

NetScaler Control Center 11.0

Apr 05, 2016

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Overview: NetScaler Control Center

Sep 23, 2015

The increasing use of virtualization and private cloud computing solutions is creating highly complex datacenter environments. This complexity results in significant IT operational challenges in the areas of provisioning, change and configuration management, root cause analysis, and performance management. Cloud orchestration solutions help reduce this complexity by providing integrated, automated application and infrastructure provisioning, workflow orchestration, and self-service management tools for all data center services, such as computing, networking, and storage.

Citrix® NetScaler® Control Center enables integration of Citrix NetScaler products with OpenStack cloud orchestration. NetScaler Control Center and OpenStack implement each other's APIs, enabling integration of the Citrix NetScaler appliance's Load Balancing feature (LBaaS) with OpenStack cloud orchestration.

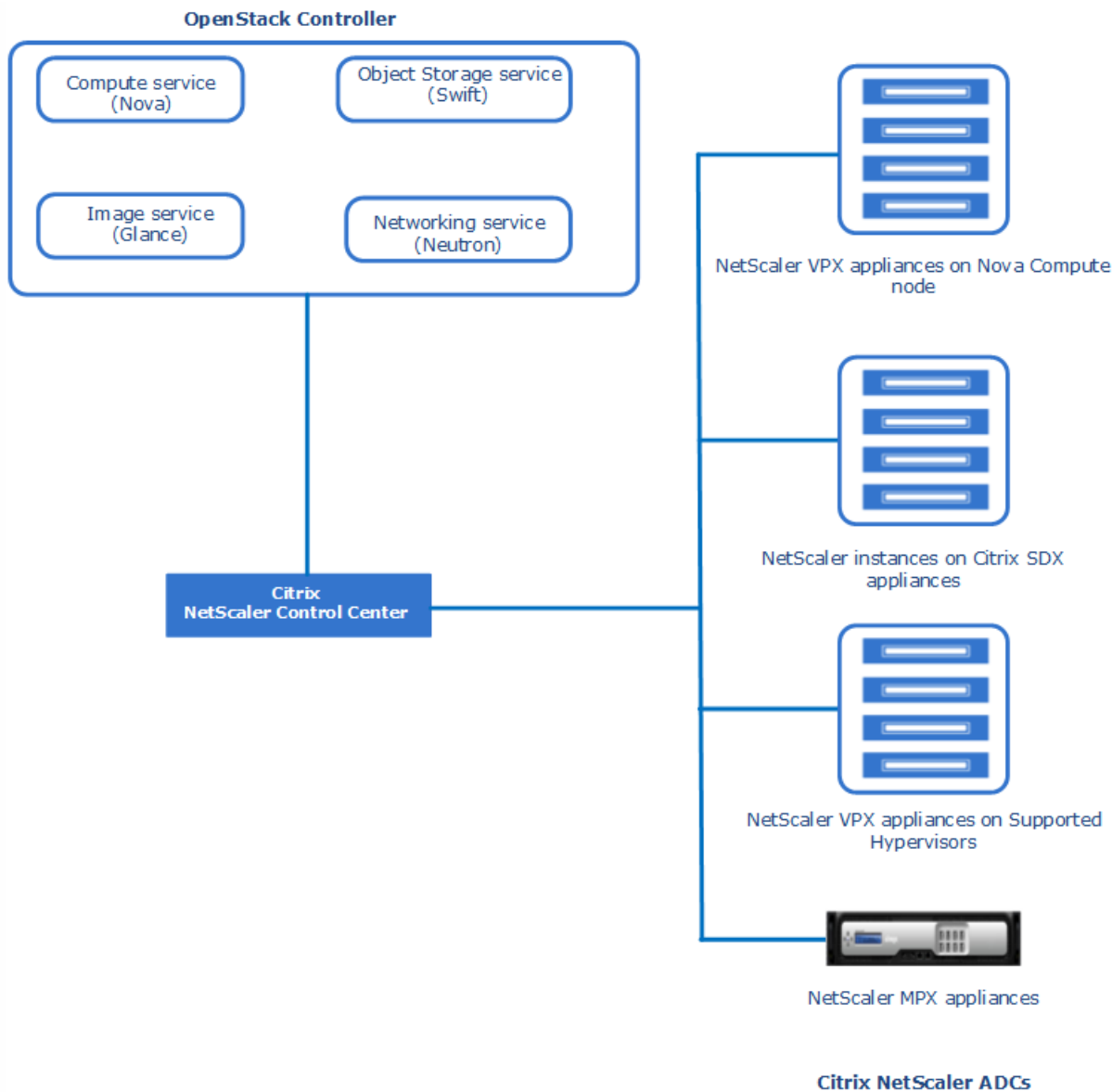
Citrix NetScaler Control Center is a software-based product, which is deployed as a virtual machine on a Linux-KVM platform.

This section includes the following details:

- [General Architecture](#)
- [Key Functionality and Benefits](#)
- [Use Case: How NetScaler Control Center Integrates NetScaler Appliances into OpenStack Cloud](#)
- [Supported Platforms](#)

General Architecture

The following illustration shows the generic architecture of the NetScaler Control Center integration of NetScaler ADCs and OpenStack cloud. Tenants of the OpenStack cloud can use the integrated NetScaler ADCs for load balancing (LBaaS) their virtual machines. These tenants configure load balancing on OpenStack cloud. OpenStack uses the NetScaler Control Center APIs to push the load balancing configuration to the NetScaler Control Center, which in turn creates the configuration on the NetScaler ADCs assigned to the tenants. The NetScaler ADCs now provide load balancing functionality (LBaaS) for these tenants. OpenStack calls the NetScaler Control Center VM at regular intervals to retrieve the status of all load balancing entities from these NetScaler ADCs.



Key Functionality and Benefits

NetScaler Control Center provides the following key functions that enable a cloud consumption model for value added NetScaler ADC features, making it easy for cloud providers to offer any NetScaler ADC or security function as a cloud service.

- **Capacity pooling across all NetScaler infrastructure.** NetScaler Control Center is designed to efficiently pool and manage capacity across all NetScaler appliances including physical (MPX), virtual (VPX), and multi-tenant (SDX) form factors.
- **End-to-end automation across all NetScaler appliances.** Using NetScaler Control Center, the complexity of provisioning and deploying ADC functions on a large pool of NetScaler appliances is completely hidden from both the cloud provider and the cloud tenant. NetScaler Control Center automation capabilities include:
 - Auto-instantiation of new VPX appliances as Nova instances and SDX instances on-demand, without any manual intervention.
 - Automation of license allocation on newly launched VPX instances.
 - Policy based resource allocation for auto-provisioned instances.
 - Native intelligence of OpenStack Networking (Neutron) management service and the ability to dynamically attach

both VPX and SDX instances to Neutron networks.

- **Guaranteed SLAs through service aware resource allocation.** Cloud providers need to guarantee performance and availability SLAs to different cloud tenants. NetScaler Control Center provides granular control over ADC resource allocation policies, giving the provider flexibility in creating differentiated SLAs for cloud tenants based on their application's needs. A simple and intuitive workflow to construct "service packages" for different tenant tiers simplifies the SLA creation process. Service packages can be defined with the following parameters and are customizable per tenant:
 - **Appliance type.** The target appliance type on which a logical NetScaler instance for the tenant is created.
 - **Isolation type.** Option to choose between fully dedicated instances and shared instances.
 - **Resource allocation.** The amount of CPU, memory, and SSL capacity to be allocated for each tenant's dedicated instance.
 - **Software versions.** The specific version of NetScaler firmware for each tenant's dedicated instance—allows for version and upgrade independence between tenants.

Note: Admin partitions are not supported in this release of NetScaler Control Center.

- **Integration with OpenStack Keystone for single-sign-on authentication.** NetScaler Control Center integrates natively with OpenStack Keystone, OpenStack's authentication service, and can retrieve tenant related information directly from Keystone. This simplifies tenant-specific policy management and eliminates the overhead and potential security concerns that can result from explicitly registering separate tenant credentials with NetScaler Control Center.
- **Centralized visibility and reporting.** NetScaler Control Center provides a single view with deep visibility into the operational characteristics of all the NetScaler ADC services running in the OpenStack environment. Information regarding status, statistics, and health across a rich set of metrics aids in centralized visibility, monitoring, and ease of troubleshooting. In addition, granular per-tenant usage metrics are made available for reporting and charge back.

NetScaler's ADC services coupled with NetScaler Control Center's automation capabilities provides the following benefits for OpenStack LBaaS deployments:

- Full investment protection for customers through the ability to leverage all their current NetScaler installed base (across all NetScaler appliance types) for powering LBaaS in an OpenStack cloud.
- Automated provisioning of both physical and virtual NetScaler instances reduces time to deploy new NetScaler ADC services from hours/days to minutes. NetScaler VPX appliances can be generated as Nova instances, further simplifying the operational complexity of deploying new NetScaler instances.
- The flexible isolation model provides to provide differentiated SLAs to cloud tenants (for example, dedicated NetScaler instances per tenant).
- Resource allocation support for each isolation model guarantees performance and reliability. Providers can reserve CPU, memory, throughput, and SSL capacity for dedicated NetScaler instances, and throughput, memory.
- Advanced placement algorithms supported by NetScaler Control Center give the administrator full control over the placement of a new ADC function or a new NetScaler instance in a distributed deployment that potentially spans multiple availability-zones, data centers, and regions.

Use Case: How NetScaler Control Center Integrates NetScaler Appliances into OpenStack Cloud

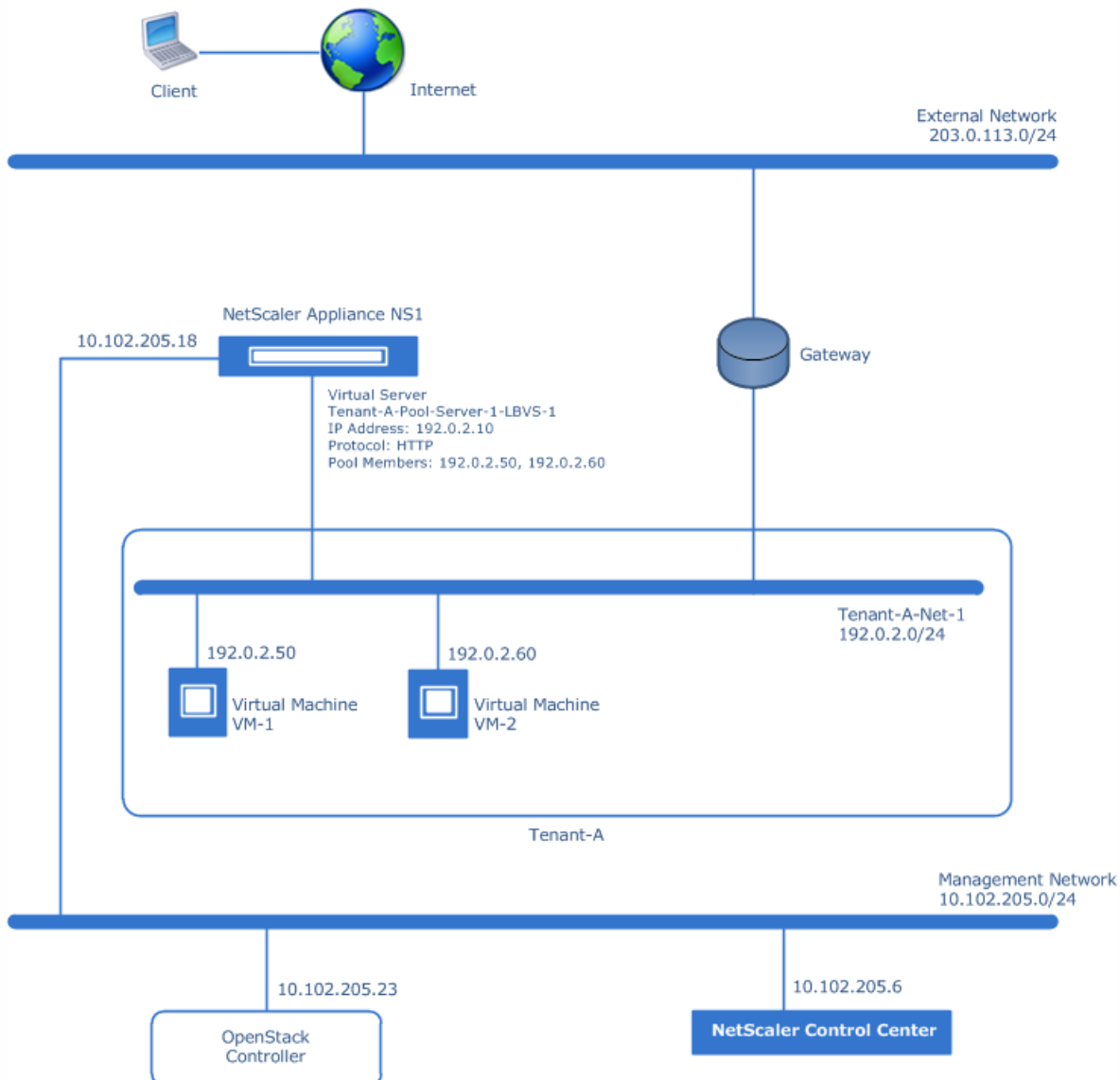
To understand how NetScaler Control Center integrates NetScaler appliances into OpenStack cloud, consider an example in which NetScaler VPX appliance NS1 is used to load balance traffic between virtual machines VM-1 and VM-2 of tenant Tenant-A.

An enterprise, Example-Cloud-Provider, has used OpenStack cloud components to set up a cloud infrastructure (OpenStack cloud). The OpenStack cloud setup includes OpenStack components such as Neutron, Nova, Glance, Swift, and OpenStack Controller.

Tenant-A is a tenant of the Example-Cloud-Provider's cloud infrastructure. Example-Cloud-Provider's administrator of the OpenStack cloud, who is also known as the cloud administrator or system administrator, creates a tenant space named Tenant-A in OpenStack and then allocates resources to it. The cloud administrator also creates some login credentials (users) for Tenant-A for managing its resources and configuration.

Tenant-A needs a NetScaler VPX appliance to load balance traffic between virtual machines VM1 and VM2 in its network in OpenStack cloud. To meet this requirement, the cloud administrator provisions NetScaler VPX instance NS1 on a supported virtualization platform.

The cloud administrator also provisions an instance of NetScaler Control Center NCC-1 on a supported virtualization platform. The NetScaler Control Center instance is required for integrating NetScaler appliance NS1 into OpenStack cloud.



The cloud administrator registers OpenStack cloud and NetScaler Control Center with each other. When registration is completed, NetScaler Control Center fetches the details of all tenants, including Tenant-A, from OpenStack cloud.

Then, the cloud administrator specifies the details (for example, IP address) of the NetScaler VPX instance in the NetScaler Control Center by creating a device entity. In other words, a device entity in NetScaler Control Center represents a NetScaler product. A device entity can be of type NetScaler VPX, NetScaler MPX, and NetScaler SDX.

The cloud administrator then creates a service package in the NetScaler Control Center. The cloud administrator assigns the device representing the NetScaler VPX instance to the service package. Also, the cloud administrator associates Tenant-A with the service package. As a result, the NetScaler VPX instance is assigned to Tenant-A.

The user (Tenant-A), by using OpenStack controller, configures load balancing to load balance traffic between virtual machines VM1 and VM2 on Tenant-A. OpenStack pushes the load balancing configuration to the NetScaler Control Center VM, which in turn creates the configuration on the NetScaler VPX instance assigned to Tenant-A.

After load balancing is configured, the NetScaler VPX instance takes over the load balancing functionality from OpenStack cloud and starts accepting traffic and load balancing the traffic between the virtual machines on Tenant-A.

The following table lists the settings used in this example:

Entity	Name	Details
General settings		
External Network		203.0.113.0/24
Management Network		10.102.205.0/24
Tenant Network		192.0.2.0/24
IP address of OpenStack Controller		10.102.205.23
IP address of the NetScaler Control Center NCC-1		10.102.205.6
Management IP address of the NetScaler ADC NS1		10.102.205.18
Settings in NetScaler Control Center NCC-1		
Service Package	SVC-PKG-GOLD	<ul style="list-style-type: none"> ● Isolation Type: Dedicated ● Device Type: NetScaler VPX
Tenant settings on OpenStack		
Name of the tenant on OpenStack	Tenant-A	
Tenant-A network	Tenant-A-Net-1	192.0.2.0/24
Virtual Machines on Tenant-A	VM-1	Virtual Machines <ul style="list-style-type: none"> ● IP address: 192.0.2.50

Entity	Name	Details
	VM-2	IP address: 192.0.2.60
Load balancing configuration created on OpenStack for Tenant-A		
Pool	Tenant-A-Pool-Server-1	Pool members <ul style="list-style-type: none"> • 192.0.2.50 (HTTP) • 192.0.2.60 (HTTP)
VIP (Virtual server)	Tenant-A-Pool-Server-1-LBVS-1	Details <ul style="list-style-type: none"> • IP address: 192.0.2.10 • Service: HTTP
Same load balancing configuration automatically created on the NetScaler ADC NS1 by NetScaler Control Center NCC-1		
Pool	Tenant-A-Pool-Server-1	Pool members <ul style="list-style-type: none"> • 192.0.2.50 (HTTP) • 192.0.2.60 (HTTP)
VIP (Virtual server)	Tenant-A-Pool-Server-1-LBVS-1	Details <ul style="list-style-type: none"> • IP address: 192.0.2.10 • Service: HTTP

Supported Platforms

NetScaler Control Center supports the following OpenStack cloud platform and Citrix NetScaler Products:

Component	Releases
OpenStack cloud platform	Icehouse release and later
Citrix NetScaler Products	
NetScaler ADCs (VPX and MPX appliances)	Release 10.1 and later
NetScaler SDX appliance	Release 10.1 and later

Setup and Configuration Steps

Sep 29, 2015

Integrating the NetScaler Control Center and NetScaler ADCs to OpenStack cloud involves the following broad tasks:

- Provision NetScaler Control Center on a virtualization server (hypervisor).
- Register NetScaler Control Center with OpenStack.
- Register OpenStack with NetScaler Control Center.
- Add Service Packages on NetScaler Control Center.
- Consuming Load Balancing as a Service (LBaaS) from OpenStack.

Prerequisites and Points to Consider

Before setting up NetScaler Control Center and integrating NetScaler ADCs into OpenStack cloud, consider the following:

- The cloud administrator should have conceptual knowledge of OpenStack cloud platform and Citrix NetScaler ADCs.
- For more information about OpenStack cloud platform, see the product documentation at <http://docs.openstack.org/>.
- For more information about the Citrix NetScaler ADCs, see the [Citrix NetScaler product documentation](#).
- The cloud administrator has to set up and configure all the required components of OpenStack cloud platform before setting up NetScaler Control Center.
- Citrix NetScaler Control Center should not be misunderstood as a product for managing and monitoring multiple NetScaler appliances. For managing and monitoring multiple NetScaler appliances, use Citrix Command Center. For more information about Citrix Command Center, see the [Citrix Command Center documentation](#).

Provisioning NetScaler Control Center on a Linux-KVM Server

Nov 26, 2015

Citrix NetScaler Control Center is a software-based product that is deployed as a virtual machine on a Linux-KVM virtualization platform. To set up NetScaler Control Center for the Linux-KVM platform, you can use the Linux-KVM command line **virsh** program. The host Linux operating system must be installed on suitable hardware for use of virtualization tools such as KVM Module and QEMU.

For provisioning an instance of NetScaler Control Center on Linux-KVM, the cloud administrator first downloads the setup files, which include the image file of NetScaler Control Center, from Citrix.com. The cloud administrator then uses virish program to provision the NetScaler Control Center instance (image file) on a Linux-KVM server.

This section includes the following details:

- [Downloading NetScaler Control Center Setup Files](#)
- [Prerequisites for NetScaler Control Center on Linux-KVM Platform](#)
- [Provisioning NetScaler Control Center on Linux-KVM by using the virsh Program](#)
- [Accessing NetScaler Control Center](#)

Downloading NetScaler Control Center Setup Files

To download the NetScaler Control Center setup files from www.citrix.com

1. In a web browser, go to www.citrix.com.
2. In the menu bar, click **Log In**.
3. Enter your login credentials, and then click **Log In**.
4. In the menu bar, click **Downloads**.
5. From the **Select a product** list, select **NetScaler ADC**.
6. On the **NetScaler ADC** page, select **Release 10.5.e**, and then select **Components**.
7. Under **Components**, select **NetScaler Control Center 10.5.e**.
8. On the page that appears, scroll down to the list of available builds, and then select a build. For example, **10.5.e-57.7005.e**.
9. Under **NetScaler Control Center KVM 10.5.e**, click **Download File** to download the NetScaler Control Center tgz file. The tgz file has the following format: CC-KVM-release number>-<build number>.tgz (for example, CC-KVM-10.5-52.1115.e.tgz).
10. Extract all the files from the tgz file and save it on your local system. The CC-KVM-*.tgz package contains following components:
 - The Domain XML file specifying NetScaler Control Center attributes [CC-KVM-*.xml]
 - Check sum of CC-KVM Disk Image [Checksum.txt]
 - CC-KVM Disk Image [CC-KVM-*.raw]

Prerequisites for NetScaler Control Center on Linux-KVM Platform

Hardware Requirements

The following table describes the minimum system requirements for Linux-KVM servers for NetScaler Control Center.

