A10 Networks LBaaS Driver for Thunder and AX Series Appliances

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## Disclaimer

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Introduction

This guide is for the A10 Networks® LBaaS Driver, which is specifically designed to manage A10 Thunder™ and AX Series Application Delivery Controller (ADC) appliances.

In this installation guide, we will cover the architecture of the A10/OpenStack environment and the requirements for installing the A10 LBaaS Driver. Expectedly, an updated community-supported driver will be in the Juno release of OpenStack. Note that the community version of this driver is different from what A10 supports—the current community version does not support the spin up of software instances. This feature will be available in the later Juno release, but should the user desire a greater degree of customization to extend Horizon and other components, we recommend using A10's version as the community supported model will present less feature versatility than our in-house solution.

This driver only supports ACOS version 2.7.2 and axAPI version 2.1.

The latest version of this document can be found at https://github.com/a10networks/a10_lbaas_driver/
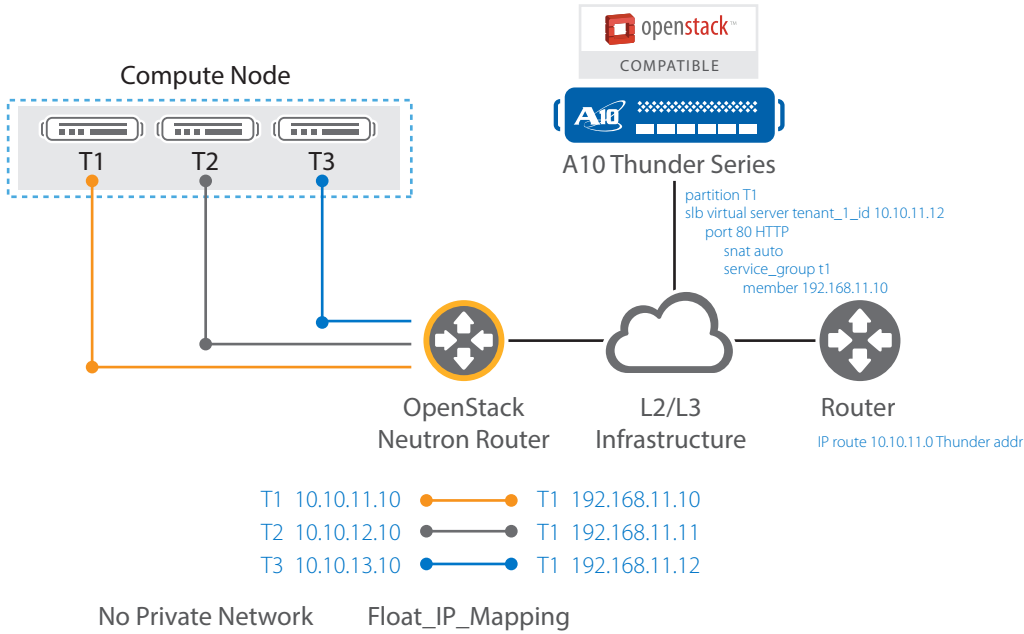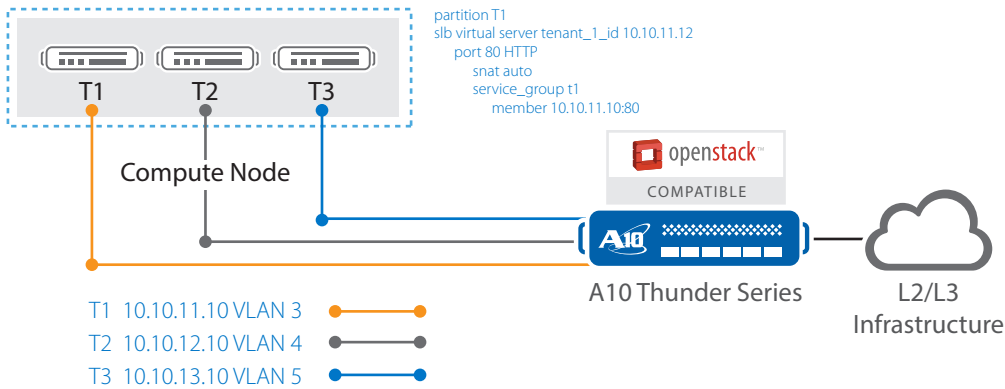
Implementation

