



Technical Report

BGP/VIP with ONTAP in the Datacenter

Quick configuration guide

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Abstract

Guide to help storage administrators quickly deploy a basic BGP configuration in NetApp® ONTAP®.

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Objective

This quick configuration guide (QCG) is designed to help storage administrators work with their network team to configure and deploy NetApp ONTAP BGP/VIP functionality. It is not intended to explain or teach the reader more about BGP than what is necessary to get this functionality up and running.

Physical topology

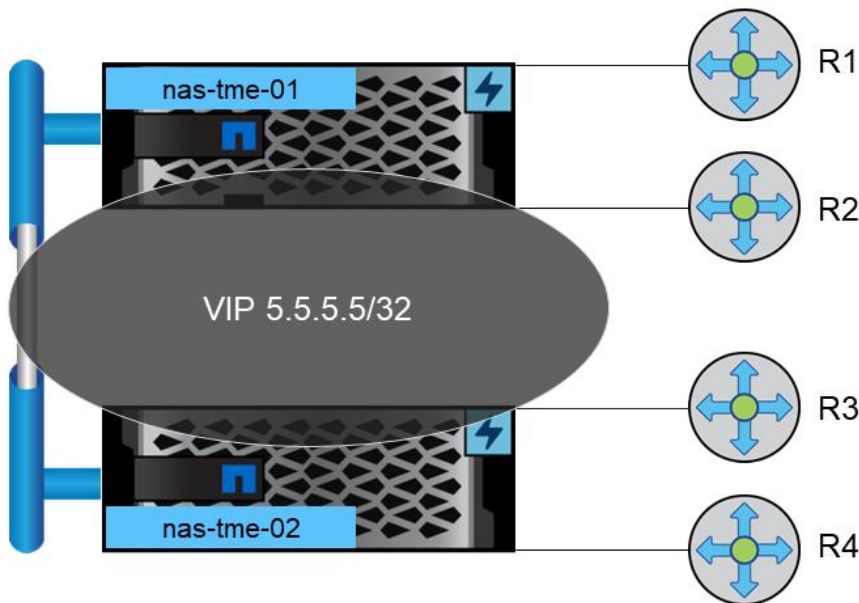
We are using the topology depicted in Figure 1 as an example.

Note: Each ONTAP node uses two separate network ports to directly connect to two separate routers.

Note: There are no intermediary, layer-two devices between ONTAP and the routers.

Note: There is no peering or other form of direct connection shown between routers.

Figure 1) Example topology.



Planning

The storage administrator needs to work with the networking team to gather the required information. Table 1 provides an example of the minimum information required to configure BGP in ONTAP.

Table 1) Configuration table.

Peer-group name	ONTAP BGP IP	ONTAP ASN	Router IP	Router ASN
node1-router1	172.16.0.11/31	65536	172.16.0.10/31	65537
node1-router2	172.16.0.13/31	65536	172.16.0.12/31	65539
node2-router3	172.16.0.15/31	65540	172.16.0.14/31	65541
node2-router4	172.16.0.17/31	65540	172.16.0.16/31	65543

A couple of notes for the network team:

- The ONTAP BGP IP and Router IP must be in the same subnet.
- NetApp recommends using a netmask of 255.255.255.254.
 - ONTAP BGP IP must be assigned the odd numbered IP from the subnet. Example: If the network is 172.16.0.10/31, then the ONTAP BGP IP must be 172.16.0.11, and the router IP is be 172.16.0.10.
- eBGP should be used. Each ASN should be from the private range and unique.
- ONTAP supports 4-byte ASN numbers.
- ONTAP defaults to BGP timers of 60 and 180 for keepalive and hold time respectively. NetApp recommends lowering these to 1 and 3.
 - Keepalive is always 1/3 of the configured hold time in ONTAP.

Configuring

After you have collected the information in the table, you can start configuring ONTAP.

1. Create the BGP configuration. Repeat this step for each node in cluster.

```
nas-tme::*> network bgp config create -node nas-tme-01 -asn 65536
```

2. Create BGP LIFs in the cluster SVM. Repeat this step for each ONTAP BGP IP.

```
nas-tme::*> network interface create -vserver <cluster_svm> -lif bgplif-nodel-router1 -service-policy default-route-announce -home-node nas-tme-01 -address 172.16.0.11 -netmask-length 31 -home-port <port>
```

3. Confirm basic connectivity to the router IPs.

```
nas-tme::*> network ping -vserver nas-tme -lif site1-bgp1 -destination 172.16.0.10
```

4. Create ONTAP BGP peer-groups.

```
nas-tme::*> network bgp peer-group create -ipspace <ipspace> -peer-group nodel-router1 -bgp-lif bgplif-nodel-router1 -peer-address 172.16.0.10 -peer-asn 65537 -use-peer-as-next-hop true
```

5. Confirm that the BGP peer group is up.

```
nas-tme::*> network bgp peer-group show -ipspace Default -peer-group nodel-router1
IPspace Name: Default
    Peer Group Name: nodel-router1
        BGP LIF: bgplif-nodel-router1
    Peer Router Address: 172.16.0.10
Peer Router Autonomous number: 65537
Peer Group State: up
    BGP LIF Node: nas-tme-01
    BGP LIF Port: e0g
    Route Preference: 100
    ASN prepend type: -
    ASN prepend count: -
    BGP Community: -
Multi Exit Discriminator: -
Use Peer Address As Next Hop: true
```

6. Create a VIP.

```
nas-tme::*> network interface create -vserver <svm> -lif <lif_name> -is-vip true -address 5.5.5.5
```

Best practices

Best practices

- Each NetApp node and router should have a different ASN. This assists in troubleshooting and isolating issues, should they arise.
- The first hop router should be directly connected to the BGP LIF port.
- BGP LIFs and router IPs should have a netmask of 255.255.255.254 (/31).
- If your hardware allows it, you should have two different BGP LIFs on two separate ports for each IPspace.
- Enable [equal-cost multi-path](#) routing if the network allows it.
- Set the BGP [hold time timer](#) to 3 seconds.

Where to find additional information

To learn more about the information that is described in this document, review the following documents and/or websites:

- NetApp Product Documentation
<https://www.netapp.com/support-and-training/documentation/>

Version history

Version	Date	Document version history
Version 1.0	November 2022	Initial release.

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