Component	Requirement
CPU	<p>64-bit x86 processors with the hardware virtualization features included in the AMD-V and Intel VT-X processors.</p> <p>To test whether your CPU supports Linux host, enter the following command at the host Linux shell prompt:</p> <pre>. egrep'^flags.* (vmx svm) '/proc/cpuinfo</pre> <p>If the BIOS settings for the above extension are disabled, you must enable them in BIOS.</p> <p>Provide at least 2 CPU cores to Host Linux.</p> <p>There is no specific recommendation for processor speed, but higher the speed, the better the performance of the NetScaler Control Center VM.</p>
Memory (RAM)	Minimum 4 GB for the host Linux kernel.
Hard Disk	Calculate the space for Host Linux kernel and VM requirements. A single NetScaler Control Center VM requires a minimum of 20 GB of disk space.

Software Requirements

The host kernel used be a 64-bit Linux kernel, release 2.6.20 or later, with all virtualization tools. Citrix recommends newer kernels, such as 3.6.11-4 and later.

Many Linux distributions, such as Red Hat, Centos, and Fedora, have tested kernel versions and associated virtualization tools.

Citrix has tested the beta release on Linux kernel version 3.11.0 and Ubuntu Distribution 12.04.4 LTS.

Guest VM Hardware Requirements

NetScaler Control Center supports only the IDE hard disk type.

Networking Requirements

NetScaler Control Center supports only one virtIO para-virtualized network interface.

This interface should be connected to the management network of the OpenStack cloud thereby enabling the NetScaler Control Center and OpenStack cloud to talk to each other.

Provisioning NetScaler Control Center on Linux-KVM by using the virsh Program

The virsh program is a command line tool for managing virtual machines on Linux-KVM. It enables you to change the status (start, stop, pause, and so on) of existing virtual machines, to provision and set up new virtual machines, and to edit existing configurations. The virsh program is also useful for scripting virtual machine management operations.

The cloud administrator must make sure that the NetScaler Control Center instance is reachable by OpenStack cloud and the NetScaler ADCs in the datacenter.

To provision NetScaler Control Center by using the virsh program

1. Use the tar command to untar the NetScaler Control Center package. The CC-KVM-*.tgz package contains following components:

- The Domain XML file specifying NetScaler Control Center attributes [CC-KVM-*.xml]
- Check sum of CC-KVM Disk Image [Checksum.txt]
- CC-KVM Disk Image [CC-KVM-*.raw]

Example

```
cd /var
tar -xvzf CC-KVM-10.1-117.5.tgz
CC-KVM-10.1-117.5.xml
CC-KVM-10.1-117.5.raw
checksum.txt
```

2. Rename the CC-KVM-*.xml XML file to a file named <DomainName>-CC-KVM-*.xml. The <DomainName> is also the name of the virtual machine.

Example

```
mv CC-KVM-10.1-117.5.xml CC-KVM-CC-KVM-10.1-117.5.xml
```

3. Edit the <DomainName>-CC-KVM-*.xml file to set the following parameters:

- name—Specify the name.
- mac—Specify the MAC address.
Note: The domain name and the MAC address must be unique.
- sourcefile—Specify the absolute disk-image source path. The file path has to be absolute. In the following example, the disk image is at the following location: /var/CONTROLCENTER-KVM-10.1-117.5.raw.

Example

```
<name> CC-KVM</name>
<mac address='52:54:00:29:74:b3' />
<source file='/var/CC-KVM-10.1-117.5.raw' />
```

4. Edit the <DomainName>-CC-KVM-*.xml file to configure the networking details:

- source dev—Specify the interface.
- mode—Specify the mode.
- Model type—Must be set to virtio.

Example

```
<interface type='direct' >
  <mac address='52:54:00:29:74:b3' />
  <source dev='eth0' mode='bridge' />
  <model type='virtio' />
</interface>
```

In the above example, eth0 is the physical interface on the Linux host that is attached to the VM.

Notes

- NetScaler Control Center should be able to reach OpenStack Neutron and KeyStone services, and also should be able

to reach to the NetScalers in the datacenter. So configure the appropriate physical interface that can reach these networks.

- NetScaler Control Center supports disk of type IDE only.

Example

```
<disk type='file' device='disk'>
  <driver name='qemu' type='raw' />
  <source file='/var/CC-KVM-11.0-14.5.raw' />
  <target dev='hda' bus='ide' />
</disk>
```

5. Define the VM attributes in the <DomainName>-CC-KVM-*.xml file by using the following command: `virsh define <DomainName>-CC-KVM-*.xml`

Example

```
virsh define CC-KVM-CC-KVM-10.1-117.5.xml
```

This command should return the UUID of the created domain (the VM's ID).

6. Start the VM by entering the following command: `virsh start [<DomainName> | <DomainUUID>]`

Example

```
virsh start CC-KVM
```

7. Connect the Guest VM through the console: `virsh console [<DomainName> | <DomainUUID> | <DomainID>]`

Example

```
virsh console CC-KVM
```

To set the management IP address of NetScaler Control Center by using the virsh Program

The cloud administrator must make sure that the management IP address of the NetScaler Control Center is reachable to the management network of the OpenStack Controller and NetScaler ADCs. Also, OpenStack Controller and NetScaler ADCs can reach the management IP address of the NetScaler Control Center.

Note: After issuing the `virsh console` command, the administrator must wait for two minutes at the login prompt in the `virsh console` before logging on to the NetScaler Control Center.

1. Wait for two minutes, and then log on to the NetScaler Control Center VM using the default system administrator credentials:

```
Username: root
```

```
Password: nsroot
```

Note: Citrix recommends changing the password of the root account by using the command `passwd root`.

2. At the prompt, type `shell`.
3. Enter the following command:

```
cp -f /mps/mps.conf /var/mps/mps.conf.bak
```
4. Enter `networkconfig` to configure the management IP address.
5. To complete the initial network configuration of NetScaler Control Center, follow the prompts. The console displays the NetScaler Control Center initial network configuration options for setting the following parameters for the NetScaler Control Center VM.

- **NetScaler Control Center IPv4 address.** The IP address at which you access a NetScaler Control Center.
- **NetScaler Control Center Host Name.** Host name for NetScaler Control Center.
- **Netmask.** The subnet mask associated with the Management IP address.
- **Gateway IPv4 address.** A default gateway IP address for the subnet of the Management IP address of the NetScaler Control Center.

```

bash                root@DEVSTACK-KILO-V1:...  bash                bash                bash
bash-2.05b# networkconfig
-----
NetScaler Control Center initial network configuration.
This menu allows you to set and modify the initial IPv4 network addresses.
The current value is displayed in brackets ( []).
Selecting the listed number allows the address to be changed.
-----
 1. NetScaler Control Center Host Name [control-center]:
 2. NetScaler Control Center IPv4 address [10.106.43.135]:
 3. Netmask [255.255.255.0]:
 4. Gateway IPv4 address [10.106.43.1]:
 5. DNS IPv4 Address [127.0.0.2]:
 6. Cancel and quit.
 7. Save and quit.

Select a menu item from 1 to 7 [7]: █

```

Accessing NetScaler Control Center

After starting the NetScaler Control Center virtual machine and configuring its network, access the NetScaler Control Center through its graphical user interface (GUI) and continue the configuration. To access the GUI, in the address bar of the browser, type the Management IP address of the NetScaler Control Center VM. Example:

[https:// 10.102.205.6/](https://10.102.205.6/)

The NetScaler Control Center GUI is supported by the following browsers:

- Internet Explorer—IE8 and later
- Google Chrome—Chrome 19 and later
- Safari—Safari 5.1.1 and later
- Mozilla Firefox—Mozilla Firefox 3.6.25 and later

NetScaler Control Center supports the following types of user accounts for access to its user interface:

- System administrators
- Tenant users

When you access NetScaler Control Center for the first time, you are prompted to select the cloud platform of your choice. Currently, only the OpenStack cloud platform is available.

To select OpenStack as the cloud platform in NetScaler Control Center, under **Cloud Platforms**, select **OpenStack**, and then click **OK**.

After selecting OpenStack as the cloud platform of your choice, must register OpenStack with NetScaler Control Center. For more information, see [Registering OpenStack with NetScaler Control Center](#).

System Administrator Access to NetScaler Control Center

A NetScaler Control Center system administrator has system level privileges.

NetScaler Control Center supports the following system administrators:

- **Local system administrator.** By default, the NetScaler Control Center includes a default system administrator account, which is used for initial configuration. The default account cannot be deleted from the NetScaler Control Center. Also, a new local system administrator account cannot be created.

The default system administrator account requires the following credentials:

- User name: nsroot
- Password: nsroot

Note: You must change the system administrator credentials by using the Local Users page of the NetScaler Control Center user interface.

To change the password of the local (default) system administrator

1. Click Local Users.
 2. In the details pane, click the nsroot user account, and then click Edit.
 3. In the Configure Local Users screen, in Password and Confirm Password, enter the password of your choice.
 4. Click OK.
- **OpenStack cloud administrator.** The OpenStack cloud administrator can access NetScaler Control Center and has the same system level privileges as the local system administrator.

The default OpenStack cloud administrator account requires the following credentials:

- User name: <Username of the cloud administrator user account in OpenStack Keystone>@<Name of the tenant associated with cloud administrator user account >

For example, admin@admin

- Password: <password of the cloud administrator user account in OpenStack Keystone>

When the OpenStack cloud administrator accesses NetScaler Control Center, the NetScaler Control Center VM contacts OpenStack cloud (the OpenStack KeyStone service) to authenticate the OpenStack cloud administrator.

The local system administrator and the OpenStack cloud administrator have privileges to perform the following operations on NetScaler Control Center through the user interface:

- Create and monitor NetScaler devices, which represents a VPX, SDX or an NetScaler MPX appliance
- Create and manage service packages
- Assign devices to a service package
- Associate tenants to a service package
- View and monitor the load balancing configurations of all tenants that are associated with any service packages.
- Monitor the current user sessions
- Configure and monitor clock synchronization with NTP servers
- Create a tech support file for troubleshooting any NetScaler Control Center issue.

To access the NetScaler Control Center user interface as the system administrator

1. In a web browser, enter the management IP address of the NetScaler Control Center VM.
2. In the Login page, enter the local system administrator user credentials.



3. Click Login.

To access the NetScaler Control Center user interface as the OpenStack Cloud administrator

1. In a web browser, enter the management IP address of the NetScaler Control Center VM.



2. In User Name, enter the user name in the following format:
<Username of the cloud administrator user account in OpenStack Keystone>@<Name of the admin tenant in OpenStack Keystone>

For example, admin@admin.

3. In Password, type the password of the OpenStack administrator user.

4. Click Login.

Accessing NetScaler Control Center by Tenant Users

Tenant users of OpenStack cloud can access the NetScaler Control Center. When the OpenStack tenant user accesses the NetScaler Control Center, the NetScaler Control Center contacts OpenStack cloud to authenticate the user.

A tenant user of the NetScaler Control Center has tenant level privileges. A tenant user has privileges to view and manage configurations related to its tenant space on the NetScaler Control Center.

A tenant user does not have privileges to view other tenants on the NetScaler Control Center or to perform system level configuration operations. The tenant user has privileges to perform the following operations on the NetScaler Control Center by using the user interface:

- View and monitor their load balancing configurations on the NetScaler Control Center.

Note: All user accounts of a tenant are allowed to access and perform operations on NetScaler Control Center allowed for that tenant.

To access the NetScaler Control Center user interface as an OpenStack tenant

1. In a web browser, enter the management IP address of the NetScaler Control Center VM.
2. In User Name, enter the user name in the following format:
<Username of the user account in OpenStack Keystone>@<Name of the tenant associated with the user>

For example, tenantuser-1@Tenant-A.

3. In Password, type the password of the tenant user.



4. Click Login.

NetScaler Control Center

11.0: Build 63.56

coke_user@coke

VIPs

View CS Vservers View LB Vservers Statistics

Name	IP Address	Port	Protocol	State
No items				

Registering OpenStack with NetScaler Control Center

Sep 30, 2015

The cloud administrator must register OpenStack information on the NetScaler Control Center instance by specifying the OpenStack controller IP address and cloud administrative user credentials.

The registering task also involves specifying OpenStack NetScaler driver user credentials. You must specify the same login credentials in the `NetScaler_driver` section of the Neutron configuration file (`neutron.conf`) on OpenStack. The NetScaler Control Center authenticates calls from the OpenStack NetScaler driver by using these login credentials.

After OpenStack and NetScaler Control Center are registered to each other, both can talk to each other. NetScaler Control Center automatically fetches details of all tenants from OpenStack KeyStone service. Therefore, any tenant user credentials on OpenStack can be used to log on to the respective tenant space on the NetScaler Control center user interface.

To register OpenStack with NetScaler Control Center by using NetScaler Control Center user interface

1. As the NetScaler Control Center system administrator log on to the NetScaler Control Center user interface.
2. Click System. Then, in Cloud Settings, click Configure OpenStack Settings.
3. On Configure Openstack Settings, set the following parameters:
 - **OpenStack Controller IP Address***— IP address of the OpenStack cloud controller (both the KeyStone service and the Neutron service need to be reachable on this IP address).
 - **OpenStack Admin Username***— Administrative user name of the OpenStack cloud controller (username in that admin tenant in openstack).
 - **Password***— Password of the administrative user of the OpenStack cloud controller (password for that username).
 - **OpenStack Admin Tenant***— Name of the administrative tenant on OpenStack.
4. In OpenStack Neutron LBaaS - Credentials Used by NetScaler Driver, set the following parameter:
 - **NetScaler Driver Password**— Password for the OpenStack NetScaler driver user account. You must specify the same login credentials (username and password) in the `NetScaler_driver` section of the Neutron configuration file on OpenStack. The NetScaler Control Center authenticates the driver's calls by using these login credentials.
Note: The NetScaler driver user name cannot be changed and is set to **openstack_driver**.
5. Click OK.

Registering NetScaler Control Center with OpenStack

Oct 22, 2015

Starting from the Juno release, OpenStack Neutron LBaaS plugin now includes a NetScaler driver that enables OpenStack to communicate to NetScaler Control Center. OpenStack uses this driver to forward any load balancing configuration to the NetScaler Control Center. NetScaler Control Center in turn creates the configuration on the desired NetScaler. OpenStack also uses the drivers to call the NetScaler Control Center at regular intervals to retrieve the status of different entities (such as VIPs and Pools) of all load balancing configurations from the NetScaler ADCs.

The NetScaler driver is located in one of the following directory of the OpenStack controller:

- **For DevStack:**

`<DEST PATH>/neutron/neutron/services/loadbalancer/drivers/netscaler`

Example

`/opt/stack/neutron/neutron/services/loadbalancer/drivers/netscaler`

- **For Production setup:**

`<PYTHON_INSTALL_PATH>/dist-packages/neutron/services/loadbalancer/drivers/netscaler/`

Example

`/usr/lib/python2.7/dist-packages/neutron/services/loadbalancer/drivers/netscaler/`

This document includes the following information:

- [Registering NetScaler Control Center with OpenStack Juno](#)
- [Registering NetScaler Control Center with OpenStack Kilo](#)

Registering NetScaler Control Center with OpenStack Juno

To register NetScaler Control Center with OpenStack, you must download the NetScaler driver bundle from the Citrix download page, extract the NetScaler driver tar file, and execute the installation script. You can also verify if the NetScaler provider option appears as one of the LBaaS options on the Add Pool page of the Load Balancing node of the OpenStack Horizon user interface.

The installation script performs the following tasks:

- Deletes the existing driver files and inserts new driver files at the locations where the existing driver files were found.
- Backs up the existing neutron.conf file in the directory where you have download the NetScaler driver tar file.
- Adds the NetScaler driver to the list of service providers in the neutron.conf file.
- Adds the [netscaler_driver] section to the neutron.conf file if it is not present. If it is present, it updates this section with the latest details.
- Restarts the Neutron service if the OpenStack setup is a production setup. If it is a DevStack setup, it prompts you to manually restart the Neutron service.

To register NetScaler Control Center with OpenStack

1. Download the latest NetScaler driver tar file from the Citrix downloads page to a temporary directory (for example,

/tmp) in OpenStack Controller.

For example, download the **netscaler_driver_bundle_juno.tar.gz** file to the /tmp directory.

2. Run the following command to extract the files from the NetScaler driver tar file:

```
tar -xvzf <name_of_tar_file>
```

3. At the prompt, type the following command:

```
cd Juno
```

4. Run the following command to install the driver and specify the NetScaler Control Center credentials and the protocol:

```
./install.sh --ip=<NetScaler_Control_Center_IP> --password=<password> --protocol=<protocol>
```

Example:

```
./install.sh --ip=10.102.29.90 --password=xxxx --protocol=HTTP
```

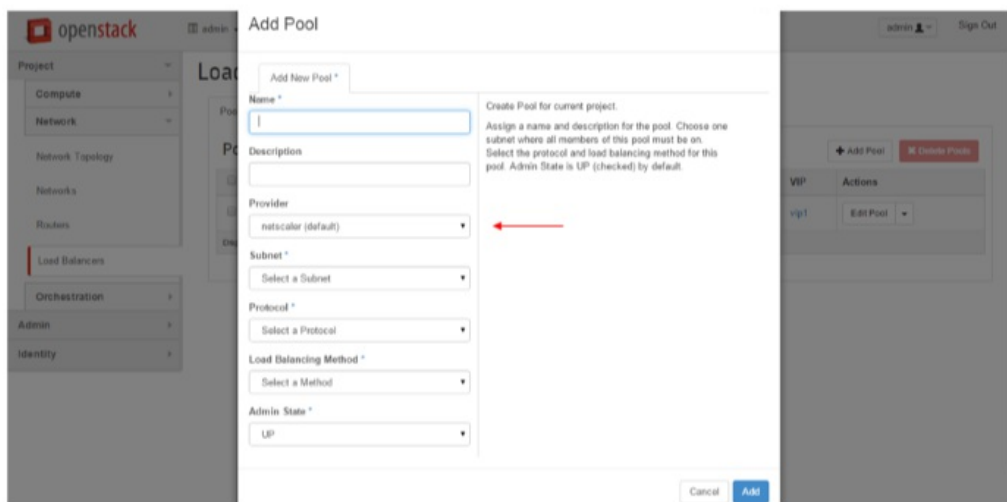
Optionally, you can specify the path where the driver should be installed by specifying the path in the **--neutron-path=<path>** parameter.

Example:

```
./install.sh --ip=10.102.29.90 --password=xxxx --protocol=HTTP --neutron-path=/opt/stack/neutron
```

To verify the NetScaler Control Center registration on OpenStack by using the OpenStack Horizon user interface

1. Log on to the OpenStack Horizon user interface as a cloud admin user or a tenant user.
2. Navigate to Project > Network > Load Balancers, and then click the Pools tab.
3. Click Add Pool.
4. In the Add Pool dialog box, netscaler appears as an option in the Provider menu.
5. Click **Cancel**. NetScaler Control Center configuration is not complete yet, so you might face issues if you proceed to add a pool at this time.



Registering NetScaler Control Center with OpenStack Kilo

To register NetScaler Control Center with OpenStack, you must download the NetScaler driver bundle from the Citrix download page, extract the NetScaler driver tar file, and execute the installation script.

Note: OpenStack Horizon support is not available in the Kilo release. Therefore, you cannot verify the NetScaler Control Center registration by using the OpenStack Horizon user interface.

The installation script performs the following tasks:

- Deletes the existing driver files and inserts new driver files at the locations where the existing driver files were found.
- Backs up the existing neutron.conf file in the directory where you have download the NetScaler driver tar file.
- Verifies if a valid service_plugins entry is present in the neutron.conf file, and then determines the OpenStack LBaaS version configured on your OpenStack setup (OpenStack LBaaS Version 2 (v2) or OpenStack LBaaS Version 1 (v1)).
- Adds the NetScaler driver to the list of service providers in the neutron.conf file. For OpenStack LBaaS Version 1, the script adds the NetscalerPluginDriver entry to the list of service providers in the neutron.conf file. For OpenStack LBaaS Version 2, the script adds the NetscalerLoadBalancerDriverV2 entry to the list of service providers in the neutron.conf file.
- Adds the [netscaler_driver] section to the neutron.conf file if it is not present. If it is present, it updates this section with the latest details.
- Restarts the Neutron service if the OpenStack setup is a production setup. If it is a DevStack setup, it prompts you to manually restart the Neutron service.

To register NetScaler Control Center with OpenStack

1. Download the latest NetScaler driver tar file from the Citrix downloads page to a temporary directory (for example, /tmp) in OpenStack Controller.

For example, download the **netScaler_driver_bundle_kilo.tar.gz** file to the /tmp directory.

2. Run the following command to extract the files from the NetScaler driver tar file:

```
tar -xvzf <name_of_tar_file>
```

3. At the prompt, type the following command:

```
cd kilo
```

4. Run the following command to install the driver and specify the NetScaler Control Center credentials and the protocol:

```
./install.sh --ip=<NetScaler_Control_Center_IP> --password=<password> --protocol=<protocol>
```

Example:

```
./install.sh --ip=10.102.29.90 --password=xxxx --protocol=HTTP
```

Optionally, you can specify the path where the driver should be installed by specifying the path in the -- **neutron-lbaas-path**=<path> parameter.

Example:

```
./install.sh --ip=10.102.29.90 --password=xxxx --protocol=HTTP --neutron-lbaas-path=/opt/stack/neutron
```

Adding Service Packages on NetScaler Control Center

Sep 30, 2015

Service packages provide the cloud administrator with granular control over NetScaler device resource allocation policies resulting in flexibility in creating differentiated SLAs for different tenants based on their application needs.

