

## Example: Configuring a Virtual Chassis with a Master and Backup in a Single Wiring Closet

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A Virtual Chassis configuration is a scalable switch. You can provide secure, redundant network accessibility with a basic two-member Virtual Chassis configuration and later expand the Virtual Chassis configuration to provide additional access ports as your office grows.

This example describes how to configure a Virtual Chassis with a master and backup in a single wiring closet:

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### 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-UM-2XFP uplink module

Before you begin, be sure you have:

1. Rack-mounted the switches. See *Mounting an EX3200 or EX4200 Switch on Two Posts in a Rack or Cabinet or Mounting an EX3200 or EX4200 Switch on a Desk or Other Level Surface*.
2. Installed the uplink module. See *Installing an Uplink Module in an EX3200 or EX4200 Switch*.
3. Cabled the switches. See *Connecting a Virtual Chassis Cable to an EX4200 Switch*.

### Overview and Topology

A Virtual Chassis configuration allows you to accommodate the networking needs of a growing office. The default configuration of a two-member Virtual Chassis includes a master and a backup switch. In addition to providing more access ports than a single EX 4200 switch can provide, a Virtual Chassis configuration provides high availability through redundancy.

This example shows a Virtual Chassis configuration composed of two EX 4200 switches. One of the switches has an uplink module with ports that can be configured to connect to a distribution switch or customer edge (CE) router or that can be

configured as Virtual Chassis ports (VCPs) to interconnect with a member switch that is located too far for the dedicated VCP cabling. For information on configuring the uplink ports as trunk ports to a distribution switch, see *Configuring Gigabit Ethernet Interfaces (CLI Procedure)*. For an example of configuring uplink ports as VCPs, see *Example: Configuring a Virtual Chassis Interconnected Across Multiple Wiring Closets*.

By default, after you interconnect the switches with the dedicated VCPs and power on the switches, the VCPs are operational. The mastership priorities and member IDs are assigned by the software. The software elects a master based on several criteria, including how long a member switch has belonged to the Virtual Chassis configuration. For additional details, see *Understanding How the Master in a Virtual Chassis Configuration Is Elected*. Therefore, we recommend that you start by powering on only one member switch, the one that you want to function as the master.



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

The Virtual Chassis configuration provides networking access for 50 onsite workers, who are sitting within range of a single wiring closet. The workers all use personal computers and VoIP phones. As the office grows, you can add more EX 4200 switches to meet increased needs for access ports.

The topology for this example consists of two switches, one of which contains an uplink module:

- One EX 4200-48P switch (SWA-0) with 48 access ports, all of which support PoE
- One EX 4200-24T switch (SWA-1) with 24 access ports, including eight ports that support PoE
- One EX-UM-2XFP uplink module, with two 10-Gigabit Ethernet ports, is installed in the EX 4200-48P switch

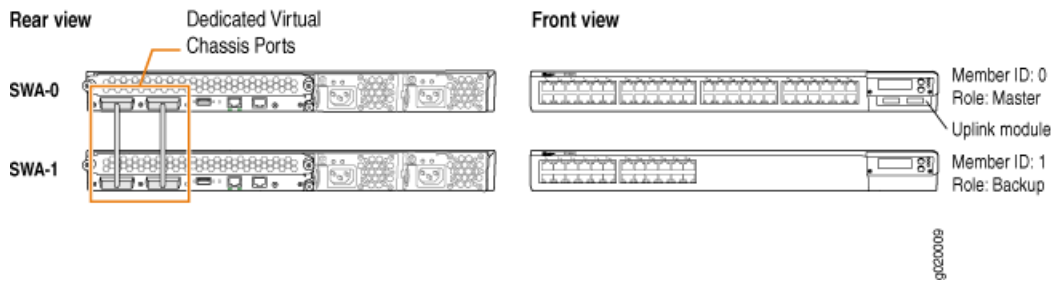
Table 1 shows the default configuration settings for the two-member Virtual Chassis.

