Application Notes

Dec. 2017

Set up a VMware ESXi Datastore via

NFS in QNAP Enterprise Storage

Notices

This user manual provides detailed instructions of using the QNAP Enterprise Storage NAS. Please read carefully and start to enjoy the powerful functions of the Enterprise Storage NAS.

- The QNAP Enterprise Storage NAS is hereafter referred to as the ES NAS or the NAS.
- This manual provides the description of all the functions of the ES NAS. The product you purchased may not support certain functions dedicated to specific models.

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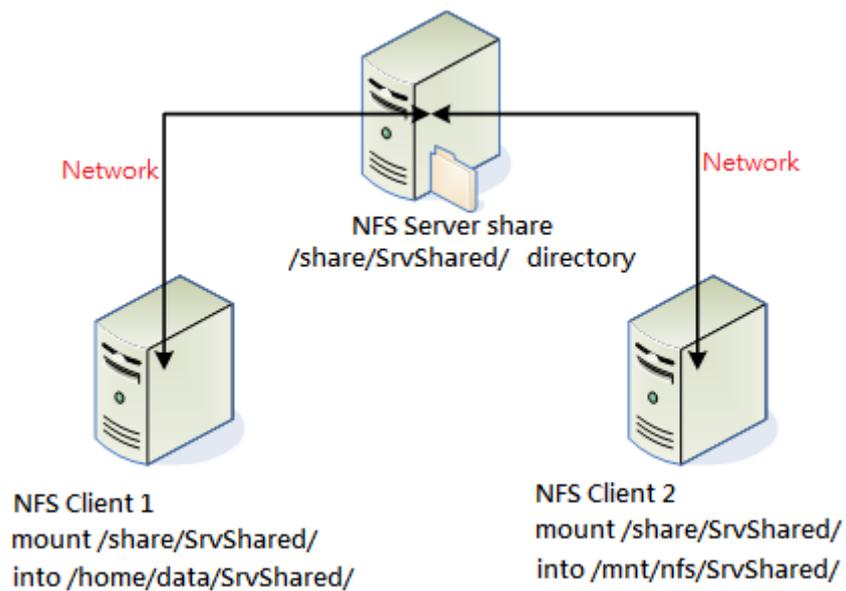
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NFS Introduction

Network File System (NFS) is a distributed file system protocol that allows remote applications on other computers to access files over a network similar to how local storage is accessed. With NFS, you can bring the resources of the ES NAS to client platforms, providing the advantages of system-managed and high-performance storage, file access security, and centralized data access with the option of data encryption.

The following figure illustrates the client-server relationship in an NFS environment. Using NFS, the client can mount all or part of the remote file system and make it appear as part of the local file system. From there the client user can create, delete, read, write, and treat the NFS server-located files as part of the workstation's own file system. On NFS Client 1, /home/data/SrvShared is the directory in the local client file system where the shared folder. /share/SrvShared, is to be mounted.

NFS Server share
/share/SrvShared/ directory

NFS Client 1
mount /share/SrvShared/
into /home/data/SrvShared/

NFS Client 2
mount /share/SrvShared/
into /mnt/nfs/SrvShared/

Use NFS Datastore in a vSphere Environment

Since NFS is file-level storage, an NFS Datastore is ideal storage for file-level resource sharing. To use NFS as a shared repository, create a directory on the NFS server (i.e. ES NAS) and then mount it as a datastore on all hosts. The following diagram illustrates the deployment of NFA storage in a vSphere environment.
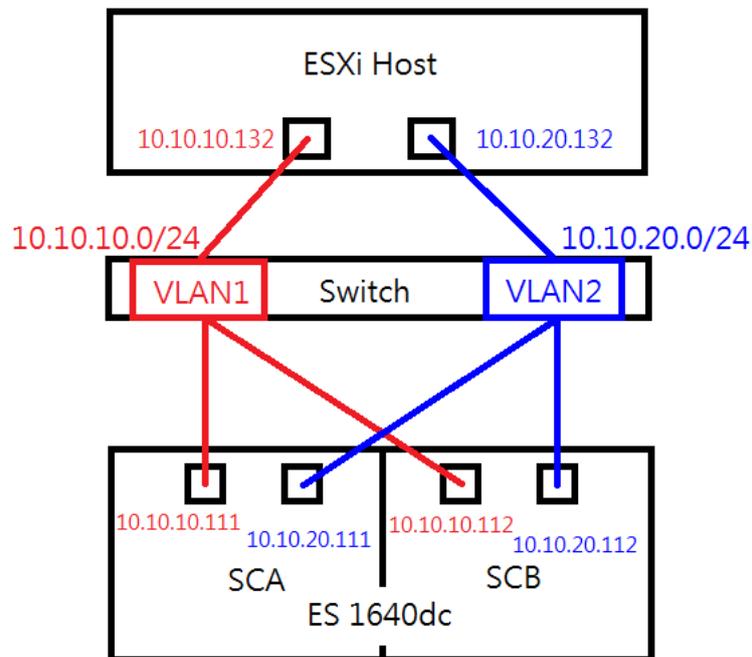
Note:

For better performance, a gigabit Ethernet adapter that transmits 1000 megabits per second (Mbps) is recommended for connection.