The following are the types of isolation policies that can be defined in a service package:

- **Dedicated.** Each tenant associated with a service package of dedicated policy is assigned a NetScaler appliance and is not shared with other tenants.
- **Partition.** Each tenant associated with a service package of partition policy is assigned a dedicated logical admin partition of a NetScaler appliance in that package.
- **Shared.** Tenants associated with the service package shares NetScaler appliances.

The following are the different NetScaler platforms that can be assigned in a service package:

- **NetScaler VPX on supported hypervisors.** NetScaler VPX appliances running on the supported virtualization platforms (for example, Citrix XenServer, VMware ESX server, Microsoft Hyper-V, and Linux-KVM server) can be assigned to the tenants associated with service package. These hypervisors are standalone and are not managed by a cloud orchestration platform such as OpenStack.
- **NetScaler MPX.** NetScaler MPX appliances can be assigned to the tenants associated with the service package.
- **NetScaler instance on SDX.** NetScaler instances are auto provisioned on demand, on one of the specified Citrix SDX appliances in the package and assigned to the tenants associated with the service package.
- **NetScaler VPX on OpenStack Compute (Nova).** NetScaler VPX appliances are auto provisioned on demand, on OpenStack Compute and assigned to the tenants associated with the service package.

Notes

The following are some notes related to service packages:

- Same tenant cannot be part of different service packages.
- Multiple tenants can be associated with the same service package.
- In a service package, virtual NetScaler devices can be created from only one platform type (SDX platform or OpenStack Compute platform).

The following table displays the isolation policies available for different NetScaler platforms:

	NetScaler VPX	NetScaler MPX	NetScaler instance on SDX	NetScaler VPX on OpenStack Compute (Nova)
Shared	Yes	Yes	No	No
Dedicated	Yes	Yes	Yes	Yes

Defining different service packages helps the cloud administrator provide different levels of service to different categories of tenants. Consider, for example, two service packages: Gold and Silver. Service package Gold can be defined with isolation type as "shared" and assigned NetScaler MPX devices. Some tenants are assigned to this service package. Service package Silver is defined with isolation type as "dedicated" and assigned auto-provisioned NetScaler VPX instances on OpenStack

Compute. The Silver service package is then assigned to another group of tenants.

This document includes the following details:

- [Adding a Service Package with a Dedicated Isolation Policy](#)
- [Adding a Service Package with a Partition Isolation Policy](#)
- [Adding a Service Package with a Shared Isolation Policy](#)

Adding a Service Package with a Dedicated Isolation Policy

Apr 05, 2016

Each tenant associated with a service package of dedicated isolation policy is assigned a NetScaler appliance and is not shared with other tenants. As a result, the load balancing configuration of a tenant is configured in a device allocated only to that tenant and not shared by others.

The dedicated isolation policy is supported for the following NetScaler platforms:

- NetScaler MPX appliances
- NetScaler VPX appliances on virtualization platforms (Citrix XenServer®, VMware ESX or ESXi, Linux-KVM, Microsoft Hyper-V)
- NetScaler VPX appliances pre-provisioned on NetScaler SDX appliances
- NetScaler VPX appliances auto-provisioned through NetScaler Control Center on NetScaler SDX appliances
- NetScaler VPX appliances auto-provisioned through NetScaler Control Center on OpenStack Compute (Nova)

This document includes the following details:

- [Adding a Service Package with Device Type as NetScaler VPX](#)
- [Adding a Service Package with Device Type as NetScaler MPX](#)
- [Adding a Service Package with Auto-Provisioning NetScaler Instances on NetScaler SDX](#)
- [Adding a Service Package with Auto-Provisioning NetScaler Instances on OpenStack Compute](#)

Adding a Service Package with Device Type as NetScaler VPX

Adding a service package with device type as NetScaler VPX consists of the following tasks:

- Manually provision NetScaler VPX appliances by using the virtualization platform's utilities. After provisioning the appliances, set up their initial configurations.
- Add the provisioned NetScaler VPX appliances in NetScaler Control Center
- Add service packages that include these NetScaler VPX instances

This section includes the following the details:

- [Provisioning NetScaler VPX Appliances](#)
- [Adding NetScaler VPX Appliances in NetScaler Control Center](#)
- [Adding Service Packages](#)

Provisioning NetScaler VPX Appliances

You can provision NetScaler VPX appliances on the following types of platforms:

- Virtualization Platforms
- NetScaler SDX Appliances

To provision NetScaler VPX instances on the following virtualization platforms, and perform initial configuration, see the documentation indicated:

- Citrix XenServer®— [Installing NetScaler Virtual Appliances on XenServer](#)
- VMware ESX or ESXi— [Installing NetScaler Virtual Appliances on VMware ESX](#)
- Linux-KVM— [Installing NetScaler Virtual Appliances on Linux-KVM Platform](#)
- Microsoft Hyper-V— [Installing Citrix NetScaler Virtual Appliances on Microsoft Hyper-V Servers](#)

To provision NetScaler VPX instances on NetScaler SDX appliances, and perform initial configuration, see the NetScaler SDX documentation at [Provisioning NetScaler Instances](#).

Adding NetScaler VPX Appliances in NetScaler Control Center

After provisioning Citrix NetScaler VPX instances and performing initial configuration on them, the cloud administrator adds these instances in NetScaler Control Center. The cloud administrator must specify details (for example, management IP address, admin user credentials, and type of NetScaler) of a particular NetScaler instance in NetScaler Control Center. Later, the cloud administrator assigns a NetScaler VPX instance to a service package.

To add a device in NetScaler Control Center by using the NetScaler Control Center user interface

1. Log on to the NetScaler Control Center as the cloud administrator.
2. Click **Devices** and, in the details pane, click **Add**.
3. Under Add Device, set the following parameters:
 - **NetScaler Management IP Address***—The instance's NetScaler IP (NSIP) address.
 - **NetScaler Admin Username***—User name of the NetScaler instance's administrative user.
 - **NetScaler Admin Password***—Password of the administrative user.
 - **Product Name***—Type of NetScaler Appliance. (Select NetScalerVPX)
4. Click **OK**.

Adding Service Packages

In this task, the cloud administrator creates a service package for a set of tenants that require a NetScaler VPX instance for LBaaS. The service package has the device type parameter set to NetScaler VPX. After creating the service package, the cloud administrator assigns one or more NetScaler VPX instances to the service package. The cloud administrator then associates tenants with the service package.

To add a service package by using the NetScaler Control Center user interface

1. Log on to the NetScaler Control Center as the cloud administrator.
2. Click **Service Packages** and, in the details pane, click **Add**.
3. Under Basic Settings, set the following parameters:
 - **Name***—Name for the service package.
 - **Isolation Policy***—The type of isolation policy for the service package by which it can allocate NetScaler device resources. (Select Dedicated)
 - **Device Type***—The type of NetScaler devices that are assigned to the service package. (Select NetScaler VPX)
4. Click **Continue** to assign a NetScaler device to a service package.
5. Under **Assign Devices**, click **Add** and select the devices that you want to assign to the service package.
6. Click **Continue** to associate a tenant with a service package.
7. Under **Assign Tenants**, click **Add** and select the tenants that you want to assign to the service package.

8. Click **Continue**, and then click **Done**.

Adding a Service Package with Device Type as NetScaler MPX

Adding a service package with device type as NetScaler MPX consists of the following tasks:

- [Deploying NetScaler MPX Appliances](#)
- [Adding NetScaler MPX Appliances in NetScaler Control Center](#)
- [Adding Service Packages](#)

Deploying NetScaler MPX Appliances

In this task, the cloud administrator deploys NetScaler MPX appliances and performs initial configuration.

The cloud administrator must make sure that the management IP address (NSIP) of a NetScaler MPX appliance is reachable from the management network of the NetScaler Control Center VM.

For more information on deploying a NetScaler MPX appliance, and configuring the management IP address (NSIP address, netmask, gateway for NSIP) on the NetScaler appliance, and other initial configurations, see the Citrix NetScaler product documentation at [Hardware Installation](#).

Adding NetScaler MPX Appliances in NetScaler Control Center

After deploying Citrix NetScaler MPX appliances and performing initial configuration on them, the cloud administrator adds these appliances in NetScaler Control Center. The cloud administrator must specify details (for example, management IP address, admin user credentials, and type of NetScaler) of a particular NetScaler appliance in NetScaler Control Center. Later, the cloud administrator assigns a NetScaler MPX appliance to a service package.

To add a device in NetScaler Control Center by using the NetScaler Control Center user interface

1. Log on to the NetScaler Control Center as the cloud administrator.

2. Click **Devices** and, in the details pane, click **Add**.

3. Under **Add Device**, set the following parameters:

- **NetScaler Management IP Address***—The instance's NetScaler IP (NSIP) address.
- **NetScaler Admin Username***—User name of the NetScaler instance's administrative user.
- **NetScaler Admin Password***—Password of the administrative user.
- **Product Name***—Type of NetScaler Appliance. (Select NetScalerMPX)

4. Click **OK**.

Adding Service Packages

In this task, the cloud administrator creates a service package for a set of tenants that require a NetScaler MPX appliance for LBaaS. The service package has the device type parameter set to NetScaler MPX. After creating the service package, the cloud administrator assigns one or more NetScaler MPX appliances to the service package. The cloud administrator then associates tenants with the service package.

To add a service package by using the NetScaler Control Center user interface

1. Log on to the NetScaler Control Center as the cloud administrator.

2. Click **Service Packages** and, in the details pane, click **Add**.
3. Under **Basic Settings**, set the following parameters:
 - **Name***—Name for the service package.
 - **Isolation Policy***—The type of isolation policy for the service package by which it can allocate NetScaler device resources. (Select Dedicated)
 - **Device Type***—The type of NetScaler devices that are assigned to the service package. (Select NetScaler MPX)
4. Click **Continue** to assign a NetScaler device to a service package.
5. Under **Assign Devices**, click **Add** and select the devices that you want to assign to the service package.
6. Click **Continue** to associate a tenant with a service package.
7. Under **Assign Tenants**, click **Add** and select the tenants that you want to assign to the service package.
8. Click **Continue**, and then click **Done**.

Adding a Service Package with Auto-Provisioning NetScaler Instances on NetScaler SDX

Adding a service package with platform as NetScaler SDX consists of the following tasks:

- [Deploying NetScaler SDX Appliances](#)
- [Adding NetScaler SDX Appliances in NetScaler Control Center](#)
- [Configuring Deployment Settings](#)
- [Adding Service Packages](#)

Deploying NetScaler SDX Appliances

The Citrix NetScaler SDX appliance is a multitenant physical platform on which you can provision and manage multiple NetScaler virtual appliances (instances) running on the SDX platform.

The cloud administrator must make sure that the management IP address of a NetScaler SDX appliance is reachable from the management network of the NetScaler Control Center VM.

In this task, the cloud administrator deploys NetScaler SDX appliances and performs initial configuration. For more information about deploying a NetScaler SDX appliance and performing initial configuration, see the Citrix NetScaler SDX Product documentation at [Hardware Installation](#).

Uploading NetScaler VPX Image files to NetScaler SDX Appliances

After deploying Citrix NetScaler SDX appliances and performing initial configuration on them, the cloud administrator uses the Citrix SDX management service to upload NetScaler VPX image files of different releases to the SDX appliances. A NetScaler instance image file for a NetScaler SDX appliance has the following format:

NSVPX-XEN-ReleaseNumber-BuildNumber_nc.xva

- For example, NSVPX-XEN-10-5-35_nc.xva

NetScaler Control Center auto provisions or instantiates multiple NetScaler instances on a SDX appliance from a NetScaler VPX image file on the SDX appliance.

The cloud administrator gets these NetScaler instance image files from a www.Citrix.com location provided by the Citrix contact person. For more information on uploading NetScaler instance image files (.xva) to a SDX appliance, see “Uploading NetScaler .Xva Images” in [Provisioning NetScaler Instances](#).

Adding NetScaler SDX Appliances in NetScaler Control Center

In this task, the cloud administrator adds the deployed SDX appliances in NetScaler Control Center. The cloud administrator must specify the details (for example, management IP address, admin user credentials, and type) of a particular NetScaler SDX appliance in NetScaler Control Center. Later, as required by demand, NetScaler Control Center instantiates and automatically provisions NetScaler instances on SDX appliances.

To add a device in NetScaler Control Center by using the NetScaler Control Center user interface

1. Log on to the NetScaler Control Center as the cloud administrator.
2. Click **Devices** and, in the details pane, click **Add**.
3. Under **Add Device**, set the following parameters:
 - **NetScaler Management IP Address***—The instance’s NetScaler IP (NSIP) address.
 - **NetScaler Admin Username***—User name of the NetScaler instance’s administrative user.
 - **NetScaler Admin Password***—Password of the administrative user.
 - **Product Name***—Type of NetScaler Appliance. (Select NetScalerSDX)
4. Click **OK**.

Configuring Deployment Settings

In the task, the cloud administrator configures the settings required to create and destroy NetScaler instances on demand. The settings mentioned below will be used along with the settings provided in service packages to create NetScaler instances on the fly on NetScaler SDX appliances.

To configure deployment settings through the NetScaler Control Center user interface

1. As the NetScaler Control Center system administrator log on to the NetScaler Control Center user interface.
2. Click **System**. Then, in Cloud Settings, click **Deployments Settings**.
3. In **Deployment Settings**, set the parameters.
4. Click **OK**.

Adding Service Packages

In this task, the cloud administrator creates a service package for a set of tenants that require NetScaler instances running on a NetScaler SDX appliance for LBaaS. The service package has the platform parameter set to NetScaler SDX. The service package also includes specifications for virtual hardware resources for each NetScaler instance to be provisioned on a SDX appliance for the tenants associated with the service package. The service package also specifies the particular release of the NetScaler instances to be provisioned on a SDX appliance. After creating the service package, the cloud administrator associates tenants with the service package.

Each of these NetScaler instances:

- Is provisioned on one of the SDX appliances, which are specified as devices in NetScaler Control Center and are associated with the service package.
- Is provisioned with the virtual hardware resources, which are provided by the host SDX appliance, as specified in the

service package.

- Is provisioned from the NetScaler instance image file (.xva), present on the host SDX appliance, of a particular release as specified in the service package.
- Has the default administrative user's (nsroot) password set to the one specified in the Auto Provision Settings for NetScaler SDX and Nova VPX platform section of the Deployment Settings screen of the NetScaler Control Center user interface.
- Has the management IP address (NSIP) set to an IP address that belongs to the OpenStack Neutron management network specified in the Auto Provision Settings for NetScaler SDX and Nova VPX platform section of the Deployment Settings screen of the NetScaler Control Center user interface. For setting the management IP address of a NetScaler instance on SDX, NetScaler Control Center queries the OpenStack Neutron service for an IP address available in the Neutron management network. The Neutron service responds with a free IP address on that network. NetScaler Control Center sets this IP address as the management IP address of a NetScaler instance.

To add a service package by using the NetScaler Control Center user interface

1. Log on to the NetScaler Control Center as the cloud administrator.
2. Click **Service Packages** and, in the details pane, click **Add**.
3. Under **Basic Settings**, set the following parameters:
 - **Name***—Name for the service package.
 - **Isolation Policy***—The type of isolation policy for the service package by which it can allocate NetScaler device resources. (Select Dedicated) Enable the Auto Provision option, and then select NetScaler SDX.
4. Enable the **Auto Provision** option, and then select **NetScaler SDX**.
5. Click **Continue**.
6. Under **Resources**, set the following parameters:
 - **CPU Cores***—The number of CPU cores that you want to assign to the NetScaler VPX instance. Default value: 1.
 - **Total Memory(MB)***—Memory in MB that you want to assign to the NetScaler VPX instance. Default value: 2048.
 - **SSL Chips***—The number of SSL chips that you want to assign to the NetScaler VPX instance. Default value: 0.
 - **Throughput (Mbps)***—Throughput in Mbps that you want to assign to the NetScaler VPX instance.
 - **NetScaler Version***—The NetScaler software version that you want to run on the NetScaler VPX instance.
7. Under **High Availability**, you can select the **Provision pair of NetScaler appliances for high availability** option for a specific service package where redundancy is required.
8. Under **Assign Platforms**, click **Add** and select the devices that you want to assign to the service package.
9. Click **Continue** to assign a tenant to a service package.
10. Under **Assign Tenants**, click **Add** and select the tenants that you want to assign to the service package.
11. Click **Continue**, and then click **Done**.

Adding a Service Package with Auto-Provisioning NetScaler Instances on OpenStack Compute

Adding a service package with platform as OpenStack Compute consists of the following tasks:

- [Uploading a NetScaler VPX image file to OpenStack Compute](#)

- [Licensing NetScaler VPX Instances Auto-Provisioned on OpenStack Compute Through NetScaler Control Center](#)
- [Configure Deployment Settings](#)
- [Adding Service Packages](#)

Note: When requesting for NetScaler VPX licenses from Citrix, you should ask for a License Activation Code (LAC). LAC is a bundle of licenses that can be purchased from Citrix. Licenses have to be purchased with an LAC that has as many line items as the number of NetScaler VPX instances desired. Each line item should have one NetScaler VPX license.

Important: Ensure that NetScaler VPX instances created in your management networks are able to access public domains. When installing a license, a NetScaler VPX instance communicates with the Citrix licensing server over the internet.

Uploading a NetScaler VPX Image File to OpenStack Compute

In this task, the cloud administrator uploads a NetScaler VPX image file to OpenStack Compute Node (Nova) by using one of the following:

- OpenStack Horizon user interface
- OpenStack Controller command line interface
- OpenStack Image service (Glance) client
- OpenStack Image service (Glance) APIs

NetScaler Control Center supports NetScaler VPX instances running only on Linux-KVM servers on OpenStack Compute node (Nova).

A NetScaler VPX image file for OpenStack Compute has the following format:

- NSVPX-KVM-ReleaseNumber-BuildNumber_nc.raw

For example, NSVPX-KVM-10-5-35_nc.raw.

NetScaler Control Center auto provisions or instantiates multiple NetScaler VPX instances on OpenStack Compute (Nova) from the NetScaler VPX image file.

The cloud administrator gets the NetScaler VPX image file for OpenStack Compute (Nova) from a www.citrix.com location provided by the Citrix contact person.

Convert the image file .raw to .qcow2 using qemu-img link - <http://linux.die.net/man/1/qemu-img> and upload the image file to OpenStack Glance.

Example

```
qemu-img convert -f raw -O qcow2 NSVPX-KVM-10-5-35_nc.raw NSVPX-KVM-10-5-35_nc.qcow2
```

To upload the NetScaler image file (.qcow2) to OpenStack Glance, run the following command:

```
glance image-create --name="<name> " --property hw_disk_bus=ide --is-public=true --container-format=bare --disk-format=raw < <NetScaler image file name>
```

Example:

```
glance image-create --name="ns-vpx-10-5 " --property hw_disk_bus=ide --is-public=true --container-format=bare --disk-format=raw < NSVPX-KVM-10-5-35_nc.qcow2
```

Note: You must specify the hard disk type for NetScaler virtual appliances as IDE. As described above, you must set the `hw_disk_bus` property to `ide`. If you have already uploaded the image to OpenStack Glance without setting the `hw_disk_bus` property, you can use the `glance image-update` command to configure the `hw_disk_bus` property to `ide`.

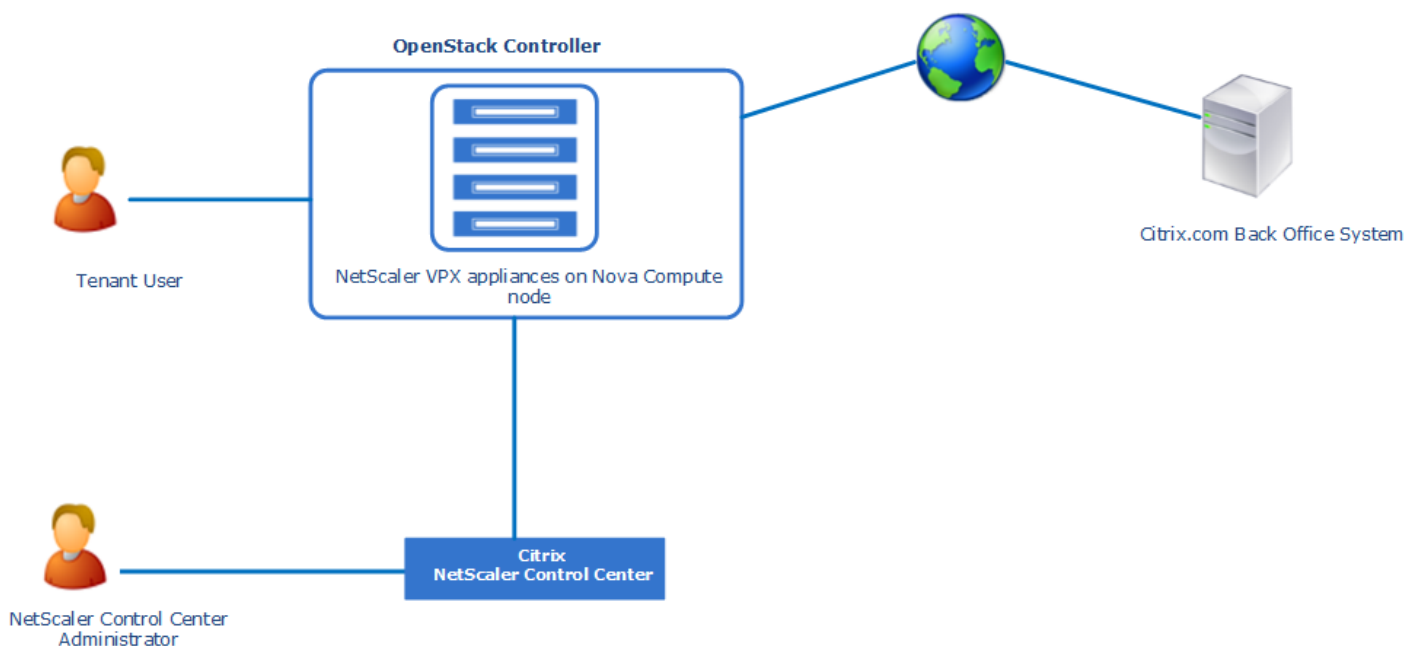
For more information on uploading an image file (.qcow2) to OpenStack Glance, see the OpenStack product documentation at <http://docs.openstack.org/>.

