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Brocade vADC Device Driver for OpenStack Mitaka Neutron LBaaS: Deployment Guide



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Preface

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

- [“About This Guide,”](#) next
- [“Documentation and Release Notes”](#) on page 2
- [“Getting Technical Help or Reporting Errors”](#) on page 2

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 Mitaka release and the Neutron LBaaS API version 2.

Document Conventions

This guide uses the following standard set of typographical conventions

Convention	Meaning
<i>italics</i>	Within text, new terms and emphasized words appear in <i>italic</i> typeface.
boldface	Within text, CLI commands, CLI parameters, and REST API properties appear in bold typeface.
Courier	Code examples appear in Courier font: <pre>amnesiac > enable amnesiac # configure terminal</pre>
< >	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/content/brocade/en/products-services/application-delivery-controllers/virtual-traffic-manager.html>.

For the Services Director, use:

<http://www.brocade.com/content/brocade/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.html>.

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 Mitaka 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 of either 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, or a Virtual Traffic Manager software installation package. Traffic Manager Virtual Appliance 11.1 or higher is required.
 - Optionally, Brocade Services Director software installation package or Virtual Appliance 2.6 or higher for your chosen OS/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 models that are described in the second chapter of this guide. The steps for deploying the driver are included in the third chapter. Make sure you have planned your deployment 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 place.

CHAPTER 2 Deployment Models

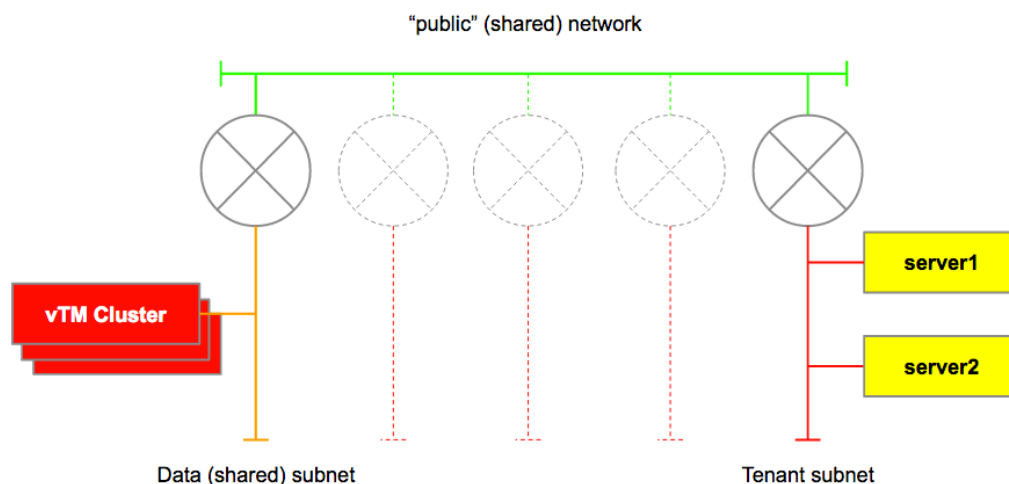
2.1 Using a Central Cluster of Traffic Managers

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 the Virtual Server max_concurrent_connections setting, which limits the number of concurrent connections to the Virtual Server. Requests beyond this limit will be queued, although they may time out before they are serviced.

“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”.

“L7Policy” and “L7Rule” Objects

LBaaS “l7policy” and “l7rule” objects are implemented as TrafficScript rules attached to the Traffic Manager Virtual Server that corresponds to the relevant LBaaS Listener. Each policy and the rules that will belong to it are implemented in a single TrafficScript rule. Note, the TrafficScript rule will not be created until the policy contains at least one rule.

2.2 Private Traffic Manager per-tenant

This configuration does require Brocade Services Director and is most suitable for organizations that wish to provide their users with network-isolated LBaaS capability whilst keeping hardware resource use to a minimum.