Preparation for Installation

We have learned that each of VMware hosts is able to connect to the ES NAS via NFS. And it allows you to mount an NFS volume and use it as if it were a Virtual Machine File System (VMFS) datastore, a special high-performance file system format that is optimized for storing virtual machines.

- Storage Device: QNAP ES NAS series with QES 1.1.4 (NAS operating system) or later.
- vSphere ESXi Host: VMware ESXi 6.0.
- IP Addressing: Static IP addresses are recommended for both ESXi host and the ES NAS.

IP Addresses

Server Host Network Settings		
Role	IP	Description
ESXi server A	172.17.23.116	VMware ESXi host
Data Network 1	10.10.10.132	10G Data port in ESXi host
Data Network 2	10.10.20.132	10G Data port in ESXi host

Table 1

ES1640dc v2 Network Settings		
Setting	Value	Description
SCA Management IP	172.17.23.111	Management IP of controller A
SCA Ethernet1 IP	10.10.10.111	Data port 1 IP of controller A
SCA Ethernet2 IP	10.10.20.111	Data port 2 IP of controller A
SCB Management IP	172.17.23.112	Management IP of controller B
SCB Ethernet1 IP	10.10.10.112	Data port 1 IP of controller B
SCB Ethernet2 IP	10.10.20.112	Data port 2 IP of controller B

Table 2

ES1640dc v2 Storage Settings		
Setting	Value	Description
Pool at SCB	Pool2	RAID6 pool at controller B
NFS shared at Pool2	SharedFolderTest	NFS Server is "10.10.10.112" Folder path is "share/SharedFolderTest"

Table 3

Confirmation before Configuration

- All data ports, from ESXi host and ES NAS, should be in the same subnet.
- Available pools must be built before configuring NFS Share on ES NAS. Regarding creating a storage pool, see"Network and Storage Settings of ES NAS High-Availability Network Storage Services".

Configure NFS Host Access Permissions

Please follow this procedure to configure the shared folder permissions for NFS host access.

Step 1:   Go to "Storage Manager" > "Storage Space", select the owning controller and the storage pool on which the shared folder was created, and then select the shared folder.
(In this example, "Storage Space" > "Pool2" > "SharedFolderTest".)

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Step 2:   Click "Permissions" in Shared Folder Manager.
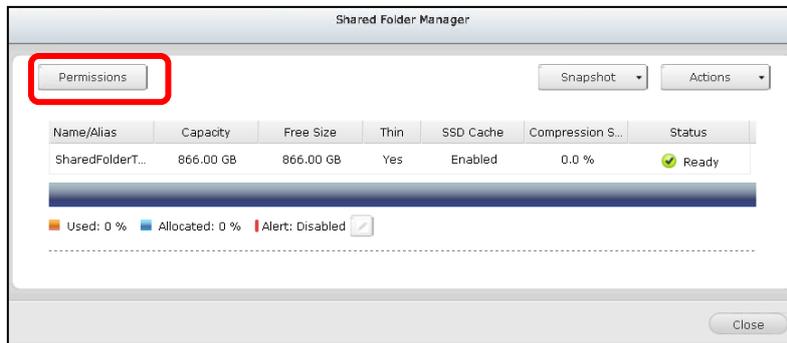
Step 3:   "Select permission type" > "NFS host access".
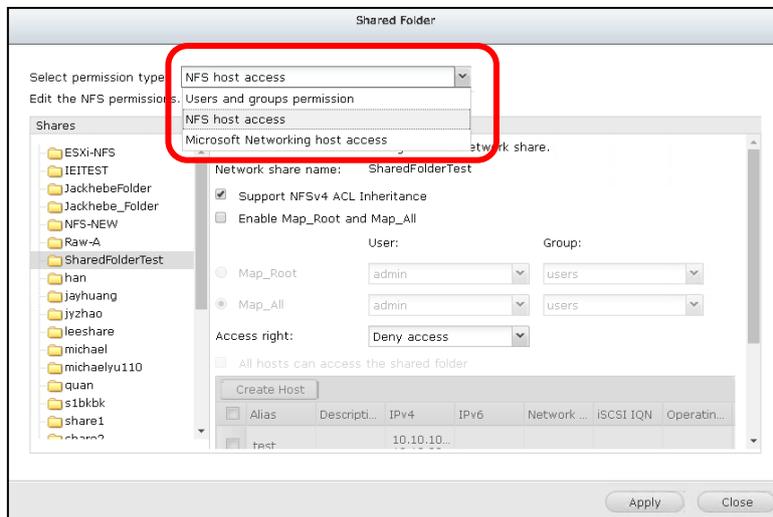
Step 4:   "Access right" > "No limit", select desired host and click "Apply" > "Close".
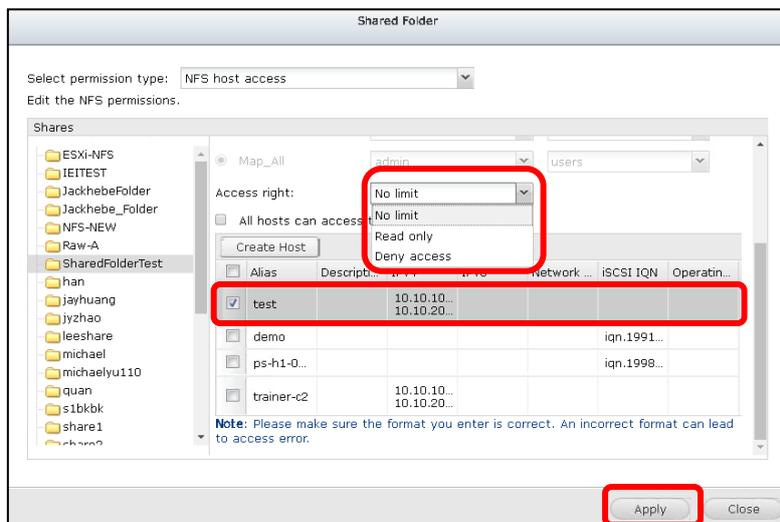
Add a NFS Datastore in vSphere Client