Licensing NetScaler VPX Instances Auto-Provisioned on OpenStack Compute Through NetScaler Control Center

NetScaler Control Center centrally manages and auto-allocates licenses on auto-provisioned NetScaler VPX instances in OpenStack Compute, thereby avoiding any manual intervention for license management. NetScaler Control Center directs the newly provisioned NetScaler VPX instance to access the Citrix.com back office system, fetch the license, and install it, with no intervention by the cloud administrator or the tenant user.

For this licensing mechanism to work, the cloud administrator must specify one or more license activation codes (LACs) in NetScaler Control Center. An LAC is a reference code that corresponds to a purchase order. Citrix emails the LAC to you when you place the purchase order. In the OpenStack Horizon user interface, you must configure the DNS server IP address for the management network in which the auto-provisioned NetScaler VPX instances will be deployed. This ensures that the instances are able to access the Citrix.com back office system.

How Licensing Works



Licensing of NetScaler VPX instances auto-provisioned in OpenStack Compute works as follows:

1. In NetScaler Control Center, the cloud administrator specifies the license activation code.

The LAC references a purchase order identifying one or more licenses purchased from Citrix. An LAC consists of multiple line items, with each line item corresponding to a license type.

Important: Each line item also specifies the number of licenses of the specified type. NetScaler Control Center requires

that quantity to be exactly equal to one (1). Each line item must correspond to a separate NetScaler VPX license.

You must specify the LAC in the deployment settings. For more information, see [Configuring Deployment Settings](#).

Note: You must specify the NetScaler VPX model number when creating a service package. For more information about creating a service package, see [Adding Service Packages](#). The model number of your NetScaler VPX appliance is part of your LAC. For example, if your LAC is CTXV3000PT20, your model number is V3000.

2. In the OpenStack Horizon user interface, the cloud administrator specifies the IP address of the DNS server for the management network in which the auto-provisioned NetScaler VPX appliances will be deployed.
3. The tenant user creates an LBaaS pool and a VIP address in the OpenStack Horizon user interface.
4. NetScaler Control Center provisions a NetScaler VPX instance on the OpenStack compute node and adds it to the management network.
5. NetScaler Control Center configures the DNS IP address in the NetScaler VPX instance.
6. NetScaler Control Center instructs the NetScaler VPX instance to access the Citrix.com back office system (citrixservices.citrix.com) with the LAC, and requests the list of NetScaler VPX licenses associated with that LAC.
7. The NetScaler VPX instance accesses the Citrix.com back office system.
8. The Citrix.com back office system returns the list of NetScaler VPX licenses associated with that LAC.
9. NetScaler Control Center selects one of the licenses from the list, and then issues a request to the NetScaler VPX instance to install the selected license.
10. The NetScaler VPX instance downloads the file from the Citrix.com back office system and changes the LAC's "Available count" value to 0 in the row corresponding to the downloaded license.
11. The NetScaler VPX instance installs the license.

Adding the DNS IP Address to a Network in OpenStack Horizon

Auto-allocating NetScaler VPX licenses in OpenStack Compute requires specifying the DNS server IP address for the management network in which the auto-provisioned NetScaler VPX instances will be deployed, so that the instances can access the Citrix licensing server.

To add a DNS IP address to a network by using the OpenStack Horizon user interface

1. Log on to the OpenStack Horizon user interface as the cloud administrator.
2. Navigate to **Project > Network**, and select the network to which you need to add the DNS IP address.
3. Under **Subnets**, click **Edit Subnet**.
4. On the **Subnet Detail** tab, in the **Edit Subnet** dialog box, in the **DNS Name Servers** field, enter the IP address of the DNS server.
5. Click **Save**.

Configuring Deployment Settings

In this task, the cloud administrator configures the settings required to create and destroy NetScaler instances on demand. The settings mentioned below will be used along with the settings provided in service packages to create NetScaler

instances on the fly on OpenStack Compute nodes.

To configure deployment settings through the NetScaler Control Center user interface

1. As the NetScaler Control Center system administrator log on to the NetScaler Control Center user interface.
2. Click System. Then, in Cloud Settings, click Deployments Settings.
3. In Deployment Settings, set the parameters.
4. Click OK.

Adding Service Packages

In this task, the cloud administrator creates a service package for a set of tenants that require NetScaler VPX instances running on OpenStack Compute (Nova). The service package has the platform parameter set to OpenStack Compute.

The service package also specifies one of the OpenStack Compute flavors (virtual hardware resource specifications) available in OpenStack Compute, for each VPX instance to be provisioned on OpenStack Compute for the tenants associated with the service package. After creating the service package, the cloud administrator associates tenants with the service package.

Each of these NetScaler VPX appliances:

- Is provisioned on OpenStack Compute.
- Is provisioned with the virtual hardware resources, which are provided by OpenStack Compute, as specified in the OpenStack Compute flavor selected during the service package creation.
- Is provisioned from one of the NetScaler VPX image file (.raw), present on OpenStack Compute, as specified in the Auto Provision Settings for NetScaler SDX and Nova VPX platform section of the Deployment Settings screen of the NetScaler Control Center user interface.
- Is the default administrative user's (nsroot) password set to the one specified in the Auto Provision Settings for NetScaler SDX and Nova VPX platform section of the Deployment Settings screen of the NetScaler Control Center user interface.
- Has the management IP address (NSIP) set to an IP address that belongs to the OpenStack Neutron management network specified in the Auto Provision Settings for NetScaler SDX and Nova VPX platform section of the Deployment Settings screen of the NetScaler Control Center user interface. For setting the management IP address of a NetScaler VPX appliance, the NetScaler Control Center queries the OpenStack Neutron service for any IP address available in the Neutron management network. The Neutron service responds with an IP address. NetScaler Control Center sets this IP address as the management IP address of a NetScaler VPX appliance.

To add a service package by using the NetScaler Control Center user interface

1. Log on to the NetScaler Control Center as the cloud administrator.
2. Click **Service Packages** and, in the details pane, click **Add**.
3. Under **Basic Settings**, set the following parameters:
 - **Name***—Name for the service package.
 - **Isolation Policy***—The type of isolation policy for the service package by which it can allocate NetScaler device resources. (Select Dedicated)
4. Enable the **Auto Provision** option, and then select **OpenStack Compute**.

5. Click **Continue**.
6. Under **Auto Provision Settings**, set the parameters.
7. Under **High Availability**, you can select the **Provision pair of NetScaler appliances for high availability** option for a specific service package where redundancy is required.
8. Click **Continue** to assign a tenant to a service package.
9. Under **Assign Tenants**, click **Add** and select the tenants that you want to assign to the service package.
10. Click **Continue**, and then click **Done**.

Adding a Service Package with a Partition Isolation Policy

Apr 05, 2016

A partition isolation policy allows tenants associated with a service package to have a dedicated logical partition of a NetScaler appliance. Each tenant can create its own load balancing configuration on its partition. With this isolation policy, a cloud administrator is able to create multiple partitions of a single NetScaler appliance and a tenant is guaranteed a dedicated logical partition of a NetScaler appliance.

You must create a service package with partition isolation policy, specify the partition specifications, assign devices to the service package, and associate tenants with the service package.

The partition isolation policy is supported for the following NetScaler platforms:

- NetScaler MPX appliances
- NetScaler VPX appliances on virtualization platforms (Citrix XenServer®, VMware ESX or ESXi, Linux-KVM, Microsoft Hyper-V)
- Manually provisioned NetScaler VPX appliances on NetScaler SDX appliances
- NetScaler VPX appliances auto-provisioned through NetScaler Control Center on NetScaler SDX appliances
- NetScaler VPX appliances auto-provisioned through NetScaler Control Center on OpenStack Compute (Nova)

This document includes the following details:

- [Adding a Service Package with Device Type as NetScaler VPX](#)
- [Adding a Service Package with Device Type as NetScaler MPX](#)
- [Adding a Service Package with Auto-Provisioning NetScaler Instances on NetScaler SDX](#)
- [Adding a Service Package with Auto-Provisioning NetScaler Instances on OpenStack Compute](#)

Adding a Service Package with Device Type as NetScaler VPX

Adding a service package with device type as NetScaler VPX consists of the following tasks:

- Manually provision NetScaler VPX appliances by using the virtualization platform's utilities. After provisioning the appliances, set up their initial configurations.
- Add the provisioned NetScaler VPX appliances in NetScaler Control Center
- Add service packages that include these NetScaler VPX instances

This section includes the following the details:

- [Provisioning NetScaler VPX Appliances](#)
- [Adding NetScaler VPX Appliances in NetScaler Control Center](#)
- [Adding Service Packages](#)

Provisioning NetScaler VPX Appliances

To provision NetScaler VPX instances on the following virtualization platforms, and perform initial configuration, see the documentation indicated:

- Citrix XenServer®— [Installing NetScaler Virtual Appliances on XenServer](#)

- VMware ESX or ESXi— [Installing NetScaler Virtual Appliances on VMware ESX](#)
- Linux-KVM— [Installing NetScaler Virtual Appliances on Linux-KVM Platform](#)
- Microsoft Hyper-V— [Installing Citrix NetScaler Virtual Appliances on Microsoft Hyper-V Servers](#)

To provision NetScaler VPX instances on NetScaler SDX appliances, and perform initial configuration, see the NetScaler SDX documentation at [Provisioning NetScaler Instances](#).

Adding NetScaler VPX Appliances in NetScaler Control Center

After provisioning Citrix NetScaler VPX instances and performing initial configuration on them, the cloud administrator adds these instances in NetScaler Control Center. The cloud administrator must specify details (for example, management IP address, admin user credentials, and type of NetScaler) of a particular NetScaler instance in NetScaler Control Center. Later, the cloud administrator assigns a NetScaler VPX instance to a service package.

You can configure the network interfaces of the NetScaler instances and configure VLAN ranges for those interfaces.

To add a device in NetScaler Control Center by using the NetScaler Control Center user interface

1. Log on to the NetScaler Control Center as the cloud administrator.
2. Click **Devices** and, in the details pane, click **Add**.
3. Under Add Device, set the following parameters:
 - **NetScaler Management IP Address***—The instance's NetScaler IP (NSIP) address.
 - **NetScaler Admin Username***—User name of the NetScaler instance's administrative user.
 - **NetScaler Admin Password***—Password of the administrative user.
 - **Product Name***—Type of NetScaler Appliance. (Select NetScalerVPX)
4. Click **OK**.

To configure network interfaces of NetScaler instances by using the NetScaler Control Center user interface

1. Log on to the NetScaler Control Center as the cloud administrator.
2. Click **Devices** and, in the details pane, select the device.
3. In the **Action** list, select **Configure Interfaces**.
4. Select the interface, and click **Enable** or **Disable** to enable or disable an interface.
5. Select the interface, and click **Configure VLAN Range**.
6. Under **Configure VLAN Range**, in the **VLAN Range** field, specify the VLAN range. (For example, 100-110.)
7. Click **OK**, and then click **Close**.

Adding Service Packages

In this task, the cloud administrator creates a service package to partition NetScaler VPX instances for LBaaS. The service package has the device type parameter set to NetScaler VPX. After creating the service package, the cloud administrator assigns one or multiple NetScaler VPX instances to the service package. The cloud administrator then associates tenants with the service package.

To add a service package by using the NetScaler Control Center user interface

1. Log on to NetScaler Control Center as the cloud administrator.
2. Click **Service Packages** and, in the details pane, click **Add**.
3. Under **Basic Settings**, set the following parameters:

Name*—Name for the service package.

Isolation Policy*—The type of isolation policy with which the service package allocates NetScaler device resources. (Select Partition)

Device Type*—The type of NetScaler devices that are assigned to the service package. (Select NetScaler VPX)

4. Under **Partition Spec**, set the following parameters:

Bandwidth (Kbps)*—Bandwidth to be allotted to each partition of a NetScaler VPX appliance.

Number of Connections*— Number of connections to be handled by each partition of a NetScaler VPX appliance.

Number of Networks*— Number of networks to be allotted if you are provisioning a NetScaler VPX instance on OpenStack Compute (Nova). Default value: -1. Maximum value: 9.

5. Click **Continue** to assign a NetScaler device to a service package.

6. Under **Assign Devices**, click **Add** and then select the devices that you want to assign to the service package.

7. Click **Continue** to associate a tenant with a service package.

8. Under **Assign Tenants**, click **Add** and then select the tenants that you want to assign to the service package.

9. Click **Continue**, and then click **Done**.

Adding a Service Package with Device Type as NetScaler MPX

Adding a service package with device type as NetScaler MPX consists of the following tasks:

- [Deploying NetScaler MPX Appliances](#)
- [Adding NetScaler MPX Appliances in NetScaler Control Center](#)
- [Adding Service Packages](#)

Deploying NetScaler MPX Appliances

In this task, the cloud administrator deploys NetScaler MPX appliances and performs initial configuration.

The cloud administrator must make sure that the management IP address (NSIP) of a NetScaler MPX appliance is reachable from the management network of the NetScaler Control Center VM.

For more information on deploying a NetScaler MPX appliance, and configuring the management IP address (NSIP address, netmask, gateway for NSIP) on the NetScaler appliance, and other initial configurations, see the Citrix NetScaler product documentation at [Hardware Installation](#).

Adding NetScaler MPX Appliances in NetScaler Control Center

After deploying Citrix NetScaler MPX appliances and performing initial configuration on them, the cloud administrator adds these appliances in NetScaler Control Center. The cloud administrator must specify details (for example, management IP address, admin user credentials, and type of NetScaler) of a particular NetScaler appliance in NetScaler Control Center. Later, the cloud administrator assigns a NetScaler MPX appliance to a service package.

You can configure the network interfaces of the NetScaler appliances and configure VLAN ranges for those interfaces.

To add a device in NetScaler Control Center by using the NetScaler Control Center user interface

1. Log on to the NetScaler Control Center as the cloud administrator.
2. Click **Devices** and, in the details pane, click **Add**.
3. Under **Add Device**, set the following parameters:
 - **NetScaler Management IP Address***—The instance's NetScaler IP (NSIP) address.
 - **NetScaler Admin Username***—User name of the NetScaler instance's administrative user.
 - **NetScaler Admin Password***—Password of the administrative user.
 - **Product Name***—Type of NetScaler Appliance. (Select NetScalerMPX)
4. Click **OK**.

To configure network interfaces of NetScaler appliances by using the NetScaler Control Center user interface

1. Log on to the NetScaler Control Center as the cloud administrator.
2. Click **Devices** and, in the details pane, select the device.
3. In the **Action** list, select **Configure Interfaces**.
4. Select the interface, and click **Enable** or **Disable** to enable or disable an interface.
5. Select the interface, and click **Configure VLAN Range**.
6. Under **Configure VLAN Range**, in the VLAN Range field, specify the VLAN range. (For example, 100-110.)
7. Click **OK**, and then click **Close**.

Adding Service Packages

In this task, the cloud administrator creates a service package to partition NetScaler MPX appliances for LBaaS. The service package has the device type parameter set to NetScaler MPX. After creating the service package, the cloud administrator assigns one or multiple NetScaler MPX appliances to the service package. The cloud administrator then associates tenants with the service package.

To add a service package by using the NetScaler Control Center user interface

1. Log on to the NetScaler Control Center as the cloud administrator.
2. Click **Service Packages** and, in the details pane, click **Add**.
3. Under **Basic Settings**, set the following parameters:
 - Name***—Name for the service package.
 - Isolation Policy***—The type of isolation policy with which the service package allocates NetScaler device resources. (Select Partition)
 - Device Type***—The type of NetScaler devices that are assigned to the service package. (Select NetScaler MPX)
4. Under **Partition Spec**, set the following parameters:
 - Bandwidth (Kbps)***—Bandwidth to be allotted to each partition of a NetScaler MPX appliance.
 - Number of Connections***—Number of connections to be handled by each partition of a NetScaler MPX appliance.
 - Number of Networks***—Number of networks to be allotted if you are provisioning a NetScaler VPX instance on

OpenStack Compute (Nova). Default value: -1. Maximum value: 9.

5. Click **Continue** to assign a NetScaler device to a service package.
6. Under **Assign Devices**, click **Add** and select the devices that you want to assign to the service package.
7. Click **Continue** to associate a tenant with a service package.
8. Under **Assign Tenants**, click **Add** and select the tenants that you want to assign to the service package.
9. Click **Continue**, and then click **Done**.

Adding a Service Package with Auto-Provisioning NetScaler Instances on NetScaler SDX

Adding a service package with platform as NetScaler SDX consists of the following tasks:

- [Deploying NetScaler SDX Appliances](#)
- [Adding NetScaler SDX Appliances in NetScaler Control Center](#)
- [Configuring Deployment Settings](#)
- [Adding Service Packages](#)

Deploying NetScaler SDX Appliances

The Citrix NetScaler SDX appliance is a multitenant physical platform on which you can provision and manage multiple NetScaler virtual appliances (instances) running on the SDX platform.

The cloud administrator must make sure that the management IP address of a NetScaler SDX appliance is reachable from the management network of the NetScaler Control Center VM.

In this task, the cloud administrator deploys NetScaler SDX appliances and performs initial configuration. For more information about deploying a NetScaler SDX appliance and performing initial configuration, see the Citrix NetScaler SDX Product documentation at [Hardware Installation](#).

Uploading NetScaler VPX Image files to NetScaler SDX Appliances

After deploying Citrix NetScaler SDX appliances and performing initial configuration on them, the cloud administrator uses the Citrix SDX management service to upload NetScaler VPX image files of different releases to the SDX appliances. A NetScaler instance image file for a NetScaler SDX appliance has the following format:

NSVPX-XEN-ReleaseNumber-BuildNumber_nc.xva

- For example, NSVPX-XEN-10-5-35_nc.xva

NetScaler Control Center auto provisions or instantiates multiple NetScaler instances on a SDX appliance from a NetScaler VPX image file on the SDX appliance.

The cloud administrator gets these NetScaler instance image files from a www.Citrix.com location provided by the Citrix contact person. For more information on uploading NetScaler instance image files (.xva) to a SDX appliance, see “Uploading NetScaler .Xva Images” in [Provisioning NetScaler Instances](#).

Adding NetScaler SDX Appliances in NetScaler Control Center

In this task, the cloud administrator adds the deployed SDX appliances in NetScaler Control Center. The cloud administrator must specify the details (for example, management IP address, admin user credentials, and type) of a particular NetScaler SDX appliance in NetScaler Control Center. Later, as required by demand, NetScaler Control Center instantiates and automatically provisions NetScaler instances on SDX appliances.

You can configure the network interfaces of the NetScaler appliances and configure VLAN ranges for those interfaces.

To add a device in NetScaler Control Center by using the NetScaler Control Center user interface

1. Log on to NetScaler Control Center as the cloud administrator.
2. Click **Devices** and, in the details pane, click **Add**.
3. Under **Add Device**, set the following parameters:
 - **NetScaler Management IP Address***—The instance's NetScaler IP (NSIP) address.
 - **NetScaler Admin Username***—User name of the NetScaler instance's administrative user.
 - **NetScaler Admin Password***—Password of the administrative user.
 - **Product Name***—Type of NetScaler Appliance. (Select NetScalerSDX)
4. Click **OK**.

To configure network interfaces of NetScaler appliances by using the NetScaler Control Center user interface

1. Log on to NetScaler Control Center as the cloud administrator.
2. Click **Devices** and, in the details pane, select the device.
3. In the **Action** list, select **Configure Interfaces**.
4. Select the interface, and click **Enable** or **Disable** to enable or disable an interface.
5. Select the interface, and click **Configure VLAN Range**.
6. Under **Configure VLAN Range**, in the **VLAN Range** field, specify the VLAN range. (For example, 100-110.)
7. Click **OK**, and then click **Close**.

Configuring Deployment Settings

In the task, the cloud administrator configures the settings required to create and destroy NetScaler instances on demand. The settings mentioned below will be used along with the settings provided in service packages to create NetScaler instances on the fly on NetScaler SDX appliances.

To configure deployment settings through the NetScaler Control Center user interface

1. As the NetScaler Control Center system administrator log on to NetScaler Control Center user interface.
2. Click **System**. Then, in **Cloud Settings**, click **Deployments Settings**.
3. In **Deployment Settings**, set the parameters.
4. Click **OK**.

