

# NTP Software QFS® for NetApp®

Installation Guide

Version 8.5



This guide provides a short introduction to installation and initial configuration of NTP Software QFS<sup>®</sup> for NAS, NetApp<sup>®</sup> Edition, from an administrator's perspective. Upon completion of the steps within this document, NTP Software QFS for NAS, NetApp Edition will be installed within your enterprise community. This Installation Guide applies to all NTP Software QFS for NAS, NetApp Filer<sup>®</sup> editions..

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## **Executive Summary**

Thank you for your interest in NTP Software QFS<sup>®</sup> for NAS, NetApp<sup>®</sup> Edition. NTP Software QFS controls storage for millions of users worldwide. NTP Software QFS for NAS, NetApp Edition extends our best-of-breed technology to include the NetApp family of products, allowing you to manage Windows<sup>®</sup> and NAS-hosted storage as a seamless whole.

Given the architecture of your Filer, NTP Software QFS for NAS, NetApp Edition does its job remotely. Part of NTP Software QFS Family of Products, NTP Software QFS for NAS, NetApp Edition uses a connector service to create a bridge and include Filers as full participants in storage environments controlled by NTP Software QFS. In light of this fact, you will need to install the NAS connector on one of the Windows Server<sup>®</sup> 2008, Windows Server<sup>®</sup> 2008 R2, Windows Server<sup>®</sup> 2012, or Windows Server<sup>®</sup> 2016 machines in your environment. This may be an existing server or workstation, or a standalone system.

To be managed by NTP Software QFS, version 6.5 or later (excluding versions7.1.x) of the Data ONTAP<sup>®</sup> operating system is required on the Filer. If the QFS license key supports NFS, the managed Filer ONTAP version need to be 7.3 or newer. If QFS is running on Windows Server 2008 or newer, it is recommended to upgrade to ONTAP version 7.3.3 or newer.

NTP Software QFS for NAS, NetApp Edition requires the Cluster mode NetApp Filer to run Data ONTAP version 8.2 or later.

NTP Software QFS for NAS, NetApp Edition can be used to manage NetApp Filers, vFilers<sup>®</sup>, and NetApp clusters or any combination of these systems. NTP Software QFS imposes no restrictions on how you organize or manage your storage. You can impose policies on individual directories, users, and/or groups of users.

**NOTE:** If you want to use email-based messaging and notifications, access to an email server is required.

To install NTP Software QFS on Windows, a login with administrator rights is needed. You will be installing four different services: the NTP Software Smart Policy Manager<sup>™</sup> service, the NTP Software QFS service, the NAS Connector, and the NTP Software QFS Watchdog service.

The NTP Software Smart Policy Manager service should be installed with a domain user account as its service account so that it can communicate with your mail system and other storage servers with which it may share policies. The NTPSoftware QFS service requires a domain user account with local administrative rights on the NetApp Filer. The NAS Connector service uses this account as well.

Your hardware should be appropriate for the services running on each machine. The connector itself and NTP Software QFS for NAS, NetApp Edition impose almost no load. on either machine.

## **Preparing the NetApp Filer**

#### **Preparing NetApp Filer for NTP Software QFS for NAS**

NTP Software QFS for NAS, NetApp Edition requires the NetApp Filer to run Data ONTAP version 6.5 or later (excluding versions 7.1.x). If the QFS license key supports NFS, the managed Filer ONTAP version need to be 7.3 or newer. If QFS is running on Windows Server 2008 or newer, it is recommended to upgrade to ONTAP version 7.3.3 or newer. If your Filer is not running one of the supported versions, you must upgrade your operating system before you proceed. (Please refer to your Network Appliance documentation for instructions.)

The Data ONTAP 7.1 release family is currently not supported with fpolicy.

NTP Software QFS for NAS, NetApp Edition requires the Cluster mode NetApp Filer to run Data ONTAP version 8.2 or later.

**NOTE:** In case NTP Software QFS for NAS, NetApp Edition is running on W2k8 Server or W2k8R2 Server, the Filers' hosts file needs to include the IP address and FQDN of the machine running NTP Software QFS.