Step 1:   Log into vCenter, select the ESXi host on which you want to add the datastore. Then go to "Configuration" > "Storage", and select "Add Storage…"
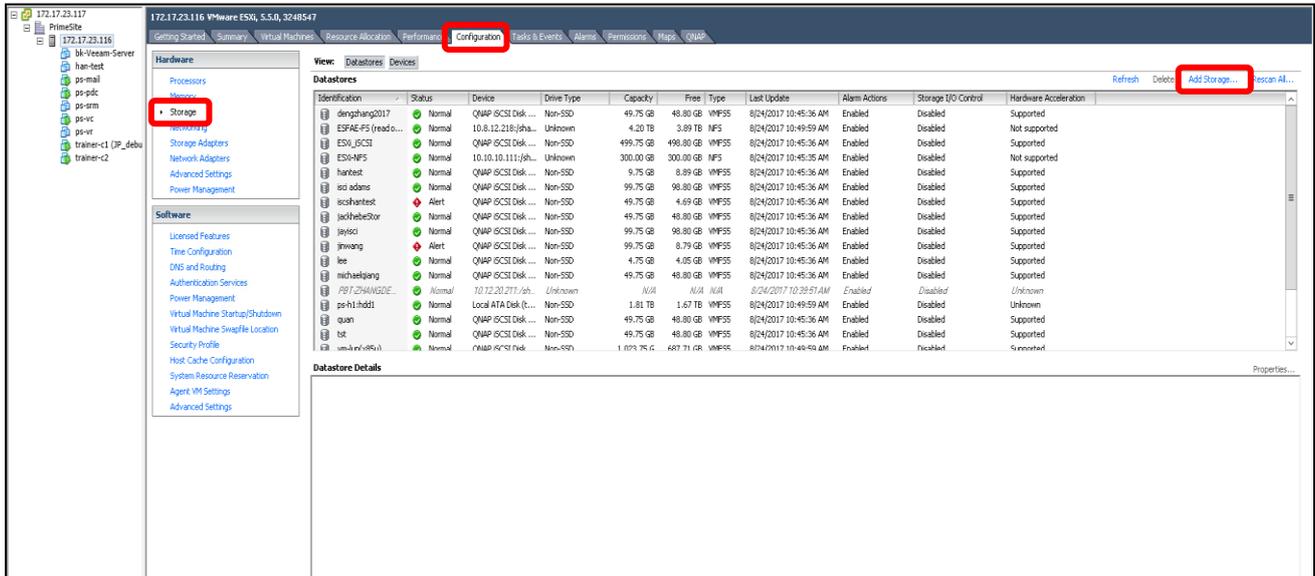
Step 2: Select "Network File System" and click "Next".
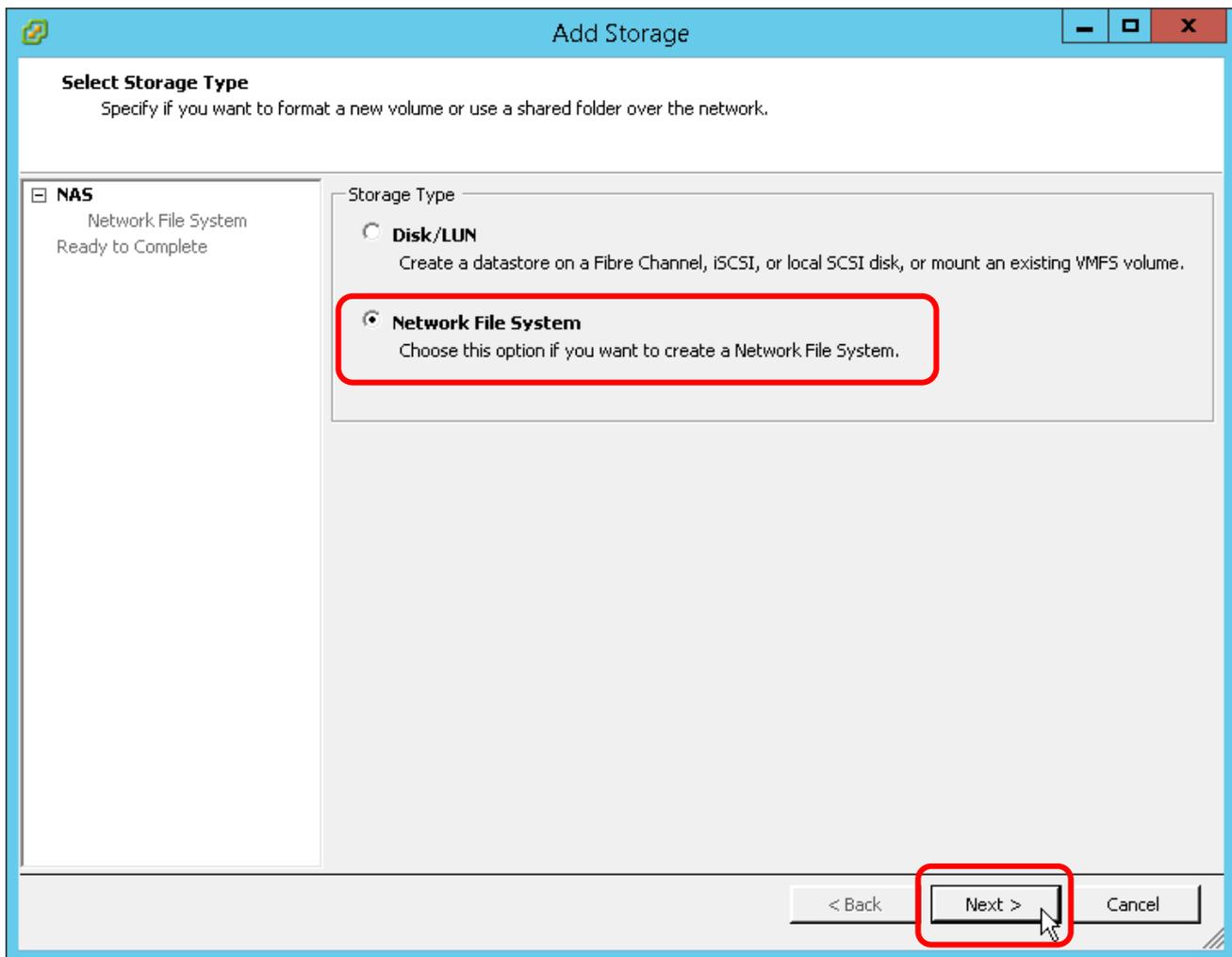
Step 3:   Server: Enter the data port's IP of the storage controller on the ES NAS.

