

Adding FlashNAS ZFS Series NFS Folder *to* VMware 5

Abstract

This application note describes how to configure a FlashNAS ZFS shared folder according to the NFS protocol and then add the folder to VMWare 5 as a datastore.

Table of Contents

Product Models Covered by This Document.....	3
FlashNAS ZFS Family of Unified Storage Systems	4
VMware Virtualization.....	5
Adding FlashNAS ZFS Series NFS Shared Folder to VMware 5	7
<i>Step 1: Preparing the Environment.....</i>	<i>7</i>
<i>Step 2: Enabling the NFS Service.....</i>	<i>8</i>
<i>Step 3: Sharing a Folder and Configuring NFS Settings.....</i>	<i>9</i>
<i>Step 4: Adding the Shared Folder as a New Database to VMWare.....</i>	<i>13</i>

Product Models Covered by This Document

This document applies to the following product models:

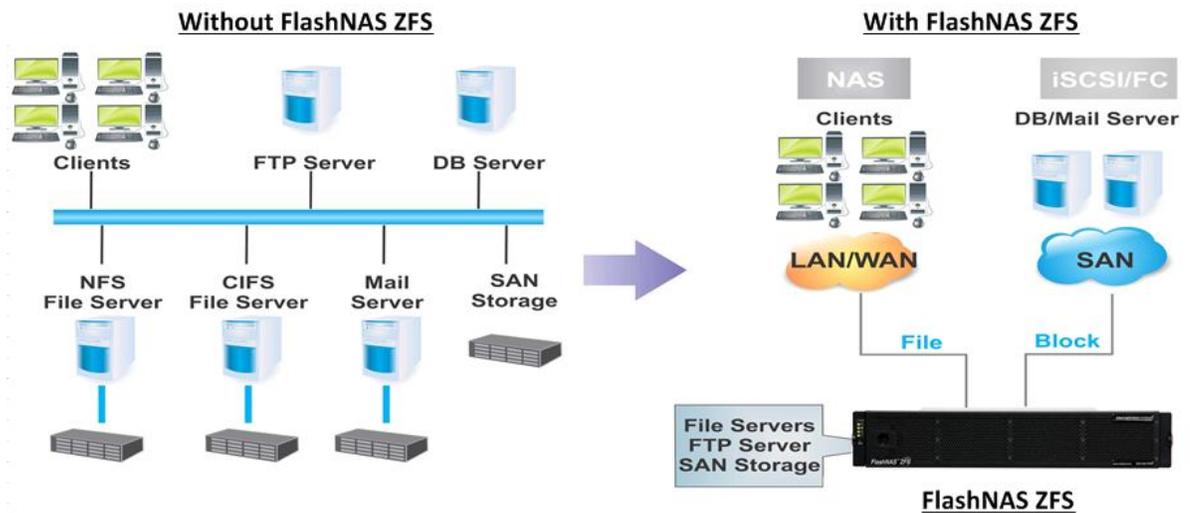
- **FlashNAS ZX2U12**
- **FlashNAS ZX3U16**

For more information about compression, virtualization, snapshot, remote replication, ZFS, backup, storage, network-attached-storage, file-sharing and WORM (Write Once, Read Many), please visit www.winsys.com

FlashNAS ZFS Family of Unified Storage Systems

IT environments often feature multiple types of storage infrastructures to accommodate various types of data and achieve different service levels. The scattered boxes for DAS (Direct-Attached Storage), SAN (Storage Area Network) and NAS (Network-Attached Storage) configurations lead to poor utilization and complicated management.

FlashNAS ZFS simultaneously serves file and block-based applications with a unified storage platform, and features easy management, optimized resource utilization, high availability, flexible scalability and competitive price/performance. In addition, FlashNAS ZFS offers a comprehensive set of advanced software features at no additional costs. FlashNAS ZFS systems help businesses effectively meet diverse and changing data demand while staying within budget.



VMware Virtualization

The concept of virtualization originated in 1960s but was not applied to the x86 architecture until the 1990s. Since the 1980s, x86 servers have been widely adopted in IT environments because they are much cheaper than mainframe computers. This distributed system of computing reduces TCO but gives birth to other challenges, such as low infrastructure utilization, increasing physical infrastructure and IT management costs, insufficient failover and disaster protection, etc. Virtualization is an effective way to deal with these challenges.

