belong to link 1.

switch(vsf-member-1)# no link 1 1/1/48-1/1/49
Port 1/1/48 does not belong to link 1.

switch(vsf-member-1)# no link 2 1/1/49-1/1/51
Port 1/1/50 does not belong to link 2.

switch(vsf-member-1)# no link 1
 <cr>
switch(vsf-member-1)# no link 1
This will cause the stack to split.
Do you want to continue (y/n)? y

switch(vsf-member-1)# no link 2
This will cause the stack to split and the residual stack
fragment will become unusable.
Do you want to continue (y/n)? y

switch(vsf-member-1)# show running-config
```

```
Current configuration:
!
!Version AOS-CX SL.10.02.0020-741-g11104d6~dirty
!
!
!
!
ssh maximum-auth-attempts 6
!
!
!
!
!
vlan 1
interface 1/1/52
    no shutdown
vsf member 1
    type jl661a
exit
```

Before removing an individual interface from the VSF link using the `no vsf link <x> <interface>` command, ensure that the interface is admin shutdown at both local and peer ends.

Command History

Release	Modification
10.07 or earlier	--

Command Information

Platforms	Command context	Authority
6200 6300	`vsf-member-<ID>`	Administrators or local user group members with execution rights for this command.

vsf force-auto-join

```
vsf force-auto-join
```

Description

Forces the switch with non-factory default configuration to join a stack. The switch should not have any existing VSF configurations for force auto-join to work. If VSF configurations are made after force auto-join is enabled, the switch will no longer be eligible for auto-join.

Examples

Forcing a switch with non-factory default configuration to join a stack:

```
switch(config)# vsf force-auto-join
```

Command History

Release	Modification
10.07 or earlier	--

Command Information

Platforms	Command context	Authority
6200 6300	`config`	Administrators or local user group members with execution rights for this command.

vsf start-auto-stacking

vsf start-auto-stacking

Description

Configures the secondary member and VSF links automatically. To use this command, the switch must be in the factory default configuration.

> This command is applicable only on the primary switch. The primary switch must be in factory default condition and must not have any VSF configuration.

Examples

Configuring a VSF secondary member and VSF link on conductor:

```
switch(config)# vsf start-auto-stacking
This will configure links and secondary on conductor

Do you want to continue (y/n)? y
```

Running the configuration on non-factory default switch:

```
switch(config)# vsf start-auto-stacking
The switch is having non-factory default running configuration.
Command is not applicable
```

Running the configuration on non-primary switch:

```
switch(config)# vsf start-auto-stacking
The command is applicable only on Primary switch
```

Command History

Release	Modification
10.07 or earlier	--

Command Information

Platforms	Command context	Authority
6200 6300	`config`	Administrators or local user group members with execution rights for this command.

vsf split-detect

```
vsf split-detect <MGMT-INTERFACE>
no vsf split-detect <MGMT-INTERFACE>
```

Description

Configures the VSF split detection method that specifies the mechanism used for stack fragment discovery when there is a stack split.

Once the stack fragments are discovered, the fragment having the primary member always wins. All non-VSF interfaces on the losing stack fragment will be brought down to minimize network disruption due to duplicate MAC/IP.

The `no` form of this command removes the VSF split detection configuration.

Parameter	Description
`<MGMT-INTERFACE>`	Configures mgmt-interface as the split detection method. Connect the management interfaces of the primary and secondary members to the same L2 network. Optionally, the management interfaces of primary and secondary can be directly connected to each other.

Examples

Configuring mgmt-interface as the split detection method:

```
switch(config)# vsf split-detect mgmt
```

Removing split detection from the stack:

```
switch(config)# no vsf split-detect
```

Command History

Release	Modification
10.07 or earlier	--

Command Information

Platforms	Command context	Authority
6200 6300	`config`	Administrators or local user group members with execution rights for this command.

vsf secondary-member

```
vsf secondary-member <MEMBER-ID>
no vsf secondary-member <MEMBER-ID>
```

Description

Configures a secondary member from the available members. The secondary member will normally operate as the Standby member of the stack.

The `no` form of this command removes the configuration of the secondary member.

> Member 1 cannot be configured as the secondary member.

Parameter	Description
`<MEMBER-ID>`	Secondary member number. Required. ■ Range for 6200F devices: 2-8. ■ Range for 6300 devices: 2-10.

Examples

Configuring and un-configuring a secondary member:

```
switch(config)# vsf secondary-member 3
This will save the configuration and reboot the specified switch.
Do you want to continue (y/n)? y

switch(config)# no vsf secondary-member
The secondary member will go for a reboot.
Do you want to continue (y/n)? y
```

Configuring a secondary member when secondary member is already configured:

```
switch(config)# vsf secondary-member 3
This will save the configuration and reboot the specified switch.
Do you want to continue (y/n)? y

switch (config)# vsf secondary-member 4
A secondary member is already configured. Existing secondary member
will be unconfigured and rebooted to join the stack as a member. The
specified switch is then rebooted and will join the stack as the new
standby.
Do you want to continue (y/n)? y
```

Configuring a secondary member when one or more members are booting:

```
switch(config)# vsf secondary-member 3
One or more members are currently booting. Allowing this configuration
may cause stack to split leading to traffic disruption.
Do you want to continue (y/n)? y
This will save the configuration and reboot the specified switch.
Do you want to continue (y/n)? y

switch(config)#no vsf secondary-member
One or more members are currently booting. Allowing this configuration
```

```
may cause stack to split leading to traffic disruption.
Do you want to continue (y/n)? y
The secondary member will go for a reboot.
Do you want to continue (y/n)? y
```

Command History

Release	Modification
10.07 or earlier	--

Command Information

Platforms	Command context	Authority
6200 6300	`config`	Administrators or local user group members with execution rights for this command.

vsf renumber-to

```
vsf renumber-to <MEMBER-ID>
```

Description

Renumbers VSF member 1 to a value from 2 through 10 (for 6300 devices) and 2 through 8 (for the 6200F device). Changing the member number causes the switch to reboot with the new member number. Only member 1 can be renumbered.

VSF links must be configured before renumbering a switch. Renumbering will be disallowed if no links are configured or there are provisioned/physically present members.

Parameter	Description
<MEMBER-ID>	Member number to which the member will be renumbered. Required. ■ Range for 6200F devices: 2-8. ■ Range for 6300 devices: 2-10.

Examples

Renumbering primary VSF member from 1 to 2:

```
switch(config)# vsf renumber-to 2
Member 1 cannot be renumbered until all other members are removed.

switch(config)# vsf renumber-to 2
Member 1 cannot be renumbered until a VSF link is configured.

switch(config)# vsf renumber-to 2
This will save the VSF configuration and reboot the switch.
Do you want to continue (y/n)? y
```

Command History

Release	Modification
10.07 or earlier	--

Command Information

Platforms	Command context	Authority
6200 6300	`config`	Administrators or local user group members with execution rights for this command.

vsf member reboot

```
vsf member <MEMBER-ID> reboot
```

Description

Reboots the specified VSF member. Upon reboot, if the conductor is reachable, the member will rejoin the stack.

Parameter	Description
<MEMBER-ID>	Member number to be rebooted. Required. ▪ Range for 6200F devices: 1-8. ▪ Range for 6300 devices: 1-10.

Examples

Rebooting the primary switch of the stack:

```
switch# vsf member 1 reboot
Rebooting the conductor switch of the stack without a standby
will make the stack unusable.
Do you want to continue (y/n)? y

switch# vsf member 1 reboot
The conductor switch will reboot and the standby will become the conductor.
Do you want to continue (y/n)? y

switch# vsf member 2 reboot
This will reboot the specified switch.
Do you want to continue (y/n)? y
```

Command History

Release	Modification
10.07 or earlier	--

Command Information

Platforms	Command context	Authority
6200 6300	Manager (#)	Administrators or local user group members with execution rights for this command.

interface (VSF link)

```
interface <IFRANGE>
```

Description

Enters configuration context for one or more VSF link interfaces.

Parameter	Description
<IFRANGE>	PORT identifier range. Required. **NOTE:** VSF link interfaces cannot be included in a range with other interfaces.

Examples

Entering configuration context:

```
switch(config)# interface 1/1/1
```

Command History

Release	Modification
10.07 or earlier	--

Command Information

Platforms	Command context	Authority
6200 6300	config	Administrators or local user group members with execution rights for this command.

shutdown (vsf)

```
shutdown
no shutdown
```

Description

Shuts down one or more VSF link interfaces.

The `no` form of this command turns on one or more VSF link interfaces.

Examples

Shutting down a VSF link interface:

```
switch(config)# interface 1/1/1-1/1/2
switch(config-if-vsf-<1/1/1-1/1/2>)# shutdown
```

Shutdown configuration for VSF interfaces is not persistent across reboots.

Command History

Release	Modification
10.07 or earlier	--

Command Information

Platforms	Command context	Authority
6200 6300	`config-if-vsf`	Administrators or local user group members with execution rights for this command.

show vsf

```
show vsf
```

Description

Displays the list of provisioned VSF stack members.

Example

Showing the list of provisioned VSF stack members:

```
switch# show vsf

Force Autojoin           : Disabled
Autojoin Eligibility Status: Not Eligible
MAC Address              : 08:97:34:b0:0e:00
Secondary                : 2
Topology                 : Chain
Status                   : Active Fragment
Split Detection Method   : mgmt

Mbr MAC Address          Type            Status
ID
--- ------------------   --------------  -----------------
1   08:97:34:b0:0e:00    JL666A          Conductor
2   08:97:34:b1:43:00    JL665A          In Other Fragment
3   08:97:34:b7:cc:00    JL663A          Member
4                        JL662A          Not Present
```

Command History

Release	Modification
10.07 or earlier	--

Command Information

Platforms	Command context	Authority
6200 6300	Manager (#)	Operators or Administrators or local user group members with execution rights for this command. Operators can execute this command from the operator context (>) only.

show vsf detail

```
show vsf detail
```

Description

Displays detailed information related to the current state of the VSF stack and the stack members.

Example

```
switch# show vsf detail

VSF Stack
   MAC Address                : ec:eb:b8:d0:80:40
   Secondary                  : 2
   Topology                   : Chain
   Status                     : No Split
   Uptime                     : 0d 0h 23m
   Split Detection Method     : None
   Software Version           : SL.10.02.0000-7755
   Force Autojoin             : Disabled
   Autojoin Eligibility Status : Not Eligible
   Autojoin Ineligibility Reason: Configuration changes detected
   Name                       : Aruba-VSF-6300F
   Contact                    :
   Location                   :

Member ID                     : 1
   MAC Address                : ec:eb:b8:d0:80:40
   Type                       : JL666A
   Model                      : Aruba 6300F 24G PoE CLS 4 /4SFP56 Switch
   Status                     : Conductor
   ROM Version                : SL.10.02.0000-7755
   Serial Number              : CN7ZK90012
   Uptime                     : 0d 0h 23m
   CPU Utilization            : 0%
   Memory Utilization         : 20%
   VSF link 1                 : Up, connected to peer member 2, link 1
   VSF link 2                 : Down

Member ID                     : 2
   MAC Address                : eb:ec:d8:e0:50:60
   Type                       : JL666A
   Model                      : Aruba 6300F 24G PoE CLS 4 /4SFP56 Switch
   Status                     : Standby
   ROM Version                : SL.10.02.0000-7755
   Serial Number              : CN7ZK90012
   Uptime                     : 0d 0h 23m
   CPU Utilization            : 0%
   Memory Utilization         : 15%
   VSF link 1                 : Up, connected to peer member 1, link 1
   VSF link 2                 : Down
```

```
Member ID                    : 3
   MAC Address               :
   Type                      : JL666A
   Model                     : Aruba 6300F 24G PoE CLS 4 /4SFP56 Switch
   Status                    : Not Present
   ROM Version               :
   Serial Number             :
   Uptime                    :
   CPU Utilization           :
   Memory Utilization        :
   VSF link 1                :
   VSF link 2                :
```

Command History

Release	Modification
10.07 or earlier	--

Command Information

Platforms	Command context	Authority
6200 6300	Manager (#)	Operators or Administrators or local user group members with execution rights for this command. Operators can execute this command from the operator context (>) only.

show vsf link

```
show vsf link
```

Description

Displays the VSF link state for each member.

Example

```
switch# show vsf link

VSF Member 1

     Link        Peer    Peer
Link State       Member  Link   Interfaces
---- ---------- ------- ------ ---------------------------
1    up          2       1      1/1/50
2    up          10      2      1/1/49

VSF Member 2

     Link        Peer    Peer
Link State       Member  Link   Interfaces
---- ---------- ------- ------ ---------------------------
1    up          1       1      2/1/49
2    up          3       1      2/1/50
```

```
VSF Member 3

     Link       Peer    Peer
Link State      Member  Link    Interfaces
---- ---------- ------- ------  ----------------------------
1    up         2       2       3/1/25
2    up         4       1       3/1/26

VSF Member 4

     Link       Peer    Peer
Link State      Member  Link    Interfaces
---- ---------- ------- ------  ----------------------------
1    up         3       2       4/1/25
2    up         5       1       4/1/26
```

Command History

Release	Modification
10.07 or earlier	--

Command Information

Platforms	Command context	Authority
6200 6300	Manager (#)	Operators or Administrators or local user group members with execution rights for this command. Operators can execute this command from the operator context (>) only.

show vsf link detail

```
show vsf link detail
```

Description

Shows detailed information of the interfaces configured on links of all stack members.

Example

```
switch# show vsf link detail

VSF Member: 1  Link 1

Port      State     Status Code  Peer Interface  Peer System MAC     Peer Product
Type
-------   --------  -----------  --------------  ------------------  ----------------
-
1/1/27    up        S            2/1/27          38:21:c7:5c:e4:c0   JL668A

1/1/28    error     M            1/1/27          38:21:c7:5c:d7:40   JL668A

VSF Member: 2  Link 1

Port      State       Status Code  Peer Interface  Peer System MAC     Peer Product
```

```
Type
------- -------- ----------- -------------- ------------------ ----------------
-
2/1/27    up        S            1/1/27         38:21:c7:5c:99:80   JL668A