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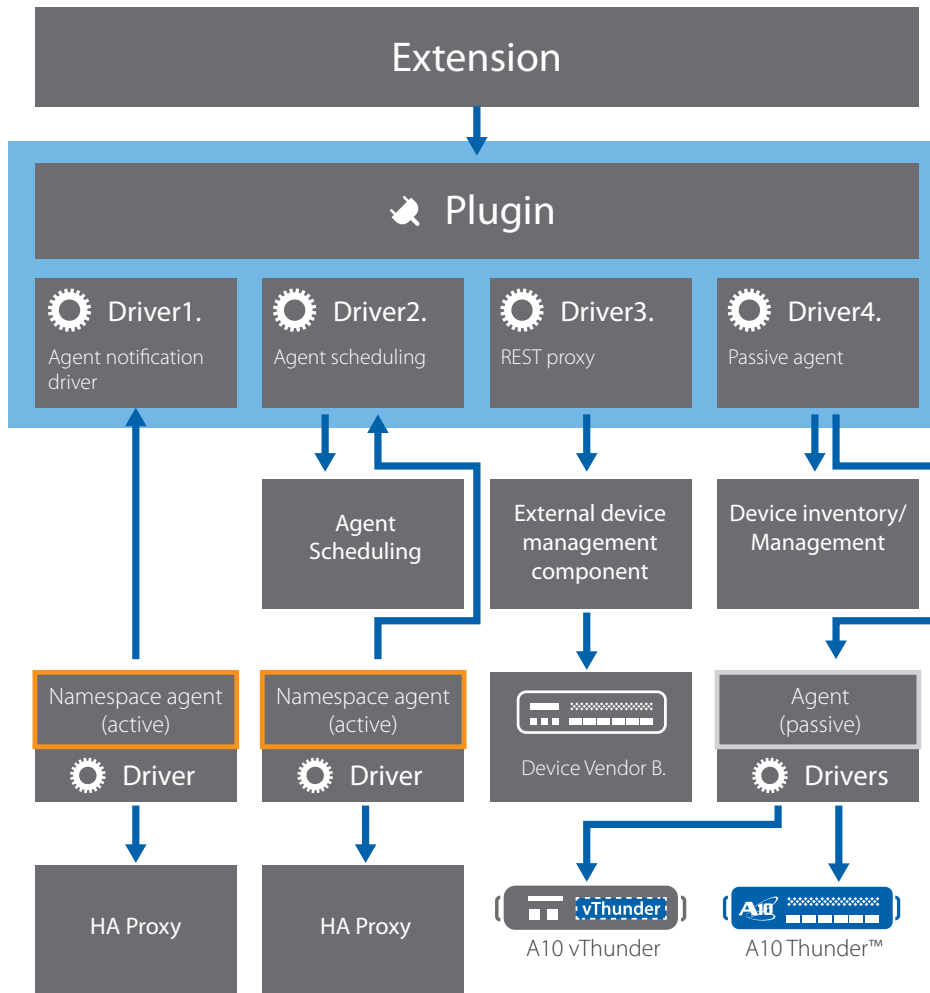
Network Architecture

You must configure the network elements of the Thunder appliance for OpenStack's Havana and Icehouse releases.

