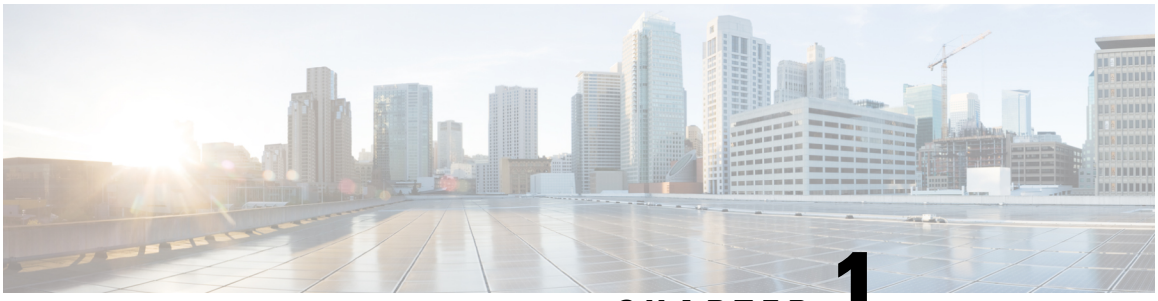


Cisco Catalyst 8000V Edge Software Deployment Guide for Oracle Cloud Infrastructure

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CHAPTER 1

Cisco Catalyst 8000V and Oracle Cloud Infrastructure

This document provides information about deploying Cisco Catalyst 8000V Edge Software on Oracle Cloud Infrastructure (OCI). This document covers:

- a brief introduction of what OCI is,
- the prerequisites you must know before you begin the deployment,
- the deployment workflow, and
- troubleshooting issues after the deployment.

Deploying Cisco Catalyst 8000V on OCI

Cisco Catalyst 8000V is a virtual router that offers routing, security, and network management functionalities as cloud services with multitenancy. As an end-user, you can boot this virtual router in the desired mode and then deploy this router on various clouds to enable and use the available solutions.

Starting from the Cisco IOS XE 17.18.1a release, you can deploy Cisco Catalyst 8000V on OCI, a cloud service provider that provides services for building and running applications in a hosted environment.

By deploying Cisco Catalyst 8000V on OCI, you can leverage all the Cisco IOS XE features and deploy the same networking services in this cloud similar to the features available in on-prem networks. The IOS XE CLI and RESTful API functionalities also ensure easy deployment, monitoring, troubleshooting, and service orchestration.

Refer to this document to know how to deploy and manage Cisco Catalyst 8000V instances on OCI.

Supported modes

Cisco Catalyst 8000V on OCI is supported in the following modes:

- Autonomous mode: Boot your router in this mode to access the Cisco IOS XE functionalities.
- Controller mode: Boot your router in this mode to access the SD-WAN capabilities.
- SD-Routing mode: Boot your virtual in this mode to manage your traditional and SD-WAN routing deployments.

- Supported Instances, on page 2

• Limitations, on page 2
• Licensing, on page 3

Supported Instances

Cisco Catalyst 8000V Edge Software supports the VM.Standard.E5.Flex instance with the performance tuned configurations listed in this table:

Table 1: Supported instances for OCI deployment

Cisco IOS XE release	Supported instance type	Instance type	Number of OCPUs	RAM in GB
Cisco IOS XE 17.18.1a	VM.Standard.E5.Flex	Small	4	8
Cisco IOS XE 17.18.1a	VM.Standard.E5.Flex	Medium	16	16

Note Cisco Catalyst 8000V on OCI supports Instance Metadata Service version 2 (IMDSv2).

Limitations

See this list to know the limitations and restrictions before you deploy Cisco Catalyst 8000V in OCI. The sub-section also specifies the functionalities that are not supported in this deployment.

- You cannot launch a virtual machine (VM) with additional interfaces at first boot. To add additional interfaces, you must wait until the first boot is complete.
- DHCP does not work for secondary interfaces. You must find out the IP address assigned to the interface from OCI and then configure the secondary interface with the IP address.
- The number of OCPUs limits the maximum number of vNICs for your deployment. For example, for a 4vCPU deployment, you can have a maximum of 4 VNICs. Similarly, for a 16vCPU deployment, you can have a maximum of 16 vNICs only.
- The cloud-init script field is limited to 32 KB.
- You can add only one interface during the initial onboarding process. When you use a generic vManage template or the **Configuration Groups** option for the initial Cisco Catalyst 8000V on-boarding in OCI, ensure the template or configuration and the respective bootstrap configurations are limited to a single interface.
- You can only hot-add and hot-delete the secondary interfaces.
- On OCI, IP traffic forwarded through IPsec or GRE tunnels is not accelerated. Thus, Cisco Catalyst 8000V autonomous-mode deployments involving an IPsec or GRE tunnel uses slow-path forwarding and thereby results in lower throughput.

