Configuring a host to use NVMe drives

ONTAP Select

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If you plan to use NVMe drives with software RAID, you need to configure the host to recognize the drives.

Use VMDirectPath I/O Pass-through on the NVMe devices to maximize data efficiency. This setting exposes the drives to the ONTAP Select virtual machine, allowing ONTAP to have direct PCI access to the device.

Before you begin

Make sure your deployment environment meets the following minimum requirements:

- ONTAP Select 9.7 or later with the associated Deploy administration utility
- Premium XL platform license offering or a 90-day evaluation license
- VMware ESXi version 6.7 or later
- NVMe devices conforming to specification 1.0 or later

Follow the host preparation checklist, review the required information for Deploy utility installation, and the required information for ONTAP Select installation topics for more information.

About this task

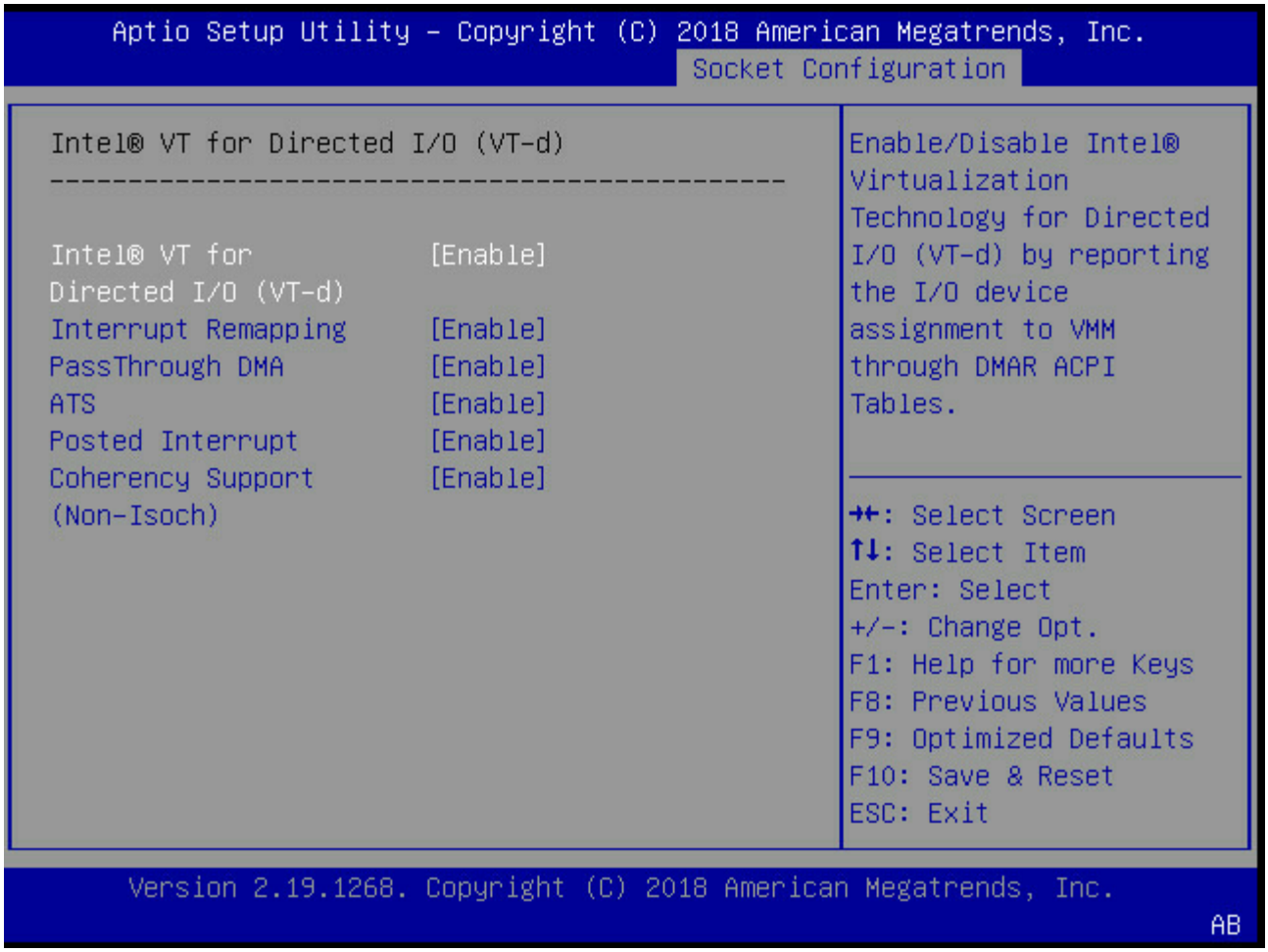
This procedure is designed to be performed before creating a new ONTAP Select cluster. You can also perform the procedure to configure additional NVMe drives for an existing SW-RAID NVMe cluster. In this case, after configuring the drives, you must add them through Deploy as you would additional SSD drives. The main difference is that Deploy detects the NVMe drives and reboots the nodes. When adding NVMe drives to an existing cluster, note the following about the reboot process:

- Deploy handles the reboot orchestration.
- HA takeover and giveback is performed in an orderly fashion, but it can be time consuming to resynchronize the aggregates.
- A single-node cluster will incur downtime.

See Increasing storage capacity for additional information.

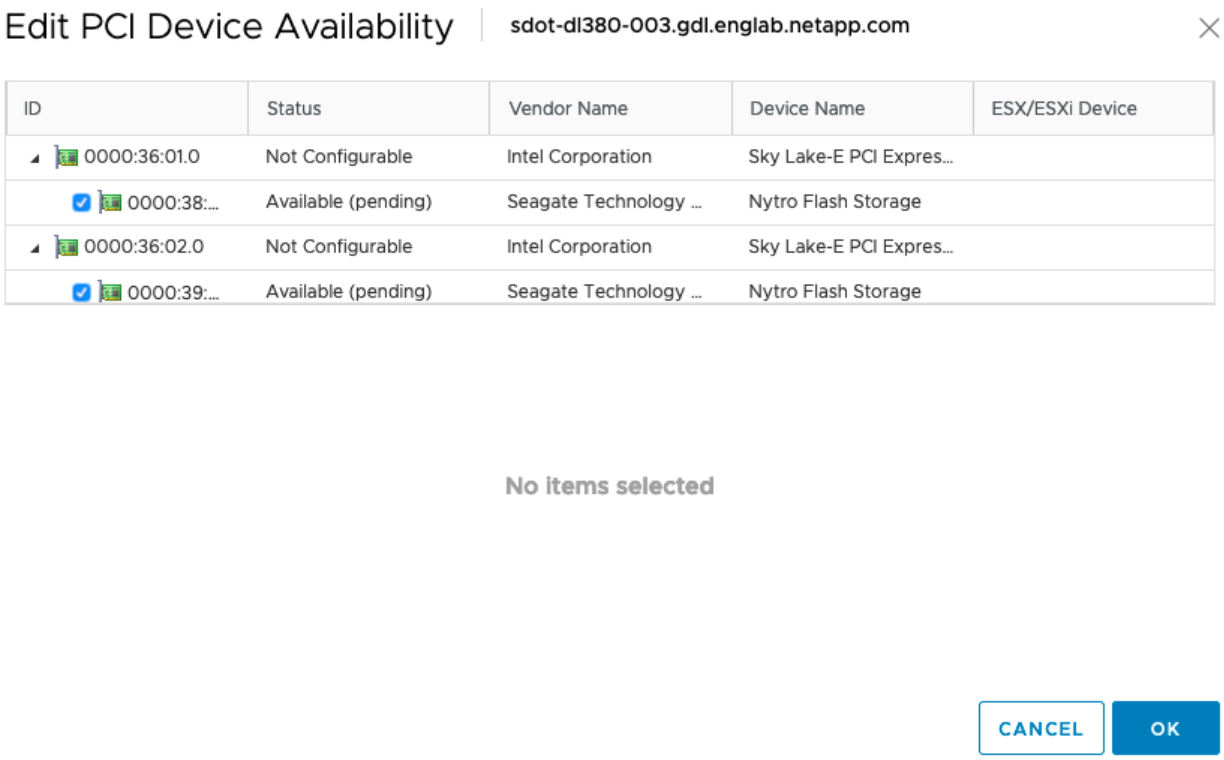
Steps

1. Access the **BIOS configuration** menu on the host to enable support for I/O virtualization.
2. Enable the **Intel® VT for Directed I/O (VT-d)** setting.



3. Some servers offer support for **Intel Volume Management Device (Intel VMD)**. When enabled, this makes the available NVMe devices invisible to the ESXi hypervisor; disable this option before proceeding.