SNATED

Compute Node

openstack™
COMPATIBLE

A10 Thunder Series

partition T1
slb virtual server tenant_1_id 10.10.11.12
   port 80 HTTP
     snat auto
     service_group t1
       member 192.168.11.10

T1   T2   T3

OpenStack
Neutron Router

L2/L3
Infrastructure

Router
IP route 10.10.11.0 Thunder addr

T1 10.10.11.10   •———•   T1 192.168.11.10
T2 10.10.12.10   •———•   T1 192.168.11.11
T3 10.10.13.10   •———•   T1 192.168.11.12

No Private Network   Float_IP_Mapping

VLAN

partition T1
slb virtual server tenant_1_id 10.10.11.12
   port 80 HTTP
     snat auto
     service_group t1
       member 10.10.11.10:80

T1   T2   T3

Compute Node

openstack™
COMPATIBLE

A10 Thunder Series

L2/L3
Infrastructure

T1 10.10.11.10 VLAN 3   •———•
T2 10.10.12.10 VLAN 4   •———•
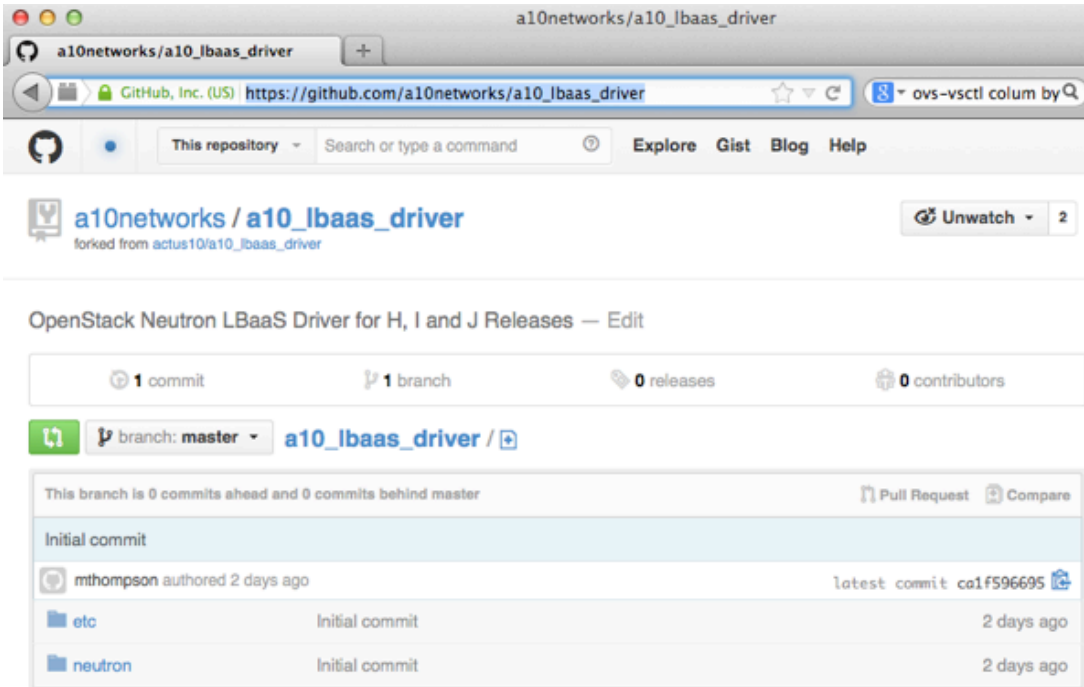T3 10.10.13.10 VLAN 5   •———•

Installation steps

Step 1:

Make sure you have the neutron-lbaas-agent installed.
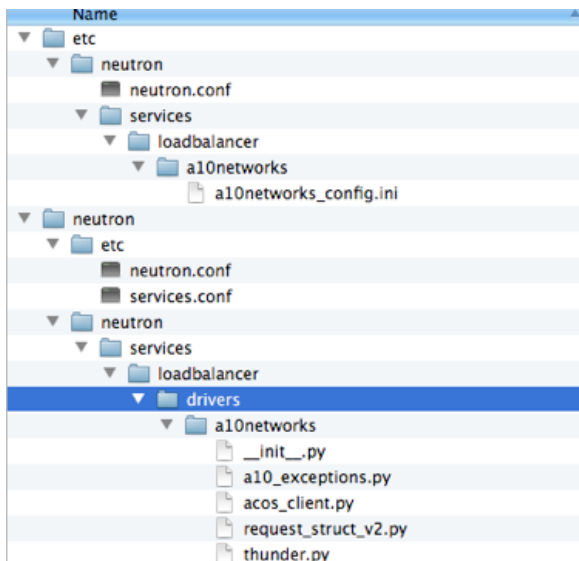
Step 2:

Download the driver from: https://github.com/a10networks/a10_lbaas_driver

Step 3:

Move the directories and files to the appropriate locations.