Folder: Enter the shared folder's path.

Datastore Name: Give a name for this NFS share.

(Regarding Server IP/Folder settings, see the previous "IP Addresses" section for reference)

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Step 4:   Confirm your settings and click "Finish".
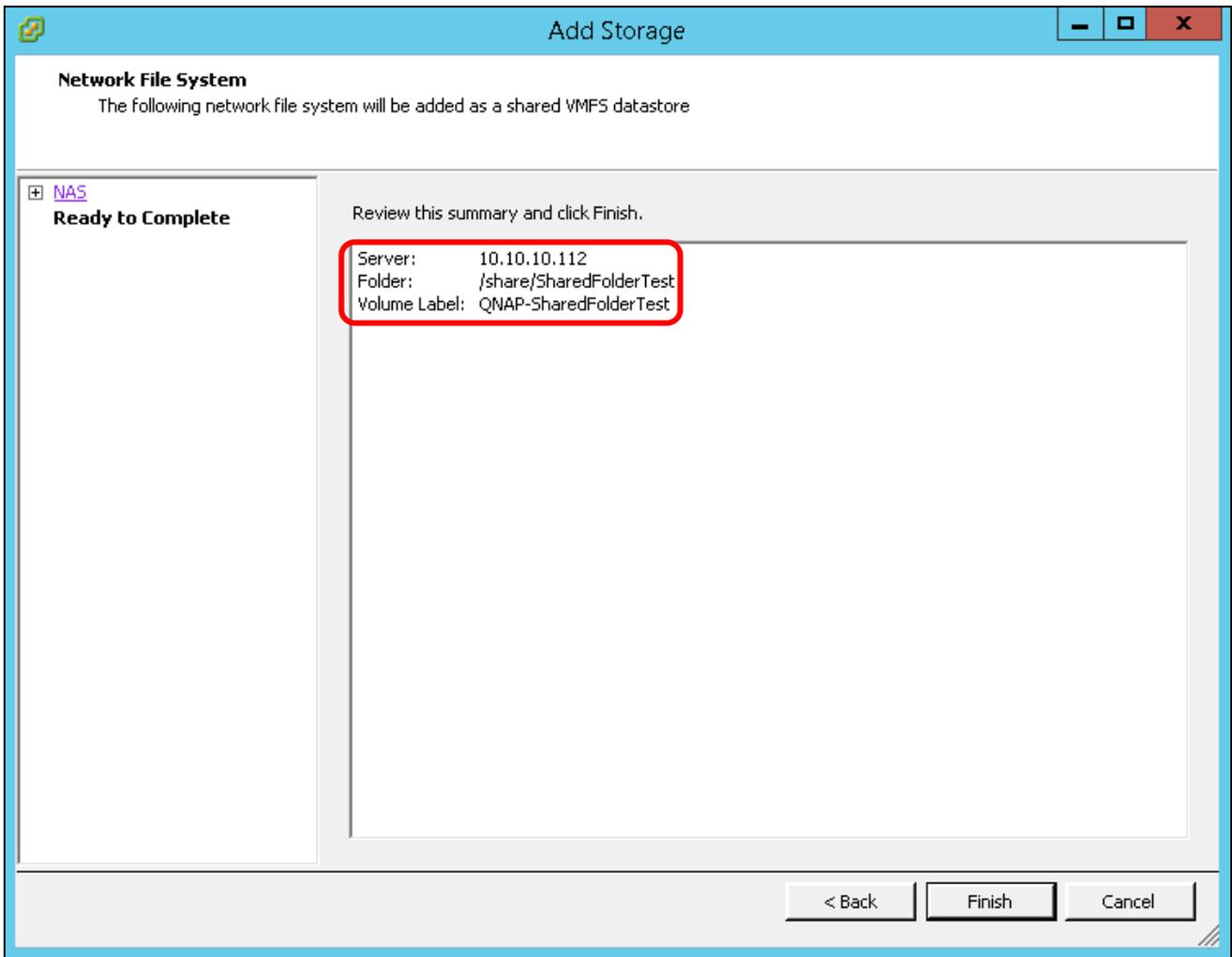
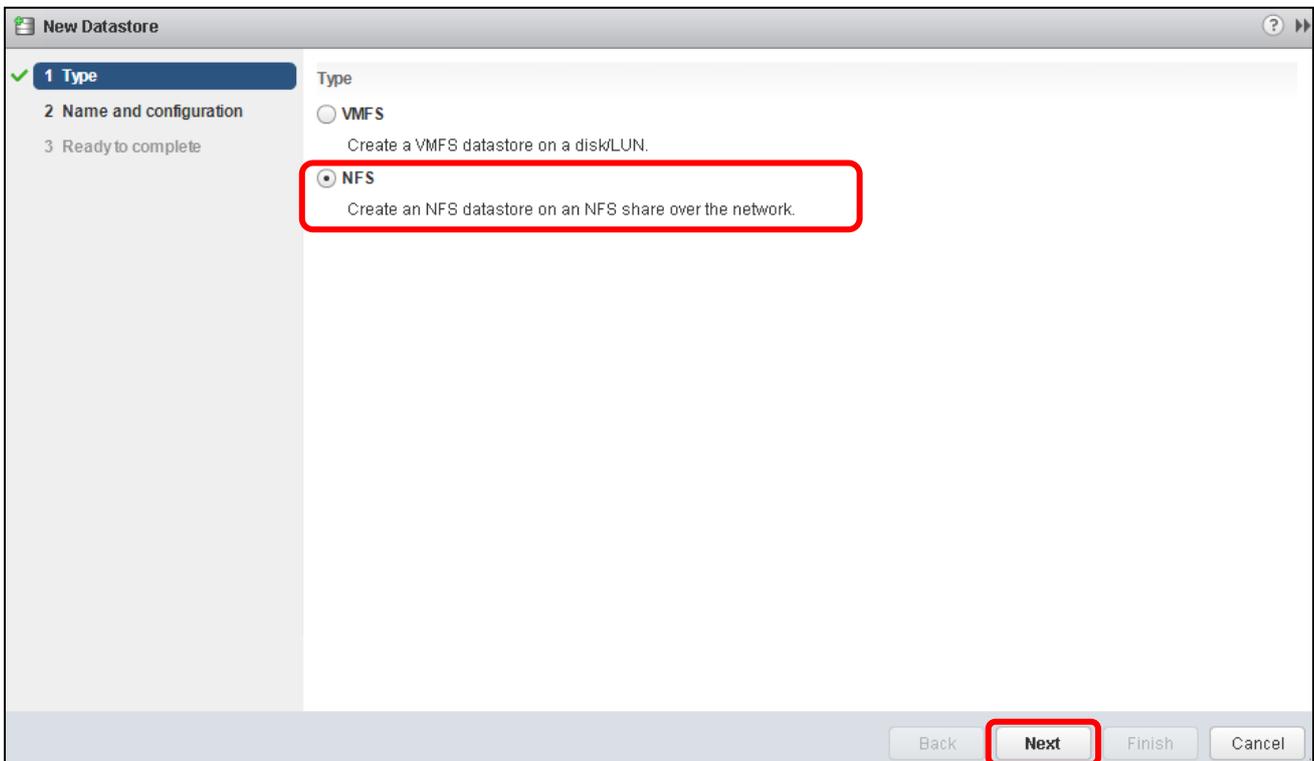Step 5:   NFS datastore is added and shown on the list.
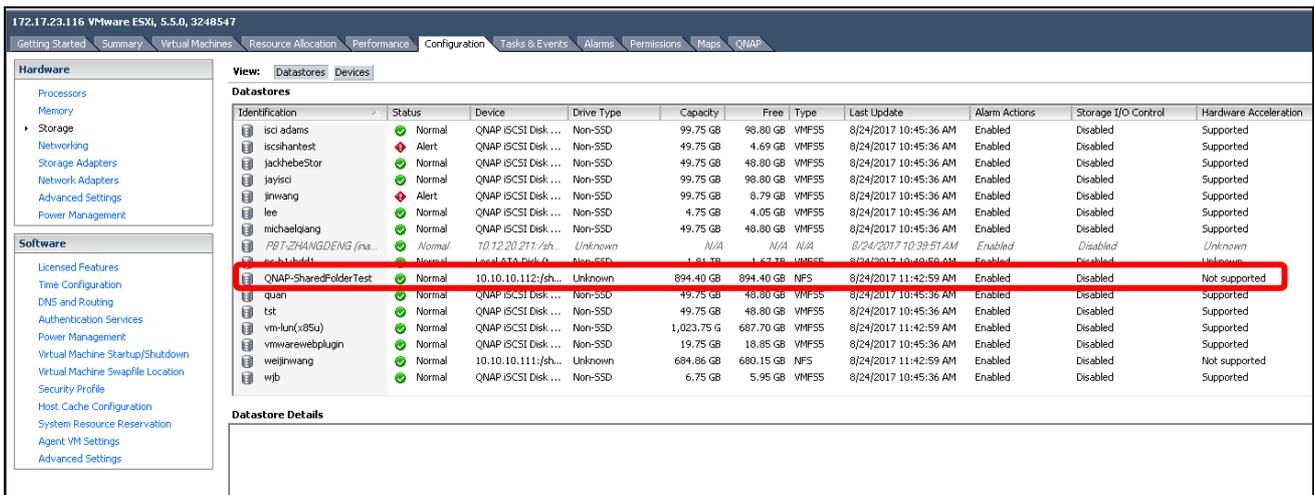
Add an NFS Datastore in vSphere Web Client 6.0

