

Deploy the ASA Virtual on OpenStack

You can deploy the ASA Virtual on OpenStack.

- Overview, on page 1
- Prerequisites for the ASA Virtual and OpenStack, on page 1
- Guidelines and Limitations, on page 2
- System Requirements, on page 3
- Sample Network Topology, on page 4
- Deploy the ASA Virtual, on page 4

Overview

You can deploy the ASA Virtual in an OpenStack environment. OpenStack is a set of software tools for building and managing cloud computing platforms for public and private clouds, and is tightly integrated with the KVM hypervisor.

Enabling OpenStack platform support for ASA Virtual allows you to run ASA Virtual on open source cloud platforms. OpenStack uses a KVM hypervisor to manage virtual resources. ASA Virtual devices are already supported on KVM hypervisor. Therefore, there is no extra addition of kernel packages or drivers to enable OpenStack support.

Prerequisites for the ASA Virtual and OpenStack

- Download the ASA Virtual qcow2 file from software.cisco.com and put it on your Linux host:

  http://www.cisco.com/go/asa-software

- ASA Virtual supports deployment on RHEL OpenStack environment and Cisco VIM managed OpenStack environment.

  Set up the OpenStack environment according to the OpenStack guidelines.

  - ASA version 9.22(x) supports deployment on Red Hat OpenStack Platform release 17.1.13 (Wallaby) with Red Hat Enterprise Linux release 9.8 (Plow).
  - See HVIM 6.0.0 - Red Hat Enterprise Linux (RHEL) 9.4 and OSP 18 (OpenStack 2023.1 Antelope).

- License the ASA Virtual. Until you license the ASA Virtual, it will run in degraded mode, which allows only 100 connections and throughput of 100 Kbps. See Licenses: Smart Software Licensing.
- Interface requirements:
  - Management interface
  - Inside and outside interfaces
- Communications paths:
  - Management interface—Used to connect the ASA Virtual to the ASDM; can't be used for traffic.
  - Inside interface (required)—Used to connect the ASA Virtual to inside hosts.
  - Outside interface (required)—Used to connect the ASA Virtual to the public network.
- Communications paths:
  - Floating IPs for access into the ASA Virtual.
- Minimum supported ASA Virtual version:
  - ASA 9.16.1
- For OpenStack requirements, see OpenStack Requirements.
- For ASA Virtual system requirements, see Cisco Secure Firewall ASA Compatibility.

Guidelines and Limitations

Supported Features

The ASA Virtual on OpenStack supports the following features:

- Deployment of ASA Virtual on the KVM hypervisor running on a compute node in your OpenStack environment.
- OpenStack CLI
- Heat template-based deployment
- OpenStack Horizon dashboard
- Licensing – Only BYOL is supported
- ASA Virtual management using the CLI and ASDM
- Drivers - VIRTIO and SRIOV
- IPv6

Unsupported Features

The ASA Virtual on OpenStack does not support the following:

- Autoscale
- Cluster

Upgrade Restrictions and Limitations

Revert upgrade restrictions

Caution Reverting an upgrade is not supported.

Ensure that you take a backup before upgrading. After upgrading to ASA Virtual 10.0.0, you cannot roll back to a previous software version. To return to an earlier version, you must redeploy the Management Center.

System Requirements

The OpenStack environment must conform to the following supported hardware and software requirements.

Table 1: Hardware and Software Requirements for RHEL

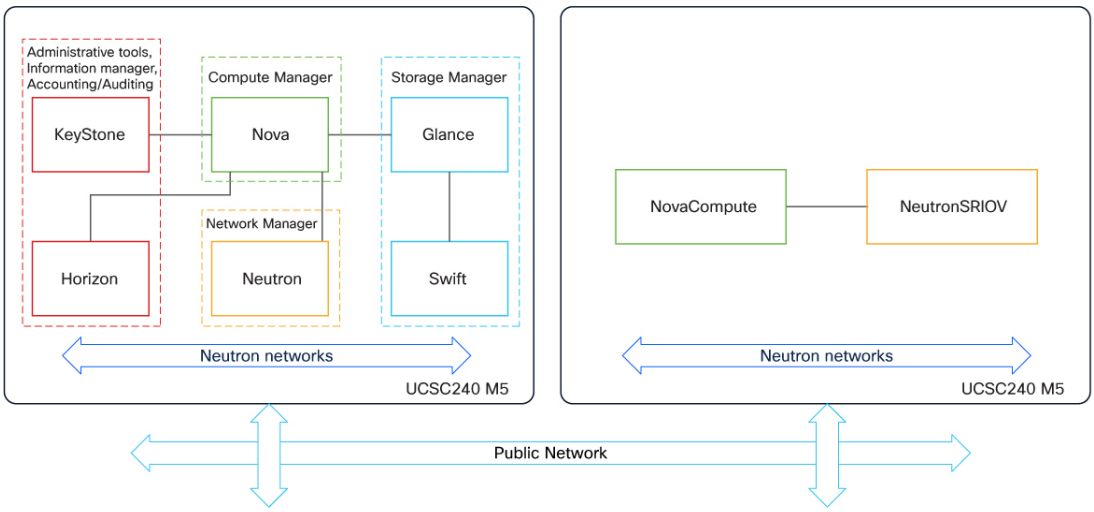
Category	Supported Versions	Notes
Server	UCS C220-M5/UCS C240-M4	2 UCS servers are recommended, one each for os-controller and os-compute nodes.
Driver	VIRTIO, IXGBE, and I40E	These are the supported drivers.
Operating System	Red Hat OpenStack Platform 17.1.13 with the OpenStack Wallaby release on Red Hat Enterprise Linux release 9.8 (Plow)	
OpenStack Version	Red Hat OpenStack Platform release 17.1.13 (Wallaby)	