- neutron/neutron/services/loadbalancer/drivers/a10networks -> your neutron directory

Example:

```
NEUTRON_IMPORT=` printf "import neutron\nprint neutron.__file__\n" | python`
NEUTRON_DIR=`dirname $NEUTRON_IMPORT`
if [ -z "$NEUTRON_DIR" ]; then
        echo "ERROR: neutron is not installed"
else
        git clone https://github.com/a10networks/a10_lbaas_driver
        cd a10_lbaas_driver/neutron/neutron/services/loadbalancer/drivers
        sudo cp -r a10networks/ $neutron_dir/services/loadbalancer/drivers/
        cd –
fi
```

Step 4:

Modify /etc/neutron/neutron.conf

In the "service_providers" section of the neutron.conf file, add the following line:

```
service_provider = LOADBALANCER:A10Networks:neutron.services.loadbalancer.drivers.
a10networks.thunder.ThunderDriver:default
```

The service provider section, as it appears in the neutron.conf file, is displayed below for reference.

```
[service_providers]
# Specify service providers (drivers) for advanced services like loadbalancer, VPN,
Firewall.
# Must be in form:
# service_provider=<service_type>:<name>:<driver>[:default]
# List of allowed service types includes LOADBALANCER, FIREWALL, VPN
# Combination of <service type> and <name> must be unique; <driver> must also be unique
# This is multiline option, example for default provider:
# service_provider=LOADBALANCER:name:lbaas_plugin_driver_path:default
# example of non-default provider:
# service_provider=FIREWALL:name2:firewall_driver_path
# --- Reference implementations ---
#service_provider=LOADBALANCER:Haproxy:neutron.services.loadbalancer.drivers.haproxy.
plugin_driver.HaproxyOnHostPluginDriver:default
#service_provider=VPN:openswan:neutron.services.vpn.service_drivers.ipsec.
IPsecVPNDriver:default
service_provider =
LOADBALANCER:A10Networks:neutron.services.loadbalancer.drivers.a10networks.thunder.
ThunderDriver:default #add to configuration here
```

Step 5:

Create and configure the a10networks section of the a10networks_config.ini. The file is located in:

/etc/neutron/services/loadbalancer/a10networks/a10networks_config.ini

In the example given below, we show various configuration options for every device added to the network, specifying the maximum number of LSI objects and ADP partitions which can be issued per device. In this case, we configured two different nodes for LSI and ADP. Note that you can add up to 50 nodes.

Terminology:

- LSI – Logical Service Instance. This configuration is realized by multiple tenant VIPs in the shared partition.
- ADP – Application Delivery Partition. This refers to the RBAC partitions on the Advanced Core Operating System (ACOS) on any Thunder/AX device.

```
# Instructions:
#     Add each device as a dictionary object in the Device Section.
#
#     Configuration options are as follows:
#
#         host:<IP|FQDN>
#         username:acos user
#         password:user password
#         status: can be configured
#         autosnat: Source address translation is configured on the VIP.
#         api_version: API version
#         v_method: Choices in this version(ADP, LSI)
#         MAX LSI: Number of objects that can be added to system range(512-10k+) and is
model dependent.
#         MAX ADP: 128 for all models except vThunder which is 32
#
#         Max L3V partitions for the device(currently not supported with the community
version),
#         MAX L3V is modules specific 32-1023
#         'use_float': utilize the floating address of the member and not the actual
interface ip.
#         "method": Placement policy. right now hash is the only thing supported. This
is utilized if there are more than one
#         acos devices configured.


[a10networks]
ax1 = {"name":"ax1", "host": "192.168.212.120",
            "username": "admin",
            "password": "a10", "status": "1", "autosnat": "True",
       "api_version": "2.1", "v_method": "LSI",
            "max_instance": "5000" , "use_float": "True", "method": "hash"}
ax2 = {"name":"ax2", "host": "192.168.212.10",
       "username": "admin",
       "password": "a10", "status": "1", "autosnat": "True",
       "api_version": "2.1", "v_method": "ADP",
       "max_instance": "5000" , "use_float": "True", "method": "hash"}
```

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Step 6:

Restart Neutron to verify successful completion of driver installation.