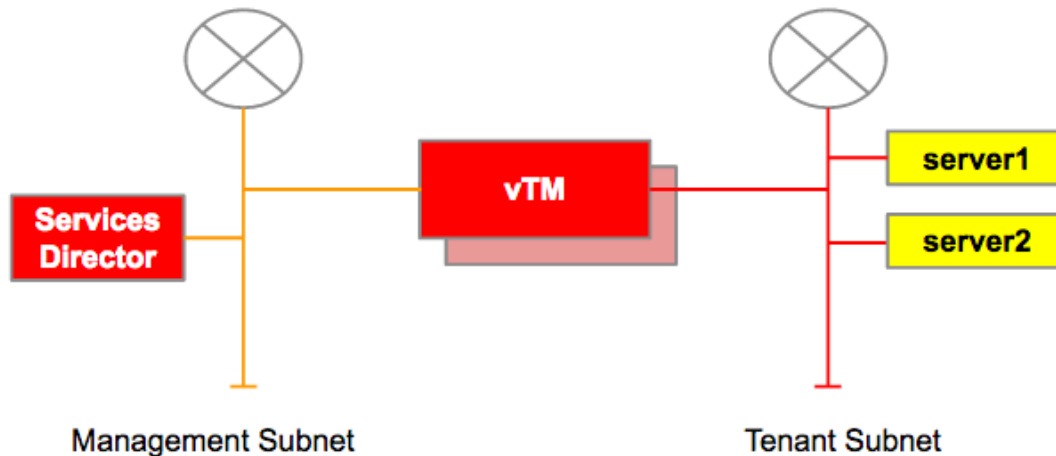
Because the driver deploys Traffic Manager virtual machines on the tenants’ behalfs, either the OpenStack “admin” user or a specially created central user with permissions to deploy Nova VMs must be added to each tenant.

A Traffic Manager instance or HA-pair (this is decided globally by the administrator) is automatically created as a Nova virtual machine for each tenant the first time they create an LBaaS “loadbalancer” object. All subsequent LBaaS services the tenant creates are hosted on the same instance/HA-pair.

The virtual machine(s) resides within the tenant's environment and is connected directly to their own subnet. This deployment provides network isolation from other tenants, but does not provide resource isolation between LBaaS services.

The vTM instance(s) are locked to prevent accidental deletion and should not be touched by the tenants. To delete the instance(s), simply delete all LBaaS "loadbalancer" objects.

The following diagram shows the Traffic Manager instance(s) connected to a management network; this is one available option for management traffic, please see section 3.1 for more details.



The relationship between LBaaS objects and vTM configuration objects is the same as for the "Central Cluster of Traffic Managers" - see section 2.1.

2.3 Private Traffic Manager per-loadbalancer

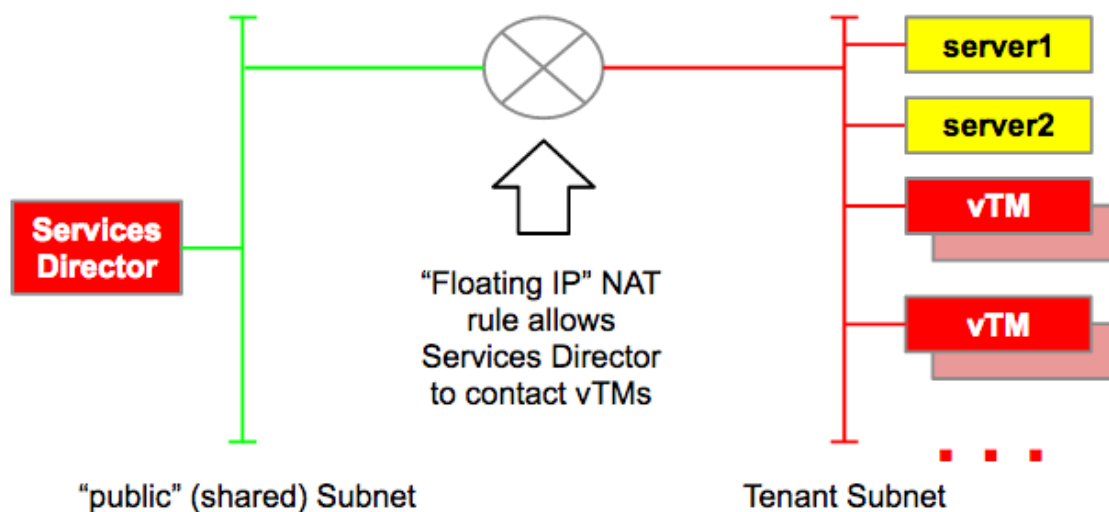
This configuration *does* require Brocade Services Director and is most suitable for organizations where resource isolation and performance are a higher priority than hardware resource usage.