In VMware's virtualization technology, ESX Server has been a foundation of virtualized environments.

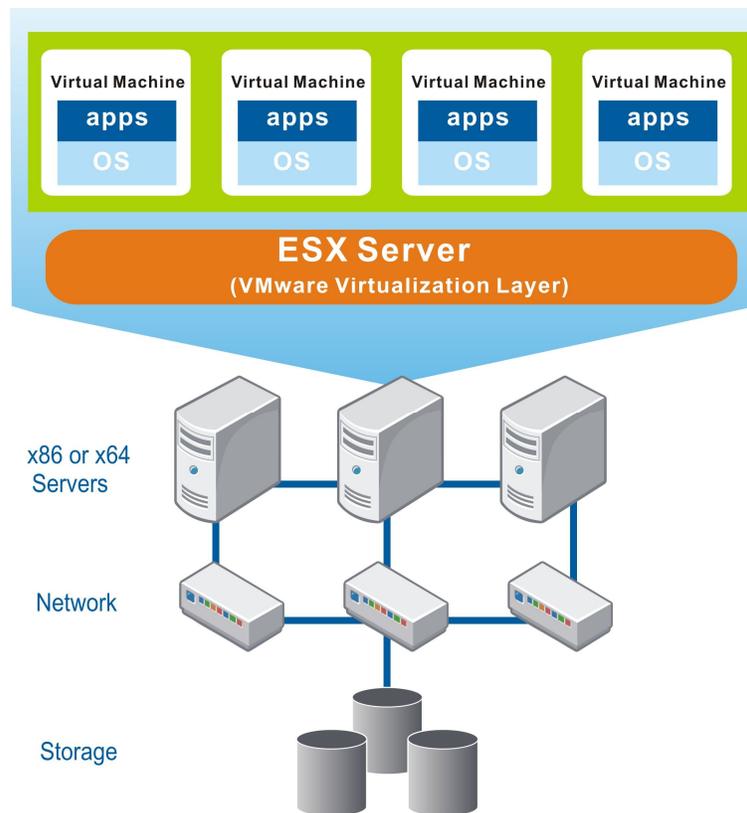


Figure 1. VMware ESX Server

Installed on an x86 or x64-based server, VMware ESX Server provides a virtualization layer on the host OS to consolidate all hardware resources, including processors, memories, storage and networking, and apply them to virtual machines (i.e. virtual servers) running on the physical server. Each virtual machine can have its own OS and applications. By sharing hardware resources across multiple virtual machines, users can improve resource utilization and in turn greatly reduce costs involved in building a datacenter's physical infrastructure.

Besides the optimized resource utilization, VMware virtualization also reduces deployment efforts and simplifies management tasks. Free from the physical considerations and requirements, deploying virtual machines can be done in minutes or hours. After the deployment, managers can easily monitor the entire virtual datacenter through a unified management pane. When any of the physical devices fail, the high-availability features of VMware can ensure continuous system operation.

Adding FlashNAS ZFS Series NFS Shared Folder to VMware 5

FlashNAS ZFS supports a variety of service protocols, including the NFS (Network File System) commonly used in Unix/Linux as well as VMWare 5 environments. Users can easily create a shared folder based on the NFS protocol in their FlashNAS ZFS systems, then associate the folder to VMWare 5 as a datastore.

In this application note, basic procedures are introduced in a step-by-step manner.

- Enabling NFS protocol in FlashNAS ZFS
- Creating a shared folder in FlashNAS ZFS
- Adding the shared folder as a datastore in VMWare

Step 1: Preparing the Environment

1. Prepare the following items:
 - (a) A host computer with VMWare 5 implemented
 - (b) A FlashNAS ZFS system
2. Power up the FlashNAS ZFS system and the computer.
3. Make sure that the FlashNAS ZFS system and the computer are connected to the network.

