

NFS Storage Configuration for vSphere using Windows 2008

Title: NFS Storage Configuration for vSphere using Windows 2008
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Target Audience: Technical - Intermediate
Current Revision: 1.0 (June 2010)
First Published: June 2010
Product(s): Microsoft Windows, VMware vSphere
UID: XD10254

Content Overview:

- Install and configuration of Service for Network File System
- Install and configuration of Identity Management for UNIX
- Adding NFS storage to an ESX host

1.0 Introduction

Windows 2008 introduced the ability to use NFS shares, enabling the server to be used as a storage target.

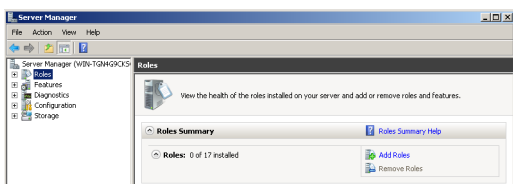
This Xtravirt white paper is a step by step guide of the process to setup and host NFS shares on a Windows 2008 server and connection to an ESXi 4 host.

The scenario described assumes that this is being setup on a single server which includes Domain Controller functions. It is designed for personal testing only and not an advocacy as a production solution.

2.0 Step-by-Step Instructions

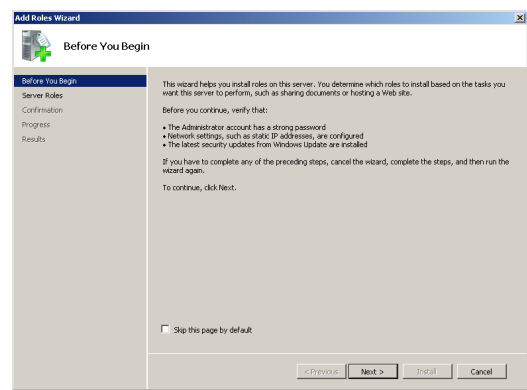
Before starting, ensure that the Windows 2008 installation is patched to current levels. The addition of a second hard disk is preferred for the setup of an independent NFS drive, although this is not essential as a folder can be shared for this purpose.

1. On the Windows 2008 server, click **Start -> Administrative Tools -> Server Manager**.
2. Select **Roles** from the list and click the **Add Roles** option.

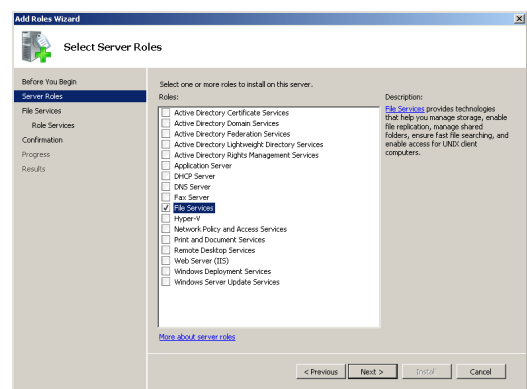


Note: This is assuming that the **File Server** role is not already enabled. If it is then click the **Go to Files Services** option instead of **Add Roles**. Scroll down in the **File Services** window and click **Add Roles Services**.

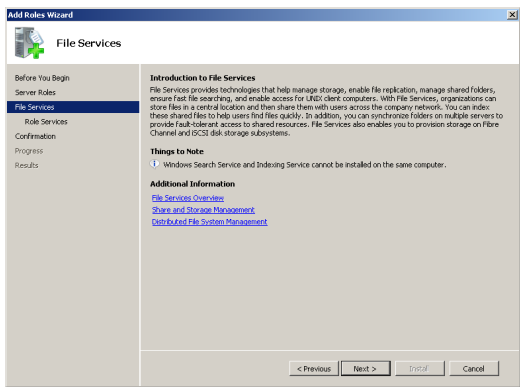
3. If the **Before You Begin** page is displayed, read it and click **Next**, if not then continue to the next step.



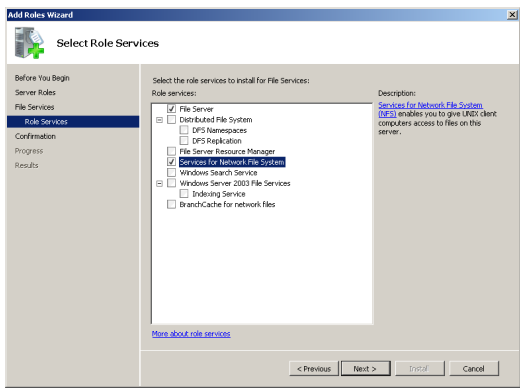
4. Select the **File Server** role checkbox and click **Next**.