Because the driver deploys Traffic Manager virtual machines on the tenants' behalfs, either the OpenStack "admin" user or a specially created central user with permissions to deploy Nova VMs must be added to each tenant.

A Traffic Manager instance or HA-pair (this is decided globally by the administrator) is automatically created for each LBaaS "loadbalancer" object the tenant creates. This deployment provides full resource isolation between services but also uses up the most resources (CPU, memory, storage).

The Traffic Manager instance(s) are locked to prevent accidental deletion and should not be touched by the tenants. To delete the instance(s), simply delete the associated LBaaS "loadbalancer" object.

The following diagram shows the Traffic Manager instance(s) communicating with the Services Director via a Neutron floating IP; this is one available option for management traffic, please see section 3.1 for more details.)



“Loadbalancer” Objects

LBaaS “loadbalancer” objects are implemented as Traffic Manager instances or HA-pairs. If single instances are used, no Traffic IP Groups are required and the instance will use the IP address of the Neutron port associated with the “loadbalancer” object for the data interface.

The relationship between all other LBaaS objects and Traffic Manager configuration objects is the same as for the “Central Cluster of Traffic Managers” - see section 2.1.

2.4 Notes about private instance HA deployments

The secondary instance in each vTM HA-pair that is created by the LBaaS driver is instantiated with the “different_host” Nova Scheduler filter to try and avoid it being deployed on the same compute node as the primary instance. For this to work, the “DifferentHostFilter” must be in the list of enabled filters in the `/etc/nova/nova.conf` file.

Additionally, separate Availability Zones for primary and secondary instances can be defined at a global level by the administrator. These availability zones can be overridden on a per-tenant basis using the customization mechanism described in chapter 5 of this guide.

In the event that the primary vTM instance fails, the secondary instance will take over processing traffic destined for the loadbalancer. However, *configuration changes made to the cluster whilst the primary instance is in a failed state may be lost when it recovers.*