Functionalities not supported in OCI deployment

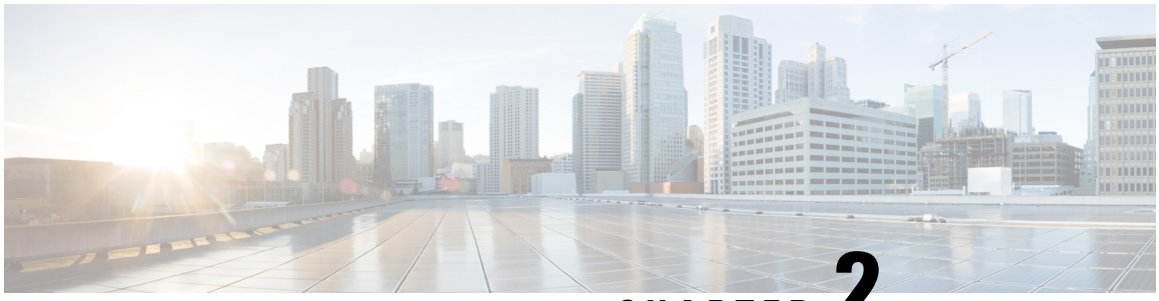
This list specifies all the features and functionalities that are not supported for this deployment.

- Cloud on Ramp is not supported.
- High Availability is not supported in autonomous mode.
- Pay As You Go (PAYG) licensing model is not supported for this deployment.
- Multiple edits on the VM are not supported. You can only perform one edit and save the changes before you proceed to the next edit.
- Multiple interface types are not supported on the VM for this deployment. For example, if you have multiple interfaces added, and you want to change the primary interface type to SRIOV, you must delete all the secondary interfaces before you modify the interface type for your primary interface. When you add the secondary interfaces back, only SRIOV interface type will be supported in this scenario.

Licensing

You can purchase a subscription-based license for Cisco Catalyst 8000V running on OCI. After you decide to purchase the Cisco Catalyst 8000V image from the OCI Marketplace, you must obtain a DNA license from Cisco.

For information on how to obtain and use Cisco Catalyst 8000V DNA licensing, see the Cisco DNA Software Routing Subscription Guide.



CHAPTER 2

Deploy Cisco Catalyst 8000V on OCI

This chapter specifies the step-by-step workflow on how to deploy Cisco Catalyst 8000V on OCI.

- Prerquisites, on page 5
- Deploying a Cisco Catalyst 8000V instance, on page 5
- Choose the Cisco Catalyst 8000V image, on page 6
- Configure the image settings, on page 6
- Configure the VCN settings, on page 7
- Add the SSH keys, on page 7
- Configure the day zero settings, on page 8
- Verify successful deployment, on page 9
- Disable simultaneous multithreading, on page 9

Prerquisites

Before you start the deployment workflow, ensure you have completed the prerequisites mentioned in this section.

- Sign up and create an OCI Account. To know how to do this, see Sign up for a new Oracle account.
- Set up a compartment to organize your resources. For more information on how to do this, see Creating a compartment.
- Set up an SSH client to configure SSH authentication.
- Create a Virtual Cloud Network (VCN). To know how to perform this task, see Creating a VCN.

Deploying a Cisco Catalyst 8000V instance

Summary

This list specifies the step-by-step workflow on how to deploy Cisco Catalyst 8000V on OCI.

Workflow

Follow these steps in the same order to deploy a Cisco Catalyst 8000V instance on OCI.

1. Choose the Cisco Catalyst 8000V image from the OCI marketplace.
2. Configure the image settings.
3. Configure the VCN settings.
4. Add the SSH keys.
5. Configure the day zero settings and launch the instance.
6. Access the instance by using an SSH client.

What's next

To know how to perform these steps in detail, refer to the individual tasks in this chapter.