5. Read the **Introduction to Files Services** page and click **Next**.

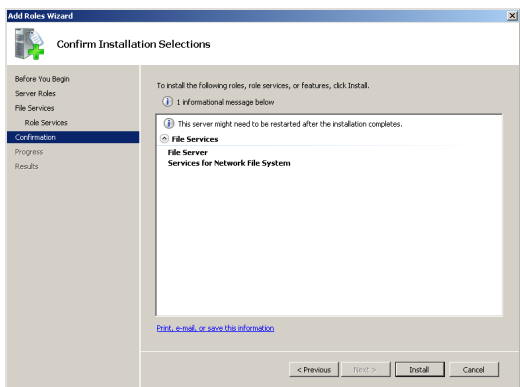


6. From within the **Select Role Services** page, select the **Services for Network File System** option and click **Next**.

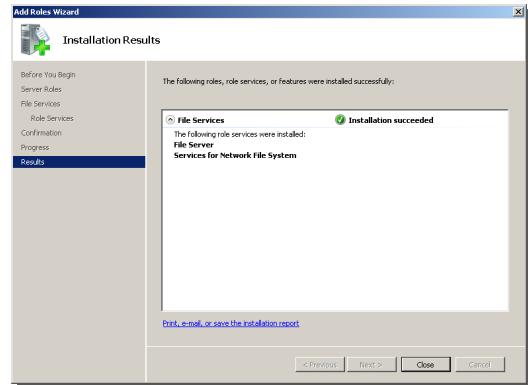


Note: This is required to enable the creation of NFS shares

7. Read the **Confirm Installation Selections** page and click **Install**.

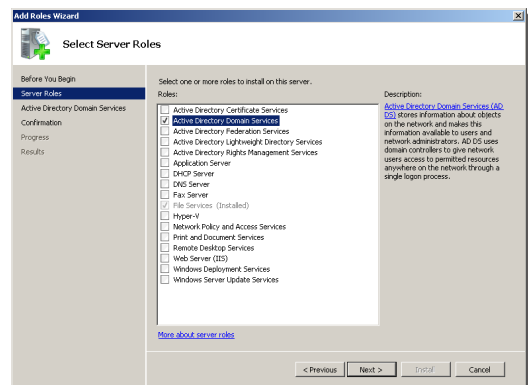


8. Once the installation has completed, click **Close**.

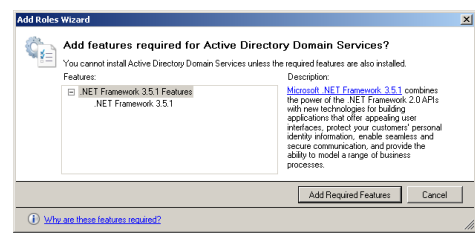


9. From the **Server Manager** window with **Roles** selected, again click **Add Roles**. If the **Before You Begin** page is displayed, read it and click **Next**, if not then continue to the next step.

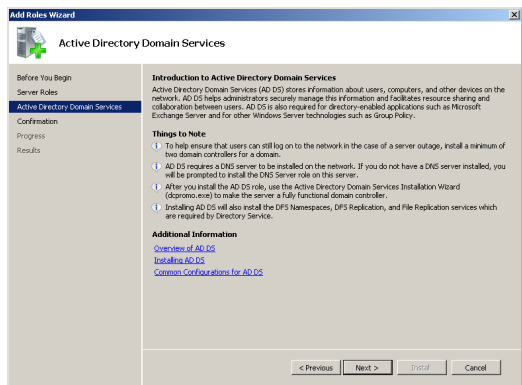
10. Select the **Active Directory Domain Services** role checkbox and click **Next**.