2/1/28    error     T

VSF Member: 2  Link 2

Port     State     Status Code  Peer Interface  Peer System MAC    Peer Product
Type
------- -------- ----------- -------------- ------------------ ----------------
-
2/1/25    up        S            3/1/26         38:21:c7:5c:f0:00   JL668A

2/1/26    down      D

VSF Member: 3  Link 1

Port     State     Status Code  Peer Interface  Peer System MAC    Peer Product
Type
------- -------- ----------- -------------- ------------------ ----------------
-
3/1/27    error     L            3/1/28         38:21:c7:5c:f0:00   JL668A

3/1/28    error     L            3/1/27         38:21:c7:5c:f0:00   JL668A

VSF Member: 3  Link 2

Port     State     Status Code  Peer Interface  Peer System MAC    Peer Product
Type
------- -------- ----------- -------------- ------------------ ----------------
-
3/1/25    down      D

3/1/26    up        S            2/1/25         38:21:c7:5c:e4:c0   JL668A

Flag abbreviation:
S   - Success       D - Interface physically down     T   - Peer timed out
L   - Loop detected on the interface                  AP  - Peer autojoin in progress
P   - Peer with incompatible product type       ANE - Peer is not autojoin eligible
SV  - Peer with incompatible software version   AF  - Peer autojoin validations
failed
M   - Peer with inconsistent system MAC address
ILC - Peer with inconsistent VSF link configuration
AMI - Peer with multiple VSF interfaces attempting to autojoin
ACM - Peer attempting to autojoin on non-provisioned interface
AND - Peer with non-default VSF interface attempting to autojoin
AID - Peer autojoin failed as it is connected in incorrect direction
AFN - Peer autojoin failed as there is no free member number available
```

Command History

Release	Modification
10.07 or earlier	--

Command Information

Platforms	Command context	Authority
6200 6300	Manager (#)	Operators or Administrators or local user group members with execution rights for this command. Operators can execute this command from the operator context (>) only.

show vsf link error-detail

```
show vsf link error-detail
```

Description

Shows detailed error information of the interfaces configured on links of all stack members. Also, the corrective action is also recommended to recover from the error.

Example

Showing error information of the interfaces about the loop detection:

```
switch# show vsf link error-detail

VSF Member: 2  Link 1

Port                        : 2/1/27
Status Code                 : L  - `Loop detected on the interface`

Error Description           : There is a loop detected between interfaces 2/1/27 and
                              2/1/28 of member 2 indicating wrong cabling.

Suggested Corrective Action : VSF interfaces 2/1/27 and 2/1/28 are connected back to
                              back - please fix the cabling.


VSF Member: 2  Link 1

Port                        : 2/1/28
Status code                 : L - `Loop detected on the interface`

Error Description           : There is a loop detected between interfaces 2/1/28 and
                              2/1/27 of member 2 indicating wrong cabling.

Suggested Corrective Action : VSF interfaces 2/1/28 and 2/1/27 are connected back to
                              back - please fix the cabling.


VSF Member: 10  Link 1

Port                        : 10/1/26
Status Code                 : AFN  - `Peer autojoin failed as there is no free
member
                              number available`

Error Description           : Maximum stack size has been reached or there are no
free
                              provisioned member entries available matching the peer
                              switch with product type JL667A.

Suggested Corrective Action : Remove a member using "no vsf member x" CLI and then
                              physically disconnect and reconnect the new switch
```

```
with
                              product type JL667A for adding it into the stack.
```

Command History

Release	Modification
10.07 or earlier	--

Command Information

Platforms	Command context	Authority
6200 6300	Manager (#)	Operators or Administrators or local user group members with execution rights for this command. Operators can execute this command from the operator context (>) only.

show vsf link error-detail member

```
show vsf link error-detail member <MEMBER-ID>
```

Description

Shows error information and the suggestive action to resolve the error of the interfaces configured on links of a particular stack member.

Parameter	Description
<MEMBER-ID>	VSF member identifier. Required. ■ Range for 6200F devices: 1-8. ■ Range for 6300 devices: 1-10.

Example

Showing error information and the suggestive action for member 1:

```
switch# show vsf link error-detail member 1

VVSF Member: 1  Link 1

Port                       : 1/1/52
Status Code                : M - `Peer with inconsistent system MAC address`

Error Description          : All interfaces within a single VSF link must terminate
                             into the same peer switch. Interface 1/1/52 of member
1
                             link 1 is connected to a wrong peer with
                             MAC 38:21:c7:5c:26:40.

Suggested Corrective Action : Multiple VSF neighbors detected on this VSF link 1.
                             Interface 1/1/52 is connected to device MAC
                             38:21:c7:5c:26:40. Please make sure the VSF interfaces
                             of link 1 terminate on the same peer device.
```

Showing error information and the suggestive action for member 4:

```
switch# show vsf link error-detail member 4

VSF Member: 4  Link 1

Port                       : 4/1/27
Status Code                : AND  - `Peer with non-default VSF interface attempting
                             to autojoin`

Error Description          : Switch with MAC 38:21:c7:5c:a0:c0 is connected on port
                             1/1/27 which is a non default autojoin VSF interface.

Suggested Corrective Action : Auto-join failed on device with MAC 38:21:c7:5c:a0:c0.
                             Please connect this device via interfaces 25 or 26 -
                             those are the auto-join capable interfaces on this
                             device.
```

Command History

Release	Modification
10.07 or earlier	--

Command Information

Platforms	Command context	Authority
6200 6300	Manager (#)	Operators or Administrators or local user group members with execution rights for this command. Operators can execute this command from the operator context (>) only.

show vsf member

```
show vsf member <MEMBER-ID>
```

Description

Displays information about the specified VSF member.

Parameter	Description
<MEMBER-ID>	VSF member identifier. Required. ■ Range for 6200F devices: 1-8. ■ Range for 6300 devices: 1-10.

Example

```
switch# show vsf member 1

Member ID              : 1
   MAC Address         : ec:eb:b8:d0:80:40
   Type                : JL557A
   Model               : Aruba JL557A 2930F-48G-740W-PoE+-4SFP Switch
```

```
Status              : Conductor
ROM Version         : SL.10.02.0000-7755
Serial Number       : CN7ZK90012
Uptime              : 0d 0h 18m
CPU Utilization     : 0%
Memory Utilization  : 15%
VSF link 1          : Down
VSF link 2          : Down
```

Command History

Release	Modification
10.07 or earlier	--

Command Information

Platforms	Command context	Authority
6200 6300	Manager (#)	Operators or Administrators or local user group members with execution rights for this command. Operators can execute this command from the operator context (>) only.

show vsf topology

```
show vsf topology
```

Description

Displays information about VSF stack member connections.

Example