Step 2: Enabling the NFS Service

1. Go to the FlashNAS ZFS web interface and select the Configuration > Service > Share menu.

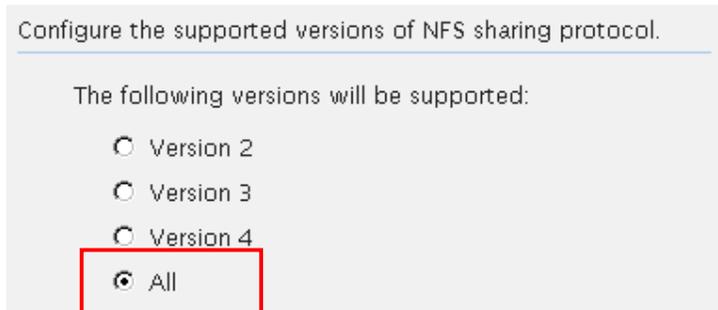


2. Highlight the NFS service. If the status is *Disabled*, click the  icon to enable it (Online).

Service Name	Status
CIFS	 Online
FTP	 Disabled
NFS	 Online

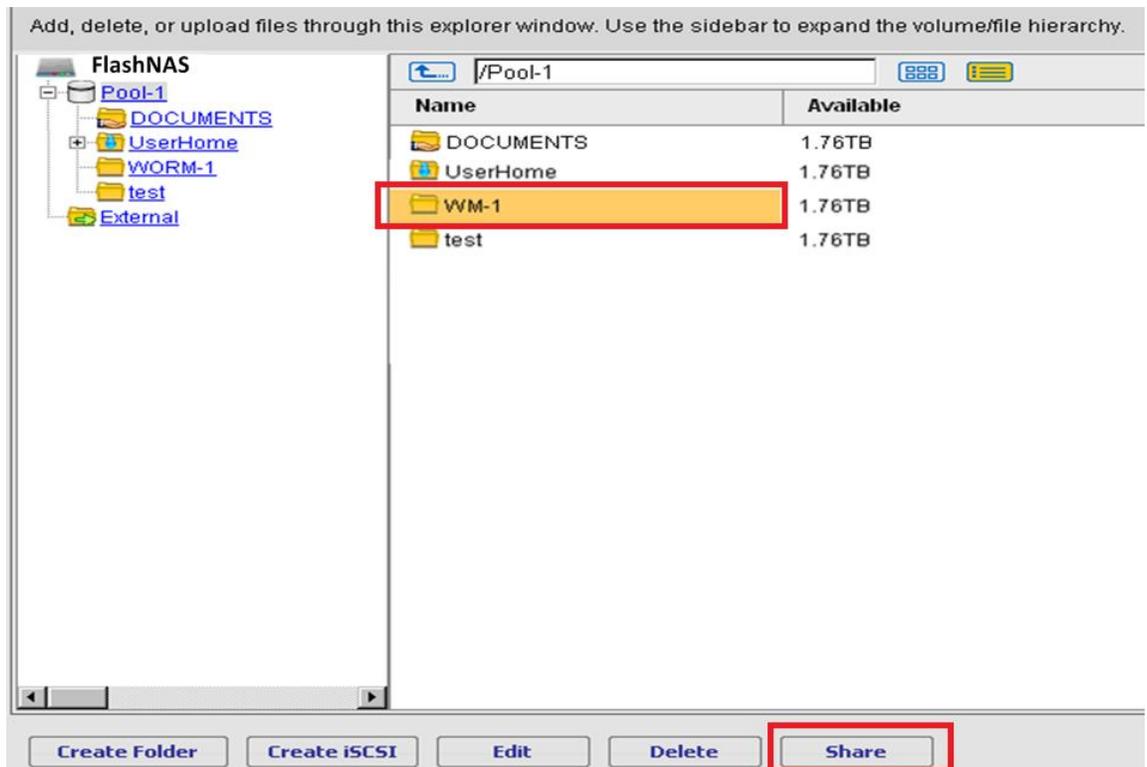
(Recent versions of software allow users to configure the compatible versions of NFS protocol. Check the Edit button and if it is active (clickable), click it.

When the setting window appears, select (check) All (all versions of NFS protocol) and click *OK*.)