Adding Service Packages

In this task, the cloud administrator creates a service package for a set of tenants that require NetScaler instances running on a NetScaler SDX appliance for LBaaS. The service package has the platform parameter set to NetScaler SDX. The service package also includes specifications for virtual hardware resources for each NetScaler instance to be provisioned on a SDX appliance for the tenants associated with the service package. The service package also specifies the particular release of the NetScaler instances to be provisioned on a SDX appliance. After creating the service package, the cloud administrator associates tenants with the service package.

Each of these NetScaler instances:

- Is provisioned on one of the SDX appliances, which are specified as devices in NetScaler Control Center and are associated with the service package.
- Is provisioned with the virtual hardware resources, which are provided by the host SDX appliance, as specified in the service package.
- Is provisioned from the NetScaler instance image file (.xva), present on the host SDX appliance, of a particular release as specified in the service package.
- Has the default administrative user's (nsroot) password set to the one specified in the Auto Provision Settings for NetScaler SDX and Nova VPX platform section of the Deployment Settings screen of the NetScaler Control Center user interface.
- Has the management IP address (NSIP) set to an IP address that belongs to the OpenStack Neutron management network specified in the Auto Provision Settings for NetScaler SDX and Nova VPX platform section of the Deployment Settings screen of the NetScaler Control Center user interface. For setting the management IP address of a NetScaler instance on SDX, NetScaler Control Center queries the OpenStack Neutron service for an IP address available in the Neutron management network. The Neutron service responds with a free IP address on that network. NetScaler Control Center sets this IP address as the management IP address of a NetScaler instance.

To add a service package by using the NetScaler Control Center user interface

1. Log on to the NetScaler Control Center as the cloud administrator.
2. Click **Service Packages** and, in the details pane, click **Add**.
3. Under **Basic Settings**, set the following parameters:
 - **Name***—Name for the service package.
 - **Isolation Policy***—The type of isolation policy for the service package by which it can allocate NetScaler device resources. (Select Dedicated)
4. Enable the **Auto Provision** option, and then select **NetScaler SDX**.
5. Under **Partition Spec**, set the following parameters:
 - **Bandwidth (Kbps)***—Bandwidth to be allotted to each partition of a NetScaler VPX appliance.
 - **Number of Connections***—Number of connections to be handled by each partition of a NetScaler VPX appliance.
 - **Number of Networks***—Number of networks to be allotted if you are provisioning a NetScaler VPX instance on OpenStack Compute (Nova). Default value: -1. Maximum value: 9.
6. Click **Continue**.
7. Under **Resources**, set the following parameters:
 - **CPU Cores***—The number of CPU cores that you want to assign to the NetScaler VPX instance. Default value: 1.
 - **Total Memory(MB)***—Memory in MB that you want to assign to the NetScaler VPX instance. Default value: 2048.
 - **SSL Chips***—The number of SSL chips that you want to assign to the NetScaler VPX instance. Default value: 0.
 - **Throughput (Mbps)***—Throughput in Mbps that you want to assign to the NetScaler VPX instance.
 - **NetScaler Version***—The NetScaler software version that you want to run on the NetScaler VPX instance.
8. Under **High Availability**, you can select the **Provision pair of NetScaler appliances for high availability** option for a specific service package where redundancy is required.

9. Under **Assign Platforms**, click **Add** and select the devices that you want to assign to the service package.
10. Click **Continue** to assign a tenant to a service package.
11. Under **Assign Tenants**, click **Add** and select the tenants that you want to assign to the service package.
12. Click **Continue**, and then click **Done**.

Adding a Service Package with Auto-Provisioning NetScaler Instances on OpenStack Compute

Adding a service package with platform as OpenStack Compute consists of the following tasks:

- [Uploading a NetScaler VPX image file to OpenStack Compute](#)
- [Licensing NetScaler VPX Instances Auto-Provisioned on OpenStack Compute Through NetScaler Control Center](#)
- [Configure Deployment Settings](#)
- [Adding Service Packages](#)

Note: When requesting for NetScaler VPX licenses from Citrix, you should ask for a License Activation Code (LAC). LAC is a bundle of licenses that can be purchased from Citrix. Licenses have to be purchased with an LAC that has as many line items as the number of NetScaler VPX instances desired. Each line item should have one NetScaler VPX license.

Important: Ensure that NetScaler VPX instances created in your management networks are able to access public domains. When installing a license, a NetScaler VPX instance communicates with the Citrix licensing server over the internet.

Uploading a NetScaler VPX image file to OpenStack Compute

In this task, the cloud administrator uploads a NetScaler VPX image file to OpenStack Compute Node (Nova) by using one of the following:

- OpenStack Horizon user interface
- OpenStack Controller command line interface
- OpenStack Image service (Glance) client
- OpenStack Image service (Glance) APIs

NetScaler Control Center supports NetScaler VPX instances running only on Linux-KVM servers on OpenStack Compute node (Nova).

A NetScaler VPX image file for OpenStack Compute has the following format:

- NSVPX-KVM-ReleaseNumber-BuildNumber_nc.raw

For example, NSVPX-KVM-10-5-35_nc.raw.

NetScaler Control Center auto provisions or instantiates multiple NetScaler VPX instances on OpenStack Compute (Nova) from the NetScaler VPX image file.

The cloud administrator gets the NetScaler VPX image file for OpenStack Compute (Nova) from a www.Citrix.com location provided by the Citrix contact person.

Convert the image file .raw to .qcow2 using qemu-img link - <http://linux.die.net/man/1/qemu-img> and upload the image file to OpenStack Glance.

Example

```
qemu-img convert -f raw -O qcow2 NSVPX-KVM-10-5-35_nc.raw NSVPX-KVM-10-5-35_nc.qcow2
```

To upload the NetScaler image file (.qcow2) to OpenStack Glance, run the following command:

```
glance image-create --name="<name> " --property hw_disk_bus=ide --is-public=true --container-format=bare --disk-format=raw < <NetScaler image file name>
```

Example:

```
glance image-create --name="ns-vpx-10-5 " --property hw_disk_bus=ide --is-public=true --container-format=bare --disk-format=raw < NSVPX-KVM-10-5-35_nc.qcow2
```

Note: You must specify the hard disk type for NetScaler virtual appliances as IDE. As described above, you must set the **hw_disk_bus** property to **ide**. If you have already uploaded the image to OpenStack Glance without setting the **hw_disk_bus** property, you can use the **glance image-update** command to configure the **hw_disk_bus** property to **ide**.

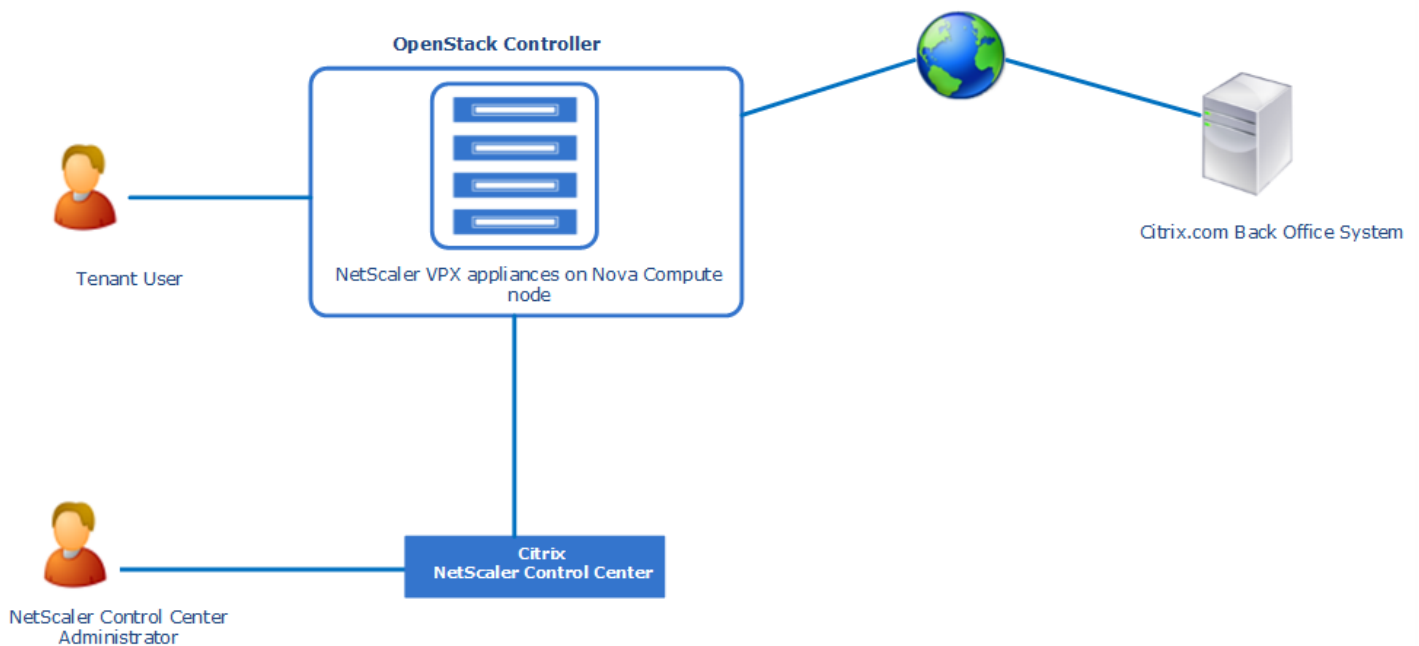
For more information on uploading an image file (.qcow2) to OpenStack Glance, see the OpenStack product documentation at <http://docs.openstack.org/>.

Licensing NetScaler VPX Instances Auto-Provisioned on OpenStack Compute Through NetScaler Control Center

NetScaler Control Center centrally manages and auto-allocates licenses on auto-provisioned NetScaler VPX instances in OpenStack Compute, thereby avoiding any manual intervention for license management. NetScaler Control Center directs the newly provisioned NetScaler VPX instance to access the Citrix.com back office system, fetch the license, and install it, with no intervention by the cloud administrator or the tenant user.

For this licensing mechanism to work, the cloud administrator must specify one or more license activation codes (LACs) in NetScaler Control Center. An LAC is a reference code that corresponds to a purchase order. Citrix emails the LAC to you when you place the purchase order. In the OpenStack Horizon user interface, you must configure the DNS server IP address for the management network in which the auto-provisioned NetScaler VPX instances will be deployed. This ensures that the instances are able to access the Citrix.com back office system.

How Licensing Works



Licensing of NetScaler VPX instances auto-provisioned in OpenStack Compute works as follows:

1. In NetScaler Control Center, the cloud administrator specifies the license activation code.

The LAC references a purchase order identifying one or more licenses purchased from Citrix. An LAC consists of multiple line items, with each line item corresponding to a license type.

Important: Each line item also specifies the number of licenses of the specified type. NetScaler Control Center requires that quantity to be exactly equal to one (1). Each line item must correspond to a separate NetScaler VPX license.

You must specify the LAC in the deployment settings. For more information, see [Configuring Deployment Settings](#).

Note: You must specify the NetScaler VPX model number when creating a service package. For more information about creating a service package, see [Adding Service Packages](#). The model number of your NetScaler VPX appliance is part of your LAC. For example, if your LAC is CTXV3000PT20, your model number is V3000.

2. In the OpenStack Horizon user interface, the cloud administrator specifies the IP address of the DNS server for the management network in which the auto-provisioned NetScaler VPX appliances will be deployed.
3. The tenant user creates an LBaaS pool and a VIP address in the OpenStack Horizon user interface.
4. NetScaler Control Center provisions a NetScaler VPX instance on the OpenStack compute node and adds it to the management network.
5. NetScaler Control Center configures the DNS IP address in the NetScaler VPX instance.
6. NetScaler Control Center instructs the NetScaler VPX instance to access the Citrix.com back office system (citrixservices.citrix.com) with the LAC, and requests the list of NetScaler VPX licenses associated with that LAC.
7. The NetScaler VPX instance accesses the Citrix.com back office system.

8. The Citrix.com back office system returns the list of NetScaler VPX licenses associated with that LAC.
9. NetScaler Control Center selects one of the licenses from the list, and then issues a request to the NetScaler VPX instance to install the selected license.
10. The NetScaler VPX instance downloads the file from the Citrix.com back office system and changes the LAC's "Available count" value to 0 in the row corresponding to the downloaded license.
11. The NetScaler VPX instance installs the license.

Adding the DNS IP Address to a Network in OpenStack Horizon

Auto-allocating NetScaler VPX licenses in OpenStack Compute requires specifying the DNS server IP address for the management network in which the auto-provisioned NetScaler VPX instances will be deployed, so that the instances can access the Citrix licensing server.

To add a DNS IP address to a network by using the OpenStack Horizon user interface

1. Log on to the OpenStack Horizon user interface as the cloud administrator.
2. Navigate to **Project > Network**, and select the network to which you need to add the DNS IP address.
3. Under **Subnets**, click **Edit Subnet**.
4. On the **Subnet Detail** tab, in the **Edit Subnet** dialog box, in the **DNS Name Servers** field, enter the IP address of the DNS server.
5. Click **Save**.

Configuring Deployment Settings

In this task, the cloud administrator configures the settings required to create and destroy NetScaler instances on demand. The settings mentioned below will be used along with the settings provided in service packages to create NetScaler instances on the fly on OpenStack Compute nodes.

To configure deployment settings through the NetScaler Control Center user interface

1. As the NetScaler Control Center system administrator log on to the NetScaler Control Center user interface.
2. Click **System**. Then, in **Cloud Settings**, click **Deployments Settings**.
3. In **Deployment Settings**, set the parameters.
4. Click **OK**.

Adding Service Packages

In this task, the cloud administrator creates a service package for a set of tenants that require NetScaler VPX instances running on OpenStack Compute (Nova). The service package has the platform parameter set to OpenStack Compute.

The service package also specifies one of the OpenStack Compute flavors (virtual hardware resource specifications) available in OpenStack Compute, for each VPX instance to be provisioned on OpenStack Compute for the tenants associated with the service package. After creating the service package, the cloud administrator associates tenants with the service package.

Each of these NetScaler VPX appliances:

- Is provisioned on OpenStack Compute.

- Is provisioned with the virtual hardware resources, which are provided by OpenStack Compute, as specified in the OpenStack Compute flavor selected during the service package creation.
- Is provisioned from one of the NetScaler VPX image file (.raw), present on OpenStack Compute, as specified in the Auto Provision Settings for NetScaler SDX and Nova VPX platform section of the Deployment Settings screen of the NetScaler Control Center user interface.
- Is the default administrative user's (nsroot) password set to the one specified in the Auto Provision Settings for NetScaler SDX and Nova VPX platform section of the Deployment Settings screen of the NetScaler Control Center user interface.
- Has the management IP address (NSIP) set to an IP address that belongs to the OpenStack Neutron management network specified in the Auto Provision Settings for NetScaler SDX and Nova VPX platform section of the Deployment Settings screen of the NetScaler Control Center user interface. For setting the management IP address of a NetScaler VPX appliance, the NetScaler Control Center queries the OpenStack Neutron service for any IP address available in the Neutron management network. The Neutron service responds with an IP address. NetScaler Control Center sets this IP address as the management IP address of a NetScaler VPX appliance.

To add a service package by using the NetScaler Control Center user interface

1. Log on to the NetScaler Control Center as the cloud administrator.
2. Click **Service Packages** and, in the details pane, click **Add**.
3. Under **Basic Settings**, set the following parameters:
 - **Name***—Name for the service package.
 - **Isolation Policy***—The type of isolation policy for the service package by which it can allocate NetScaler device resources. (Select Partition)
4. Enable the **Auto Provision** option, and then select **OpenStack Compute**.
5. Under **Partition Spec**, set the following parameters:
 - **Bandwidth (Kbps)***—Bandwidth to be allotted to each partition of a NetScaler VPX appliance.
 - **Number of Connections***—Number of connections to be handled by each partition of a NetScaler VPX appliance.
 - **Number of Networks***—Number of networks to be allotted if you are provisioning a NetScaler VPX instance on OpenStack Compute (Nova). Default value: -1. Maximum value: 9.
6. Click **Continue**.
7. Under **Auto Provision Settings**, set the parameters.
8. Under **High Availability**, you can select the **Provision pair of NetScaler appliances for high availability** option for a specific service package where redundancy is required.
9. Click **Continue** to assign a tenant to a service package.
10. Under **Assign Tenants**, click **Add** and select the tenants that you want to assign to the service package.
11. Click **Continue**, and then click **Done**.

Adding a Service Package with a Shared Isolation Policy

Jun 29, 2015

Shared isolation policy allows tenants associated with a service package to share NetScaler appliances. In a service package of shared isolation policy, the load balancing configuration of a tenant coexists with other tenants' load balancing configuration in the device allocated to that tenant.

The shared isolation policy is supported for the following NetScaler platforms:

- NetScaler MPX appliances
- NetScaler VPX appliances on virtualization platforms (Citrix XenServer®, VMware ESX or ESXi, Linux-KVM, Microsoft Hyper-V)
- Manually provisioned NetScaler VPX appliances on OpenStack Compute (Nova)
- Manually provisioned NetScaler VPX appliances on NetScaler SDX appliances

Note: You can share NetScaler VPX appliances running on NetScaler SDX appliances and OpenStack Compute (Nova) provided that they are first manually provisioned on these platforms. You cannot share NetScaler VPX appliances auto-provisioned through NetScaler Control Center on NetScaler SDX appliances and OpenStack Compute.

This document includes the following details:

- [Adding a Service Package with Device Type as NetScaler VPX](#)
- [Adding a Service Package with Device Type as NetScaler MPX](#)

Adding a Service Package with Device Type as NetScaler VPX

Adding a service package with device type as NetScaler VPX consists of the following tasks:

- Manually provision NetScaler VPX appliances by using the virtualization platform's utilities. After provisioning the appliances, set up their initial configurations.
- Add the provisioned NetScaler VPX appliances in NetScaler Control Center
- Add service packages that include these NetScaler VPX instances

This section includes the following the details:

- [Provisioning NetScaler VPX Appliances](#)
- [Adding NetScaler VPX Appliances in NetScaler Control Center](#)
- [Adding Service Packages](#)

Provisioning NetScaler VPX Appliances

You can provision NetScaler VPX appliances on the following types of platforms:

- Virtualization Platforms
- NetScaler SDX Appliances
- Virtualization Platforms managed by OpenStack Compute

To provision NetScaler VPX instances on the following virtualization platforms, and perform initial configuration, see the

documentation indicated:

- Citrix XenServer®— [Installing NetScaler Virtual Appliances on XenServer](#)
- VMware ESX or ESXi— [Installing NetScaler Virtual Appliances on VMware ESX](#)
- Linux-KVM— [Installing NetScaler Virtual Appliances on Linux-KVM Platform](#)
- Microsoft Hyper-V— [Installing Citrix NetScaler Virtual Appliances on Microsoft Hyper-V Servers](#)

To provision NetScaler VPX instances on NetScaler SDX appliances, and perform initial configuration, see the NetScaler SDX documentation at [Provisioning NetScaler Instances](#).

To provision NetScaler VPX instances on a virtualization platform managed by OpenStack Compute, use NetScaler Control Center.

Note: The virtualization platform supported by OpenStack Compute is Linux-KVM.

To provision NetScaler VPX instances on Linux-KVM using the NetScaler Control Center user interface

1. Log on to NetScaler Control Center as the cloud administrator.
2. In the navigation pane, click **Devices** and, in the details pane, click **Create**.
3. Under **Create NetScaler VPX using OpenStack Compute**, set the parameters.
4. Click **OK**.
5. Proceed to [Adding Service Packages](#).

Adding NetScaler VPX Appliances in NetScaler Control Center

After provisioning Citrix NetScaler VPX instances and performing initial configuration on them, the cloud administrator adds these instances in NetScaler Control Center. The cloud administrator must specify details (for example, management IP address, admin user credentials, and type of NetScaler) of a particular NetScaler instance in NetScaler Control Center. Later, the cloud administrator assigns a NetScaler VPX instance to a service package.

To add a device in NetScaler Control Center by using the NetScaler Control Center user interface

1. Log on to the NetScaler Control Center as the cloud administrator.
2. Click **Devices** and, in the details pane, click **Add**.
3. Under **Add Device**, set the following parameters:
 - **NetScaler Management IP Address***—The instance's NetScaler IP (NSIP) address.
 - **NetScaler Admin Username***—User name of the NetScaler instance's administrative user.
 - **NetScaler Admin Password***—Password of the administrative user.
 - **Product Name***—Type of NetScaler Appliance. (Select NetScalerVPX)
4. Click **OK**.

Adding Service Packages

In this task, the cloud administrator creates a service package for a set of tenants that share a set of NetScaler VPX instances for load balancing as a service (LBaaS). The service package has the device type parameter set to NetScaler VPX. After creating the service package, the cloud administrator assigns one or multiple NetScaler VPX instances to the service package. The cloud administrator then associates tenants with the service package.

To add a service package by using the NetScaler Control Center user interface

1. Log on to NetScaler Control Center as the cloud administrator.

2. Click **Service Packages** and, in the details pane, click **Add**.
3. Under **Basic Settings**, set the following parameters:
 - **Name***—Name for the service package.
 - **Isolation Policy***—The type of isolation policy for the service package by which it can allocate NetScaler device resources. (Select Shared)
 - **Device Type***—The type of NetScaler devices that are assigned to the service package. (Select NetScaler VPX)
 - **Placement Method***—The placement method by which a NetScaler appliance configured in a service package is allotted to a tenant for its first load balancing configuration.
4. Click **Continue** to assign a NetScaler device to a service package.
5. Under **Assign Devices**, click **Add** and select the devices that you want to assign to the service package.
6. Click **Continue** to associate a tenant with a service package.
7. Under **Assign Tenants**, click **Add** and select the tenants that you want to assign to the service package.
8. Click **Continue**, and then click **Done**.