Step 1:   Log into vSphere Web Client, select the ESXi host on which you want to add the datastore. Then go to "Related Objects" > "Datastores", and select "Create a new datastore" icon.
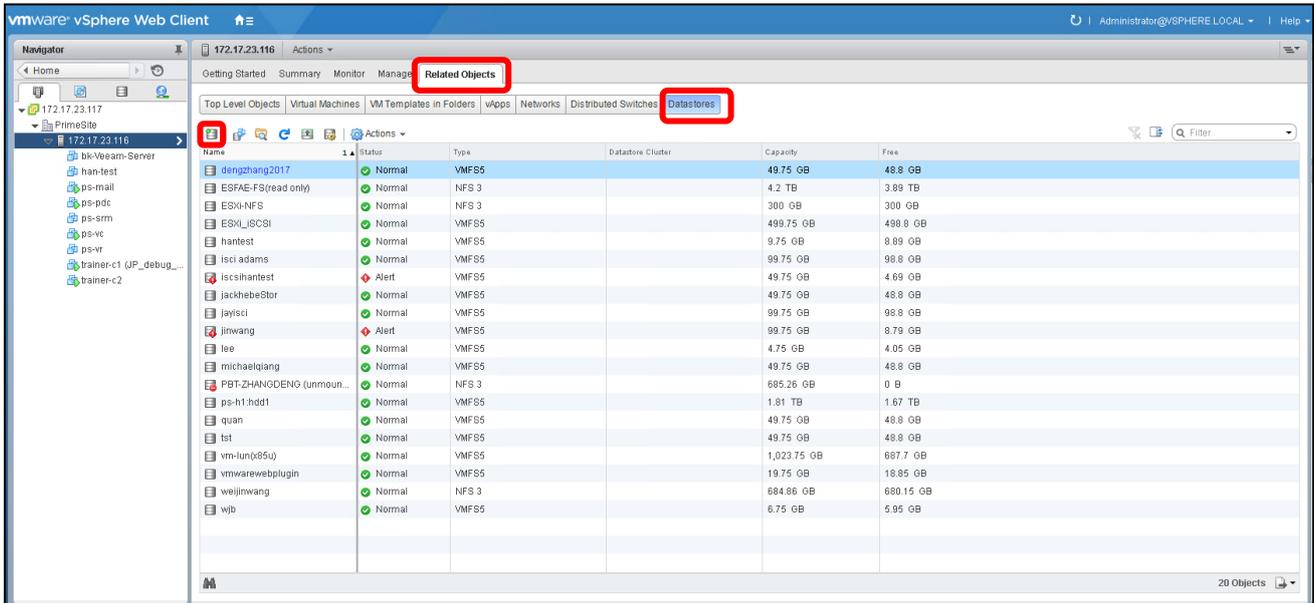
Step 2:   Select "NFS", and then click "Next".