Step 3: Sharing a Folder and Configuring NFS Settings

1. Highlight a folder in the Explorer screen and click the *Share* button.



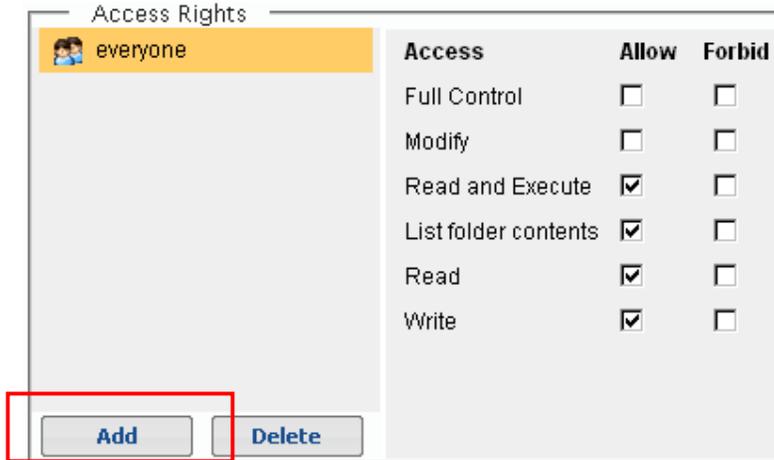
2. In the Share Configuration window that appears, specify the name of this share and a short description (optional).

Folder Path

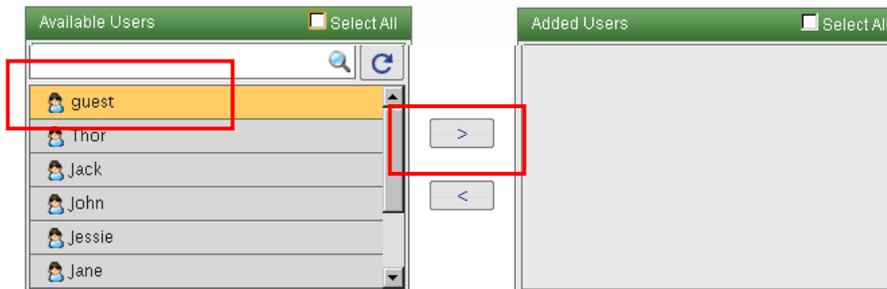
Share Name

Description

3. Click the *Add* button in the *Access Rights* pane to add users who can access this folder.



4. Highlight target users/groups from the left box and move them to the right box using the arrow button. When done, click the *OK* button.