Table 2: Hardware and Software Requirements for Cisco VIM Managed OpenStack

Category	Supported Versions	Notes
Server Hardware	UCS C220-M5/UCS C240-M4	5 UCS servers are recommended, three each for os-controller and Two or more for os-compute nodes.
Drivers	VIRTIO, IXGBE, and I40E	These are the supported drivers.
HVIM Version	HVIM 6.0.0 Supported on: • Red Hat Enterprise Linux (RHEL) 9.4 • OSP 18 (OpenStack 2023.1 Antelope)	See HVIM 6.0.0 - Red Hat Enterprise Linux (RHEL) 9.4 and OSP 18 (OpenStack 2023.1 Antelope) for more information.

Figure 1: OpenStack Platform Topology

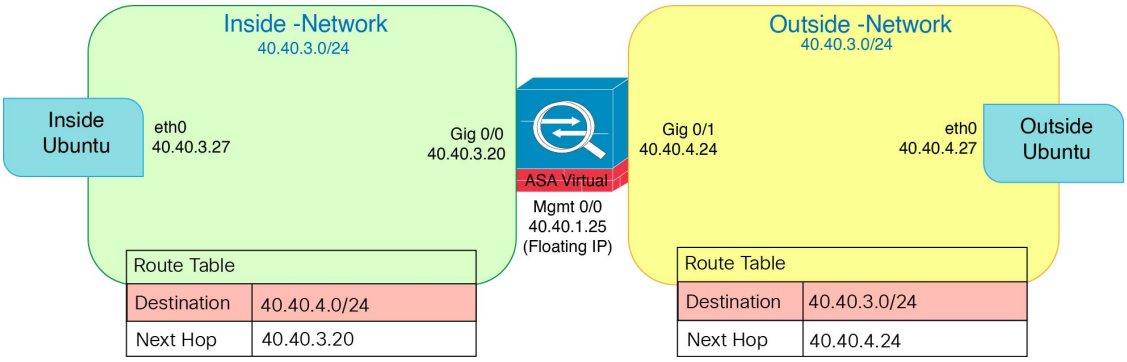
OpenStack platform topology shows the general OpenStack setup on two UCS servers.



Sample Network Topology

The following figure shows the recommended network topology for the ASA Virtual in Routed Firewall Mode with 3 subnets configured in OpenStack for the ASA Virtual (management, inside, and outside).

Figure 2: Sample ASA Virtual on OpenStack Deployment



Deploy the ASA Virtual

Cisco provides sample heat templates for deploying the ASA Virtual. Steps for creating the OpenStack infrastructure resources are combined in a heat template (`deploy_os_infra.yaml`) file to create networks, subnets, and router interfaces. At a high-level, the ASA Virtual deployment steps are categorized into the following sections.

- Upload the ASA Virtual qcow2 image to the OpenStack Glance service.
- Create the network infrastructure.

- Network
- Subnet
- Router interface

- Create the ASA Virtual instance.
  - Flavor
  - Security Groups
  - Floating IP
  - Instance

You can deploy the ASA Virtual on OpenStack using the following steps.

Upload the ASA Virtual Image to OpenStack

Copy the qcow2 image (`asav-<version>.qcow2`) to the OpenStack controller node, and then upload the image to the OpenStack Glance service.

Before you begin

Download the ASA Virtual qcow2 file from Cisco.com and put it on your Linux host:

http://www.cisco.com/go/asa-software

Note A Cisco.com login and Cisco service contract are required.