Choose the Cisco Catalyst 8000V image

Perform these steps to choose the Cisco Catalyst 8000V image from the marketplace and configure the basic settings for the deployment.

Procedure

Step 1 Log in to the OCI marketplace.

Step 2 From the navigation menu, choose **Marketplace** > **All Applications**.

Step 3 Search for and select the **Cisco Catalyst 8000V for SD-WAN and Routing** image.

Step 4 On the top right corner of the landing page, from the **Region** drop-down list, choose your region.

Step 5 From the **Version** drop-down list, select the version, for example, **`17.18.1a`**.

Step 6 From the **Compartment** drop-down list, choose one of the compartments you've already created.

Step 7 Agree to the terms and conditions by selecting the check box.

Step 8 Click **Launch Instance**.

Configure the image settings

Perform this task to configure the image settings such as choosing the instance, memory, and bandwidth for your deployment.

Procedure

Step 1 On the **Create Compute Instance** window, enter a name for your instance in the **Name** field.

Step 2 In the **Placement** area, you can optionally configure the **Availability Domain**, **Capacity Type**, **Fault Domain**, and **Cluster Placement settings**. For more information on these settings, see Create an Instance.

Step 3 From the **Image and Shape** area, configure these image settings:

a) **Image**: Displays the name of the image you've selected. This field should display the **Cisco Catalyst 8000V for SD-WAN and Routing** value.

b) **Shape**: From this field, select a flexible shape that is supported for the Cisco Catalyst 8000V deployment. To know the supported shapes, see the Supported instance types section in this guide.

c) **OCPU**: Since you chose the flexible option under Shapes, you must select the number of OCPUS or the number of virtual CPUs that you want to allocate to this instance. Drag the slider to configure the number of OCUPS. By default, the other resources scale proportionately.

d) **Memory**: Choose the memory that you want to allocate to this instance.

e) **Network Bandwidth**: Specifies the network bandwidth for your instance based on your settings.

Step 4 Click the **Show Advanced OCI Settings** link in the **Image and Shape** area and ensure the **Enable simultaneous multithreading** check box is not checked. This setting is recommended for optimum performance.

Configure the VCN settings

Perform the steps mentioned in this task to configure the network details for your instance.

Procedure

Step 1 On the **Create Instance** page, go to the **Primary vNIC Information** section to configure the network details.

Step 2 Specify a name for your networkin the **vNIC Name** field. This is an optional field.

Step 3 From **Primary Network** > **VCN** drop-down list, choose the VCN for your deployment. Either choose the **Existing virtual cloud network** option and choose a VCN that you've already created or choose the **Create new virtual cloud network** option and create a VCN. You can also enter a subnet OCID to choose the VCN for your deployment.

Step 4 From the **Subnet** field, choose **Select existing subnet** or **Create new public subnet**. If you choose a public subnet, you can also assign the instance a public IPv4 address. A public IP address (with associated security and routing configuration) is required to make this instance accessible from the internet.

Step 5 From the **Primary vNIC IP Address** field, choose either **Automatically assign private IPv4 address** or **Manually assign private IPv4 address**. The automatic option, where the OCI selects an available IP address, is the default option. Both IPv4 and IPv6 are supported.

Add the SSH keys

Perform this task to configure the SSH key pair using which you can access your instance. You can either allow OCI to generate an SSH key pair or use your own. If you want to use your own SSH key to connect to the instance, you need the public key from the SSH key pair that you plan to use. The key must be in OpenSSH format.

Procedure

On the **Create Instance** page, in the **Add SSH Keys** section, configure your SSH keys by choosing one of the following radio buttons:

- **Generate a key pair for me**: Choose this option if you want OCI to generate a key pair for you. Select **Save Private Key** and then save the private key on your computer. Optionally, select **Save Public Key** and then save the public key.
- **Upload public key files (.pub)**: Choose this option upload the public key portion of your key pair. Either browse to the key file that you want to upload or drag and drop the file into the box.
- **Paste public keys**: Choose this option and paste the public key portion of your key pair in the box.

  If the public key has a username appended at the end, access the VM by using:

  ```
  ssh -i <ssh_key>
  <username>@<public_ip_addr>
  ```

  If the public key is not appended with any username, it is defaulted to oci-user. In this case, access the VM by using:

  ```
  ex- ssh -i <ssh_key>
  oci-user@<public_ip_addr>
  ```

- **No SSH keys**: Select this option only if you do not want to connect to the instance using SSH.