```
switch# show vsf topology

          Stby       Conductor
+---+     +---+       +---+
| 3 |1==2| 2 |1==1| 1 |
+---+     +---+       +---+
```

Command History

Release	Modification
10.07 or earlier	--

Command Information

Platforms	Command context	Authority
6200 6300	Manager (#)	Operators or Administrators or local user group members with execution rights for this command. Operators can execute this command from the operator context (>) only.

The following recommendations and restrictions apply to VSF.

- Before applying a configuration on a stack through checkpoint restore or TFTP/SFTP/USB download, make sure that current VSF-specific configurations and the intended configurations match exactly. In other words, the VSF stack and the intended configuration must have the same:
  - Total number of members
  - Member types
  - Member number/ID
  - VSF link configurations
- A functional stack must be configured with a standby for redundancy purposes. If the conductor fails and there is no standby, the stack will fail.
- If the conductor fails and there is a standby device, the standby becomes the new conductor and will take over stack management. When the old conductor device is replaced, it seamlessly becomes the standby device for the stack and there no disruption.

The MAC address of the stack will remain the same until the entire stack is rebooted, after which the stack MAC address will be the MAC address of the new conductor. However, once recovered, it is not advisable to use the removed conductor elsewhere in the same network until the stack is rebooted to avoid MAC address conflicts.

- After downloading firmware to a stack, the stack must be rebooted to complete the upgrade process. Adding or rebooting individual members before the upgrade process is completed can cause the individual member to fail while joining the stack. A member with 10.07 software version cannot join a stack running on earlier versions.
- If there is a discrepancy between a VSF member link configuration on the conductor and the VSF member link configuration on the member, the link configuration on the member is used.
- If there is a split, failure in the connectivity between management interfaces of the conductor and standby might result in two active fragments. This issue can occur even if management split-detect is enabled.
- Replacing member 1 in a stack without a standby with a new switch booted as member 1 will reset all configurations on the stack.
- Do not connect a renumbered member to multiple primary devices through VSF links.
- Before removing an individual interface from VSF link using the command `no link <x> <interface>`, ensure that the interface is admin shutdown at both local and peer ends. For example: Interface 1/1/25 on member 1 link 1 is connected to 2/1/25 on member 2 link 2. The user intends to remove 1/1/25 from link 1 of member 1. Both the interfaces 1/1/25 and 2/1/25 have to be admin shutdown before actually removing them from the link configuration. To delete the link completely using the `no link <x>` command, all individual interfaces in the VSF link have to be admin shutdown both at local and peer ends.
- There may be instances in which a conductor switch with `vsf secondary <id>` configuration is unable to discover the standby switch. In such cases, the conductor switch will wait for up to 6 minutes to detect the standby switch.
- When applying a configuration on a stack from Central/NetEdit/ZTP/TFTP or through a checkpoint restore to remove members from the stack, consider the following recommendations:

a. If you are removing members that are physically present, it is recommended to remove one member at a time. In the case of ring topology, once a single member is removed, the topology will get transitioned to a chain topology. After that, members must be removed starting from the farthest end.

b. If you are removing provisioned members, then you can remove multiple members at the same time.

Removing more than one member at a time through configuration restoration (ZTP/Central/Checkpoint) might result in non-deterministic behavior. This might cause the members to reboot and drop to the console.

- If the entire stack configuration needs to be provisioned manually using CLIs, ensure that the conductor's VSF link configuration is done at the last.
- For TFTP download, the recommended work-flow is to copy the configuration to startup first, and then copy to running-configuration. The direct download of TFTP to running-configuration is not recommended.
- It is not recommended to change the VSF configurations (links & secondary) on the conductor when one or more members of the stack are booting.

The following section describes failure and recovery scenarios for VSF stacks.

Stack split
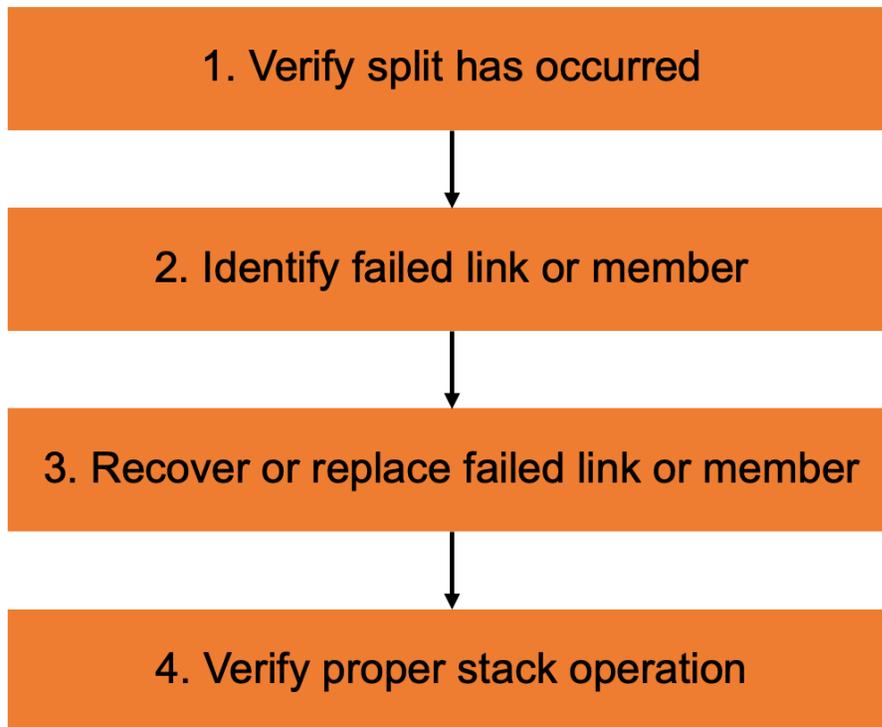
Step 1: Verify split has occurred

Use the `show vsf` command from the primary and secondary members to determine whether or not a split has occurred.

Output from the primary member will display a stack status of Active Fragment and member status of any members on the other side of the split as In Other Fragment:

```
6300# show vsf

Force Autojoin              : Disabled
Autojoin Eligibility Status: Not Eligible
MAC Address                : 08:97:34:b0:0e:00
Secondary                  : 2
Topology                   : Chain
Status                     : Active Fragment
Split Detection Method     : mgmt


Mbr Mac Address        type          Status
```

```
ID
--- ------------------- -------------- ---------------
1   38:21:c7:5c:f4:c0   JL668A         Conductor
2                       JL668A         In Other Fragment
3                       JL668A         In Other Fragment
4                       JL668A         In Other Fragment
```

Output from the secondary member will display a stack status of Inactive Fragment, with members on the other side of the split listed as In Other Fragment:

```
switch# show vsf
Force Autojoin            : Disabled
Autojoin Eligibility Status: Not Eligible
MAC Address               : 08:97:34:b0:0e:00
Secondary                 : 2
Topology                  : Chain
Status                    : Inactive Fragment
Split Detection Method    : mgmt


Mbr Mac Address           type           Status
ID
--- ------------------- -------------- ---------------
1                       JL668A         In Other Fragment
2   38:21:c7:5c:77:40   JL668A         Conductor
3   38:21:c7:5a:a5:80   JL668A         Member
4   38:21:c7:5c:b3:00   JL668A         Member
```

Step 2: Identify failed link or member

Symptoms may include:

  a. No link lights for VSF link ports between stack members
  b. No power to one or more stack members
  c. Event logs indicating loss of connectivity to one or more members and/or VSF links going down

Utilize show commands, event logs, and physical inspection of stack members and associated cabling to determine which link(s) or member(s) have failed to cause the split.

