

Example: Expanding a Virtual Chassis Configuration in a Single Wiring Closet

A Virtual Chassis configuration is a scalable switch composed of multiple interconnected EX 4200 switches. Up to ten EX 4200 switches can be interconnected as a Virtual Chassis configuration.

This example describes how to configure an expanding Virtual Chassis within a single wiring closet:

- Requirements on page 1
- Overview and Topology on page 1
- Configuration on page 3
- Verification on page 4
- Troubleshooting on page 5

Requirements

This example uses the following hardware and software components:

- JUNOS Release 9.0 or later for EX-series switches
- One EX 4200-48P switch
- One EX 4200-24T switch
- One EX 4200-24P switch
- One EX-UM-2XFP uplink module

Before you begin, be sure you have:

- Confirmed that the existing Virtual Chassis configuration is operating correctly. See Example: Configuring a Virtual Chassis with a Master and Backup in a Single Wiring Closet.

Overview and Topology

A Virtual Chassis configuration can be expanded without disrupting the site's network connectivity. This example describes adding a member switch to an existing Virtual Chassis configuration to provide additional access ports for connecting more PCs and VoIP phones at this location. You can continue to expand the Virtual Chassis configuration with additional members in the same wiring closet, using the same procedure. If you want to expand the Virtual Chassis configuration to include member switches in another wiring closet, see Example: Configuring a Virtual Chassis Interconnected Across Multiple Wiring Closets.

If you want to retain the roles of the existing master and backup switches, explicitly configure the mastership priority of these switches, specifying the highest possible value (255) for both the master and the backup.

During expansion, the existing Virtual Chassis configuration can remain powered on and connected to the network. Before powering up the new switch, interconnect it

to the other the switches using the dedicated VCPs on the rear panel. Do not run the EZ Setup program on the added member switch.

This example shows an existing Virtual Chassis configuration composed of two EX 4200 switches. The Virtual Chassis configuration is being expanded to include a EX 4200-24P switch as a linecard member.

The topology for this example consists of:

- One EX 4200-24T switch (SWA-0) with 24 access ports, including eight ports that support PoE
- One EX 4200-48P switch (SWA-1) with 48 access ports, all of which support Power over Ethernet (PoE)
- One EX 4200-24P switch (SWA-2) with 24 access ports, all of which support PoE
- One uplink module with two 10-gigabit ports is installed in the EX 4200-48P switch. These ports can be configured as trunk ports to connect to a distribution switch or customer edge (CE) router or as Virtual Chassis ports (VCPs) to interconnect with a member switch that is located too far for dedicated VCP cabling. For information on configuring the uplink ports as trunk ports to a distribution switch, see [Configuring Gigabit Ethernet Interfaces \(CLI Procedure\)](#) or [Configuring Gigabit Ethernet Interfaces \(J-Web Procedure\)](#). For information on configuring uplink ports as Virtual Chassis ports, see [Setting an Uplink Port as a Virtual Chassis Port \(CLI Procedure\)](#).

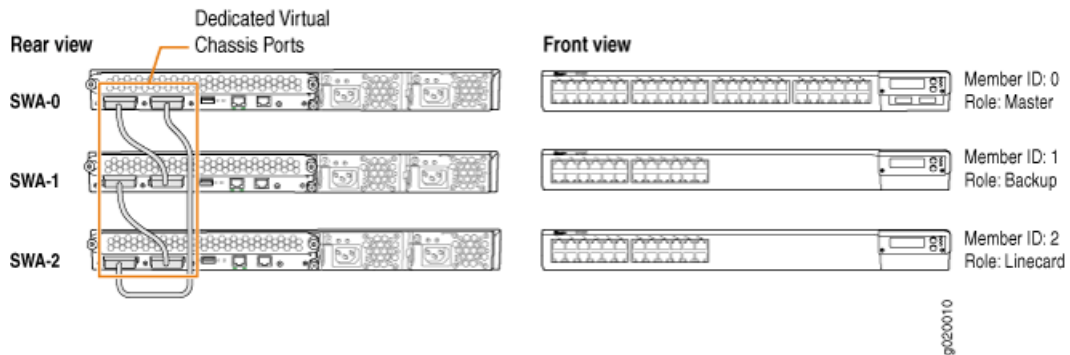
Table 1 on page 2 shows the configuration settings for the expanded Virtual Chassis.

Table 1: Components of the Expanded Virtual Chassis Access Switch

Member Switch	Hardware	Member ID	Role in Virtual Chassis
SWA-0	EX 4200-48P switch	0	master; mastership priority 255
SWA-1	EX 4200-24T switch	1	backup; mastership priority 255
SWA-2	EX 4200-24P switch	2	linecard; mastership priority 128

Figure 1 on page 3 shows that the three member switches (SWA-0, SWA-1 and SWA-2) are interconnected with their dedicated VCPs on the rear panel. The LCD on the front displays the member ID and role. SWA-0 also includes an uplink module. Its uplink ports can be used to connect to a distribution switch.

Figure 1: Expanded Virtual Chassis in Single Wiring Closet



Configuration

To expand a Virtual Chassis configuration to include additional member switches within a single wiring closet, perform these tasks:



NOTE: We recommend that you use the `commit synchronize` command to save any configuration changes that you make to a multimember Virtual Chassis configuration.