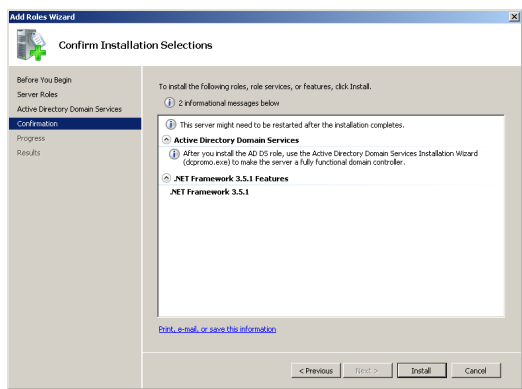
Note: If an **Add Roles Wizard** popup is displayed click the **Add Required Features** button and click **Next** from the **Select Server Roles** page.



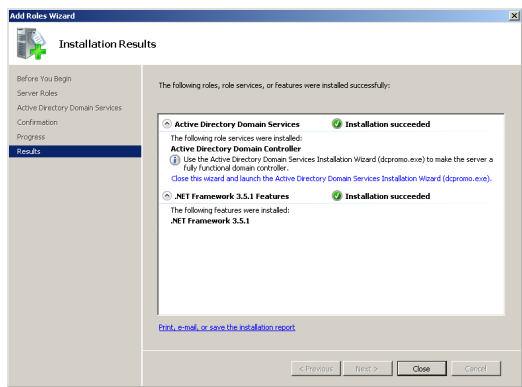
11. Read the **Introduction to Active Directory Domain Services** page and click **Next**.



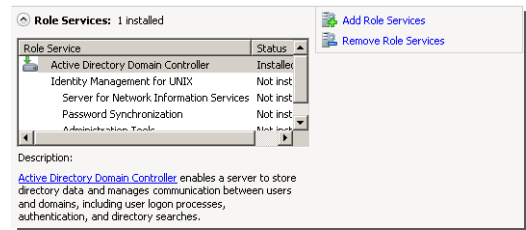
12. Read the **Confirm Installation Selections** page and click **Install**.



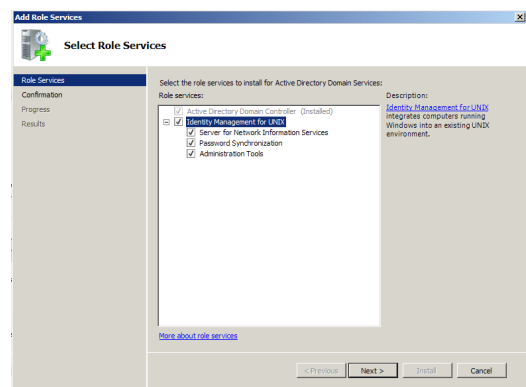
13. Once the installation has completed, click **Close**.



14. From the **Server Manager** window with **Roles** selected, scroll down and click the **Add Role Services** from within the **Active Directory Domain Services** section.

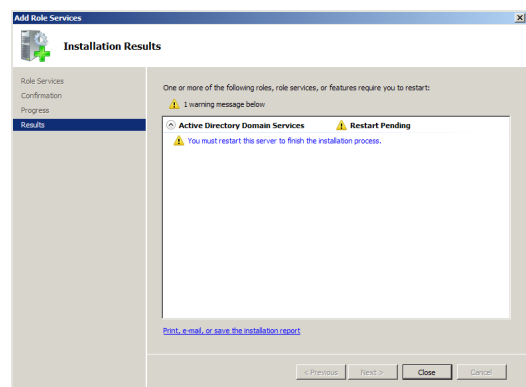


15. Select the **Identity Management for UNIX** checkbox and ensure that all sub options within **Identity Management for UNIX** are also checked.



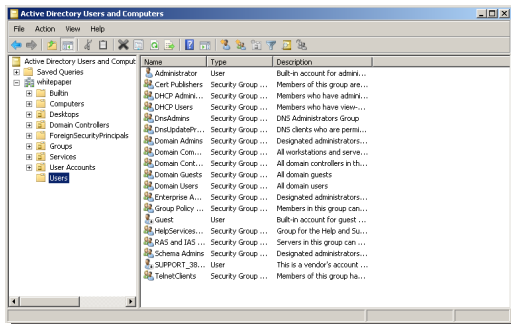
Note: This is required to allow the mapping of UNIX accounts to Active Directory

16. Once the **Service for Network File System** and **Identity Management for UNIX** have been installed, reboot the server as instructed.