Adding a Service Package with Device Type as NetScaler MPX

Adding a service package with device type as NetScaler MPX consists of the following tasks:

- [Deploying NetScaler MPX Appliances](#)
- [Adding NetScaler MPX Appliances in NetScaler Control Center](#)
- [Adding Service Packages](#)

Deploying NetScaler MPX Appliances

In this task, the cloud administrator deploys NetScaler MPX appliances and performs initial configuration.

The cloud administrator must make sure that the management IP address (NSIP) of a NetScaler MPX appliance is reachable from the management network of the NetScaler Control Center VM.

For more information on deploying a NetScaler MPX appliance, and configuring the management IP address (NSIP address, netmask, gateway for NSIP) on the NetScaler appliance, and other initial configurations, see the Citrix NetScaler product documentation at [Hardware Installation](#).

Adding NetScaler MPX Appliances in NetScaler Control Center

After deploying Citrix NetScaler MPX appliances and performing initial configuration on them, the cloud administrator adds these appliances in NetScaler Control Center. The cloud administrator must specify details (for example, management IP address, admin user credentials, and type of NetScaler) of a particular NetScaler MPX appliance in NetScaler Control Center. Later, the cloud administrator assigns a NetScaler MPX appliance to a service package.

To add a device in NetScaler Control Center by using the NetScaler Control Center user interface

1. Log on to NetScaler Control Center as the cloud administrator.
2. Click **Devices** and, in the details pane, click **Add**.

3. Under **Add Device**, set the following parameters:
 - **NetScaler Management IP Address***—The instance's NetScaler IP (NSIP) address.
 - **NetScaler Admin Username***—User name of the NetScaler instance's administrative user.
 - **NetScaler Admin Password***—Password of the administrative user.
 - **Product Name***—Type of NetScaler Appliance. (Select NetScalerMPX)
4. Click **OK**.

Adding Service Packages

In this task, the cloud administrator creates a service package for a set of tenants that share a NetScaler MPX appliance for LBaaS. The service package has the device type parameter set to NetScaler MPX. After creating the service package, the cloud administrator assigns one or multiple NetScaler MPX appliances to the service package. The cloud administrator then associates tenants with the service package.

To add a service package by using the NetScaler Control Center user interface

1. Log on to NetScaler Control Center as the cloud administrator.
2. Click **Service Packages** and, in the details pane, click **Add**.
3. Under **Basic Settings**, set the following parameters:
 - **Name***—Name for the service package.
 - **Isolation Policy***—The type of isolation policy for the service package by which it can allocate NetScaler device resources. (Select Dedicated)
 - **Device Type***—The type of NetScaler devices that are assigned to the service package. (Select NetScaler MPX)
 - **Placement Method***—The placement method by which a NetScaler appliance configured in a service package is allotted to a tenant for its first load balancing configuration.
4. Click **Continue** to assign a NetScaler device to a service package.
5. Under **Assign Devices**, click **Add** and select the devices that you want to assign to the service package.
6. Click **Continue** to associate a tenant with a service package.
7. Under **Assign Tenants**, click **Add** and select the tenants that you want to assign to the service package.
8. Click **Continue**, and then click **Done**.

Consuming Load Balancing as a Service (LBaaS) from OpenStack

Sep 30, 2015

The tenant user configures load balancing on OpenStack Controller by creating a pool, pool members, health monitors, and a VIP by using the OpenStack Horizon user interface, the OpenStack CLI or the OpenStack LBaaS API. The NetScaler Control Center then creates the same load balancing configuration on the NetScaler ADC that is paired with the tenant specified by a service package configuration on the NetScaler Control Center VM.

After load balancing is configured, the NetScaler ADC starts accepting traffic and load balancing the traffic between the virtual machines on the tenant network.

This section includes the following details:

- [Configuration Tasks by Using OpenStack Horizon](#)
- [Verifying and Monitoring the Load Balancing Configuration](#)

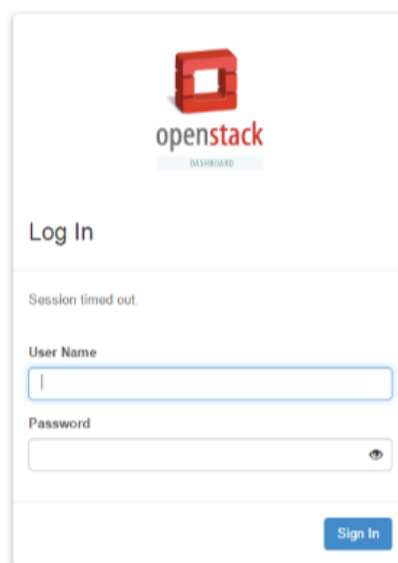
Configuration Tasks by Using OpenStack Horizon

Configuring load balancing for a tenant consists of the following tasks to be performed by the tenant user using the OpenStack Horizon user interface:

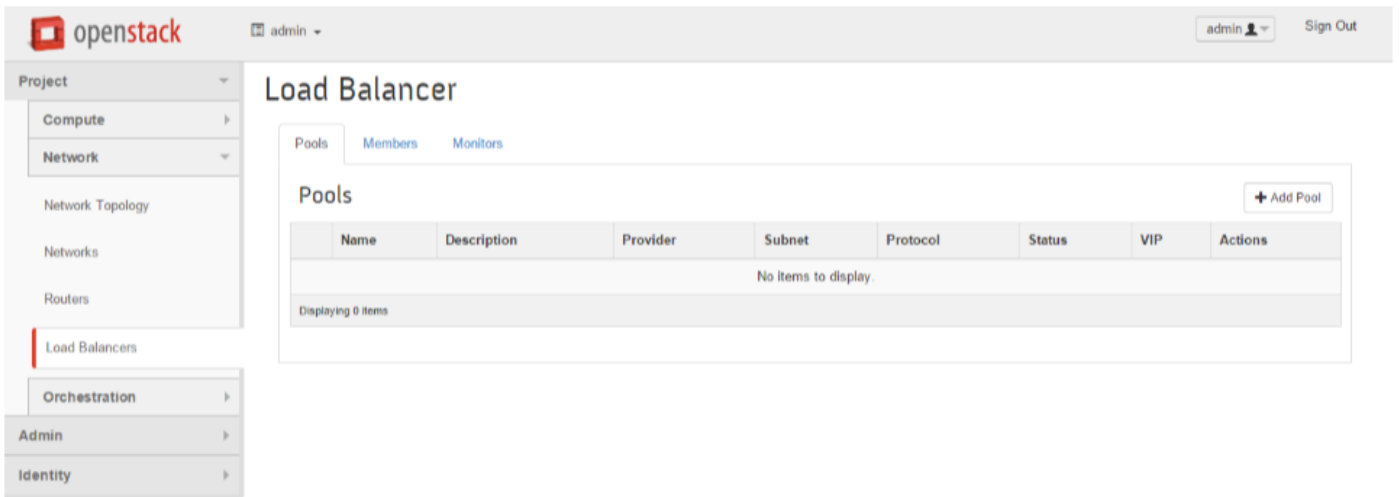
- Add an LBaaS pool.
- Add members to the configured pool.
- Add a health monitor and associate it to the pool.
- Add a virtual server (VIP) for the pool.

To add an LBaaS pool by using the OpenStack Horizon user interface

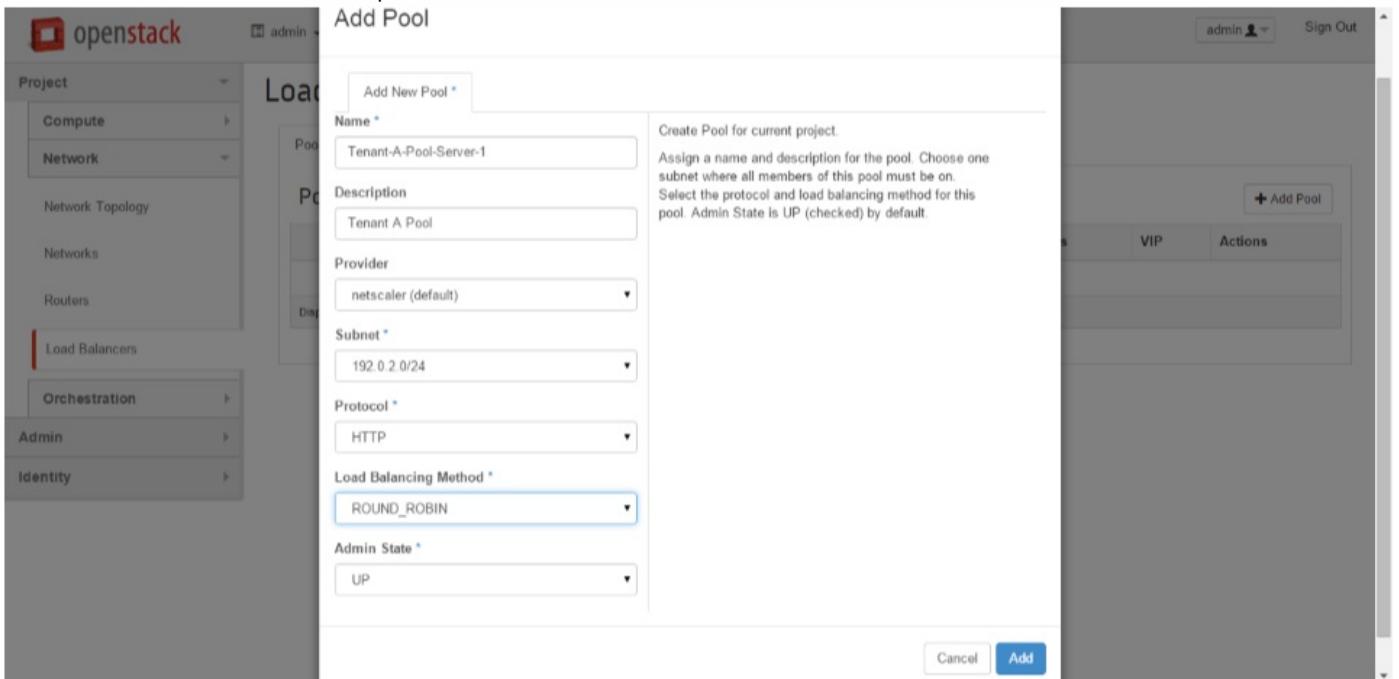
1. Log on to the OpenStack Horizon user interface as the tenant user.

The image shows a screenshot of the OpenStack Horizon user interface. At the top, there is the OpenStack logo (a red square with a white 'O') and the text 'openstack' in lowercase, with 'DESIGNED' in smaller text below it. Below the logo is the heading 'Log In'. Underneath, there is a message 'Session timed out.' followed by two input fields: 'User Name' and 'Password'. The 'User Name' field is empty, and the 'Password' field has a small eye icon to its right. At the bottom right of the form is a blue button labeled 'Sign In'.

2. Navigate to Project > Network > Load Balancers, and then click the Pools tab.



3. Click Add Pool, and then set the parameters.

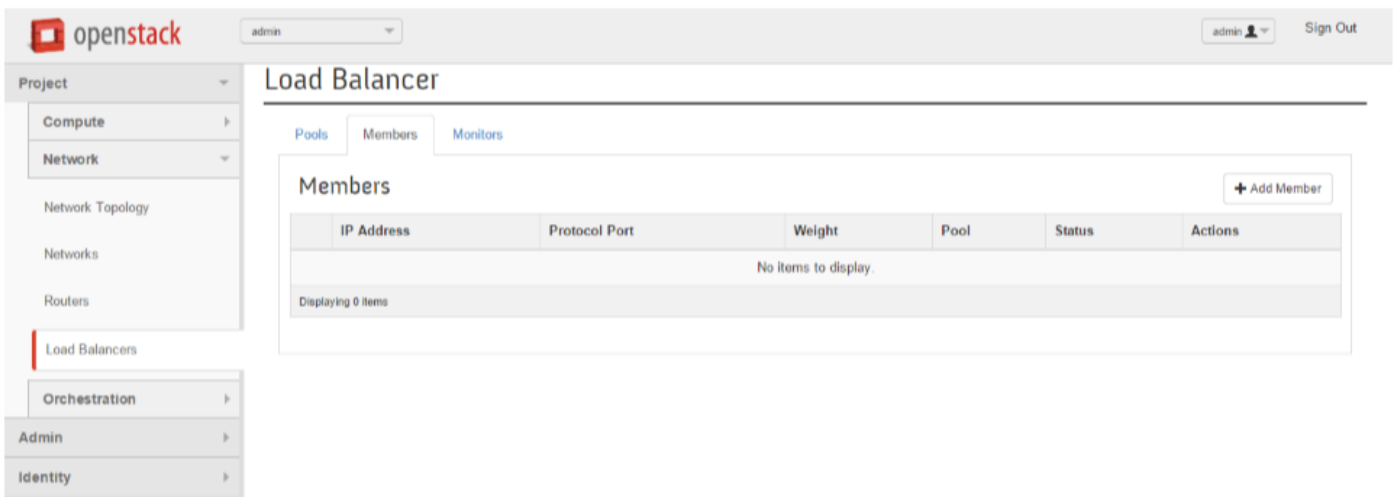


Note: Set the Provider parameter to NetScaler.

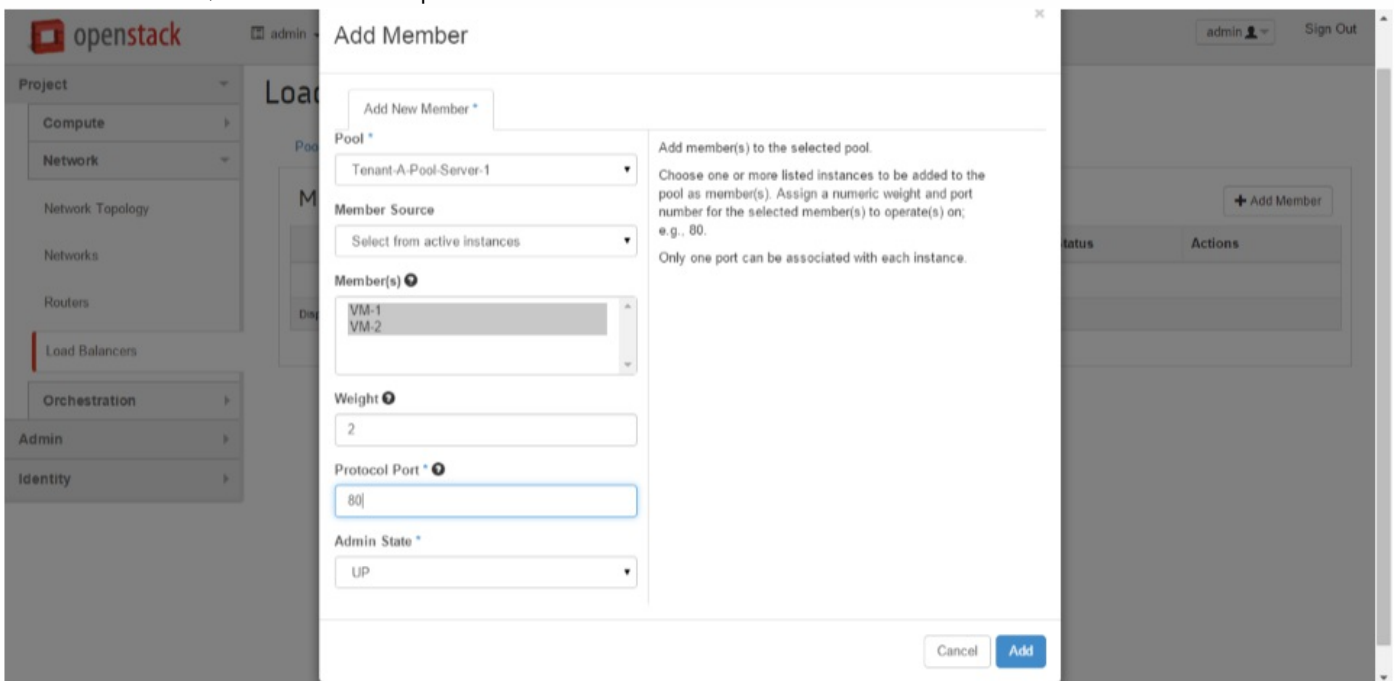
4. Click Add.

To add a member by using the OpenStack Horizon user interface

1. Navigate to Project > Network > Load Balancers, and then click the Members tab.



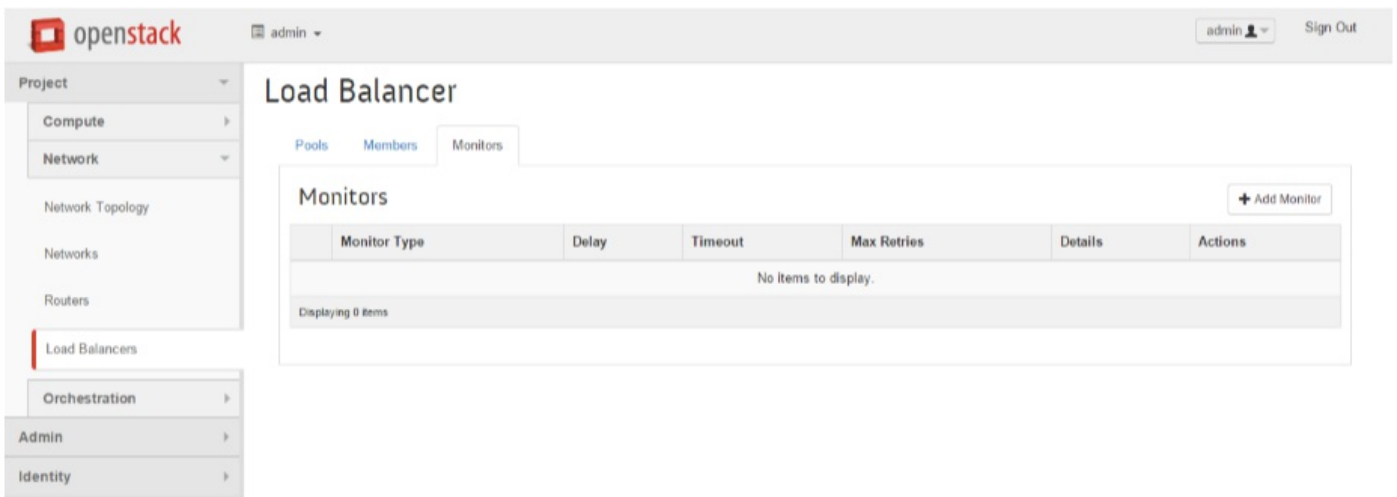
2. Click Add Member, and then set the parameters.



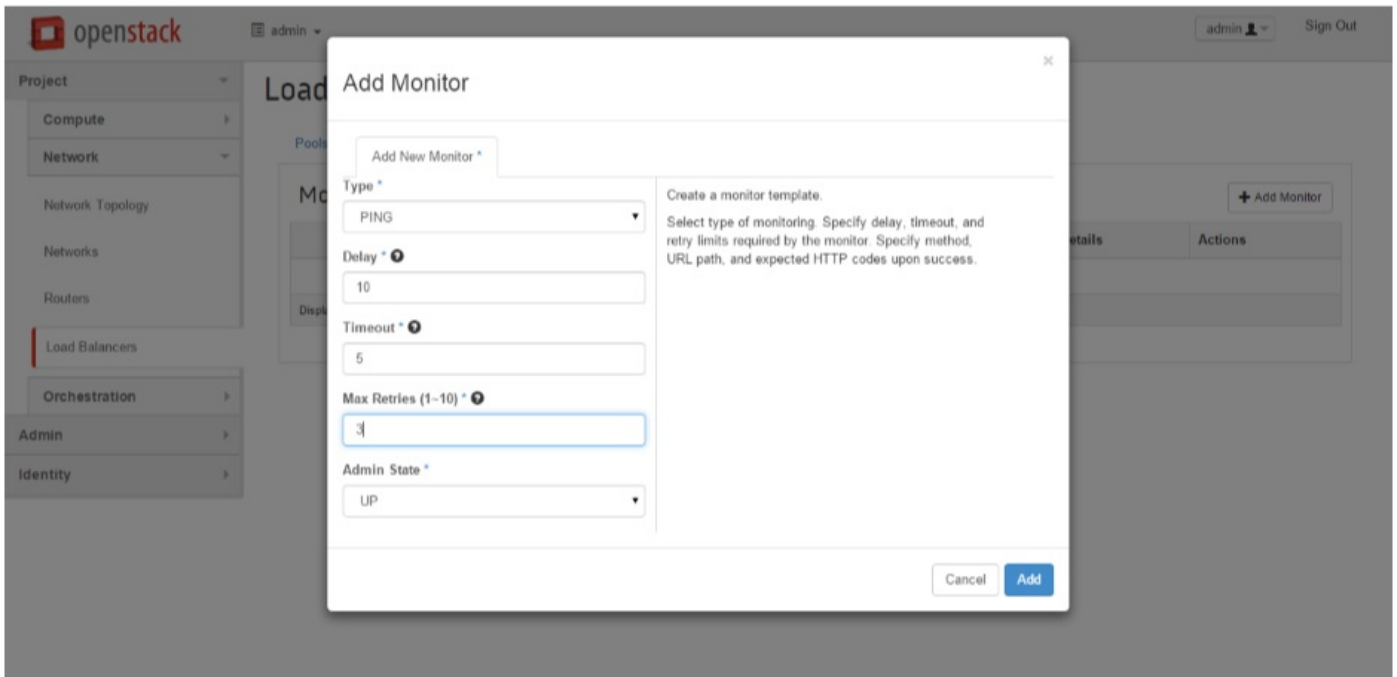
3. Click Add.