CLI Quick Configuration

To maintain the master and backup roles of the existing members and ensure that the new member switch functions in a linecard role, copy the following commands and paste them into the terminal window:

```
[edit]
user@SWA-0# set virtual-chassis member 0 mastership-priority 255
user@SWA-1# set virtual-chassis member 1 mastership-priority 255
```

Step-by-Step Procedure

To ensure that the existing member switches retain their current roles and to add another member switch in a linecard role:

1. Configure the mastership priority of SWA-0 (member 0) to be the highest possible value, thereby ensuring that it functions as the master of the expanded Virtual Chassis configuration.

```
[edit virtual-chassis]
user@SWA-0# set member 0 mastership-priority 255
```

2. Configure the mastership priority of SWA-1 (member 1) to be the highest possible value. This setting is recommended for high availability and smooth transition of mastership in case the original master becomes unavailable.

```
[edit virtual-chassis]
user@SWA-1# set member 1 mastership-priority 255
```

3. Interconnect the unpowered SWA-2 with SWA-0 and SWA-1 using the dedicated VCPs on the rear panel. See Virtual Chassis Cabling Configuration Examples for additional information.
4. Power on SWA-2.

You do not need to configure or run EZ Setup on SWA-2. The identification parameters that were set up for the master apply implicitly to all members of the Virtual Chassis configuration. SWA-2 functions in a linecard role, since SWA-0 and SWA-1 have been configured to the highest mastership priority values.

Verification

To verify that the new switch has been added as a linecard and that its VCPs are operational, perform these tasks:

- Verifying That the New Switch Has Been Added as a Linecard on page 4
- Verifying That the VCPs Are Operational on page 5

Verifying That the New Switch Has Been Added as a Linecard

Purpose Verify that SWA-2 has been added in a linecard role to the Virtual Chassis configuration.

Action Use the `show virtual-chassis status` command to list the member switches with their member IDs, mastership priority values, and assigned roles.

```
user@SWA-0> show virtual-chassis status
```

```
Virtual Chassis ID: 0000.e255.00e0
```

Member ID	Status	Serial No	Model	Mastership Priority	Role	Neighbor List ID	Interface
0 (FPC 0)	Prsnt	abc123	ex4200-48p	255	Master*	1 vcp-0 2 vcp-1	
1 (FPC 1)	Prsnt	def456	ex4200-24t	255	Backup	2 vcp-0 0 vcp-1	
2 (FPC 2)	Prsnt	abd231	ex4200-24p	128	Linecard	0 vcp-0 1 vcp-1	

Meaning The `show virtual-chassis status` command lists the member switches of the Virtual Chassis configuration with the member IDs and mastership priority values. It also displays the neighbor members with which each member is interconnected. This output shows that SWA-2 has been assigned member ID 2 and has the default mastership priority value 128. Because the mastership priority is lower than the mastership priority of the other members, SWA-2 functions in the linecard role. You can continue to add more member switches, following the same procedure. It is possible to have multiple members in linecard roles with the same mastership priority value.

Verifying That the VCPs Are Operational

Purpose Verify that the dedicated VCPs interconnecting the member switches are operational.

Action List the VCP interfaces on the Virtual Chassis configuration.

```
user@SWA-0>show virtual-chassis vc-port all-members  
fpc0:
```

```
-----  
Interface      Type      Status  
or  
PIC / Port  
vcp-0          Dedicated Up  
vcp-1          Dedicated Up
```

```
fpc1:
```

```
-----  
Interface      Type      Status  
or  
PIC / Port  
vcp-0          Dedicated Up  
vcp-1          Dedicated Up
```

```
fpc2:
```

```
-----  
Interface      Type      Status  
or  
PIC / Port  
vcp-0          Dedicated Up  
vcp-1          Dedicated Up
```

Meaning The `show virtual-chassis vc-port all-members` command lists all the interfaces for the Virtual Chassis configuration. In this case, no VCP uplinks have been configured. However, the VCP interfaces are automatically configured and enabled when you interconnect member switches using the dedicated Virtual Chassis ports. There are two dedicated VCPs on the rear panel of each EX 4200 switch. It is recommended that you interconnect the member switches using both VCPs for redundancy. The VCP interfaces are identified simply as `vcp-0` and `vcp-1`. The `fpc` number is the same as the member ID.

Troubleshooting

To troubleshoot the configuration of an expanded Virtual Chassis, perform these tasks:

Troubleshooting Mastership Priority

Problem You want to designate a different member as the master.

Solution Change the mastership priority value or values of the switches, designating the highest mastership priority value for the switch that you want to be master.

1. Lower the mastership priority of the existing master (member 0).

```
[edit virtual-chassis]  
user@SWA-0# set member 0 mastership-priority 1
```

2. Set the mastership priority of the member that you want to be the master to the highest possible value (255):

```
[edit virtual-chassis]
user@SWA-2# set member 2 mastership-priority 255
```

Troubleshooting Nonoperational VCPs

Problem The VCP interface shows a status of down.

Solution Check the cable to make sure that it is properly and securely connected to the VCPs.

- Related Topics**
- Example: Setting Up a Multimember Virtual Chassis Access Switch with a Default Configuration
 - Configuring a Virtual Chassis (CLI Procedure)
 - Configuring a Virtual Chassis (J-Web Procedure)