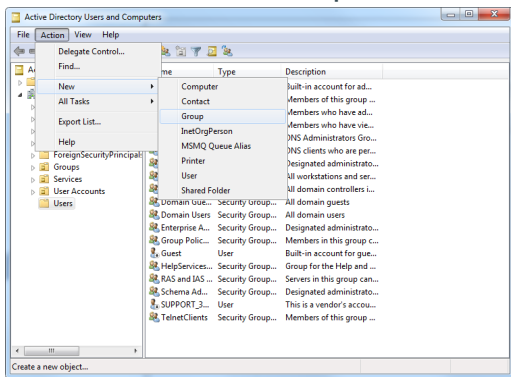
17. Upon restart open **Active Directory Users and Computers** from within the **Start -> Administrative Tools** menu.

- Expand the domain and select the **Users** OU (directory).

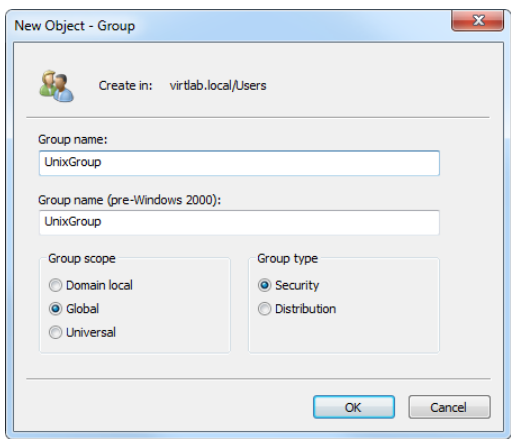


Note: The group can be created in other directory, dependant on the directory structure. For the purpose of this white paper, the built-in Users OU has been used.

- Click **Action -> New -> Group**.

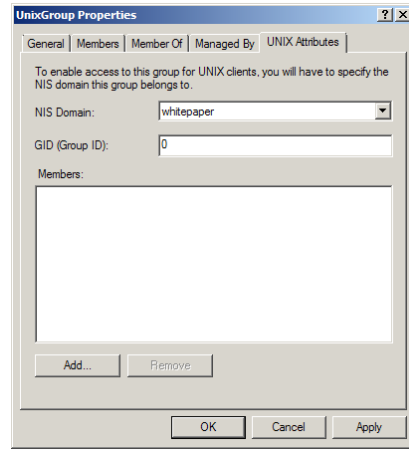


- Type the group name **UnixGroup** and leave the **Group scope** as **Global** and **Group type** as **Security**.



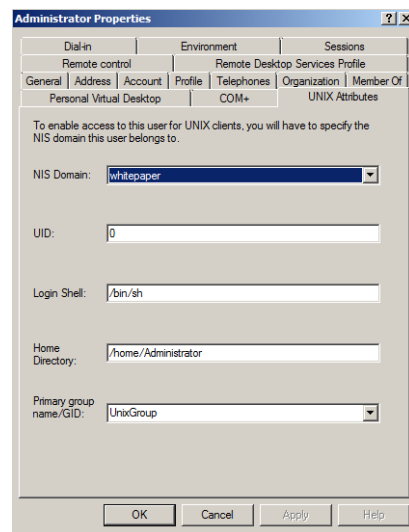
Note: The group name is not specific but must only be one word. For the purpose of this white paper **UnixGroup** has been used throughout.

- The **UnixGroup** now needs to be edited. **Double click** the newly created group and select the **UNIX Attributes** tab. **NIS Domain** should be the name of the **domain** (select from the drop down) and change the **GID (Group ID)** to **0 (zero)**.



- Select the **Members** tab and add the user to associate with UNIX - this scenario uses the **Administrator** account and click **OK** to close the **UnixGroup** properties box.

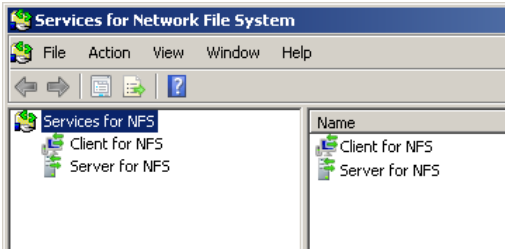
- Double click the **Administrator** user account (or the user account being used) and select the **UNIX Attributes** tab. **NIS Domain** should be the name of the **domain** (select from the drop down) and change the **UID** to **0 (zero)**. **Primary group name/GID** should be the group name created earlier (selected from the drop down).