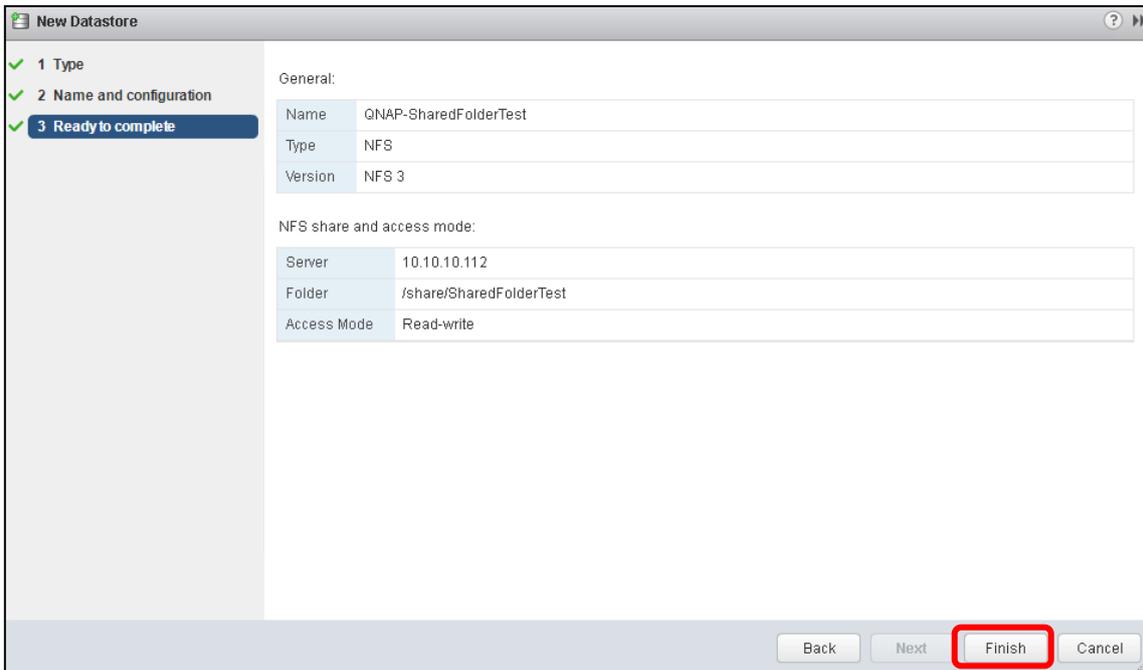Step 3:   Datastore name: Give a name for this NFS share.

Folder: Enter the shared folder's path.