To add a monitor and associate it with a pool by using the OpenStack Horizon user interface

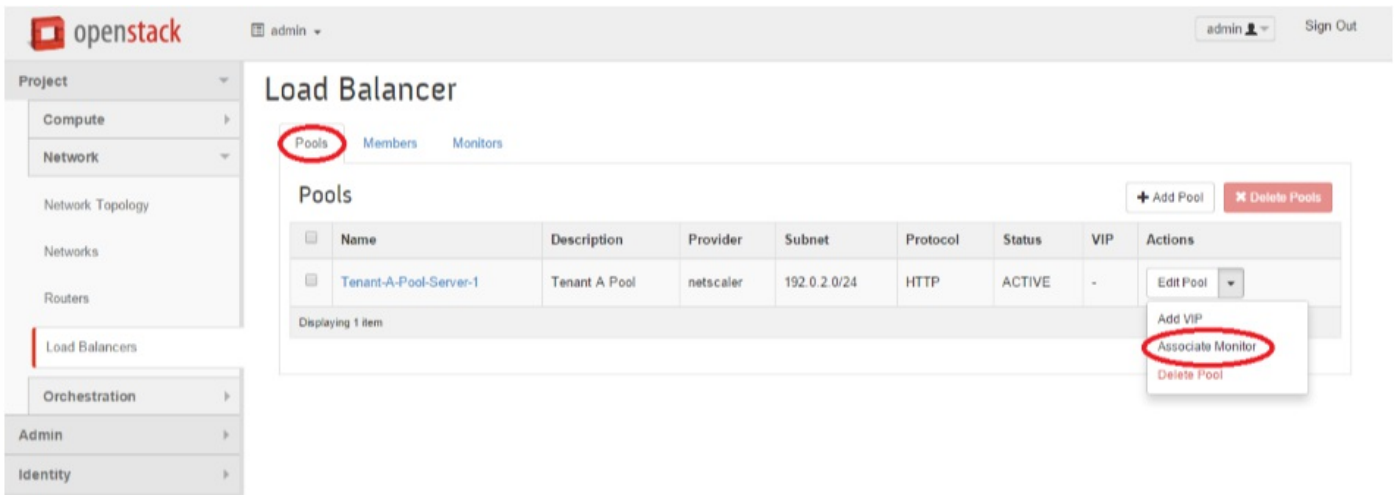
1. Navigate to Project > Network > Load Balancers.



2. On the Monitors tab, click Add Monitor, and then set the parameters.



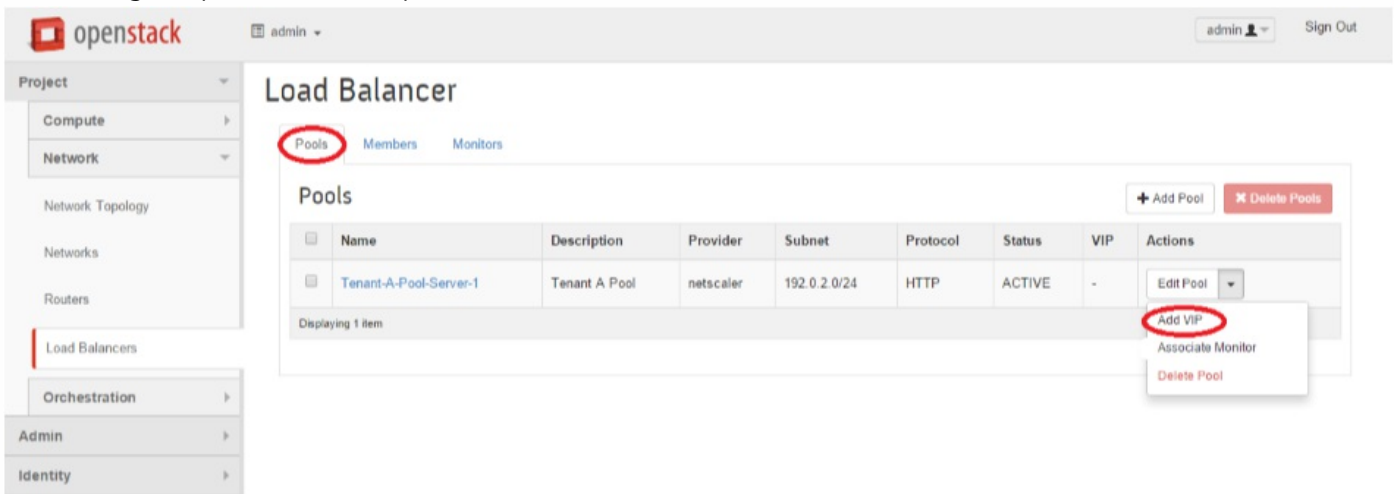
3. Click Add.
4. Select the Pools tab.
5. For a configured pool, click the dropdown menu and select Associate Monitor.



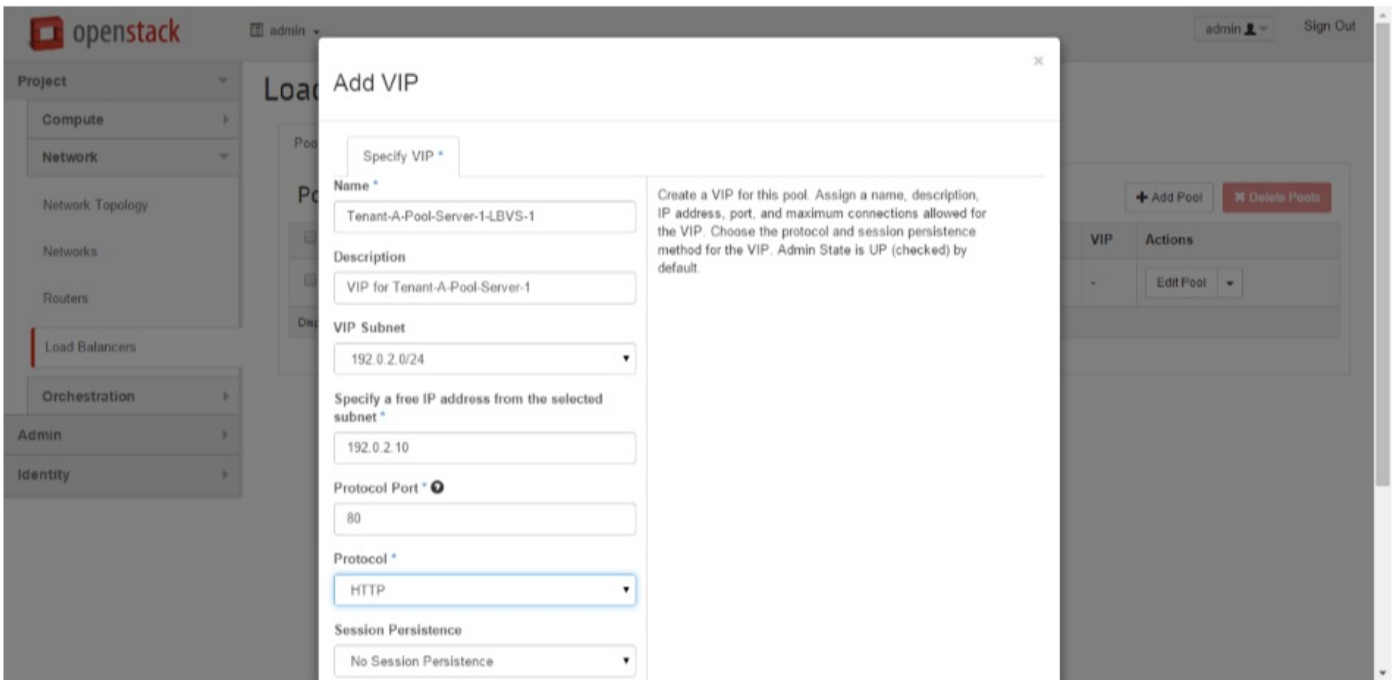
6. On the Association Details tab, from the dropdown menu, select a monitor.
7. Click Associate.

To add a VIP and associate it with a pool by using the OpenStack Horizon user interface

1. Navigate to Project > Network > Load Balancers, and then the click Pools tab.
2. For a configured pool, click the dropdown menu, and then select Add VIP.



3. In the Add VIP dialog box, set the parameters.



4. Click Add.

Verifying and Monitoring the Load Balancing Configuration

After configuring load balancing on OpenStack cloud, the tenant user must verify the load balancing configuration created on the NetScaler ADC.

For verifying the configuration, the tenant user views the NetScaler ADC's load balancing configuration displayed on the NetScaler Control Center user interface.

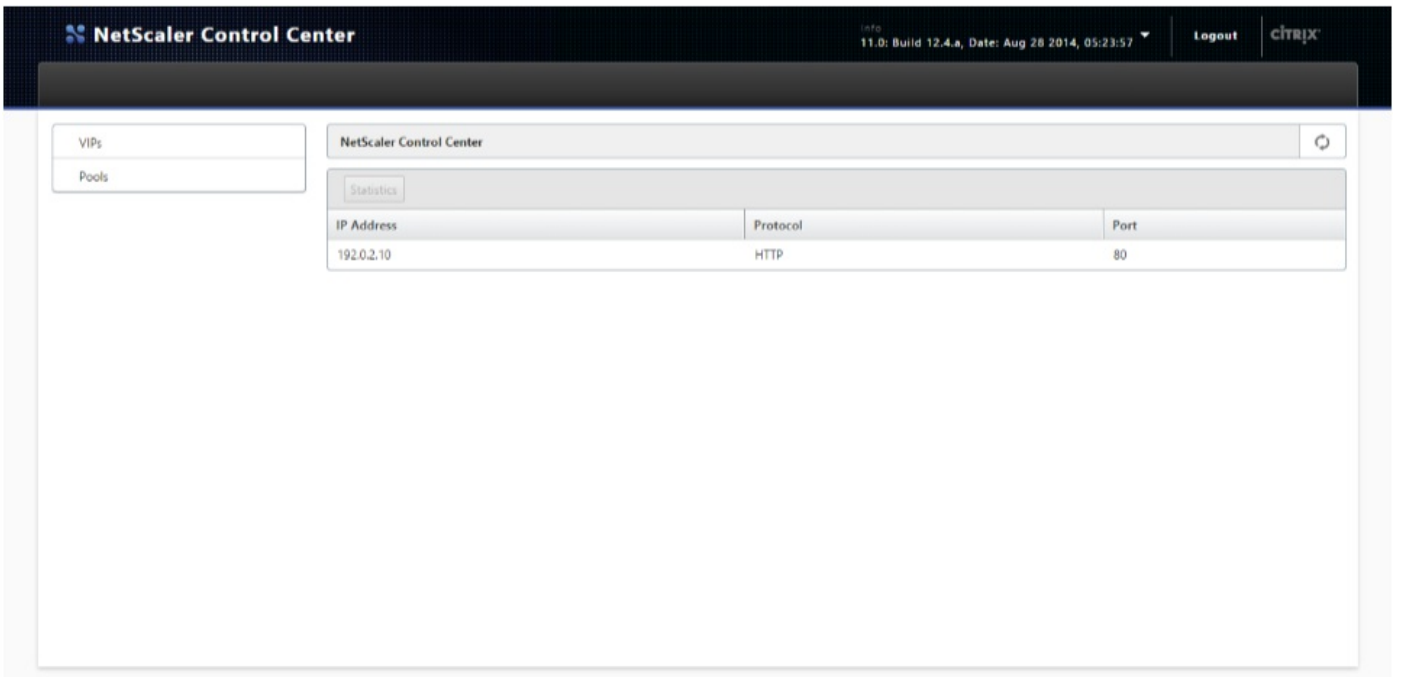
For monitoring the performance of the NetScaler ADC's load balancing configuration, the tenant user views the statistics of a virtual server on the NetScaler Control Center user interface.

To display the load balancing configuration entries by using the NetScaler Control Center user interface

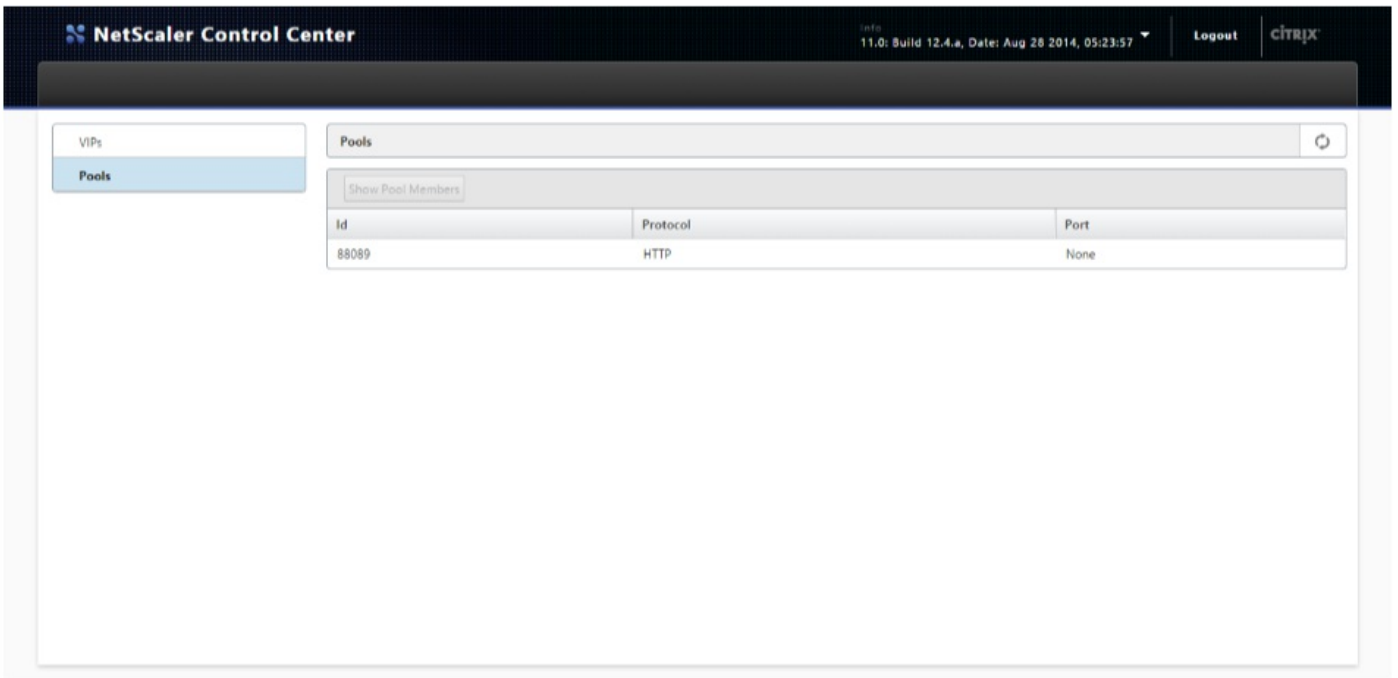
1. Log on to the NetScaler Control Center user interface as the tenant user.



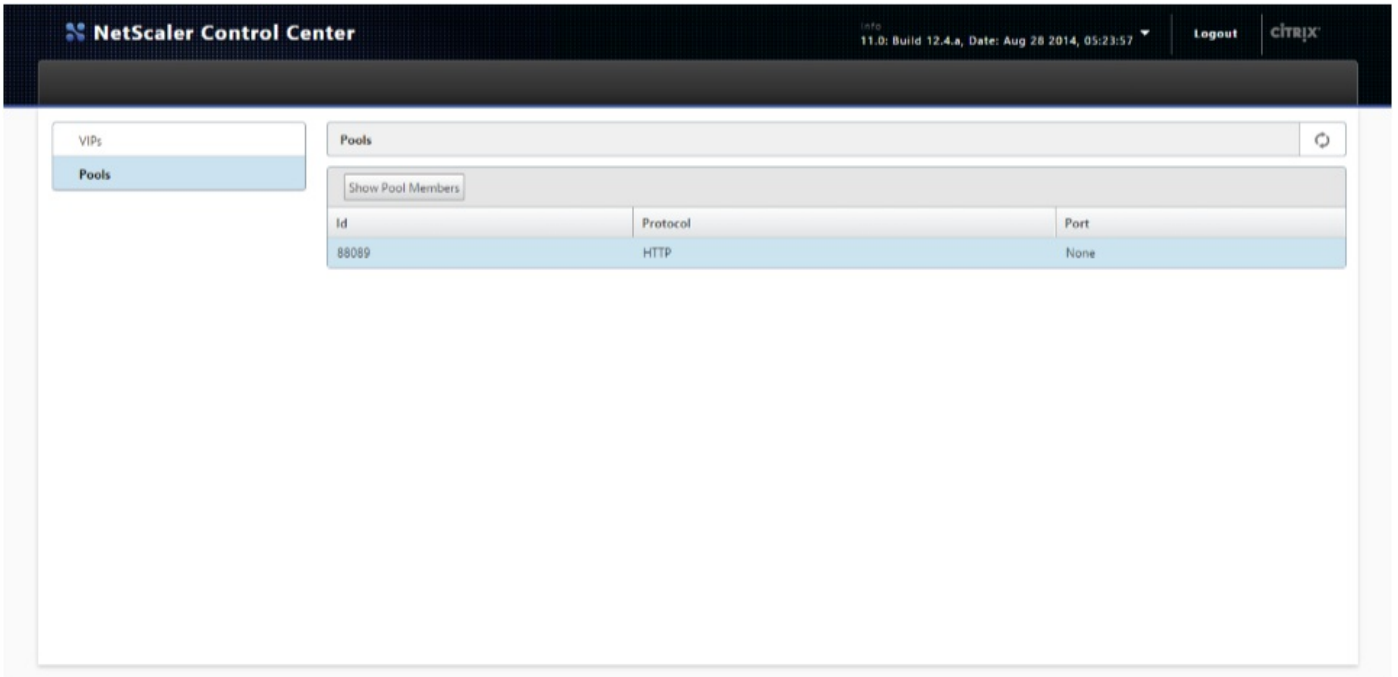
2. In the navigation pane, click VIPs. The VIPs details pane lists all the virtual servers configured for the tenant.



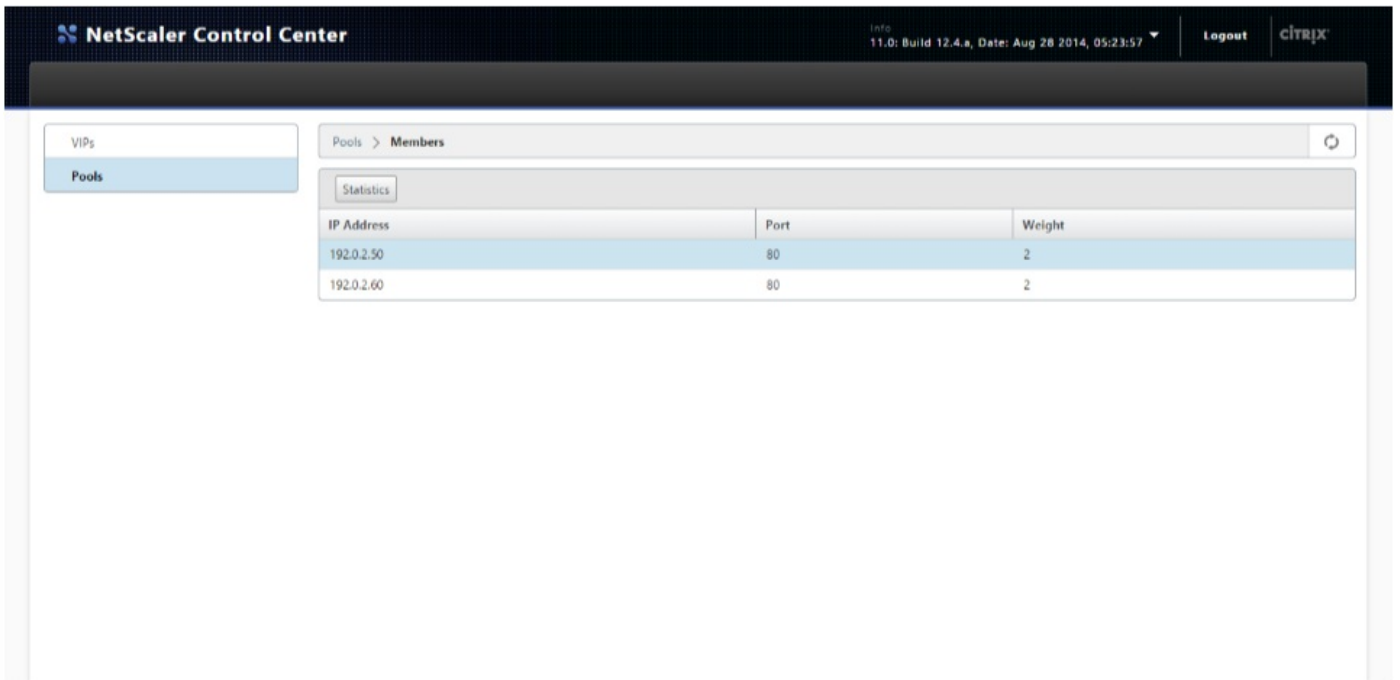
3. In the navigation pane, click Pools. The Pools details pane lists all the Pools configured for the tenant.