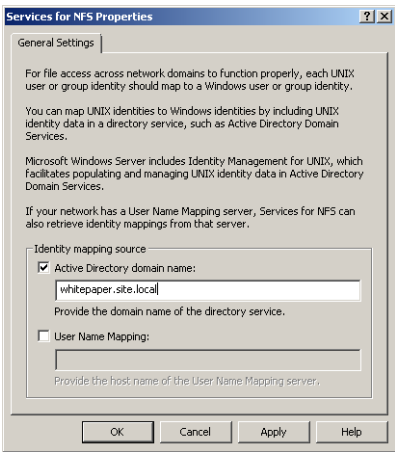
Note: This effectively links the **Administrator** account to the **root** account allowing UNIX account access (including ESX Server) to browse the NFS.

24. Open **Service for Network File System (NFS)** via Administrative Tools.

25. Right-click **Services for NFS** and select **Properties**.



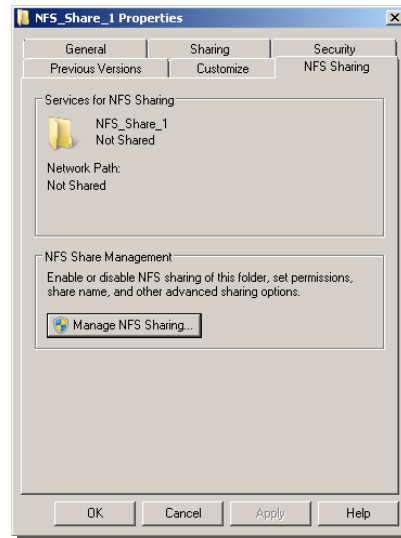
26. The **General Settings** tab has two options under **Identity mapping source**. In this case check **Active Directory domain name** and enter the fully qualified domain name for the network.



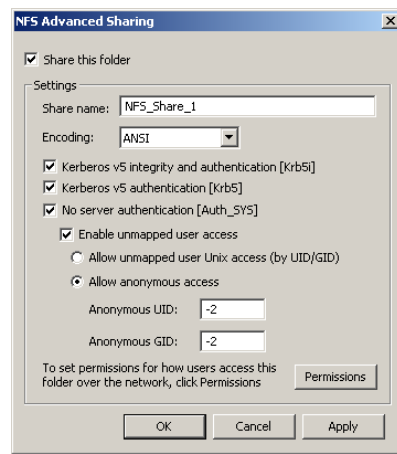
Note: This assumes that the machine is a domain controller. If not then **User Name Mapping** is required. This is not covered in this paper, but before using **User Name Mapping**, the computer running **Client for NFS** must be listed in the **.maphosts** file on the computer running **User Name Mapping**.

27. The folder share now needs to be setup. This is done by **right-clicking** the folder or drive to be used and selecting **Properties**. Select the new tab called **NFS Sharing**.

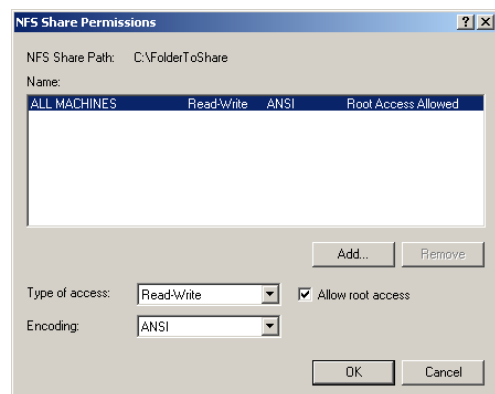
28. Under **NFS Share Management** click **Manage NFS Sharing**.



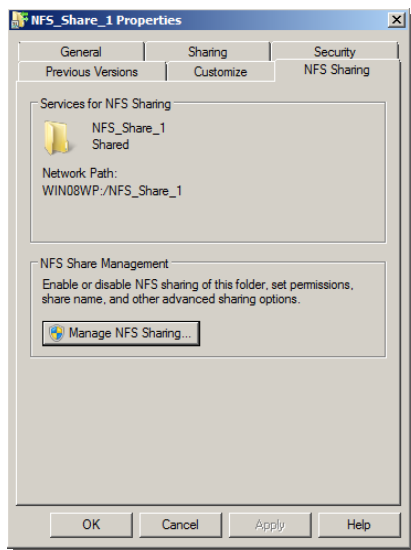
29. Select the **Share this folder** checkbox and enter a **Share name (no spaces)**. Select the radio button **Allow anonymous access** and ensure both the **UID** and **GID** fields display **-2**.