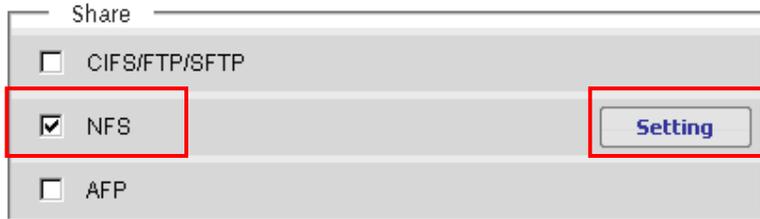


5. Check the access rights granted to the selected users in the right pane.



Adding FlashNAS ZFS Series NFS Shared Folder to VMware 5

6. Check the NFS sharing protocol and click the Setting button.



Share

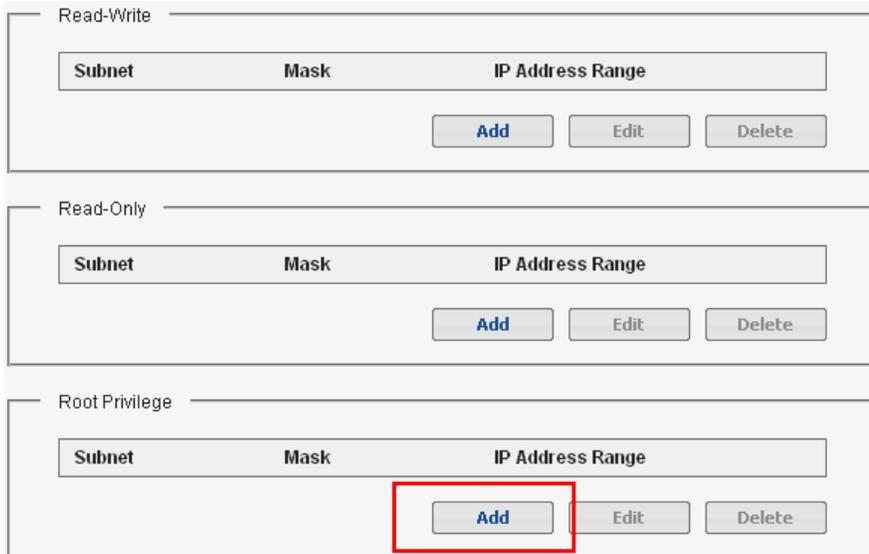
CIFS/FTP/SFTP

NFS

AFP

Setting

7. The NFS protocol setting screen will appear. Click the *Add* button in the Root Privilege corner.



Read-Write

Subnet	Mask	IP Address Range
--------	------	------------------

Add Edit Delete

Read-Only

Subnet	Mask	IP Address Range
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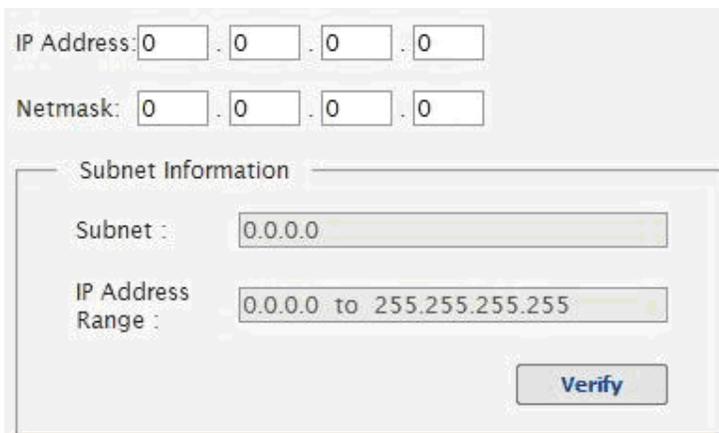
Add Edit Delete

Root Privilege

Subnet	Mask	IP Address Range
--------	------	------------------

Add Edit Delete

8. In the setting screen, enter the following parameters and then click *OK*.



IP Address: 0 . 0 . 0 . 0

Netmask: 0 . 0 . 0 . 0

Subnet Information

Subnet : 0.0.0.0

IP Address Range : 0.0.0.0 to 255.255.255.255

Verify

- IP Address: 0.0.0.0
- Netmask: 0.0.0.0
- Subnet: 0.0.0.0
- IP Address Range: 0.0.0.0 to 255.255.255.255

(These settings ensure that all addresses will be available for the users. Omitting these settings will lead to service errors.)

Adding FlashNAS ZFS Series NFS Shared Folder to VMware 5

9. The root privilege setting should appear in the list. Click *OK* to close the window.

The screenshot displays a configuration window with three sections: Read-Write, Read-Only, and Root Privileges. Each section contains a table with columns for Subnet, Mask, and IP Address Range, and buttons for Add, Edit, and Delete.