**Table 1: Components of the Basic Virtual Chassis Access Switch Topology**

Member Switch	Hardware	Member ID	Role and Priority
SWA-0	EX 4200-48P switch	0	Master: mastership priority 128
SWA-1	EX 4200-24T switch	1	Backup: mastership priority 128

Figure 1 shows that SWA-0 and SWA-1 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: Basic Virtual Chassis with Master and Backup**



## Configuration

Configure a Virtual Chassis with a default master and backup in a single wiring closet:

### Step-by-Step Procedure

To configure a Virtual Chassis with master and backup:

1. Make sure the VCPs on the rear panel of the member switches are properly cabled. See Virtual Chassis Cabling Configuration Examples for EX4200 Switches.
2. Power on SWA-0 (the member switch that you want to function as the master).
3. Check the front-panel LCD to confirm that the switch has powered on correctly.
4. Run the EZ Setup program on SWA-0, specifying the identification parameters. See Connecting and Configuring an EX Series Switch (CLI Procedure) or Connecting and Configuring an EX Series Switch (J-Web Procedure) for details.
5. Configure SWA-0 with the virtual management Ethernet (VME) interface for out-of-band management of the Virtual Chassis configuration, if desired.

[edit]

```
user@SWA-0# set interfaces vme unit 0 family inet address /ip-address/mask/
```

6. Power on SWA-1.

## Verification

To confirm that the Virtual Chassis configuration is operational, perform these tasks:

- Verifying That the Mastership Priority Is Assigned Appropriately on page 3
- Verifying That the VCPs Are Operational on page 4

### Verifying That the Mastership Priority Is Assigned Appropriately

**Purpose** Verify that the master, which has been selected by default, is the member switch that you want to function in that role.

- Action**
1. Check the front-panel LCD to confirm that the switch has powered on correctly and that a member ID has been assigned.
  2. List the member switches of the Virtual Chassis configuration.

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

```
Virtual Chassis ID: 0019.e250.47a0
```

Member ID	Status	Serial No	Model	Mastership priority	Role	Neighbor List ID	Interface
0 (FPC 0)	Prsnt	AK0207360276	ex4200-48p	128	Master*	1	vcp-0
						1	vcp-1
1 (FPC 1)	Prsnt	AK0207360281	ex4200-24t	128	Backup	0	vcp-0
						0	vcp-1

```
Member ID for next new member: 2 (FPC 2)
```

**Meaning** The show virtual-chassis status command lists the member switches interconnected in a Virtual Chassis configuration with the member IDs that have been assigned by the master, the mastership priority values, and the roles. It also displays the neighbor members with which each member is interconnected. The output shows that SWA-0, member 0, has been assigned default mastership priority 128. Because SWA-0 is the first member to be powered on, it has the most seniority and is therefore assigned the role of master. SWA-1 is powered on after member 0, so it is assigned the role of backup. The member IDs are displayed on the front panel of the switches. Check and confirm whether the default assignment is satisfactory.

### Verifying That the VCPs Are Operational

**Purpose** Verify that the dedicated Virtual Chassis ports interconnecting the switches are operational.

**Action** Display the Virtual Chassis ports of all the members:

```
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
```

**Meaning** The show virtual-chassis vc-port command lists the interfaces that are enabled for the member switches of the Virtual Chassis configuration and shows the status of the interfaces. The output in this example shows that two of the VCPs are operational and two VCPs are not. A single cable has been used to interconnect vcp-0 of member ID 0 and vcp-0 of member ID 1. That interconnection is sufficient for the switch to be operational. However, we recommend that you connect the second set of VCPs for redundancy.

## Troubleshooting the Virtual Chassis

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

### Troubleshooting the Assignment of Roles

**Problem** The master and backup roles are not assigned to the member switches that you want to function in these roles.

**Solution** Modify the mastership priority values.

To quickly modify the mastership priority of SWA-1 (member ID 1), copy the following command and paste it into the switch terminal window:

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

### Troubleshooting the VCPs

**Problem** The VCPs are down.

**Solution**

1. Check to make sure that you have cabled the appropriate ports.
2. Check to make sure that the cables are seated properly.

You should generally cable and interconnect both of the VCPs on the member switches, for redundancy and high availability.

- Related Topics**
- Example: Expanding a Virtual Chassis Configuration in a Single Wiring Closet
  - Example: Setting Up a Multimember Virtual Chassis Access Switch with a Default Configuration
  - Example: Configuring a Virtual Chassis Using a Preprovisioned Configuration File
  - Configuring a Virtual Chassis (CLI Procedure)
  - Configuring a Virtual Chassis (J-Web Procedure)

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