Note You can't provide a public key or save the key pair that is generated by OCI after the instance is created.

Configure the day zero settings

This task provides the day zero configuration in the form of User data, which can be used by cloud-init to run custom scripts or provide custom cloud-init configuration.

Procedure

Step 1 On the **Create Instance** page, in the **Advance Settings** section, click the **Management** tab.

Step 2 In the **Initialization script** field, select one of these two options:

- **Cloud-init script file**: Browse to the file that you want to upload or drag the file into the box.
- **Paste cloud-init script**: Paste your script in the Cloud-init script text box.

Step 3 Click **Create** to create the instance.

Verify successful deployment

After you deploy Cisco Catalyst 8000V on OCI, perform these steps to verify successful deployment.

Procedure

On the **Create Instance** page, click **Create**.

The system displays the **New Instance Launch** page with a summary of all the settings you've chosen for the deployment. On the left side, the instance status is displayed as **Provisioning**. Once the instance is created and launched without any issues, this status changes to **Running**.

After the instance is provisioned, the instance details appear in the instance list. To view additional details such as IP addresses and the initial password, click on the instance name.

When the instance is fully provisioned and running, you can connect to the instance.

Disable simultaneous multithreading

To optimize the performance of your instances, we strongly recommend you disable simultaneous multithreading (SMT) on your instances.

Procedure

Step 1 Log in to the marketplace. Click **Compute** > **Instances** to access your instance.

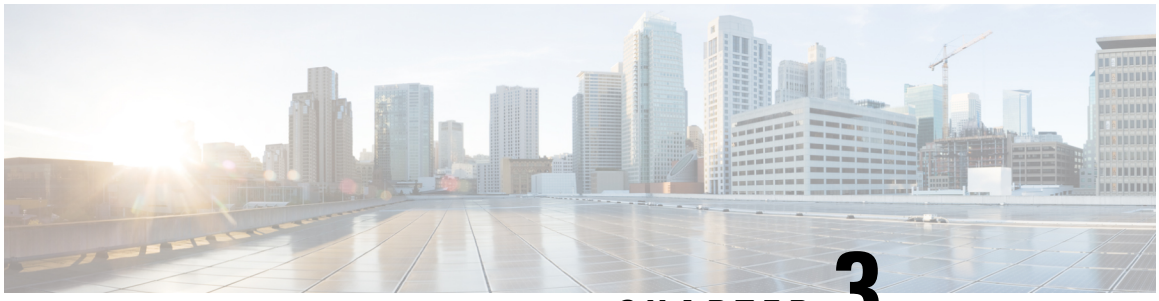
Step 2 Choose the instance for which you want to disable SMT and choose **Stop Instance**.

Step 3 Click **More Actions** > **Edit** > **Edit Shape**.

Step 4 In the **Shape Summary** area, click the **Show Advanced OCI Settings** link.

Step 5 Uncheck the **Enable simultaneous multithreading** check box.

Step 6 Click **Save** to disable SMT.



CHAPTER 3

Troubleshoot Deployment Issues

This chapter provides troubleshooting information on some of the common issues you might experience when you deploy Cisco Catalyst 8000V on OCI. Refer to the sections in this chapter to view the resolution or workaround for common issues.

- Console displays SMT is enabled despite disabling this setting, on page 11
- Show platform all command does not retrieve secondary vNIC information, on page 11
- Serial console hangs abruptly, on page 12

Console displays SMT is enabled despite disabling this setting

Issue

The OCI console displays that SMT is enabled even after you disable this setting.

Resolution or workaround

- Verify the configuration of the VM using CLI. To know how to do this, see Disabling Simultaneous Multithreading.
- To confirm the status of hyperthreading by checking the number of CPU allocations on Cisco Catalyst C8000V, run the **show platform software cpu allocation** command.

Show platform all command does not retrieve secondary vNIC information

Issue

When you run the show platform software system all command, the secondary vNIC information is not displayed.

Resolution or workaround

This is expected behavior. If you've hot added an interface, perform a reboot to see the interface listed in the CLI.

Serial console hangs abruptly

Issue

The serial console hangs abruptly at times.

Resolution or workaround

Re-initiate the serial console before proceeding with your workflow.