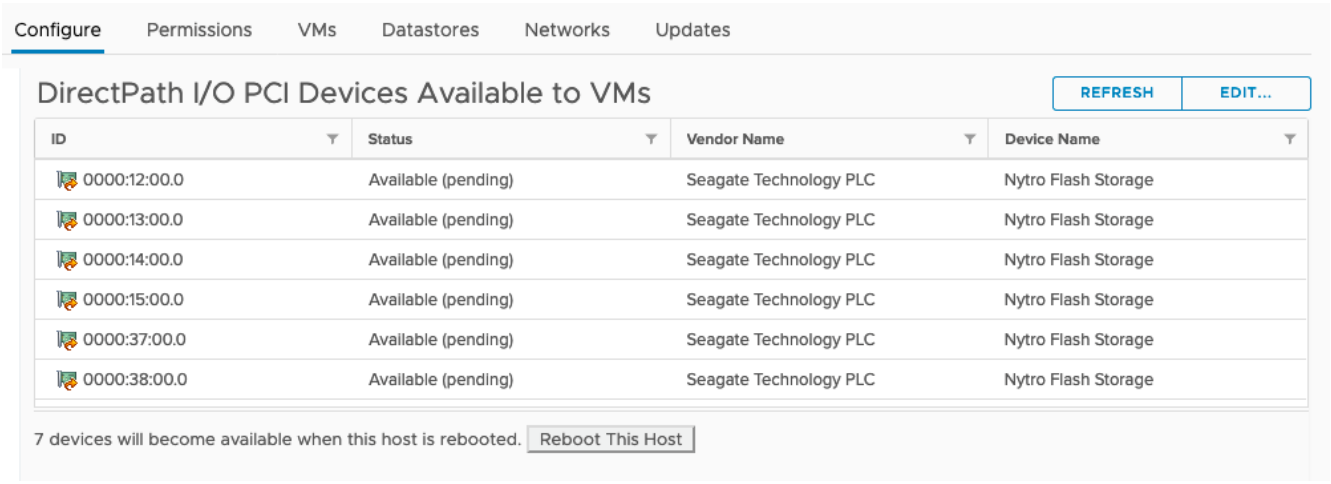
4. Configure the NVMe drives for pass-through to virtual machines.
   a. In vSphere, open the host **Configure** view and click **Edit** under **Hardware: PCI devices**.
   b. Select the NVMe drives you want to use for ONTAP Select.



> You need a VMFS datastore that is also backed by an NVMe device to host the ONTAP Select VM system disks and virtual NVRAM. Leave at least one NVMe drive available for this purpose when configuring the others for PCI pass-through.

c. Click **OK**. The selected devices indicate **Available (pending)**.