```
6300# show events -r -d vsfd
-------------------------------------------------
Event logs from current boot
-------------------------------------------------
2021-11-23T20:08:01.173123+00:00 6300 vsfd[732]: Event|9927|LOG_INFO|CDTR|1|Fragment
with conductor 1 is Active
2021-11-23T20:07:59.400936+00:00 6300 vsfd[732]: Event|9924|LOG_INFO|CDTR|1|VSF link
1 is down
2021-11-23T20:07:59.400841+00:00 6300 vsfd[732]: Event|9913|LOG_WARN|CDTR|1|Lost
member 2 with Loss of communication
2021-11-23T20:07:59.400733+00:00 6300 vsfd[732]: Event|9908|LOG_INFO|CDTR|1|Topology
is Standalone
2021-11-23T20:07:58.534186+00:00 6300 vsfd[732]: Event|9924|LOG_INFO|CDTR|1|VSF link
2 is down
```

Step 3: Recover or replace failed link or member

If the split was caused by the failure of a stack member or VSF link cable, replace the affected hardware.

If the split was caused by a misconfiguration, such as inadvertently disabling one or more VSF links or otherwise modifying the stack configuration, revert the applicable configuration changes. If the configuration change resulted in removing members from the stack, re-add those members as appropriate.

Step 4: Verify proper stack operation

Once the cause of the split has been identified and corrected, verify that the stack is operating normally.

```
6300(config)# show vsf
Force Autojoin           : Disabled
Autojoin Eligibility Status: Not Eligible
MAC Address              : 08:97:34:b0:0e:00
Secondary               : 2
Topology                : Ring
Status                  : No Split
Split Detection Method   : mgmt


Mbr Mac Address          type            Status
ID
--- ------------------- --------------- ---------------
1   38:21:c7:5c:f4:c0    JL668A          Conductor
2   38:21:c7:5c:77:40    JL668A          Standby
3   38:21:c7:5a:a5:80    JL668A          Member
4   38:21:c7:5c:b3:00    JL668A          Member
```

Misconfiguration recovery

If a switch fails to join the stack, or fails to rejoin after a reboot, due to misconfiguration, use the following procedure to restore the switch back to a factory default configuration.

The user must have management connectivity to the failed member for support files from the member in recovery mode.

1. Press **Ctrl+C** on the switch console.

   If the member is not able to reach conductor, it will go to recovery console after 10 minutes. You can press **Ctrl+C** to redirect the switch to the recovery console immediately.

2. Log in using administrator credentials.
3. At the prompt, issue the `vsf-factory-reset` command.

```
^C
Login: admin
Password:

recovery# vsf-factory-reset
```

4. This resets the member to factory-default settings and the switch will come up with a default member ID of 1.
5. Now the user can reconfigure the VSF link and renumber it to the preferred member ID.

General

What is VSF?

Virtual Switching Framework, or VSF, defines a single virtual switch comprised of multiple individual physical switches that are interconnected through standard Ethernet links. These links are referred to as VSF links.

These physical switches will function as one device with a unified control and management plane.

Multiport VSF links are supported.

What are the supported platforms for VSF?

The Aruba 6300F/M Switch Series supports VSF.

VSF can be formed with a combination of any of the Aruba 6300F/M Switch Series (JL658A, JL659A, JL660A, JL661A, JL662A, JL663A, JL664A, JL665A, JL666A, JL667A, JL668A, JL762A) or a combination of any of the Aruba 6200F Switch Series (JL724A, JL725A, JL726A, JL727A, JL728A).

Aruba 6200F Switch Series only supports fixed SKUs.

What port speeds do VSF links support?

For Aruba 6300F/M Switch Series: All uplink ports with 10G, 25G, and 50G speeds can be configured as VSF links.

For Aruba 6200F Switch Series: All uplink ports with 10G speed can be configured as VSF links.

Aruba recommends that all VSF links be configured to run at the same speed.

Can VSF be disabled?

Users cannot disable VSF. A factory default switch boots up as a VSF-enabled device with its Member ID set to 1.

What is a primary switch in VSF stack? Is it configurable?

Only the switch with a Member ID of 1 will be the primary switch in a VSF stack. This switch will function as the stack conductor and will drive the control and management plane for the stack.

What is a secondary switch in a VSF stack? Is it configurable?

The secondary switch will function as the standby in a stack. In the case of auto-stacking, secondary member is automatically configured through button press or `vsf start-auto-stacking` command.

In addition, any member other than Member 1 can be configured manually as the secondary switch using the `vsf secondary-member <MEMBER-ID>` command.

Aruba strongly recommends that you configure a secondary member (standby) for stack high-availability.

How many secondary member switches are configurable in a VSF stack?

A VSF stack can be configured with one secondary member only.

Once it is configured, is it possible to change the secondary member?

Yes, a new secondary member can be configured using the `vsf secondary-member <MEMBER-ID>` command. The old standby device will boot first and join the stack with the member role. Then, the newly configured secondary member will go for boot and join the stack with the standby role.

The secondary member configuration can only be changed when Member 1 is conductor of the stack.

How are conductor and standby for a stack determined?

By default, the primary member (Member 1) becomes the conductor of the stack and the user-configured secondary member becomes the standby.

The secondary member synchronizes all its states with the conductor. If the current conductor (Member 1) fails, the standby (secondary member) will seamlessly transition to the conductor role. In this state, if Member 1 comes back up, it will take the standby role.

Only primary and secondary members can take up conductor and standby roles in a stack.

What is the role of other members in a stack?

All devices other than the conductor and standby are called members. These devices do not have any network, control, or management plane functions. Their interfaces are directly controlled and managed by the conductor switch.

Is there any restriction in the order of VSF member numbering?

There is no restriction on the order in which VSF members can be numbered. Each member, however, must have a unique number in the range of 1-10 (for 6300 switches) or 1-8 (for 6200F switches).

What is the supported stack height and topology?

- 6200F platforms can stack up to 8 members with no modular SKU (only fixed SKU).
- 6300 F/M platforms can stack up to 10 members in a chain or ring topology.

Ring is the recommended topology. This topology requires that each member is configured with two VSF links, interconnecting each member with two other members in the stack.

Can features be configured on a VSF link?

Once an interface becomes part of a VSF link, no standard network layer protocol or feature can run on that interface because it is part of the VSF stack fabric.

Will configurations in an individual member switch be retained after joining a stack?

Individual member device configurations are not retained after the switch is renumbered and becomes part of a stack.

How do the consoles of each member in a stack work?

The console of the conductor switch provides a full CLI that can be used to manage the stack. Consoles of other stack members, including the standby, have a limited set of CLI commands that are useful for troubleshooting the device from a stacking functionality standpoint.

How does an image upgrade for a stack work?

To upgrade a stack to a new firmware image, use the `copy <TFTP/SFTP> image` command to download the image to the device. The image will be downloaded to the stack conductor first and then synced with other members of the stack automatically.

After downloading the firmware, reboot the stack using the `boot system <PRIMARY/SECONDARY>` command. This action completes the upgrade process.

Adding or rebooting individual members before the upgrade process is complete can cause the individual member to fail while joining the stack.

Is two-member ring supported ?

Yes. It is supported from AOS-CX 10.07 onwards.

show run vsf:

```
switch(config)# show run vsf
vsf secondary-member 2
vsf member 1
    type jl668a
    link 1 1/1/26
    link 2 1/1/25
vsf member 2
    type jl668a
    link 1 2/1/25
    link 2 2/1/26
```

show vsf:

```
switch(config)# show vsf

Force Autojoin            : Disabled
Autojoin Eligibility Status: Not Eligible
MAC Address               : 90:20:c2:20:a2:80
Secondary                 : 2
Topology                  : Ring
Status                    : No Split
Split Detection Method    : None


Mbr Mac Address           type            Status
ID
--- ------------------- --------------- ---------------
1   90:20:c2:20:a2:80   JL668A          Conductor
2   38:21:c7:5a:a5:40   JL668A          Standby
```

show vsf topology:

```
switch# show vsf topology

          Stby      Conductor
+---+     +---+     +---+
| 3 |1==2| 2 |1==1| 1 |
+---+     +---+     +---+
```

Can I add a member to the VSF stack when the member is running an image with a different version than the stack?

When a device joins a stack and its firmware version is different from the version on the conductor, the conductor will push its firmware copy to the device. Once the device receives a copy of the firmware, it will reboot and rejoin the stack, now running the same version as the conductor.

This is not supported if either members or the conductor running on firmware prior to 10.07 version.

What happens when the VSF conductor switch goes down?

The standby switch, if present, will take the role of the conductor. The old conductor switch will boot and join the stack as the standby switch. This transition will be seamless with limited network impact.

In the absence of a standby (no secondary member configuration), conductor device failure causes the remaining VSF members to reboot and come back up. At this point, members will enter a state in which they are waiting for the conductor to come back up. During this time, front plane ports of the members will be down.

How do I recover a device that has not joined a stack due to misconfiguration?

The `vsf renumber-to` command is used to trigger a device to take up its new member number and light up its VSF links. This command causes the device to reboot, come back up and wait for messages from the stack conductor. If the VSF link is configured incorrectly or the member number is wrong, the device could be waiting in this state indefinitely.

To recover a device in this state, execute the following commands:

1. Execute the `ctrl+c` command on the device console. This action launches the recovery console.
2. Execute the `vsf-factory-reset` command on the recovery console.

This action resets the device to factory-default.

- The device will come back up as member ID 1 with no VSF link configuration.
- The device can be configured with the correct member number and VSF links.
- The `vsf renumber-to` command will trigger this configuration to take effect.

The recovery console also has commands that allow the user to copy support files to an external server. This functionality is useful for troubleshooting stacking-related issues.

How do the management ports of each member in a stack work?

In a stack, only the conductor management interface is active. The management interface can be assigned an IP address for device management purposes. When a conductor device fails, the standby becomes conductor and activates its management interface.

How does replacing the conductor switch in a stack work?

The replacement device must be of the same part number as the switch being replaced. You must also have a standby switch configured for replacing the conductor of a stack without losing configuration.

Complete the following steps:

1. Execute the `vsf switchover` command to trigger the standby switch to take over the conductor role.
2. Once the stack is up with the new conductor, remove all physical connections from the old conductor switch that is being replaced.
3. Configure VSF interfaces/links on the new device. It is of critical importance to match the interfaces configured on the switch being replaced.
4. Physically connect the new device to the stack through configured VSF links.
5. The new switch will join the stack and take up the role of standby.

What is the workflow for replacing a standby or member switch?

The replacement device must be of the same part number as the switch being replaced.

Complete the following steps:

1. Configure VSF interfaces/links on the new device. It is of critical importance to match the interfaces configured on the switch being replaced.
2. Renumber the new device to match the switch being replaced.
3. Physically connect the new device to the stack through configured VSF links.
4. The new switch will join the stack and take up the standby or a member role based on the secondary configuration for the stack.

What happens if a VSF link fails?

- If the stack topology is a ring, it will degenerate to a chain when a VSF link in the stack fails.
- If the topology is a chain, a VSF link failure will result in a stack being split into two independent stack fragments.
- When a stack splits and the conductor and standby of the stack become part of two different fragments, the standby takes up the conductor role for its fragment. Network disruption can result because the two fragments are simultaneously active. Aruba highly recommends enabling VSF split-detection to gracefully handle split brain scenarios.
- If a stack splits and the conductor and standby are in the same fragment with the other members on a different fragment, the members-only fragment will:
  - Reboot.
  - Come back up.
  - Wait for communication from the stack conductor.

What is VSF split-detect?

When a stack splits, the split-detect feature provides a mechanism for the fragments to discover each other.

Once the two stack fragments are discovered, the fragment that has the primary member becomes the active fragment and keeps its front plane (non-VSF) interfaces up and running. The other fragment becomes inactive and all non-VSF interfaces on the inactive fragment are brought down to avoid network disruption.

How do I configure split-detect?

VSF supports split-detection through the management interface.

Connect the management interfaces of the primary and secondary members to the same management VLAN/network or connect them directly to one another. The CLI command to enable split detection is `vsf split-detect mgmt`.

How do I remove the non-VSF configurations in a stack?

Use the `erase startup-config` command on the VSF stack. This action will remove all non-VSF related configurations from the startup-config. Then reboot the stack.

Can a VSF member be removed from a stack?

Yes, remove a member from the stack using the `no vsf member <MEMBER-ID>` command. All configurations associated with the member will also be removed. The member will boot and come back up with the factory default configuration.

How do I remove the conductor switch from the stack?

Aruba does not recommend removing a member that is conductor of a stack.

If the conductor switch has to be removed, complete a switchover and wait for:

- the standby to take up the conductor role, and
- the old conductor to reboot and join the stack as standby.

Then use a member remove command to remove the device from the stack.

How can I boot the whole VSF stack and individual members using CLI?

The `boot system` command can be used to boot the whole stack.

To boot an individual member, use the `vsf member`
`<MEMBER-ID> reboot` command.

Is modifying the VSF-specific configuration using Checkpoint restore or TFTP/SFTP/USB download supported?

This functionality is not supported. Before applying a configuration on a stack through Checkpoint restore or TFTP/SFTP/USB download, you must ensure that the following configurations match exactly:

- The current stack VSF configurations.
- The VSF configurations that are part of the configuration file that is being restored or downloaded from the server.

Specifically, the current VSF stack and the Checkpoint/downloaded configuration that will be applied on the stack must have the same:

- Number of members
- Member part number (J#)
- Member number
- VSF link configurations
- Secondary member configuration
- Split-detect configuration

How can I dismantle a stack?

A VSF stack can be dismantled by using the `erase all zeroize` command.

This action will cause each member to reboot, come back up with factory defaults, and function as individual/standalone devices.

How do I collect support files for a stacked device?

The `copy support-files all` command executed on the conductor console will collect support and troubleshooting information from all members that are part of the stack.

