

Virtual Chassis Overview

The Juniper Networks EX4200 Ethernet Switch is the basis for the *Virtual Chassis* flexible, scaling switch solution. You can connect individual EX4200 switches together to form one unit and manage the unit as a single chassis, called a Virtual Chassis. Up to ten EX4200 switches can be interconnected, providing up to a total of 480 access ports. The available bandwidth increases as you include more members within the Virtual Chassis configuration. See *Understanding the High-Speed Interconnection of the Virtual Chassis Members*.

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Basic Configuration of a Virtual Chassis with Master and Backup Switches

To take advantage of the Virtual Chassis configuration's higher bandwidth capacity and software redundancy features, you need to interconnect at least two EX4200 switches in a Virtual Chassis configuration. You can start with a default configuration, composed of two EX4200 *member switches* interconnected through the dedicated 64-Gbps *Virtual Chassis ports (VCPs)* on their rear panels. These ports do not have to be configured. They are operational as soon as the member switches are powered on. See *Example: Configuring a Virtual Chassis with a Master and Backup in a Single Wiring Closet* for additional information.

Expanding Configurations—Within a Single Wiring Closet and Across Wiring Closets

As your needs grow, you can easily expand the Virtual Chassis configuration to include more member switches. Within a single wiring closet, simply add member switches by cabling together the dedicated VCPs. For more information about expanding Virtual Chassis configurations within a single wiring closet, see *Example: Expanding a Virtual Chassis Configuration in a Single Wiring Closet* and *Example: Setting Up a Multimember Virtual Chassis Access Switch with a Default Configuration*.

You can also expand a Virtual Chassis configuration beyond a single wiring closet. Interconnect switches located in multiple wiring closets or in multiple data center racks by installing the optional SFP, SFP + , or XFP uplink modules and connecting the uplink module ports or by connecting the 1-gigabit network interfaces in an EX4200-24F switch. The small form-factor pluggable (SFP) uplink module provides four ports for 1-gigabit transceivers. The SFP + uplink module provides two ports for 10-gigabit SFP + transceivers or four ports for 1-gigabit SFP transceivers. The XFP uplink module provides two ports for 10-gigabit XFP transceivers. To use SFP, SFP + , and XFP uplink module ports or EX4200-24F network interfaces for

interconnecting member switches, you must first explicitly configure them as *Virtual Chassis ports (VCPs)*. This procedure includes configuring these ports of a standalone EX4200 switch as VCPs prior to interconnecting the new member switch with the existing Virtual Chassis configuration. See [Example: Configuring a Virtual Chassis Interconnected Across Multiple Wiring Closets](#) for detailed information.

When you are creating a Virtual Chassis configuration with multiple members, you might want to deterministically control the role and member ID assigned to each member switch. You can do this by creating a preprovisioned configuration. See [Example: Configuring a Virtual Chassis Using a Preprovisioned Configuration File](#) for more information.

You can add switches to a preprovisioned configuration by using the autoprovisioning feature to automatically configure the uplink module ports as VCPs on the switches being added. See [Adding a New Switch to an Existing Virtual Chassis Configuration \(CLI Procedure\)](#) for detailed information.

Global Management of Member Switches in a Virtual Chassis

The interconnected member switches in a Virtual Chassis configuration operate as a single network entity. You run EZSetup only once to specify the identification parameters for the master, and these parameters implicitly apply to all members of the Virtual Chassis configuration. You can view the Virtual Chassis configuration as a single device in the J-Web user interface and apply various device management functions to all members of the Virtual Chassis configuration.

The serial console port and dedicated out-of-band management port that are on the rear panel of the individual switches have global virtual counterparts when the switches are interconnected in a Virtual Chassis configuration. A *virtual console* allows you to connect to the master by connecting a terminal directly to the console port of any member switch. A *virtual management Ethernet (VME)* interface allows you to remotely manage the Virtual Chassis configuration by connecting to the out-of-band management port of any member switch through a single IP address. See [Understanding Global Management of a Virtual Chassis Configuration](#).

High Availability Through Redundant Routing Engines

A Virtual Chassis configuration has a master and a backup, each of which has a Routing Engine. These redundant Routing Engines handle all routing protocol processes and control the Virtual Chassis configuration. See [High Availability Features for EX Series Switches Overview](#) for further information on redundant Routing Engines and additional high availability features.

Adaptability as an Access Switch or Distribution Switch

A Virtual Chassis configuration supports a variety of user environments, because it can be composed of different models of EX4200 switches, with either 24 or 48 access ports, and with these having either full (24 or 48 ports) or partial (8 ports) Power over Ethernet (PoE) port capabilities. You can select different switch models to support various functions. For example, you might set up one Virtual Chassis access switch configuration composed of the full PoE models to support users sitting in cubicles equipped with PCs and VoIP phones. You could set up another Virtual Chassis

configuration with partial PoE models to support the company's internal servers and configure one more Virtual Chassis configuration with partial PoE models to support the company's external servers. Alternatively, the Virtual Chassis configuration can be used as a distribution switch. For this type of deployment, you might select the EX4200-24F model to connect the distribution switch to multiple access switches located in different buildings on the campus.

- Related Topics**
- Understanding Virtual Chassis Components
 - Understanding How the Master in a Virtual Chassis Configuration Is Elected
 - Understanding Virtual Chassis EX4200 Switch Version Compatibility
 - Understanding Virtual Chassis Configurations and Link Aggregation
 - Understanding Virtual Chassis Configuration
 - EX4200 Switch Models

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