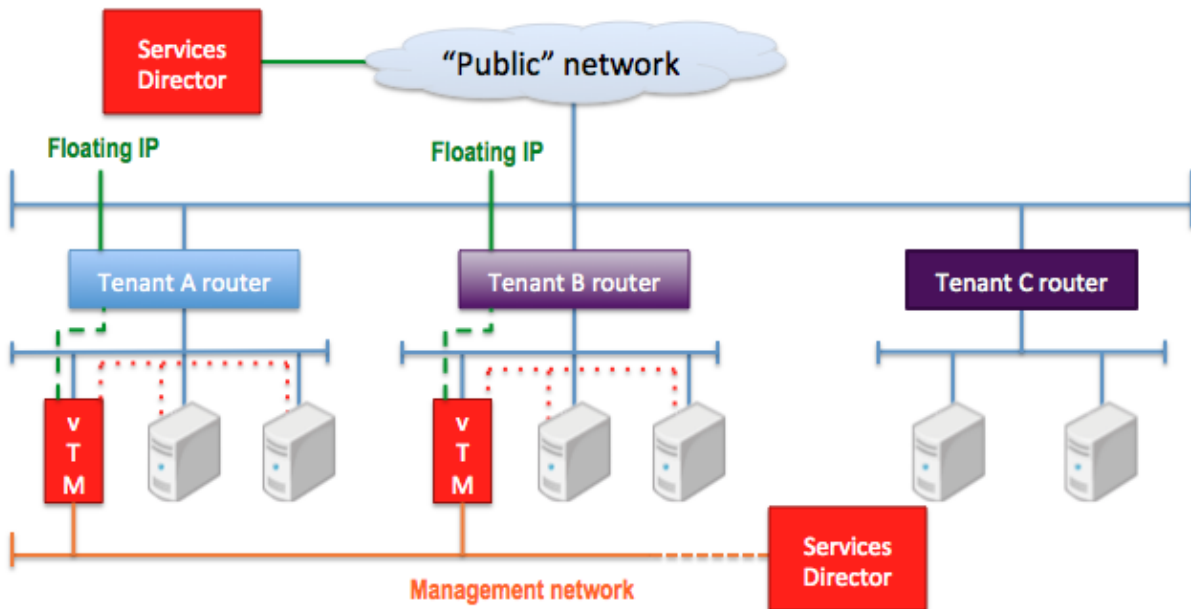
Other Deployment Options

As well as the three deployment models described in section 1, the Brocade vADC device driver supports various options for the following:

3.1 Management Traffic

For the two deployment options that require Brocade Services Director, management communication between the SD and the vTM instances can be configured in one of two ways:

1. Over a dedicated management network (the vTM will have two vNICs – one for management, one for data) - orange in the diagram below
2. Via a Neutron floating IP mapped to the vTM's data vNIC - green in diagram below



To use a management network, the OpenStack administrator must create a suitable shared network and subnet before running the `brocade_lbaas_config_generator` tool (see chapter 4), as the network ID will be required.

When a management network is used, Neutron security group rules are automatically created and applied to ensure that management traffic can only come from the Services Directors.

3.2 GUI Access

For the two deployment options that create Traffic Manager instances owned by the tenant, the administrator can optionally (as a global setting) provide the tenant with read-only access to the GUI for monitoring.

If allowed, the GUI can be accessed in a web browser on TCP port 9090 of the IP address assigned to the data interface, from within the tenant's subnet. IP forwarding may be required

The username for read-only access is "monitor" and the initial password is "password".

3.3 Availability Zones

The two deployment options that create Traffic Manager instances owned by the tenant can be configured to deploy HA-pairs of instances. When using these models, the administrator can optionally define separate Availability Zones for the primary and secondary instances of the pairs, ensuring they are on different compute nodes and giving them a higher resilience (infrastructure-dependent) to hardware failures in the datacenter.

3.4 DifferentHosts Hint

Nova supports "hints" to help the scheduler decide on which compute node to deploy an instance. When operating in an HA mode, per-tenant and per-loadbalancer vTMs can optionally provide the DifferentHosts hint to Nova to prevent both members of the cluster being deployed on the same compute node. Note, this setting should not be used in environments with one compute node (e.g. DevStack).

3.5 Custom Deployment Settings For Individual Tenants

Some of the configuration options that the administrator specifies globally for automatically provisioned can be overridden on a per-tenant (also known as "per-project") basis using a custom lookup table in the Neutron database. A tool is provided with the LBaaS driver to configure and manage this table, and its use is described in chapter 5 of this document.

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 Mitaka environment, including all of the required Neutron networks.