Subnet	Mask	IP Address Range

Buttons: Add, Edit, Delete

Subnet	Mask	IP Address Range

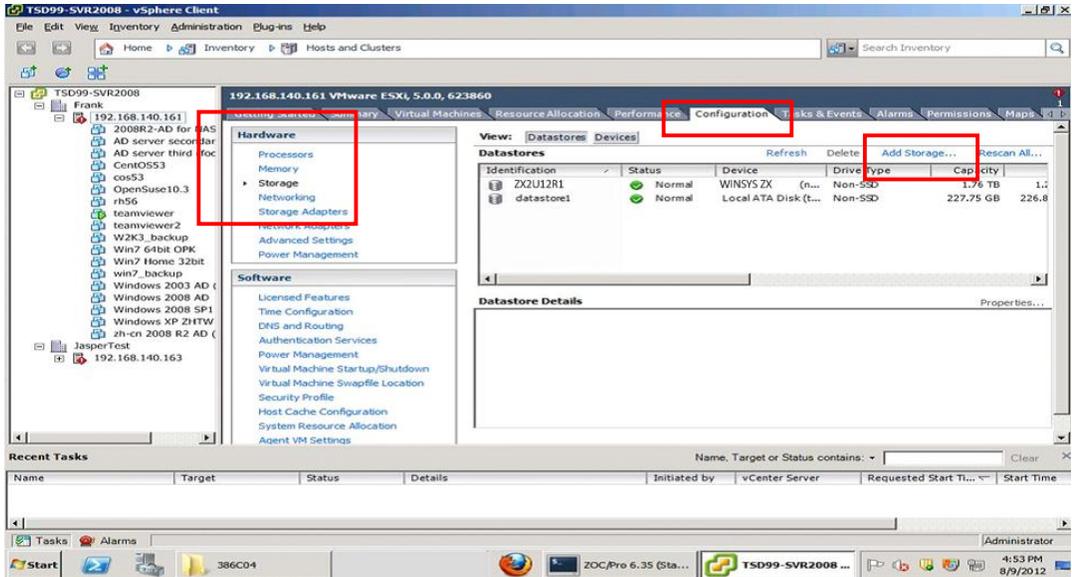
Buttons: Add, Edit, Delete

Subnet	Mask	IP Address Range
0.0.0.0	0.0.0.0	0.0.0.0 to 255.255.255.255

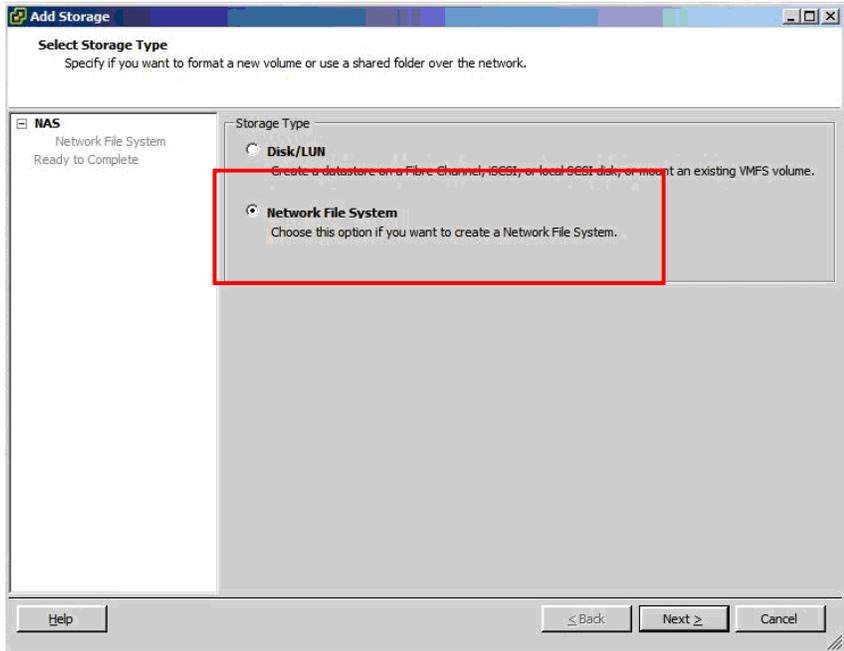
Buttons: Add, Edit, Delete

Step 4: Adding the Shared Folder as a New Database to VMWare

1. Open VMWare, select *Storage* from the *Hardware* corner, and select the *Configuration* tab. Click *Add Storage...* from the top bar menu.

