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Brocade vADC Device Driver for OpenStack Neutron LBaaS: Deployment Guide

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Contents

Preface

Read this preface for an overview of the information provided in this guide. This preface includes the following sections:

About This Guide

Brocade vADC Device Driver for OpenStack Neutron LBaaS: Deployment Guide describes how to deploy the Brocade vADC device driver for OpenStack Neutron LBaaS. It applies specifically to the OpenStack Kilo release and the Neutron LBaaS API version 2.

Document Conventions

This guide uses the following standard set of typographical conventions

Convention	Meaning
italics	Within text, new terms and emphasized words appear in *italic* typeface.
boldface	Within text, CLI commands, CLI parameters, and REST API properties appear in **bold** typeface.

Courier	Code examples appear in Courier font:
	`amnesiac > enable`
	`amnesiac # configure terminal`

< >	Values that you specify appear in angle brackets: **interface <ip-address>**
[ ]	Optional keywords or variables appear in brackets: **ntp peer <ip-address> [version <number>]**
{ }	Elements that are part of a required choice appear in braces: **{<interface-name> | ascii <string> | hex <string>}**
|	The pipe symbol represents a choice to select one keyword or variable to the left or right of the symbol. The keyword or variable can be either optional or required: **{delete <filename> | upload <filename>}**

Documentation and Release Notes

To obtain the most current version of all Brocade documentation, click through to the desired product page on the Brocade Web site at http://www.brocade.com/en/products-services.html.

If you need more information, see the Brocade Knowledge Base for any known issues, how-to documents, system requirements, and common error messages. You can browse titles or search for keywords and strings. To access the Brocade Knowledge Base, login to the MyBrocade Web site at https://login.brocade.com.

Each software release includes release notes. The release notes identify new features in the software as well as known and fixed problems. To obtain the most current version of the release notes, login to the MyBrocade Web site at https://login.brocade.com.

Examine the release notes before you begin the installation and configuration process.

Traffic Manager and Services Director Documentation

The Brocade Virtual Traffic Manager (Traffic Manager) and Brocade Services Director (Services Director) products includes comprehensive user's guides that describes their respective feature sets in depth.

There are also getting started guides for each variant of each product line, and a series of reference guides to cover additional functionality such as the TrafficScript rules language and product APIs.

You can download documentation for all supported editions from the relevant product pages on the Brocade Web site.

For the Traffic Manager, use:

http://www.brocade.com/en/products-services/application-delivery-controllers/virtual-traffic-manager.html.

For the Services Director, use:

http://www.brocade.com/en/products-services/application-delivery-controllers/services-director.html

Further Information Online

Visit the Brocade Community Web site for further documentation, examples, white papers, and other resources:

http://community.brocade.com

Getting Technical Help or Reporting Errors

Brocade is committed to ensuring that your investment in our products remains cost-effective. If you need assistance or find errors in the documentation, contact Brocade using one of the following options.

Web Access

The Brocade Web site contains the latest version of this guide and all other user guides for the Traffic Manager and Services Director. For more information, see http://www.brocade.com/en/products-services/application-delivery-controllers.htm

To report errors, log in to the MyBrocade Web site at https://login.brocade.com and click **Support Cases** to open a new support case. Make sure you specify the document title in the case description.

E-mail and Telephone Access

Go to http://www.brocade.com/en/support.html for the latest e-mail and telephone contact information.

CHAPTER 1 Prerequisites

Read this chapter for a description of the required prerequisites for this deployment guide.

You must first satisfy the following requirements:

- A configured OpenStack environment, consisting of at least the Keystone, Neutron, Nova and Glance services. For HTTPS decryption, the Barbican service is also required.
- A working understanding of the above OpenStack services, or the related documentation (available from http://docs.openstack.org) to work from.
- Suitable licenses for the Brocade products you are going to use. These could be:
  - None, if you are using the Developer Edition of the Traffic Manager in the "central cluster" deployment model for testing purposes.
  - One or more perpetual Traffic Manager licenses if you are using the "central cluster" deployment model in production.
  - A Brocade Services Director license, either of the Cloud Services Provider type, or the Enterprise type with an associated bandwidth pack.
- The necessary Brocade software packages, downloadable from the Brocade Web site:
  - A Traffic Manager Virtual Appliance image for the hypervisor you are using for OpenStack Nova. Must be version 10.1 or later.
  - Optionally, the Services Director Virtual Appliance (2.1 or higher) for VMWare, or the Services Director software package if using a different hypervisor.
- A working understanding of the above Brocade products, or the related documentation (available from the Brocade Web site) to work from.