1. If you haven't already done so:

If you are using the “central cluster” deployment model:

- Create and configure the vTM 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 a management network if applicable. You can use either the applicable vTM Virtual Appliance for your hypervisor platform, or a vTM software installation.
- Ensure that the REST API is enabled on all cluster members

If you are using one of the private Traffic Manager deployment models:

- Create and configure the necessary Services Director instances (see Services Director User Guide). NB. Services Director 2.2 or higher must be used.
- Create the `feature_pack` resource on the Services Director to be used by the Traffic Manager instances that are dynamically created.
- Download the appropriate Brocade vTM Virtual Appliance image (must be vTM 10.3 or above) for your environment and copy the image file to the Glance server.
- As an OpenStack admin user, register the image with Glance:

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

- If a built-in machine flavor does not have the required settings, create one:

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

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

On all nodes on which Neutron server is running (typically all “controller” nodes):

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

```
$ git clone -b stable/mitaka https://github.com/brocade-vadc/neutron-lbaas-device-driver
```

3. Type the following commands to install the driver:

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

When you run `setup.py`, the script will attempt to use the Linux `locate` command to find the installation path of the Brocade plugin driver that ships with Neutron, as this need to be replaced. If the script fails to determine the location, or if the `locate` command is unavailable, you will be prompted to specify this path manually. The path will take the form

```
<INSTALL_PATH>/neutron_lbaas/drivers/brocade/
```

For example:

```
/usr/lib/python2.7/site-packages/neutron_lbaas/drivers/brocade/
```

4. Type the following command to create the driver configuration file:

```
$ sudo brocade_lbaas_config_generator /etc/neutron/services/loadbalancer/brocade.conf
```

Answer the questions concerning the deployment settings you wish to use (see appendix I for more information).

NB. The configuration file should be the same across all Neutron server nodes, so once the configuration file has been created it can simply be copied between nodes without having to re-run the generator script.

5. Use the following steps to configure Neutron to use the driver:

- In `/etc/neutron/neutron.conf`, under the `[DEFAULT]` section, ensure the “`service_plugins =`” 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:default
```

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

7. 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>.

Customizing Per-tenant Deployment Options

When using one of the deployment models with which private Traffic Manager instances are created on-demand, certain deployment variables, such as the Nova flavor and the bandwidth allocation for the instances, are pulled from the global configuration file. There may be times, however, when the administrator wishes to be able to assign custom values for these settings to specific tenants, for example to meet a particular tenant's need for high bandwidth, or to offer differentiation between service levels.

To accommodate this, the Brocade vADC LBaaS driver now provides a tool to manage a custom table in the Neutron database that allows particular configuration settings to be overridden on a pre-tenant basis. The settings that can be overridden are:

```
[lbaas_settings]
image_id
flavor_id
connection_limit_mode
deployment_model
primary_az
secondary_az
specify_az

[vtm_settings]
gui_access
nameservers
ssh_port

[services_director_settings]
bandwidth
feature_pack
```

5.1 Enabling Per-tenant Customization

To tell the driver to check for per-tenant customizations, the following settings are required in the global configuration file (`/etc/neutron/services/loadbalancer/brocade.conf`):

```
[lbaas_settings]
...
allow_tenant_customizations=True
tenant_customizations_db=<DB_CONNECTION>
```

where `<DB_CONNECTION>` is a connection string in the format :

```
<db_type>://<username>:<password>@<db_host>/<db_name>
```

eg. `mysql://root:P@55w0rd1@controller/neutron`

The supplied `brocade_lbaas_tenant_customization` command line tool can then be used to create and manipulate the customizations database table. For each invocation of the tool, the database connection string, as specified by the `tenant_customizations_db` global setting, must be provided.

This can be done in one of three ways:

1. Pass the `--db=<DB_CONNECTION>` parameter to the command
2. Set the environment variable `BROCADE_LBAAS_DB_PATH=<DB_CONNECTION>`
3. Place the connection string in a file with:

```
# echo '<DB_CONNECTION>' > /etc/brocade_lbaas_tenant_customizations
```

5.2 Creating the customizations table

The `brocade_lbaas_tenant_customization` tool must now be used to create the customizations table in the database:

```
# sudo brocade_lbaas_tenant_customization initialize --db=<DB_CONNECTION>
```

After the command is run, the `brocade_lbaas_tenant_customizations` table should have been created in the specified database. The command will also attempt to write the connection string to `/etc/brocade_lbaas_tenant_customizations` to avoid having to specify the `--db=` parameter every time.

5.3 Viewing and editing tenant customizations

To view all customized settings for a particular tenant:

```
# brocade_lbaas_tenant_customization list --tenant-id=<TENANT_ID>
```

where:

`<TENANT_ID>` is the Keystone ID of the tenant to customize

To view a particular customized setting for a tenant:

```
# brocade_lbaas_tenant_customization get --tenant-id=<TENANT_ID> \
--section=<CONFIG_SECTION> --parameter=<CONFIG_PARAM>
```

where:

`<TENANT_ID>` is the Keystone ID of the tenant to customize

`<CONFIG_SECTION>` is the section in which the setting is present. It must be one of "lbaas_settings", "vtm_settings" or "services_director_settings".

`<CONFIG_PARAM>` is the name of the parameter to customize.

To create or modify a customized setting for a tenant:

```
# brocade_lbaas_tenant_customization set --tenant-id=<TENANT_ID> \
--section=<CONFIG_SECTION> --parameter=<CONFIG_PARAM> --value=<VALUE> \
[--force=True]
```

where:

`<TENANT_ID>` is the Keystone ID of the tenant to customize

`<CONFIG_SECTION>` is the section in which the setting is present. It must be one of "lbaas_settings", "vtm_settings" or "services_director_settings".
`<CONFIG_PARAM>` is the name of the parameter to customize.
`<VALUE>` is the custom value to set for this parameter for this tenant

The optional `--force=True` argument will prevent the command from prompting for confirmation if a customized value for this tenant and parameter already exists. This may be helpful when running the command from a script.

To delete a customized setting for a tenant:

```
# brocade_lbaas_tenant_customization delete --tenant-id=<TENANT_ID> \
--section=<CONFIG_SECTION> --parameter=<CONFIG_PARAM>
```

where:

`<TENANT_ID>` is the Keystone ID of the tenant to customize
`<CONFIG_SECTION>` is the section in which the setting is present. It must be one of "lbaas_settings", "vtm_settings" or "services_director_settings".
`<CONFIG_PARAM>` is the name of the parameter to customize.

To view a list of customizable fields:

```
# brocade_lbaas_tenant_customization fields
```

Full usage for the `brocade_lbaas_tenant_customization` tool can be found by running the command with no arguments.

Driver Configuration Information

Table 1

Question	Guidelines for answer
What deployment model are you using?	<p>Select “1” if you are using a central cluster of Traffic Managers (see section 2.1), then proceed to Table 2.</p> <p>Select “2” if you wish Traffic Manager instances to be created by tenants on-demand, then proceed to Table 3.</p>

Table 2

Question	Guidelines for answer
Please provide a comma-separated list of all vTM management IPs in your cluster	These IP addresses are called from the driver to make configuration changes that represent LBaaS objects. You do not have to specify every cluster member in this list, but only those specified will have management traffic sent to them which could influence high availability.
What is the username for the vTM cluster admin user?	This is the username that will be included in all API calls to the Traffic Manager cluster. Default: “admin”.
What is the password for the vTM cluster admin user?	This is the password that will be included in all API calls to the Traffic Manager cluster.
Please provide a comma-separated list of Neutron port IDs that represent the interfaces for each vTM on which VIPs will listen:	In a “central cluster” deployment, all LBaaS “loadbalancer” objects will raise their VIPs on the same shared network. This setting is a list of the Neutron port IDs for the interface on this network of <i>every</i> cluster member. This setting is used to set the “allowed_address_pairs” setting of each port to facilitate high-availability.
How many passive Traffic IP Group members should there be?	A central cluster can have up to 64 members, but, for efficiency, VIPs will be spread across the cluster. A VIP will only be active on one cluster member at a time, but can have the number of passive members defined with this setting. A value of one represents active-passive, whilst a value of two represents active-passive-passive, etc.
Should HTTPS off-load be supported?	<p>Select “1” if you have the Barbican service installed and configured, and wish to allow HTTPS off-load on the Traffic Managers.</p> <p>Otherwise, select “2”.</p>
Which TCP port does the vTM REST API listen on?	Port that the driver will use to communicate with the Traffic Manager cluster. Please ensure that this port is not blocked by any firewalls between the Neutron server and the Traffic Manager cluster. Default: 9070
What is the username for the OpenStack admin user?	Username for an OpenStack user that has permission to alter Neutron settings on the central cluster network. Default: “admin”.
What is the password for the OpenStack admin user?	Corresponding password for above.
Which Keystone version should be used?	<p>Select “1” if you are using Keystone v2.0.</p> <p>Select “2” if you are using Keystone v3.</p>

Table 3

Question	Guidelines for answer
Which deployment model do you wish to use?	<p>Select “1” if you wish each tenant to have a Traffic Manager instance/pair on which all their LBaaS “loadbalancer” objects are hosted (see section 2.2).</p> <p>Select “2” if you wish each LBaaS “loadbalancer” object to be hosted on its own Traffic Manager instance/pair.</p>
How should vTMs be deployed?	<p>Select “1” if you wish Traffic Manager instances to be created singly (ie. No HA).</p> <p>Select “2” if you wish Traffic Managers to be deployed as HA-pairs.</p>
Do you wish to use the Nova scheduler 'different_host' hint to ensure primary and secondary instances are created on different compute hosts?	<p>Select “1” if you wish Nova to schedule primary and secondary Traffic Manager instances to different compute hosts. This is preferred for multi-compute-node environments where separate Availability Zones are not being utilized.</p> <p>Select “2” if you only have one compute node (e.g. in a test environment) or if you are going to specify different AZs for primary and secondary Traffic Manager instances.</p>
Do you wish to specify Availability Zones for primary and secondary vTM instances?	<p>Select “1” if you wish to tell the driver in which Availability Zones to deploy primary and secondary instances. If you select this option you will then be asked to specify a primary AZ and a secondary AZ.</p> <p>Select “2” if you are happy for the Nova scheduler to decide where the instances are created.</p>
What is the Service Endpoint Address of your Services Director cluster?	Specify the Service Endpoint Address (the high-availability floating IP) of your Services Director cluster, as chosen when you created the cluster.
Please provide a comma-separated list of source IP addresses from which vTM instances will receive configuration calls:	This list should contain the possible source addresses of REST calls made from the Services Directors to the vTM instances. These will typically be the real IP addresses of the Services Directors’ network interfaces, but could be different if SNAT occurs between the Services Directors and the vTMs.
What is the Glance ID of the vTM image to use?	The Glance ID that will be used when creating Traffic Manager instances.
