NVMe storage

ONTAP 9

NetApp
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You can use the non-volatile memory express (NVMe) protocol to provide storage in a SAN environment. The NVMe protocol is optimized for performance with solid state storage.

For NVMe, storage targets are called namespaces. An NVMe namespace is a quantity of non-volatile storage that can be formatted into logical blocks and presented to a host as a standard block device. You create namespaces and subsystems, and then map the namespaces to the subsystems, similar to the way LUNs are provisioned and mapped to igroups for FC and iSCSI.

NVMe targets are connected to the network through a standard FC infrastructure using FC switches or a standard TCP infrastructure using Ethernet switches and host-side adapters.

The following NVMe protocols are supported:

Protocol	Beginning with …	Allowed by…
TCP	ONTAP 9.10.1	Default
FCP	ONTAP 9.4	Default

Related information

- Provision NVMe storage for SUSE Linux with System Manager
- Configure an SVM for NVMe with the CLI

Provision NVMe storage for SUSE Linux

Create namespaces to provide storage for a SUSE Linux server using the NVMe protocol. Namespaces appear to Linux as SCSI disk devices.

This procedure creates new namespaces on an existing storage VM. Your storage VM must be configured for NVME, and your FC or TCP transport should already be set up.

Beginning with ONTAP 9.8, when you provision storage, QoS is enabled by default. You can disable QoS or choose a custom QoS policy during the provisioning process or at a later time.

Steps

1. In System Manager, click **Storage > NVMe Namespaces** and then click **Add**.

   If you need to create a new subsystem, click **More Options**.

   a. If you are running ONTAP 9.8 or later and you want to disable QoS or choose a custom QoS policy,

click **More Options** and then, under **Storage and Optimization** select **Performance Service Level**.

1. Zone your FC switches by WWPN. Use one zone per initiator and include all target ports in each zone.
2. On your Linux server, discover the new namespaces.
3. Initialize the namespace and format it with a file system.
4. Verify the Linux server can write and read data on the namespace.

Resizing a namespace

Beginning with ONTAP 9.10.1, you can use the ONTAP CLI to increase or decrease the size of a NVMe namespace. You can use System Manager to increase the size of a NVMe namespace.

Increase the size of a namespace

Using System Manager	Using the CLI
1. Click **Storage > NVMe Namespaces**. 2. Hoover over the namespace you want to increase, click ⋮, and then click **Edit**. 3. Under **CAPACITY**, change the size of the namespace.	1. Enter the following command: `vserver nvme namespace modify -vserver` *`SVM_name`* `-path` *`path`* `-size` *`new_size_of_namespace`*

Decrease the size of a namespace

You must use the ONTAP CLI to decrease the size of a NVMe namespace.

1. Change the privilege setting to advanced:

   ```
   set -privilege advanced
   ```

2. Decrease the size of the namespace:

   ```
   vserver nvme namespace modify -vserver SVM_name -path namespace_path -size
   new_size_of_namespace
   ```