30. Select **Permissions** and change **Type of access** to **Read-Write**, select the **Allow root access** checkbox and click **OK**.

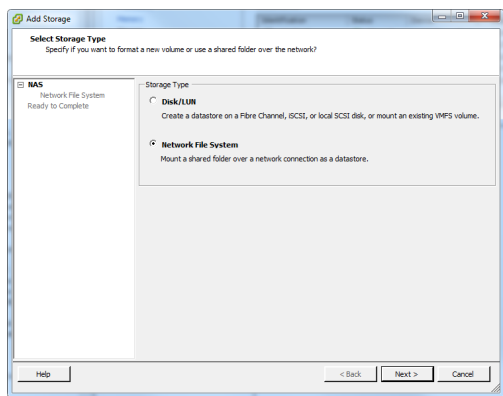


Note: Once returned to the NFS Sharing page the **Network Path** will be displayed. It is important to ensure the share name is copied correctly as NFS share names are case sensitive.



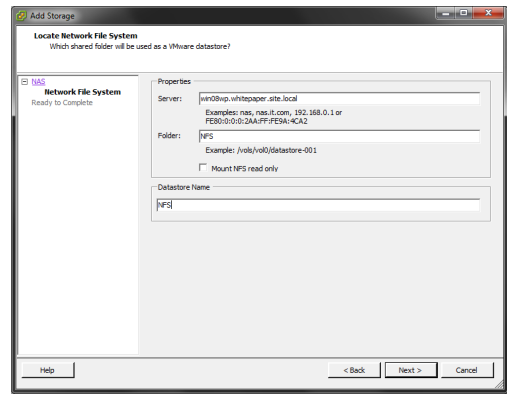
The Service for Network File System has now been configured and the NFS share should be available to systems that can use NFS for storage. In this case ESXi 4 has been used and the next section describes adding the NFS share to a host.

31. Open a connection to vCenter and choose the **Hosts and Clusters** view and **select the host** that the **NFS share** is to be added to.
32. Click the **Configuration** tab from within the right window and select **Storage** within the **Hardware** section.
33. Click **Add Storage** from the right hand side of the Window.
34. Select the radio button **Network File System**.



35. The **Locate Network File System** page needs to have the following information:

- Server:** Server and fully qualified domain name / IPv4 / IPv6
- Folder:** This is the folder name of the share
- Datastore Name:** This is how the NFS share will be listed under the datastores section



36. The NFS share is now listed as a datastore that can be used for hosting virtual machines etc. This datastore is thin provisioned by default as per all NFS shares.

View: Datastores Devices

Identification	Device	Capacity	Free	Type	LastUsed
datastore1	Local VMWare, Disk (mpx.vmhba1:0:0:0)	35.00 GB	34.55 GB	vmfs3	14/04/2010 08:55:06
NFS	win08wp.whitepaper.site.local/NFS	100.00 GB	99.91 GB	NFS	14/04/2010 09:32:11

This concludes the white paper.

About Xtravirt

Xtravirt is a knowledge-based company that delivers its expertise in virtualization online and in person. We have developed a reputation for astute leadership and expertise through our work with an impressive array of organisations. It is this real-world experience that drives our ability to provide independent, current and free advice online.

We work with organisations whose IT staff are frustrated with how hard it is to find detailed information and skills around virtualization. We help our clients deliver the true benefits of virtualization, resulting in cost and time savings.

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Useful Links

1. Microsoft Windows 2008 documentation, <http://www.microsoft.com/windowsserver2008/en/us/white-papers.aspx>
2. VMware vSphere documentation, http://www.vmware.com/support/pubs/vs_pubs.html

Tags

VMware, ESX, ESXi, Virtual Machine, NFS, vSphere, Windows 2008, Windows 2008 R2, Service for Network File System, Identity Management for UNIX