What is the Nova ID of the flavor to use for vTMs?	The Nova ID that will be used as the flavor when creating Traffic Manager instances.
Which management mode should be used?	<p>Select “1” if using a dedicated management network to which all Traffic Manager instances will be attached.</p> <p>Select “2” if management traffic should be sent via a floating IP address to the Traffic Manager instance.</p> <p>See section 3.1 for further details.</p>
What is the Neutron ID of the management network?	<p>If you selected “1” in the previous question, this should be the Neutron ID of the management network to which the Traffic Manager instances should be attached.</p> <p>If you selected “2” in the previous question, this should be the Neutron ID of the public network on which to raise the floating IP address.</p>
What is the username of the Services Director admin user?	This is the username that will be included in all API calls to the Services Director cluster. Default: “admin”.
What is the password of the Services Director admin user?	This is the password that will be included in all API calls to the Services Director cluster.

Which port does the Services Director REST API listen on?	Port that the driver will use to communicate with the Services Director cluster. Please ensure that this port is not blocked by any firewalls between the Neutron server and the Services Director cluster. Default: 8100
How much bandwidth (Mbps) should each vTM be allocated?	The amount of bandwidth allocated (by license key limitation) to each Traffic Manager instance that is created.
Which Services Director "feature_pack" resource should each vTM use?	The name of the Services Director <code>feature_pack</code> object that instances will be licensed with. <i>N.B. functionality is limited by the LBaaS API so the feature pack should not be over-specified.</i>
Give tenants read-only access to the vTM GUI?	Select "1" if tenants should be allowed read-only access to the Traffic Manager GUI for the purposes of monitoring. Select "2" if no GUI access should be permitted.
Which port would you like the vTM admin SSH server to run on?	Overrides the default SSH port. This question only appears if option "1" (Give tenants read-only GUI access) is selected in the previous question; in this case, the SSH daemon binds to all IP addresses on the vTM and stops Listener objects being created on the same port. If GUI access is not permitted, the SSH daemon only binds to the management interface and so does not interfere with ports available to Listeners.
What timezone are the vTMs in?	This setting will be applied to each Traffic Manager instance created.
Please provide a comma-seperated list of your nameservers	This setting will be applied to each Traffic Manager instance created.
Enable per-tenant configuration customizations database?	Select "1" if you wish to be able to override certain global deployment options on a per-tenant basis. If you select this option, you will then be asked to specify a database connection string that can be used to store customizations in. Select "2" if you wish all instances to be deployed with the global default settings.
Should HTTPS off-load be supported?	Select "1" if you have the Barbican service installed and configured, and wish to allow HTTPS off-load on the Traffic Managers. Otherwise, select "2".
What should the 'listener' object's 'connection_limit' parameter apply to?	Select "1" if you wish to limit connections to pool members by requests-per-second. Select "2" if you wish to limit connections to pool member by concurrency.
Which TCP port does the vTM REST API listen on?	Port that the Services Director cluster will use to communicate with the Traffic Manager instances. Please ensure that this port is not blocked by any firewalls between the Services Director cluster and the Traffic Manager instances. Default: 9070
What is the username for the OpenStack admin user?	Username of a centralized user that is a member of all tenants and has the permissions to create Nova instances.
What is the password for the OpenStack admin user?	Password corresponding to above user.
Which Keystone version should be used?	Select "1" if you are using Keystone v2.0. Select "2" if you are using Keystone v3.

Sample Configuration File

The following is a sample configuration file as produced by the configuration generation script:

```
[lbaas_settings]
allow_different_host_hint=True
allow_tenant_customizations=True
configuration_source_ips=10.100.0.1,10.100.0.2
connection_limit_mode=requests_per_sec
deploy_ha_pairs=False
deployment_model=PER_TENANT
flavor_id= 574fb517-fbf1-44ed-adce-3323e72822ec
https_offload=True
image_id=c9f2ff3c-7eeb-470e-ae4d-8e5fc291d29f
keystone version=3
management_mode=MGMT_NET
management_network= a2ed32de-8496-45fc-88dc-c4ff49430edb
openstack_password=p@55w0rd
openstack_username=admin
primary_az=Nova_LBaaS_Primary_AZ
secondary_az=Nova_LBaaS_Secondary_AZ
service_endpoint_address=10.100.0.100
specify_az=True
tenant_customizations_db=mysql://root:P@ssword1@controller/neutron

[vtm_settings]
gui_access=True
nameservers=8.8.8.8,8.8.4.4
rest_port=9070
ssh_port=2222
timezone=Europe/London

[services_director_settings]
bandwidth=10
feature_pack=my_feature_pack
password=p@55w0rd
rest_port=8100
username=admin
```