The Brocade vADC driver supports various deployment options that are described in the first two sections of this guide. The steps for deploying the driver are included in the third section. Make sure you have planned your deployment, selected the options you will use and configured the necessary prerequisite services before creating your Brocade LBaaS configuration file (see Chapter 4, "Installing and Configuring the Device Driver") to ensure you have all the required components and settings in plac

CHAPTER 2

Deployment Model

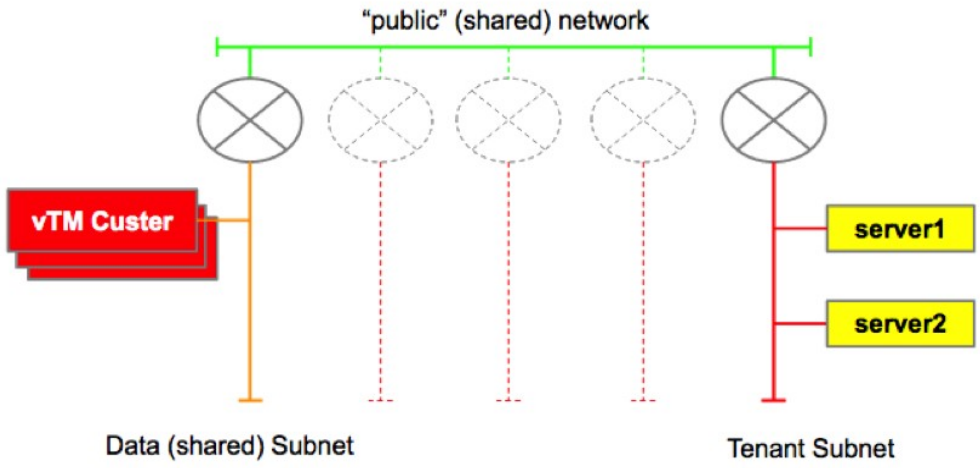
Using a Central Cluster of Traffic Managers

This configuration does not require the Services Director and is most suited to organizations that wish to use perpetual Traffic Manager license keys.

A central cluster of Traffic Managers (up to 64) is shared between all OpenStack tenants. A shared network on which all LBaaS "loadbalancer" IP addresses are raised is required, and there is no resource isolation between tenants' services.

Although the load-balanced services use an IP address on a shared network, the back-end servers themselves remain within the tenants' own subnets.

Figure 2-1. A central cluster of Traffic Managers (vTM Cluster) shared between all OpenStack tenants.



Note: All Traffic Manager configuration objects that are created on the cluster by the LBaaS driver will have the Neutron name of the object and the Keystone ID of the tenant included in the object's "Note" field.

"Loadbalancer" Objects

LBaaS "loadbalancer" objects are implemented as Traffic Manager Traffic IP Groups.

Each group contains the "Loadbalancer" IP address, one primary Traffic Manager on which to host the IP during normal operation, and a configurable number of backup Traffic Managers to use in the event of a failure of the primary. The driver will automatically distribute Traffic IP Groups across the cluster to providing scalability and approximately even load distribution (assuming all "loadbalancers" process

roughly the same amount of traffic). To facilitate Traffic IP failover, each Traffic IP address is added to the "allowed_address_pair" field of the Neutron port associated with each Traffic Manager.

"Listener" Objects

LBaaS "listener" objects are implemented as Virtual Servers in the Traffic Manager.

HTTP, HTTPS pass-through, HTTPS off-load, generic TCP (client-first) and UDP protocols are supported.

Certificates for HTTPS off-loading must be managed through the OpenStack Barbican tool.

