Overview of Cisco Catalyst 8000V

The Cisco Catalyst 8000V Edge Software is a virtual, form-factor router deployed on a virtual machine (VM) running on an x86 server hardware. This guide covers the overview, installation, upgrade, and configuration of Cisco Catalyst 8000V.

Cisco Catalyst 8000V supports both Cisco IOS XE and the Cisco IOS XE SD-WAN functionalities through the autonomous mode and the controller mode, respectively. Cisco Catalyst 8000V in the autonomous mode supports a subset of the Cisco IOS XE software features and technologies, and provides Cisco IOS XE security and switching features on a virtualization platform. The controller mode delivers comprehensive SD-WAN, WAN gateway, and network services functions in the virtual and cloud environments.

When you deploy Cisco Catalyst 8000V on a VM, the Cisco IOS XE software functions just as if it were deployed on a traditional Cisco hardware platform. This router includes a virtual Route Processor and a virtual Forwarding Processor (FP) as part of its architecture, and provides secure connectivity from an enterprise location such as a branch office or a data center, to a public or a private cloud.

Cisco Catalyst 8000V supports SSL VPN. From Cisco IOS XE Release 17.x, when you are running a Cisco IOS-XE router as an SSL VPN gateway, an extra SSL VPN overhead is added due to the TLS encapsulation. To prevent IP fragmentation and reassembly of packets between SSL VPN client and server, you must adjust the TCP-MSS value optimally. Otherwise, packet drop due to the IPFragErr error could occur in the SSL VPN gateway.

The Cisco Catalyst 8000V router also provides a virtual IOS XE operating system for routing and forwarding on the Enterprise Network Compute System (ENCS) platform and on the Cisco Cloud Services Platform 5000 Series.

To use the functionalities of this virtual router, read on to know how to deploy a Cisco Catalyst 8000V router as a virtual machine on a hypervisor.

Benefits of Virtualization Using the Cisco Catalyst 8000V Router

- **Hardware independence**: The Cisco Catalyst 8000V router uses the benefits of virtualization in the cloud to provide hardware independence. Since the Cisco Catalyst 8000V runs on a virtual machine, you can use this router on any x86 hardware that the virtualization platform supports.

- **Sharing of resources**: The resources used by Cisco Catalyst 8000V are managed by the hypervisor, and these resources can be shared among the VMs. You can regulate the amount of hardware resources that the VM server allocates to a specific VM. You can reallocate resources to another VM on the server.

- **Flexibility in deployment**: You can easily move a VM from one server to another. Thus, you can move a Cisco Catalyst 8000V instance from a server in one physical location to a server in another physical location without moving any hardware resources.

- **Enhanced software security - Secure Object Store**: In Cisco Catalyst 8000V, storage partitions for NVRAM, licensing, and other data are created as Object stores. The individual Object stores are encrypted to ensure data security, and this product is Cisco Secure Development lifecycle (CSDL) compliant. Further, Cisco Catalyst 8000V supports a 16G disk profile.

Router Interfaces

The Cisco Catalyst 8000V router interfaces perform the same functionality as those on hardware-based Cisco routers. The Cisco Catalyst 8000V interfaces function as follows:

- The interfaces are logically named as the Gigabit Ethernet (GE) interfaces.

- The available interface numbering depends on the Cisco Catalyst 8000V version.

When you first boot the device, the Cisco Catalyst 8000V router interfaces are mapped to the vNIC interfaces on the VM based on the vNIC enumeration to the Cisco Catalyst 8000V. On subsequent boot, the Cisco Catalyst 8000V router interfaces are mapped to the vNIC MAC addresses.

For more information, see Mapping the Cisco Catalyst 8000V Network Interfaces to the VM Network Interfaces.

Interface Numbering

- The interface port numbering is from 1 and up to the number of interfaces supported. See VMware Requirements to know the supported vNICs and the minimum and maximum number of vNICs supported for each VM instance.

- Gigabit Ethernet interface 0 is not supported.

- You can designate any interface as the management interface. You can designate a management interface by performing the appropriate Day0 bootstrapping mechanisms available for your target environment. For more details, see Day 0 Configuration.

Cisco IOS XE and Cisco Catalyst 8000V

Cisco Catalyst 8000V is a virtual router that runs on Cisco IOS XE and Cisco IOS XE SD-WAN. This guide provides the overview, installation, and configuration information for Cisco Catalyst 8000V on Cisco IOS XE.

You can configure and manage Cisco Catalyst 8000V by:

- Provisioning a serial port in the VM to connect and access the Cisco IOS XE CLI commands.

Note You can use a serial port to manage a Cisco Catalyst 8000V VM only if the underlying hypervisor supports associating a serial port with a VM. See your hypervisor documentation for more details.

• Using the remote SSH/Telnet to access the Cisco IOS XE CLI commands.

Note By default, Telnet is disabled for security reasons. SSH is disabled in an on-prem deployment. Although SSH is preferred for remote user management, you must manually enable SSH in an on-prem deployment.

In cloud deployments, SSH is enabled by default. To access SSH, ensure that your cloud security settings allow SSH connectivity for both inbound and outbound traffic.

The software for Cisco Catalyst 8000V uses the standard Cisco IOS XE CLI commands and conventions. The commands are not case sensitive, and you can abbreviate the commands and parameters if the abbreviations contain enough letters to be different from any other currently available commands or parameters. To access all the features of Cisco IOS XE CLI and how to use them, see the Configuration Fundamentals Configuration Guide.

Cisco Unified Computing System (UCS) Products

Table 1: Cisco Catalyst 8000V Compatibility with Cisco UCS Servers

Cisco Unified Computing System (UCS) Products	The Cisco UCS server requirements are: • VMware-certified. • 4 or more cores configured. • A minimum UCS memory of 16 GB. If you use the SDWAN/Controller mode, at least 128 GB memory is required to accomodate SDWAN vManage, vBond, and vSmart. • A minimum UCS storage of 1 TB. • A UCS C220 M5 minimum is recommended. See http://www.cisco.com/en/US/products/ps10477/prod_technical_reference_list.html to determine the UCS hardware and software that is compatible with the supported hypervisors.