Procedure

Step 1 Copy the qcow2 image file to the OpenStack controller node.

Step 2 Upload the ASA Virtual image to the OpenStack Glance service.

```
root@ucs-os-controller:$ openstack image create <image_name> --public --disk-
format qcow2 --container-format bare --file ./<asav_qcow2_file>
```

Step 3 If the OpenStack environment is running Red Hat Enterprise Linux (RHEL) 9 or later, set the image property for the uploaded image.

```
openstack image set <image_id> --property hw_machine_type=pc
```

Example:

```
openstack image set 06dd7975-0b6e-45b8-810a-4ff98546a39d --property hw_machine_type=pc
```

Step 4 Verify if the ASA Virtual image upload is successful.

root@ucs-os-controller:$ openstack image list

Example:

```
root@ucs-os-controller:$ openstack image list
+--------------------------------------+----------------------+--------+
| ID                                   | Name                 | Status |+
| 06dd7975-0b6e-45b8-810a-4ff98546a39d | asav-<version>-image | active |+
```

The uploaded image and its status is displayed.

Step 5 Configure Image properties.

Image creation and configuration:

Enable UEFI:

```
openstack image set <your_image> --property hw_firmware_type=uefi --property hw_machine_type=q35
```

Enable UEFI (with Secure Boot):

```
openstack image set <your_image> --property hw_firmware_type=uefi --property os_secure_boot=required
--property hw_machine_type=q35
```

What to do next

Create the network infrastructure using the `deploy_os_infra.yaml` template.

Create the Network Infrastructure for OpenStack and ASA Virtual

Before you begin

Heat template files are required to create the network infrastructure and the required components for ASA Virtual, such as flavor, networks, subnets, router interfaces, and security group rules:

- `deploy_os_infra.yaml`
- `env.yaml`

Templates for your ASA Virtual version are available from the GitHub repository at ASA Virtual OpenStack heat template.



Important Note that Cisco-provided templates are provided as open source examples, and are not covered within the regular Cisco TAC support scope. Check GitHub regularly for updates and ReadMe instructions.

Procedure

Step 1 Deploy the infrastructure heat template file.

root@ucs-os-controller:$ openstack stack create <stack-name> -e <environment files name> -t <deployment file name>

Example:

```
root@ucs-os-controller:$ openstack stack create infra-stack -e env.yaml -t deploy_os_infra.yaml
```

Step 2 Verify if the infrastructure stack is created successfully.

root@ucs-os-controller:$ openstack stack list

What to do next

Create the ASA Virtual instance on OpenStack.

Create the ASA Virtual Instance on OpenStack

Use the sample ASA Virtual heat template to deploy ASA Virtual on OpenStack.

Before you begin

A heat template is required to deploy the ASA Virtual on OpenStack:

- `deploy_asav.yaml`

Templates for your ASA Virtual version are available from the GitHub repository at ASA Virtual OpenStack heat template.

Important Note that Cisco-provided templates are provided as open source examples, and are not covered within the regular Cisco TAC support scope. Check GitHub regularly for updates and ReadMe instructions.

Procedure

Step 1 Deploy the ASA Virtual heat template file (`deploy_asav.yaml`) to create the ASA Virtual instance.

root@ucs-os-controller:$ openstack stack create asav-stack -e env.yaml-t deploy_asav.yaml

Example:

```
+---------------------+------------------------------+
| Field               | Value                        |
+---------------------+------------------------------+
| id                  | 14624af1-e5fa-4096-bd86-c453bc2928ae |
| stack_name          | asav-stack                   |
| description         | ASAvtemplate                 |
| updated_time        | None                         |
| stack_status        | CREATE_IN_PROGRESS           |
| stack_status_reason | Stack CREATE started         |
+---------------------+------------------------------+
```

Step 2 Verify that your ASA Virtual stack is created successfully.

root@ucs-os-controller:$ openstack stack list

Example:

```
+--------------------------------------+------------+----------------------------------+--------+
| ID                                   | Stack Name | Project                          | Stack Status
    |
```

```
+--------------------------------------+-------------+----------------------------------+-----------------+
| 14624af1-e5fa-4096-bd86-c453bc2928ae | asav-stack  | 13206e49b48740fdafca83796c6f4ad5 |
CREATE_COMPLETE |
| 198336cb-1186-45ab-858f-15ccd3b909c8 | infra-stack | 13206e49b48740fdafca83796c6f4ad5 |
CREATE_COMPLETE |
+--------------------------------------+-------------+----------------------------------+-----------------+
```