The LBaaS "listener" "connection_limit" setting is implemented using a Traffic Manager Rate Class and a corresponding TrafficScript request rule to apply it. These are tied to the Virtual Server and will be deleted automatically along with it when the "listener" object is deleted.

"Pool" Objects

LBaaS "pool" objects are implemented as Pools in the Traffic Manager.

The LBaaS "pool" "session_persistence" setting is implemented using a Traffic Manager Session Persistence Class applied to the Pool. This is tied to the Pool and will be deleted automatically along with it when the "pool" object is deleted.

"Member" Objects

LBaaS "member" objects are implemented as nodes in the corresponding Traffic Manager Pool.

"Healthmonitor" Objects

LBaaS "healthmonitor" objects are implemented as Monitors in the Traffic Manager.

While there is a 1:1 relationship between "pools" and "healthmonitors", the Traffic Manager Monitor object is not automatically deleted when the "pool" is deleted, allowing it to be reused by another "pool".

CHAPTER 3 Installing and Configuring the Device Driver

This chapter contains instructions for installing and configuring the Brocade vADC Device Driver for OpenStack Neutron LBaaS.

The following instructions assume you have a fully configured OpenStack Kilo (or later) environment, including all of the required Neutron networks.

1. Download the appropriate Traffic Manager Virtual Appliance image (must be Traffic Manager release 10.1 or later) for your environment and copy the image file to the Glance server.

2. As an OpenStack admin user, type the following command to register the image with Glance:

   ```
   # glance image-create --name Brocade-vTM --is-public True --disk-format <FORMAT> --container-format bare --file <IMAGE_FILE>
   ```

Note: You can omit the `--is-public` argument if using the shared central cluster deployment model and you don't want end-users to have access to the Traffic Manager image.

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3. If a built-in machine flavor does not have the required settings, type the following command to create one:

   ```
   # nova flavor-create <NAME> <ID> <RAM> <DISK> <VCPUS>
   ```

   A minimum of 2GB RAM and 16GB storage should be allocated.

4. If using a shared central cluster of Traffic Managers:

   – Create and configure the cluster (for more information, see the *Brocade Virtual Traffic Manager: User's Guide* or *Brocade Virtual Traffic Manager: Virtual Appliance Installation and Getting Started Guide*) ensuring each cluster member has a vNIC on the shared data network, and on the management network if applicable.

   – Ensure that the REST API is enabled on all cluster members.

   Alternatively, if you are using one of the deployment options that requires the Services Director:

   – Create and configure the necessary Services Director instances (see the *Brocade Services Director User's Guide*).

   – Create the required Version, License and Feature Pack resources to be used by the Traffic Manager instances that are created. Note that the instances are unmanaged, so the Version entry can be a dummy.

5. Type the following command to clone the device driver GitHub repository:

```
# git clone https://github.com/brocade-vadc/neutron-lbaas-device-driver
```

6. Type the following commands to install the driver:

```
# cd neutron-lbaas-device-driver
# sudo python setup.py install
```

7. Type the following command to configure the driver:

```
# brocade_lbass_config_generator > \ /etc/neutron/services/loadbalancer/brocade.conf
```

   Answer the required questions concerning the deployment options you wish to use, service credentials, and identifiers of key components such as network IDs, Services Director hostnames, and so on.

8. Use the following steps to configure Neutron to use the driver:
   - In `/etc/neutron/neutron.conf`, under the `[DEFAULT]` section, ensure the "service_providers=" line contains "`neutron_lbaas.services.loadbalancer.plugin.LoadBalancerPluginv2`".
   - In `/etc/neutron/neutron_lbaas.conf`, under the `[service_providers]` section, type the following:

```
service_provider = \
LOADBALANCERV2:brocade:neutron_lbaas.drivers.brocade.driver_v2.BrocadeLoadBalancerDriver:
d efault
```

9. Stop the Neutron server (system and installation-specific).

10. Start the Neutron server with the following additional CLI parameter:

```
--config-file /etc/neutron/services/loadbalancer/brocade.conf
```

At this point, you should be able to create, modify and delete LBaaS services through the Neutron command line tool, the Neutron REST API or the Horizon GUI. For more information, see http://docs.openstack.org.