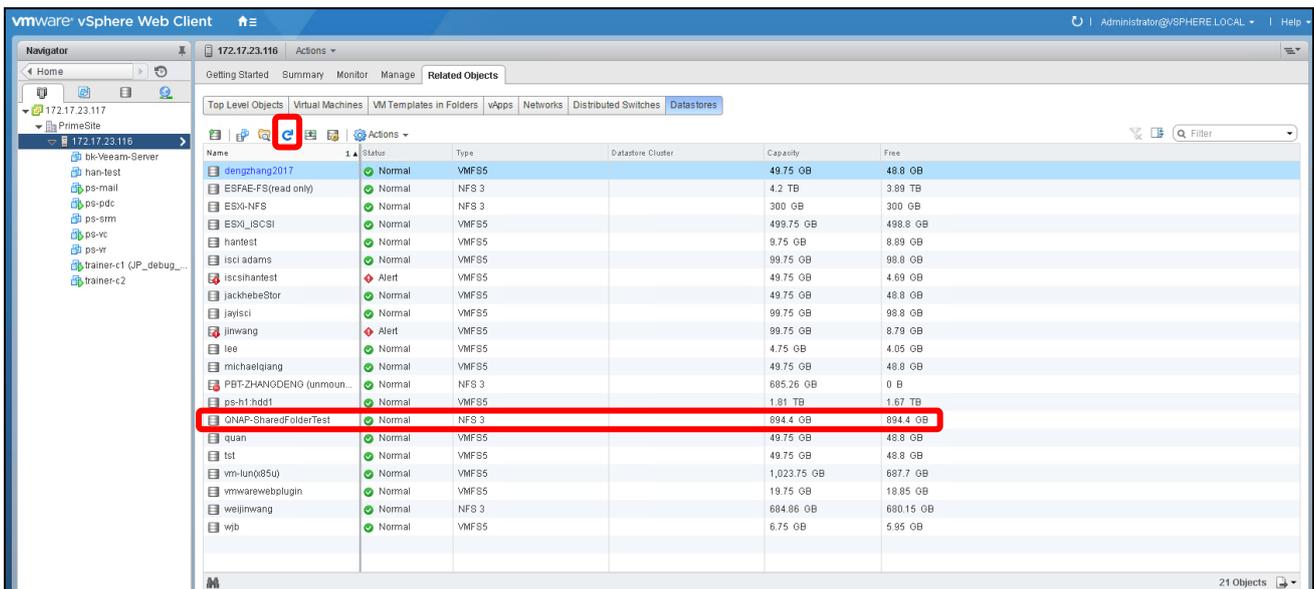Server: Enter the data port's IP of the storage controller on the ES NAS.

(Regarding Server IP/Folder settings, see the previous "IP Addresses" section for reference)

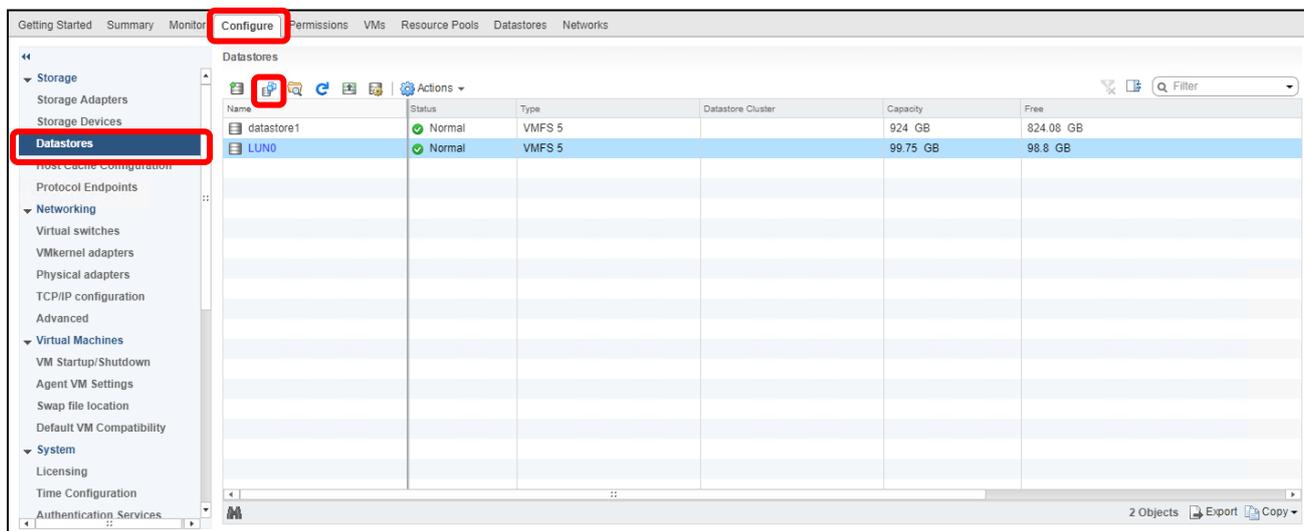

Step 4:   Confirm the settings and click "Finish".

Step 5: NFS datastore is added and shown on the list.

Add an NFS Datastore in vSphere Web Client 6.5

Step 1:   Log into vSphere Web Client, select the ESXi host on which you want to add the datastore. Then go to "Configure" > "Datastores", and select "Create a new datastore" icon.

Step 2:   Follow the same steps from 2 to 5 as in "Add an NFS Datastore in vSphere Web Client 6.0" section.