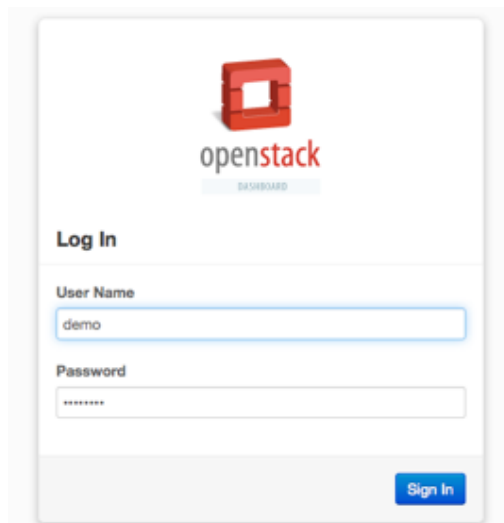**Example:**

service neutron-server restart

Note: *Make sure the user utilizes their own method to avoid service interruption.*

Validation

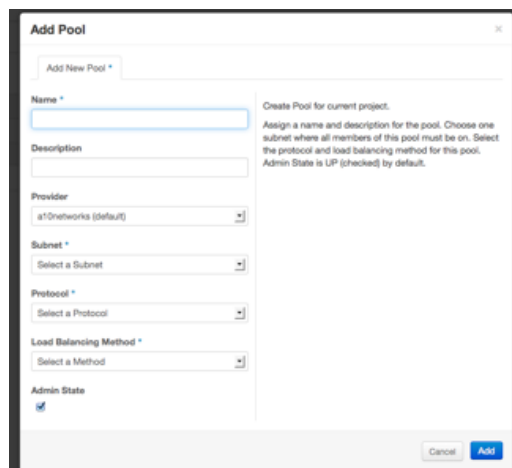Validate the configurations are correct and customize further settings if necessary.

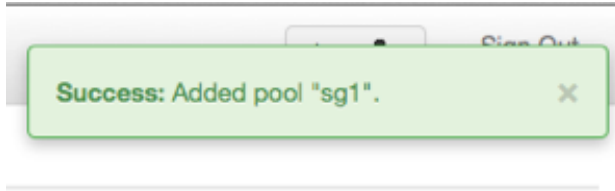**Step 1:**

Login to the OpenStack dashboard.

Step 2:

Under the "Network" menu, go to the "Load Balancers" tab and select "Add Pool":

Once you have added a pool, a success message should appear.

Step 3:

Login to the GUI on your Thunder or AX device, and validate which configuration was applied if the ADPs are set. The ADP name is the first 13 characters of the tenant ID.

Repeat this for all configuration steps, then delete all resources if ADPs are configured. They should be deleted when the tenant has no more resources configured.

Conclusion:

Knowledge of OpenStack and Neutron setup is required for implementing the LBaaS driver. For questions on setting up an OpenStack/LBaaS environment, contact A10 Professional Services at A10_PS@a10networks.com or refer to the OpenStack Community Forum at https://www.openstack.org/community/. Errors in configuring an OpenStack environment can impact seamless integration of the A10 LBaaS driver.

To test the GUI and other ADC features, download a free trial of A10 Networks vThunder™ at http://www.a10networks.com/vThunder_trial/.

About A10 Networks

A10 Networks is a leader in application networking, providing a range of high-performance application networking solutions that help organizations ensure that their data center applications and networks remain highly available, accelerated and secure. Founded in 2004, A10 Networks is based in San Jose, California, and serves customers globally with offices worldwide. For more information, visit: **www.a10networks.com**

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To learn more about the A10 Thunder Application Service Gateways and how it can enhance your business, contact A10 Networks at: **www.a10networks.com/contact** or call to talk to an A10 sales representative.