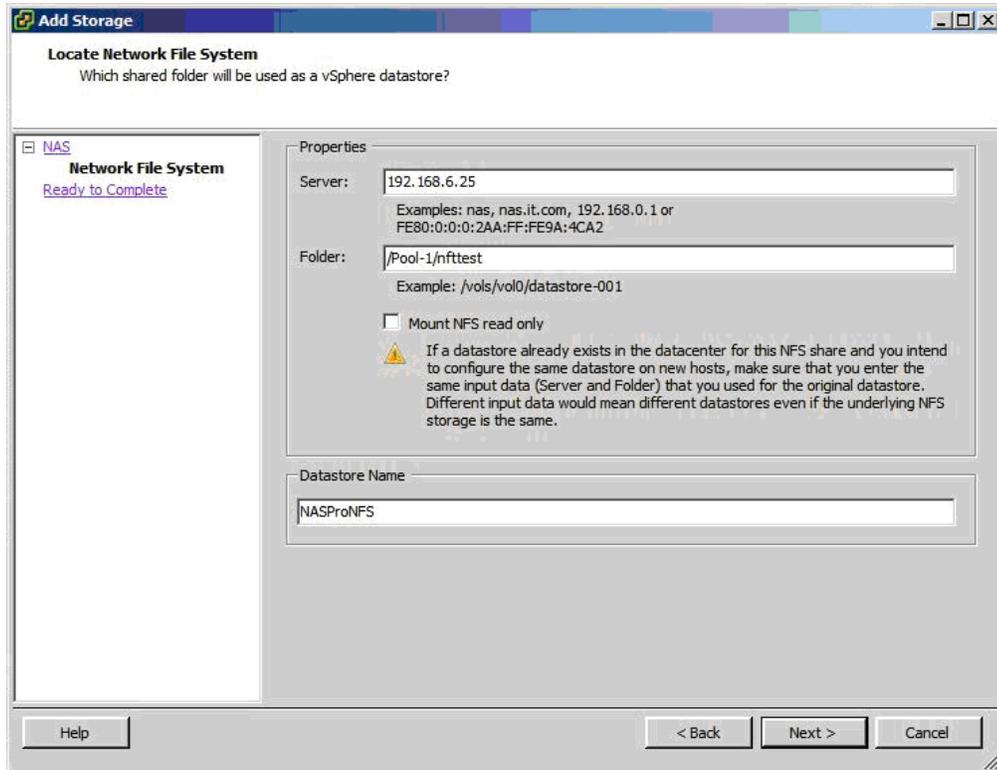


2. In the *Add Storage* dialogue that appears, select *Network File System* and click *Next*.



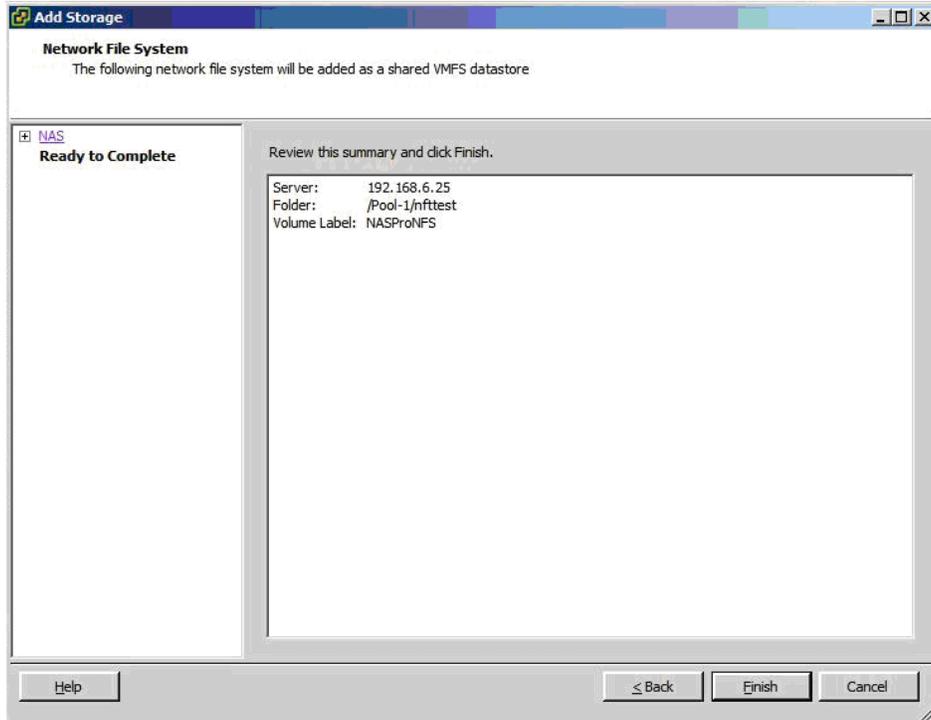
3. Enter the parameters and click *Next*.

Adding FlashNAS ZFS Series NFS Shared Folder to VMware 5



- Server: Enter the IP address of the FlashNAS ZFS system.
 - Folder: Enter the path to the shared folder.
Example: If the folder name is “nfttest” and the pool name is “Pool-1,” the path should be specified as: */Pool-1/nfttest*
 - Mount NFS read only: Unless there is an explicit reason to make the datastore read only, leave this option as unchecked.
 - Datastore Name: Name the datastore that will be associated with the FlashNAS ZFS shared folder.
4. The summary of the datastore configuration will appear. Click *Finish* to complete the process.

Adding FlashNAS ZFS Series NFS Shared Folder to VMware 5



5. The FlashNAS ZFS shared folder now appears as a new datastore in the list.