5. Click **Reboot The Host**.

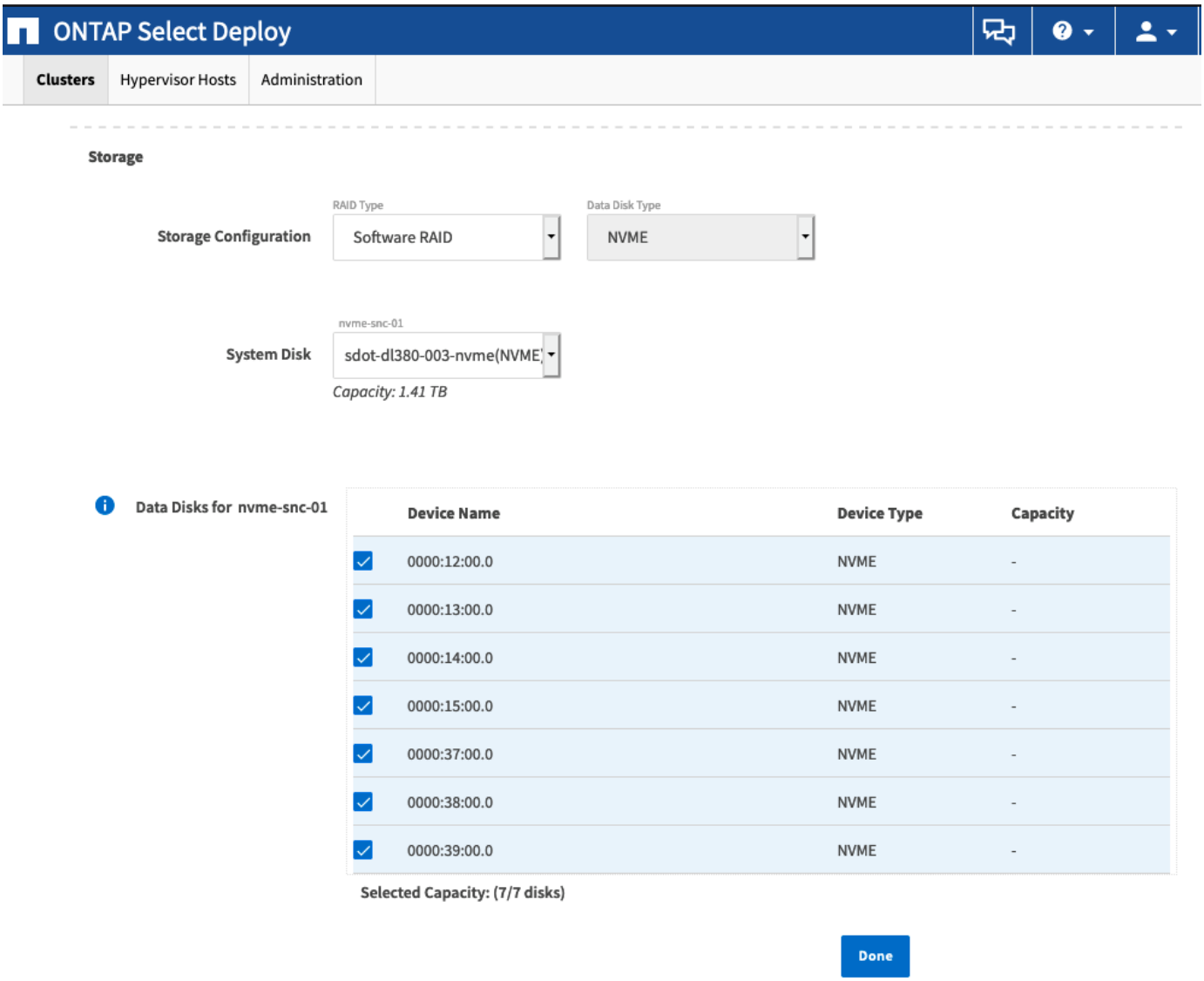


After you finish

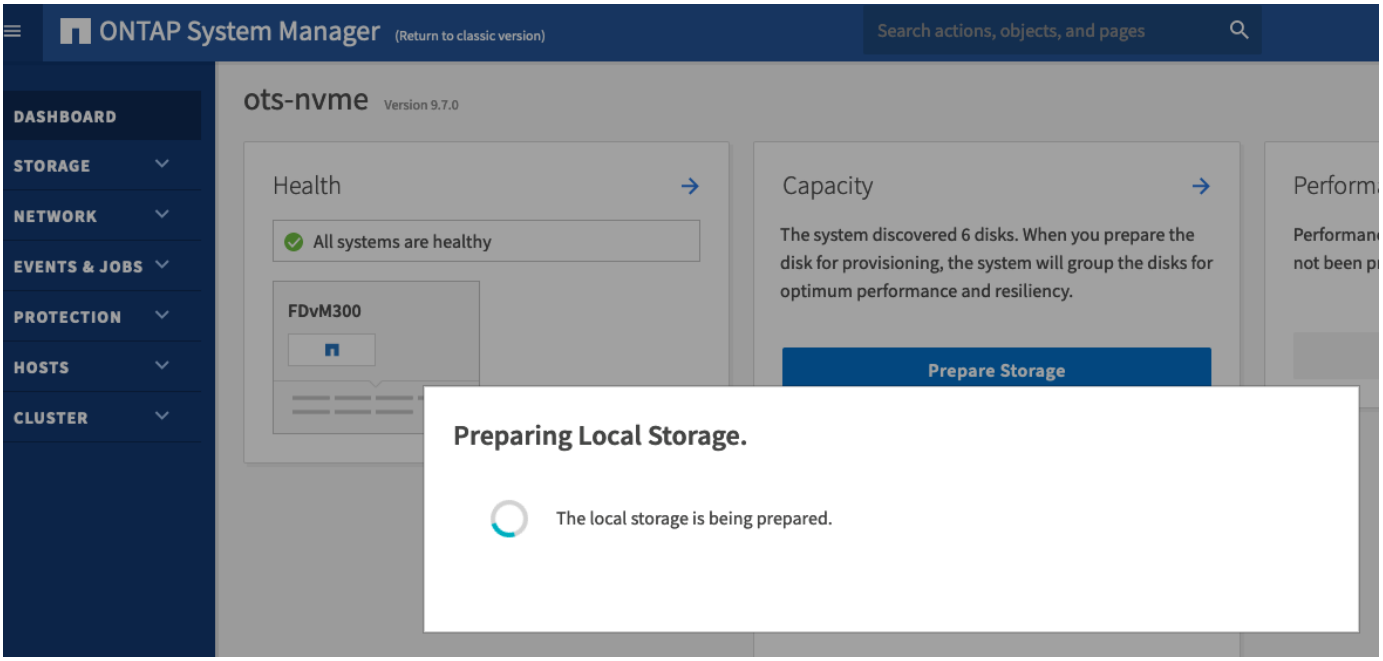
After the hosts are prepared, you can install the ONTAP Select Deploy utility. Deploy guides you through creating ONTAP Select storage clusters on your newly prepared hosts. During this process,