If a member is not part of the stack, you must run the same command from the recovery console of the respective member.

If a stack has split into two fragments, both fragments will have a conductor. Execute the same command on the conductor console of both fragments.

Can VSF configurations be changed when some of the members are booting?

No. It is recommended to change VSF configurations only when the stack is in steady state.

To ensure that there is no stack split , it is recommended to form the VSF stack in the ring topology before changing the VSF configurations. This might result in reboot of some of the members.

Is there a way to troubleshoot if the members did not join the stack?

Yes. Use the `show vsf link error-details` command to check if any of the VSF links are down due to error scenarios. For most of the error scenarios, corrective action is also recommended to resolve the issue.

Auto-stacking

Is it mandatory to connect the new switch in the direction of the higher-numbered conductor port after configuring the VSF links on the conductor for auto-stacking?

Yes. Auto-stacking process always starts only in the direction of the higher-numbered VSF link port on the conductor. If no switches are connected to the end of the stack connected to the higher-numbered port, the auto-stacking process will not start.

If a new switch being added to the stack is connected in the direction of the lower-numbered port on the conductor, the conductor will show it as an error. Use the `show vsf link error-detail` command to see the error and its recommendation to fix the error.

In this example, Switch3 will join the stack only when it is connected in the direction of the higher-numbered port on the conductor (i.e. to port 1/1/50 on Switch2) as shown in the following figure:
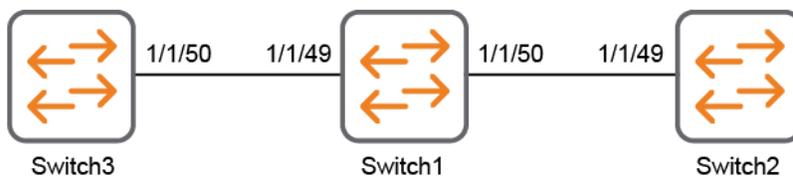
Can the size of the stack be extended in the direction of lower denomination port of the conductor?

No. You can still renumber manually and add the members to the stack. But the newly added member will not join the stack automatically through auto-stacking.

What are the different methods to designate the conductor to bring up a stack using auto-stacking?

There are five different ways to designate the conductor and bring up the stack using auto-stacking. The different ways are:

1. Configuring the VSF links manually on the conductor switch.
2. Executing the `vsf start-auto-stacking` command using CLI on the conductor switch.
3. Pressing the **Stk** LED mode button on the conductor switch.
4. Downloading full stack configuration using ZTP.
5. Downloading full stack using TFTP, SFTP, NetEdit, or REST.

What happens when the conductor is designated manually by configuring the lower-numbered port as VSF port first?

This can potentially lead to formation of out-of-order stack since auto stacking happens only in the direction of highest denomination port. If physical connections are already made, the newly added switch might not join the stack.

What is the eligibility criteria for a switch to be connected to an existing stack through auto-stacking?

For a switch to connect to an existing stack, it must be in the auto-join eligible state. A switch in its factory default state is considered to be auto-join eligible.

When will a switch become auto-join eligible? Is there a way to make a switch auto-join eligible again to take part in the auto-join process to form the stack?

If a switch moves out of factory default configuration state, then the switch cannot join an existing stack.

In this case, use the `vsf force-auto-join` command to make a non-factory default switch to auto-join eligible again. Once the user sets force auto-join in the switch configuration, the switch will be considered as auto-join eligible and will join the stack even though the switch does not have factory default configuration.

`vsf force-auto-join` command will only work if the switch does not have any pre-existing VSF configurations such as secondary or VSF links. If the switch has VSF configurations already, then the recommendation is to unconfigure and reconfigure `vsf force-auto-join` once all VSF configurations are removed from the switch.

Is it mandatory to use only the internally reserved ports to bring up a stack through auto-stacking ?

If you need to form a stack using `vsf start-auto-stacking` command or by pressing **Stk** LED mode button, then it is mandatory to use the internally reserved VSF ports.

Based on the product type of a switch, the following two interfaces are reserved for the auto-stacking process:

- 24-port switch models: 25 and 26
- 48-port switch models: 49 and 50

If auto-stacking via zero-touch provisioning is being used to build the stack, any of the four SFP ports on each member can be used for VSF links.

Can a stack be formed through auto-stacking when the conductor is running on 10.07 firmware version and the newly added member is running on firmware version prior to 10.07?

No. It is mandatory to have all the switches running on 10.7 or later releases to form a stack through auto-stacking .

You cannot form a stack through auto-stacking if either conductor or the stack members running on different firmware versions prior to 10.07.

Will a stack be formed if the Stk mode button is pressed on all the members before physically connecting the cables?

No. Pressing the **Stk** mode button on all the members will configure VSF links and secondary on the switches which will make the members not eligible for auto-join. The members will join with the stack only when it becomes auto-join eligible again.

Pressing **Stk** LED mode button is to designate the conductor. So, press **Stk** LED mode button only on the switch which is supposed to be the conductor of the stack. There should be only one conductor for a VSF stack.

Will a stack be formed if `vsf start-auto-stacking` is executed on all the members before connecting the cables physically?

No. Executing the `vsf start-auto-stacking` command will configure VSF links and secondary on a switch which will make the switch not eligible for auto-join, The members will join with the stack only when they become auto-join eligible again.

Executing `vsf start-auto-stacking` is to designate the conductor. So, execute the command on the switch which is supposed to be the conductor of the stack. There should be only one conductor for a VSF stack.

What will happen if Stk mode button is pressed on the conductor of an active stack?

Since the VSF configurations are already present , pressing the **Stk** mode button will not have any effect on the stack configuration. But the LEDs of the stack will now glow to depict the state of the stack.

For more details on the LED states,

What will happen if the `vsf start-auto-stacking` command is executed on the conductor of an active stack?

Since the VSF configurations are already present , configuring `vsf start-auto-stacking` will not have any effect on the stack configuration. An error message also will be displayed to show that the switch does not have factory default configuration.

After downloading the VSF stack configuration to the conductor through TFTP/ZTP/NetEdit, what happens if a new member added has a different SKU than the one provisioned for that particular member-id through auto-stacking?

If the existing stack size configuration is less than maximum size supported (10 for 6300 switch series, 8 for 6200 switch series) , the newly added member will join the stack with the least member-id available , but not with the provisioned member id.

If the existing stack size configuration is already the maximum size supported, then the newly added member will go for a reboot , but will not join the stack. This member will again come up with the factory default configuration as there is a SKU mismatch.

What happens if the Stk mode button is pressed when the cables are not connected properly on the reserved interfaces, later connected correctly on the reserved interfaces?

Members switches go for a reboot and join the stack when the cables are connected on the reserved interfaces correctly.

Is multi-port VSF configuration supported to bring up a VSF stack through auto-stacking?

Forming a stack using auto-stacking with multi-ports can be done only when the configuration of all the members are fully pre-provisioned on Member 1.

By default, **Stk** mode button press or `vsf start-auto-stacking` command configures only one port per VSF link. So even if multiple ports were connected physically, stack will come up with single port per VSF link only.