4. Select a pool whose members you want to display, and then click Show Pool Members.

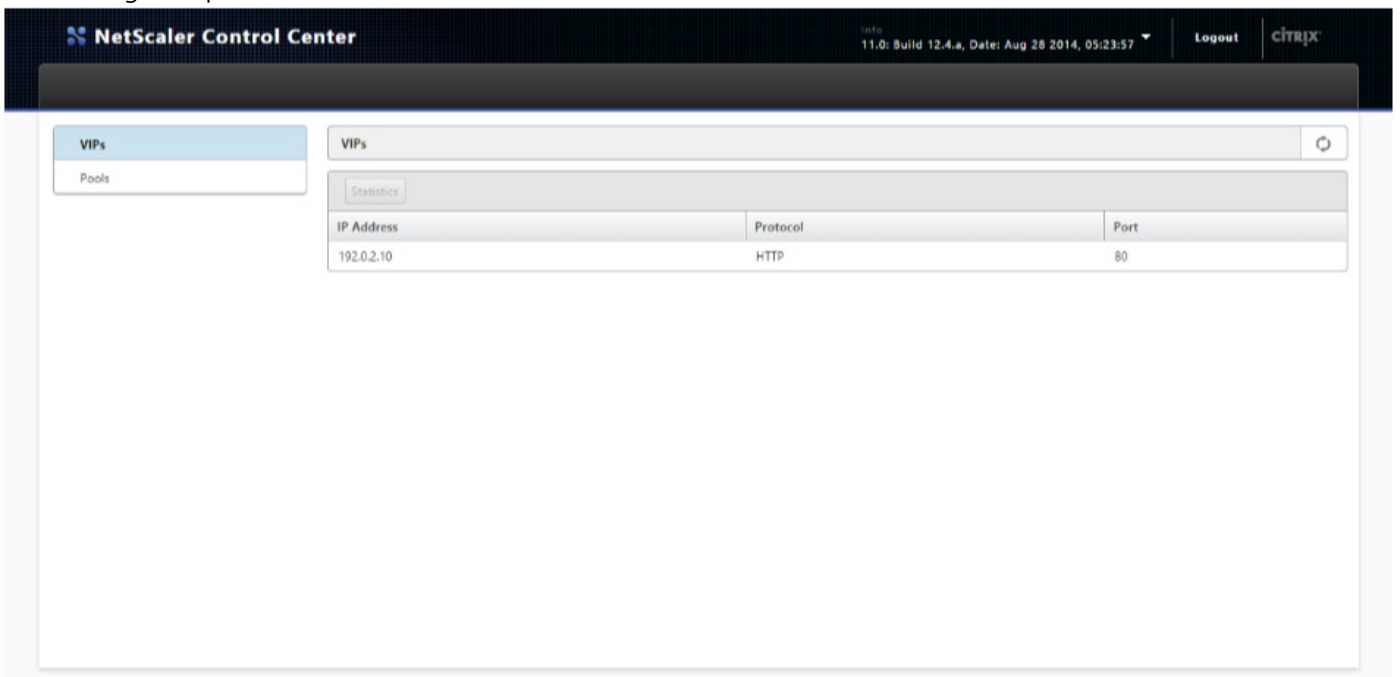


The Members details pane lists all the members of the selected pool.

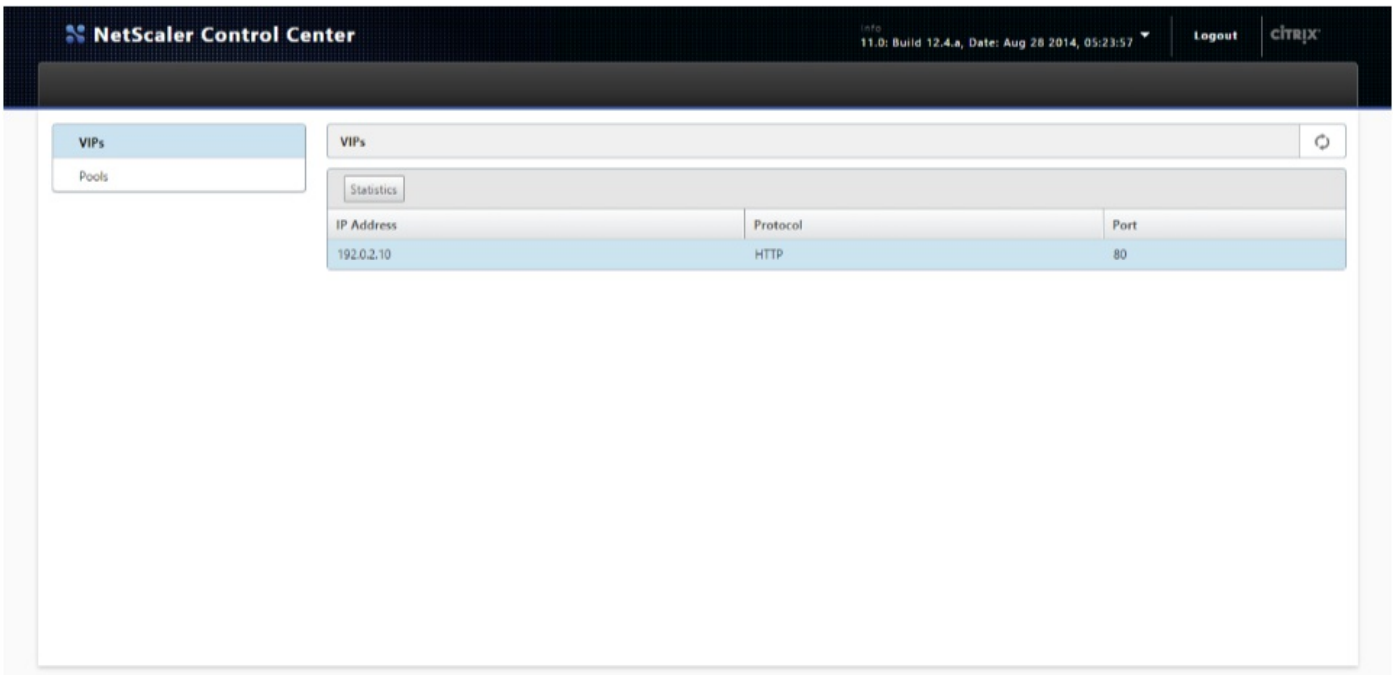


To display the load balancing configuration statistics by using the NetScaler Control Center user interface

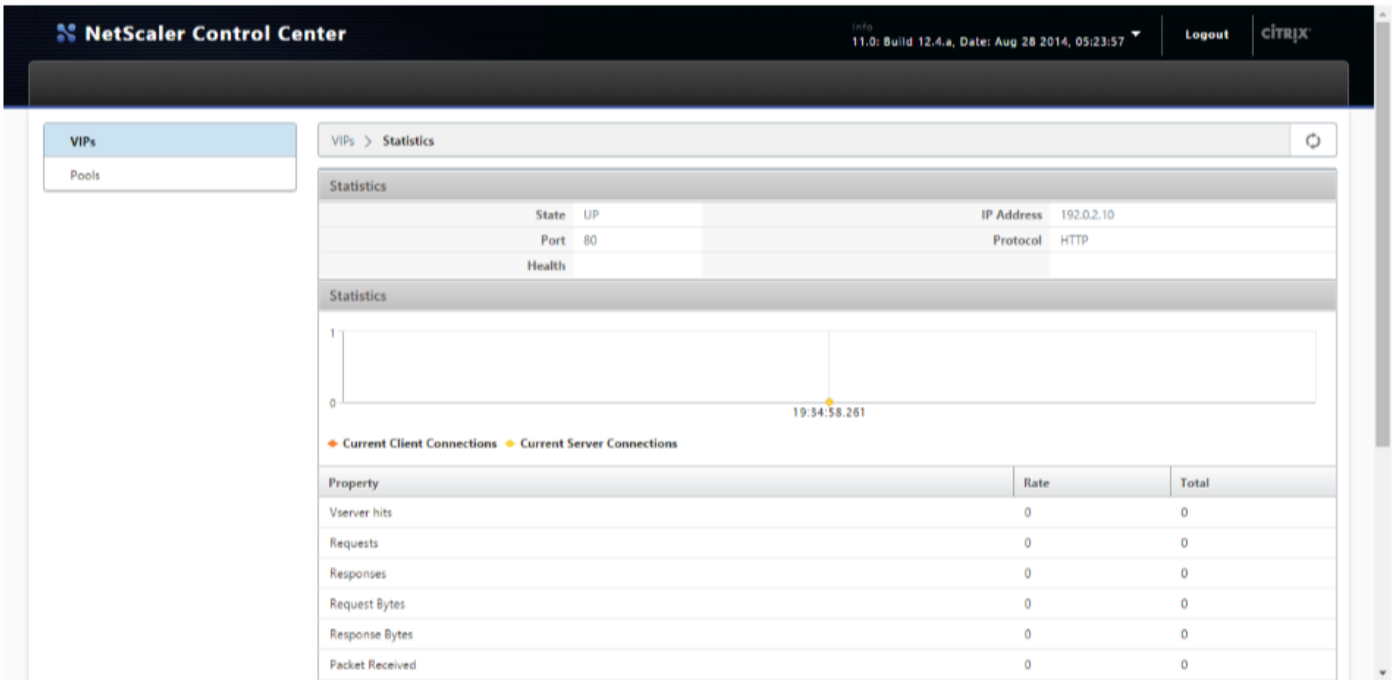
1. In the navigation pane, click VIPs.



2. In the VIPs details pane, select a virtual server whose statistics you want to display.



3. Click Statistics. The following screenshot displays the statistics for virtual server Tenant-A-Pool-Server-1-LBVS-1.



Configuring SSL Offloading in OpenStack

Dec 08, 2015

The LBaaS APIs in the OpenStack Kilo release support the HTTPS protocol with SSL Offloading. A NetScaler appliance configured for SSL acceleration transparently accelerates SSL transactions by offloading SSL processing from the server. A virtual server on the NetScaler appliance intercepts and processes SSL transactions, and sends the decrypted traffic to the server. Upon receiving the response from the server, the appliance completes the secure transaction with the client. From the client's perspective, the transaction seems to be directly with the server.

You can use the OpenStack CLI, or the Neutron LBaaS APIs (OpenStack Horizon support is not available in the Kilo release), to configure SSL offloading by creating a load balancer, listener, pool, and members. Configuring SSL offloading requires an SSL server certificate and key pair for the domain name you want to secure, which you must obtain from a Certificate Authority (CA). You must then upload the certificate-key pair in a Barbican container.

The SSL Offload feature is supported from the Kilo release of OpenStack with OpenStack LBaaS Version 2 (v2) APIs.

For more information about SSL Offloading on OpenStack, see <https://wiki.openstack.org/wiki/Neutron/LBaaS/SSL#Description>.

Tip: For optimal SSL capabilities and performance, Citrix recommends using NetScaler MPX appliances, or NetScaler instances provisioned on NetScaler SDX appliances.

In NetScaler Control Center, you must create a service package that has a dedicated, partition, or shared isolation policy, add devices to the service package, and associate tenants with the service package. For more information about creating service packages, see [Adding Service Packages on NetScaler Control Center](#).

Prerequisites

1. A certificate-key pair obtained from a Certificate Authority.
2. A Barbican service running on OpenStack. For more information, see <https://wiki.openstack.org/wiki/BarbicanDevStack>.
3. An OpenStack controller setup running the Kilo release of the OpenStack software.

How SSL Offloading Works With OpenStack and NetScaler Control Center

SSL Offloading with OpenStack and NetScaler Control Center works as follows:

1. The admin tenant uploads the certificate-key pair, obtained from a CA, to the Barbican service on OpenStack. OpenStack Neutron LBaaS uses Barbican as a keystore to store certificates and keys as secrets.
2. The admin tenant creates a Barbican container with the certificate-key pair as secrets. The tenant user must use the container created by only the admin tenant to create a listener.
3. The tenant user creates a load balancer with a VIP address, a tenant ID, and a subnet ID.
4. The tenant user creates a listener that specifies the load balancer, the Barbican containers' reference URL (obtained from step 2) for the default TLS container ID and the SNI container's IDs. The listener is created with the TERMINATED_HTTPS protocol.
5. The tenant user creates a pool that specifies the listener.
6. The tenant user creates members and specifies the pool associated with them.
7. NetScaler Control Center creates a load balancing virtual server and a content switching virtual server on the NetScaler appliance.
8. The certificate-key pair associated with the listener is bound to the content switching virtual server.

9. The pool is bound to the load balancing virtual server as a service group, and members are bound to the service group as servers.
10. The content switching virtual server intercepts client requests and processes SSL transactions. The decrypted traffic is then forwarded to the load balancing virtual server, which then forwards the traffic to the appropriate servers.

Limitation

Currently, the OpenStack Neutron LBaaS service accesses the containers created only by the admin tenant. Therefore, the OpenStack tenant user can use only the containers created by the admin tenant to create listeners.

Configuration Steps

Configuring load balancing with SSL Offload on OpenStack Neutron LBaaS consists of the following tasks:

- Upload certificate and keys and the Certificate Authority's certificates (optional) in the Barbican service
- Create a Barbican container
- Create a load balancer
- Create a listener that uses the TERMINATED_HTTPS protocol, and specify the certificate container
- Create a pool
- Create members

OpenStack LBaaS V2 supports only the OpenStack command line interface. OpenStack Horizon support is not available in the Kilo release.

To configure the above entities in OpenStack, see the OpenStack documentation at <https://wiki.openstack.org/wiki/Network/LBaaS/docs/how-to-create-tls-loadbalancer>.

Verifying and Monitoring Listeners and Pools Configured with OpenStack LBaaS V2

You can verify and monitor the listeners and pools by using the NetScaler Control Center user interface.

To display the listener and pool entries by using the NetScaler Control Center user interface

1. In the navigation pane, click **OpenStack Tenants**, select a tenant, and click **Details**.
2. On the **Listeners_v2** tab, select a listener, to display that listener's statistics and the load balancing and content switching virtual servers associated with that listener.
3. On the **Pool_v2** tab, select a pool, to display the service groups associated with that pool.

Using NetScaler Appliances in High Availability in NetScaler Control Center

Sep 30, 2015

A high availability (HA) deployment can provide uninterrupted operation in any transaction. It ensures non-interrupted traffic during device provisioning and failover.

You can use NetScaler appliances in high availability in the following ways:

1. Auto-provisioning NetScaler VPX instances in an HA Pair through NetScaler Control Center.
2. Pre-provisioning NetScaler VPX instances in an HA Pair through NetScaler Control Center.
3. Using an HA pair created out of band through NetScaler Control Center.

Auto-provisioning NetScaler VPX instances in an HA Pair through NetScaler Control Center

NetScaler Control Center can deploy NetScaler VPX instances in high availability on demand.

To setup NetScaler VPX instances in high availability, you must enable high availability by selecting the Provision pair of NetScaler appliances for high availability option while creating a service package as shown in the following figure.

The screenshot shows the configuration page for a service package named "Gold". It is divided into three main sections: "Basic Settings", "Auto Provision Settings", and "High Availability".

- Basic Settings:** Name: Gold; Isolation Policy: dedicated; Device Type: NetScaler VPX; Platform Type: NetScalerSDX.
- Auto Provision Settings:** Resources section with input fields for CPU Cores (1), Total Memory (MB) (2048), SSL Chips (1), and Throughput (Mbps) (2048). NetScaler Version* is set to 10.5.
- High Availability:** A checkbox labeled "Provision pair of NetScaler appliances for high availability" is present, with a descriptive text above it: "A high availability (HA) deployment can provide uninterrupted operation in any transaction. It ensures a non-interrupted traffic during device provisioning and fail-over."

For more information on creating service packages, see [Adding Service Packages with Auto-Provisioning NetScaler Instances on NetScaler SDX](#) and [Adding Service Packages with Auto-Provisioning NetScaler Instances on OpenStack Compute](#).

Pre-provisioning NetScaler VPX instances in an HA Pair through NetScaler Control Center

To provision NetScaler VPX instances and configure high availability, do the following:

1. Enable high availability while creating devices in NetScaler Control Center
2. Add these devices to a service package.

To enable high availability while creating devices, see [Provisioning NetScaler VPX Appliances on OpenStack Compute](#).

To add devices to a service package, see [Adding Service Packages](#).

Using an HA pair created out of band through NetScaler Control Center

To add an HA pair created out of band through NetScaler Control Center, do the following:

1. Configure two NetScaler appliances in an HA pair.
2. Add a management IP address to the HA pair
3. Add devices to the NetScaler Control Center
4. Add these devices to a service package.

To configure two NetScaler appliances in an HA pair, see [High Availability](#).

To add a management IP address to the HA pair

1. Log on to the primary node of the HA pair.
2. Run the following command to add the management IP address:

```
add ns ip <IPAddress>@ <netmask> [-mgmtAccess ( ENABLED | DISABLED )] [-type <type>]
```

Example

```
add ns ip 10.102.29.203 255.255.255.0 -mgmtAccess ENABLED -type SNIP
```

To add devices to the NetScaler Control Center, see [Adding NetScaler Appliances in NetScaler Control Center](#).

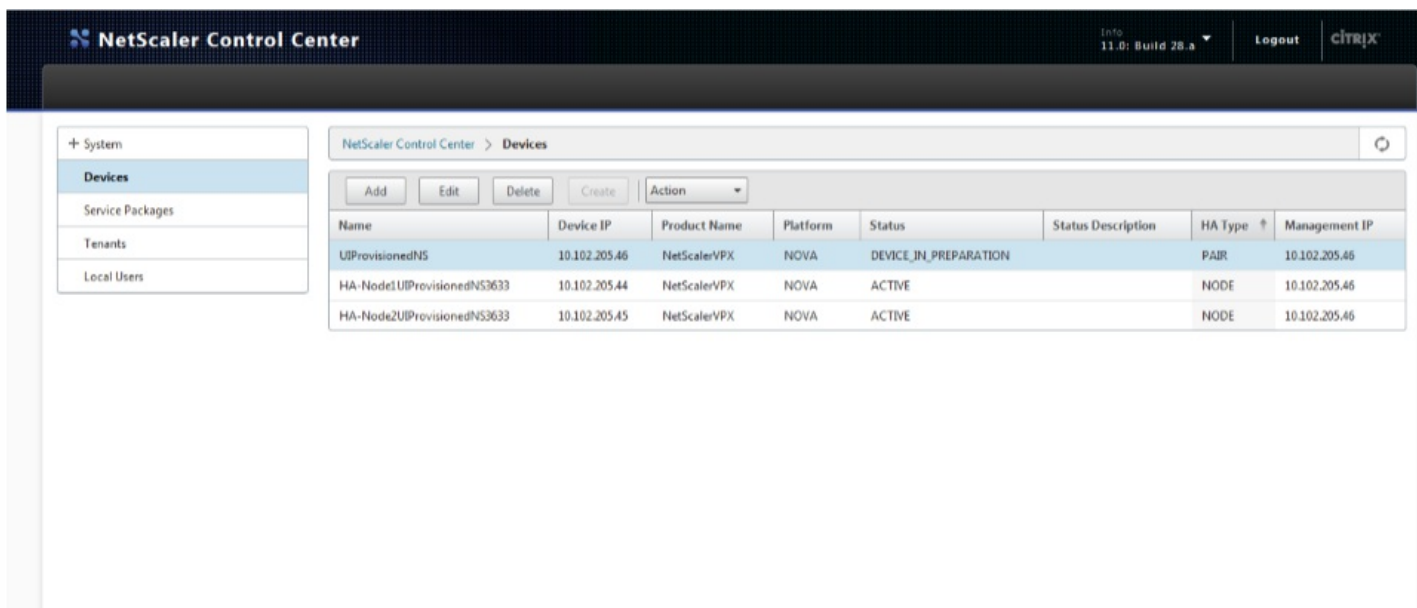
To add devices to the service packages, see [Adding Service Packages](#).

How NetScaler Control Center Provisions an HA Pair

During the first load balancing configuration of a tenant, NetScaler Control Center deploys a pair of NetScaler VPX instances in the following sequence:

1. Two NetScaler VPX instances are deployed on two different hosts (NetScaler SDX or OpenStack Compute) in parallel.
2. The above pair of NetScaler VPX instances are then configured in an HA pair.

You can now see three entries under Devices, the first entry denotes the HA pair and the other two entries denote the two individual nodes.



How NetScaler Control Center Plugs an HA Pair created on OpenStack Compute into a New Network

Consider that two NetScaler VPX instances, Node-1 and Node-2, are in a high availability configuration, where Node-1 is the primary node and Node-2 is the secondary node.

NetScaler Control Center plugs an HA Pair into a new LBaaS VIP and Pool network during a load balancing configuration in the following sequence:

1. The status of the HA pair is marked as `DEVICE_IN_PREPARATION`.
2. HA synchronization and propagation is disabled on both nodes.
3. Node-2, the current secondary node, is prepared for the new network.
4. A forced failover is executed to make Node-1 as the secondary node. Node-2 now becomes the primary node and handles traffic.
5. Load balancing configuration is deployed.
6. Node-1, the current secondary node, is prepared for the new network.
7. HA synchronization and propagation is enabled on both nodes.
8. The status of the HA pair is now marked as `ACTIVE`.

Note: No new load balancing configuration is accepted till the HA pair is marked as `ACTIVE`.