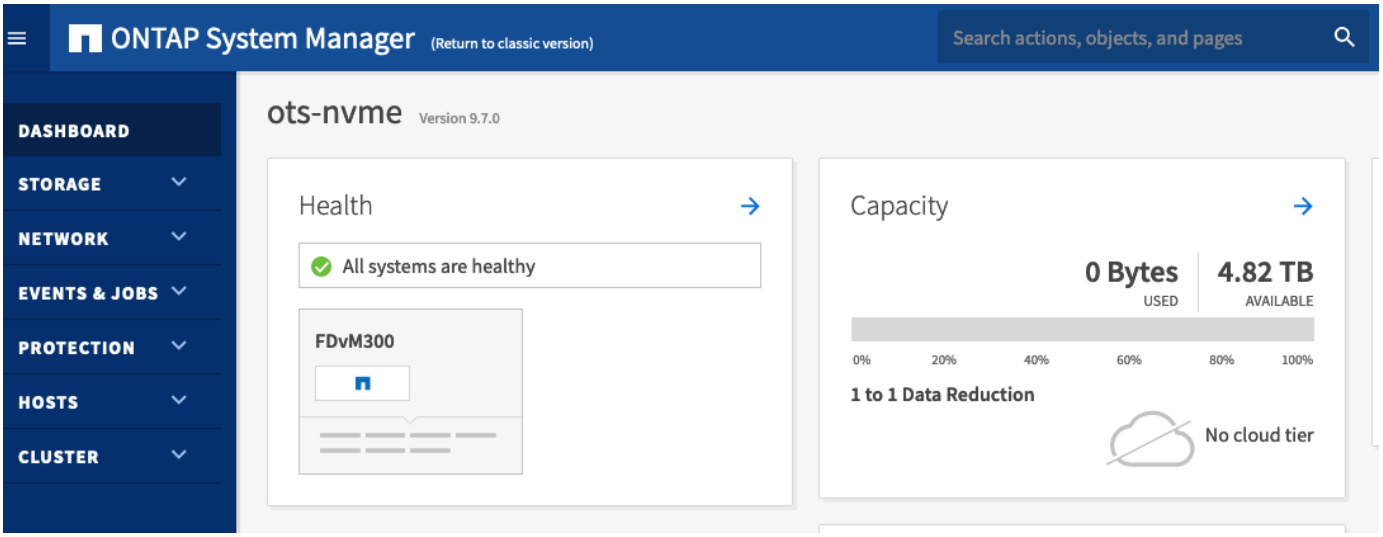
Deploy will detect the presence of the NVMe drives configured for pass-through and automatically select them for use as ONTAP data disks. You can adjust the default selection if needed.

A maximum of 14 NVMe devices are supported for each ONTAP Select node.



After the cluster is successfully deployed, ONTAP System Manager allows you to provision the storage according to best practices. ONTAP will automatically enable flash-optimized storage efficiency features that make the best use of your NVMe storage.


ONTAP System Manager
(Return to classic version)
Search actions, objects, and pages
DASHBOARD
STORAGE
NETWORK
EVENTS & JOBS
PROTECTION
HOSTS
CLUSTER
ots-nvme
Version 9.7.0
Health
All systems are healthy
FDvM300
Capacity
The system discovered 6 disks. When you prepare the disk for provisioning, the system will group the disks for optimum performance and resiliency.
Prepare Storage
Preparing Local Storage.
The local storage is being prepared.


ONTAP System Manager
(Return to classic version)
Search actions, objects, and pages
DASHBOARD
STORAGE
NETWORK
EVENTS & JOBS
PROTECTION
HOSTS
CLUSTER
ots-nvme
Version 9.7.0
Health
All systems are healthy
FDvM300
Capacity
0 Bytes
USED
4.82 TB
AVAILABLE
0%
20%
40%
60%
80%
100%
1 to 1 Data Reduction
No cloud tier