Can cables of different speed be connected to the members to form a stack through auto-stacking?

Yes. Though it is supported , it is always recommended to have the entire stack with cable of same speed for VSF links.

What happens when non-reserved ports of the newly added switch is connected to the auto-stacking reserved ports of member 1?

Newly added member will not go for a reboot unless there is a provisioned configuration of the member matching with non-reserved ports on member 1.

To use **Stk** mode button or `vsf start-auto-stacking` command, the cables must be connected to the reserved interfaces on the new switch to start the auto-stacking process. For more information on reserved interfaces, see Reserved interfaces for auto-stacking

Can the Stk mode button or `vsf start-auto-stacking` command be used on a switch which has some VSF configuration already?

No. To use **Stk** mode button or `vsf start-auto-stacking` command, the switch must be in factory-default configuration.

Is there a way to download configuration automatically after forming a stack via Stk mode button press?

Yes. Once the stack is formed , `ztp force-provision` will be automatically enabled on the stack. But you must have an uplink connectivity to DHCP Server (which can provide the ZTP options) and TFTP server to download the firmware and configuration files.

Can I download the full stack configuration via TFTP to the running configuration directly?

Full stack configuration can be downloaded into the conductor of the stack. The recommendation is to first download the configuration to the start-up and then move the startup to the running configuration. Copying the configuration first to startup will help in detecting errors in the deployed configuration. Once the configuration is copied to startup without any errors, then the startup configuration can be applied to the running configuration. This will also ensure that auto-stacking process did not start prematurely. The stacking process might start prematurely if the configuration is applied directly to the running configuration.

How to check whether the switch is auto-join eligible or not?

Executing the `show vsf` or `show vsf details` command shows an entry called `Autojoin Eligibility Status` which shows whether the switch is eligible or not eligible .

Is it possible to change the secondary member of the stack which is formed through `vsf start-auto-stacking` or stk mode button press?

Yes. You can execute the `vsf secondary-member <member-id>` on the conductor to change the secondary member. This will reboot the member 2 (default secondary) and make it to join the stack as member. Then the newly configured secondary member will go for a reboot and joins the stack as standby. Changing the secondary member can only be done from the primary switch (member 1).

Will the switch stay as auto-join eligible if any new VSF configurations are made after executing the `vsf force-auto-join` command?

No. `vsf force-auto-join` is a command used to make an auto-join ineligible switch to auto-join eligible again. If the VSF configuration of the switch gets changed again after executing the `vsf force-auto-join` command, the switch will become auto-join ineligible again. When the VSF configurations are removed , switch will automatically become auto-join eligible.

What happens if a member configuration is removed from the conductor of a stack using the `no vsf member <id>` command?

If the member is part of the stack (not in "Not Present" state) and its ports are connected through reserved auto-stacking ports, then the removed switch will join back the stack after it comes up as standalone. This is because the auto-stacking starts on the reserved ports. So, after member removal, make sure you immediately disconnect the cables physically as well.

Will both auto-stacking and ZTP process start simultaneously if the conductor is designated using the configuration download through ZTP,?

No. The auto-stacking process will start only after the completion of ZTP process.

Is there any difference between forming the stack using the `vsf start-auto-stacking` command and Stk mode button?

There is no difference in forming the stack. But the `ztp force-provision` configuration will be added in addition to the VSF related configurations only when the stack is formed using the **Stk** mode button press. If the stack has an uplink connectivity to DHCP server, then the configuration and firmware for the stack can be downloaded from a TFTP server through ZTP.

Does auto-stacking support ring topology without the need for any configuration changes?

Yes. By default, auto-stacking feature configures two links on each of the VSF members. In case, if there is a need to change the stack from chain to ring topology, connect the first member with the last member of the stack with a cable on the auto-stacking reserved ports.

For example, consider the three-member stack in a chain topology as shown in the following figure:
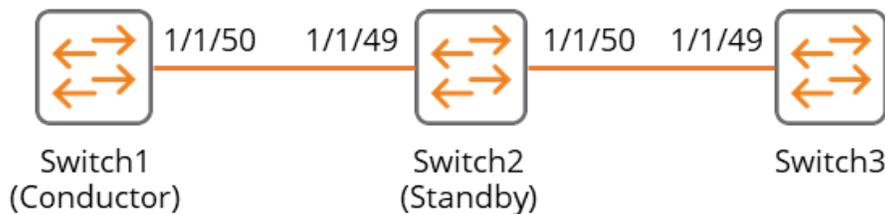
To change this into ring topology, connect Switch3 and Switch1 as shown in the following figure:
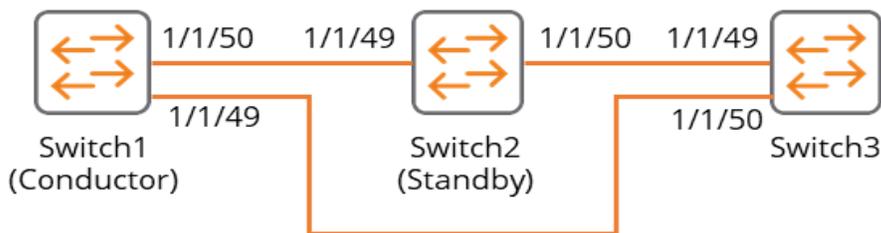
The three-member VSF Stack in chain topology can also be converted into a four-member VSF stack in Ring topology by connecting the Switch4 to port 1/1/50 of Switch3 and port 1/1/49 of Switch1 as shown in the following figure:

Can I use reserved auto-stacking interfaces as normal data ports?

Yes. The reserved auto-stacking interfaces can be used as normal data ports.

Accessing Aruba Support

Aruba Support Services	https://www.arubanetworks.com/support-services/
Aruba Support Portal	https://asp.arubanetworks.com/
North America telephone	1-800-943-4526 (US & Canada Toll-Free Number) +1-408-754-1200 (Primary - Toll Number) +1-650-385-6582 (Backup - Toll Number - Use only when all other numbers are not working)
International telephone	https://www.arubanetworks.com/support-services/contact-support/

Be sure to collect the following information before contacting Support:

- Technical support registration number (if applicable)
- Product name, model or version, and serial number
- Operating system name and version
- Firmware version
- Error messages
- Product-specific reports and logs
- Add-on products or components
- Third-party products or components

Other useful sites

Other websites that can be used to find information:

Airheads social forums and Knowledge Base	https://community.arubanetworks.com/
Software licensing	https://lms.arubanetworks.com/
End-of-Life information	https://www.arubanetworks.com/support-services/end-of-life/
Aruba software and documentation	https://asp.arubanetworks.com/downloads
Aruba Developer Hub	https://developer.arubanetworks.com/

Accessing Updates

You can access updates from the Aruba Support Portal or the HPE My Networking Website.

Aruba Support Portal

https://asp.arubanetworks.com/downloads

If you are unable to find your product in the Aruba Support Portal, you may need to search My Networking, where older networking products can be found:

My Networking

https://www.hpe.com/networking/support

To view and update your entitlements, and to link your contracts and warranties with your profile, go to the Hewlett Packard Enterprise Support Center **More Information on Access to Support Materials** page:

https://support.hpe.com/portal/site/hpsc/aae/home/

Access to some updates might require product entitlement when accessed through the Hewlett Packard Enterprise Support Center. You must have an HP Passport set up with relevant entitlements.

Some software products provide a mechanism for accessing software updates through the product interface. Review your product documentation to identify the recommended software update method.

To subscribe to eNewsletters and alerts:

https://asp.arubanetworks.com/notifications/subscriptions (requires an active Aruba Support Portal (ASP) account to manage subscriptions). Security notices are viewable without an ASP account.

Warranty Information

To view warranty information for your product, go to https://www.arubanetworks.com/support-services/product-warranties/.

Regulatory Information

To view the regulatory information for your product, view the *Safety and Compliance Information for Server, Storage, Power, Networking, and Rack Products*, available at https://www.hpe.com/support/Safety-Compliance-EnterpriseProducts

Additional regulatory information

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