To insert the IP address and FQDN within the Filer's hosts file, perform the following steps:

- 1. Go to http://filername/na\_admin
- 2. Click FilerView > Network > Manage Hosts File
- 3. On the Manage Hosts File page, click the Insert button.
- 4. On the Create a New/etc/hosts Line dialogue box, add in the IP, FQDN, and other required data of the current NTP Software QFS server machine and then click Ok.
- 5. On the Manage Hosts File page, click the Apply button.

#### **Preparing NetApp Filer for NFSv4 Support**

Although NTP Software QFS<sup>®</sup> does not install any components on the NetApp<sup>®</sup> server; you will need to enable NFSv4 protocol in the Data ONTAP<sup>®</sup> and disable NFSv3 to prevent its usage. Perform these steps:

- 1. Log on to the NetApp<sup>®</sup> server with an account that has administrative privileges.
- 2. To enable NFSv4 in the Data ONTAP<sup>®</sup>, enter the following command at the prompt:

options nfs.v4.enable on options nfs.v4.id.domain localdomain

3. It is recommended to disable NFSv3 in the Data ONTAP<sup>®</sup> and keep only NFSv4 enabled. To do so, enter the following command:

options nfs.v3.enable off

4. Make sure the volumes and qtrees that will be accessed using the NFS protocol have their security style set to mixed. To check that, enter the following command:

qtree status

The command should display something similar to the following:

Volume Tree Style Oplocks Status vol0 \_\_\_\_\_ mixed enabled normal

If the volume has a value under the Style column is ntfs or unix, proceed to step 5. If the volume has a value under the Style column is mixed, skip step 5 and go directly to the next section.

5. Enter the following command to set the security style to mixed (replace <path> with the actual path, as /vol/vol0 for the example shown above:

qtree security <path> mixed

- 6. Open the exports file located inside the etc directory of your filer.
- 7. NFS exports are similar to CIFS shares. The exports file contains entries for NFS exports. For every path you wish to export, add the following line to the end of the exports file (where <path> is replaced with the actual path as in step 5):

<path> -sec=sys,rw,anon=0

#### **Preparing NetApp Filer for NFSv3 Support**

Although NTP Software QFS<sup>®</sup> does not install any components on the NetApp<sup>®</sup> server; you will need to enable NFSv3 protocol in the Data ONTAP<sup>®</sup> and disable NFSv4 to prevent its usage. ONTAP 7.3.x or later is required for NFS support. Perform these steps:

- 1. Log on to the NetApp<sup>®</sup> server with an account that has administrative privileges.
- 2. Make sure NFSv3 is enabled in the Data ONTAP<sup>®</sup>, by entering the following command at the prompt:

options nfs.v3.enable on

3. It is recommended to disable NFSv4 in the Data ONTAP<sup>®</sup> and keep only NFSv3 enabled. To do so, enter the following command:

options nfs.v4.enable off

4. Follow the steps 4 through 7 in the previous section (Preparing NetApp<sup>®</sup> Filer<sup>®</sup> for NFSv4 Support).

**NOTE**: ONTAP 7.3.3 or later is required for NFS support.

## Preparing NetApp Filer for Unix-to-Windows User Mapping

For NTP Software QFS<sup>®</sup> to work with NFS protocol, Unix users should be mapped to corresponding Windows users. To do that, follow these steps:

1. Log on to the NetApp<sup>®</sup> server with an account that has administrative privileges and type the following command at the prompt. This will make sure that if the filer fails to map the operating user, their operation will be denied:

options nfs.require\_valid\_mapped\_uid on

- 2. If you have NIS or LDAP configured for your Unix users, skip to step 4. Otherwise, open the passwd file located inside the etc directory of your filer.
- 3. The passwd file contains entries for all Unix users that will be accessing the filer. For every Unix user, add the following entry to the end of the filer::

<unix\_name>::<unix\_uid>:<unix\_gid>::/:

Example: Assume we have a Unix user with the name unixClient. This user has a UID of value 1000 and a GID with a value 1000. The added entry should look as follows:

unixClient::1000:1000::/:

- 4. Open the usermap.cfg file located inside the etc directory of your filer.
- 5. The usermap.cfg file contains entries that specify the mappings desired for the system. Each entry specifies a pair of Windows and Unix users, separated with a mapping operator. Enter the desired mapping entries in the following format:

[<DOMAIN\_NAME>\]<WINDOWS\_NAME> <MAPPING\_DIRECTION> <UNIX\_NAME>

DOMAIN\_NAME is the domain that the Windows user belongs to (optional). WINDOWS\_NAME is the account name of the Windows user. UNIX\_NAME is the name of the Unix user.

MAPPING\_DIRECTION is either ==, => or <=, for bidirectional mapping, left-to-right mapping and right-to-left mapping respectively.

Example: Assume we have a Unix user with the name unixClient, and we want to map this Unix user to the Windows user windowsUser whose account belongs to the myDomain domain. The mapping entry should look as follows:

myDomain\windowsUser == unixClient

For more details about user mapping and its verification, please refer to the "Error! eference source not found." section.

**IMPORTANT**: For vFilers, the mapping configuration on the vFiler must be identical to the mapping configuration on its host filer.

# **User Mapping Configuration**

All Unix user should have corresponding mapping on the Windows domain for NTP Software QFS® to work with the NFS protocol properly. Mapping entries are stored in the usermap.cfg file on the filer. All Unix users included in the mapping mechanism should have entries in the passwd file as well if you don't have NIS or LDAP servers configured for your Unix users (refer to the "Preparing NetApp Filer for NFSv3 Support

Although NTP Software QFS® does not install any components on the NetApp® server; you will need to enable NFSv3 protocol in the Data ONTAP® and disable NFSv4 to prevent its usage. ONTAP 7.3.x or later is required for NFS support. Perform these steps:

- 5. Log on to the NetApp<sup>®</sup> server with an account that has administrative privileges.
- 6. Make sure NFSv3 is enabled in the Data ONTAP<sup>®</sup>, by entering the following command at the prompt:

options nfs.v3.enable on

7. It is recommended to disable NFSv4 in the Data ONTAP<sup>®</sup> and keep only NFSv3 enabled. To do so, enter the following command:

options nfs.v4.enable off

8. Follow the steps 4 through 7 in the previous section (Preparing NetApp<sup>®</sup> Filer<sup>®</sup> for NFSv4 Support).

**NOTE**: ONTAP 7.3.3 or later is required for NFS support.

Preparing NetApp Filer for Unix-to-Windows User Mapping" section for configuration steps).

#### **Default Mapping**

Before configuring the mapping mechanism on the filer, it is better to configure (or disable) the default filer mapping. When a mapping request comes in to the filer, it is first checked against the NIS, LDAP or mapping files. If this fails, the request is checked against the default filer mapping. If the latter fails, the request is allowed or denied based on the value set for nfs.require\_valid\_mapped\_uid (refer to the "Preparing NetApp Filer for NFSv3 Support

Although NTP Software QFS® does not install any components on the NetApp® server; you will need to enable NFSv3 protocol in the Data ONTAP® and disable NFSv4 to prevent its usage. ONTAP 7.3.x or later is required for NFS support. Perform these steps:

- 9. Log on to the NetApp<sup>®</sup> server with an account that has administrative privileges.
- 10. Make sure NFSv3 is enabled in the Data ONTAP<sup>®</sup>, by entering the following command at the prompt:

options nfs.v3.enable on

11. It is recommended to disable NFSv4 in the Data ONTAP<sup>®</sup> and keep only NFSv3 enabled. To do so, enter the following command:

options nfs.v4.enable off

12. Follow the steps 4 through 7 in the previous section (Preparing NetApp<sup>®</sup> Filer<sup>®</sup> for NFSv4 Support).

**NOTE**: ONTAP 7.3.3 or later is required for NFS support.

Preparing NetApp Filer for Unix-to-Windows User Mapping" section for configuration steps).

The default filer mapping is set using the following command:

options wafl.default\_nt\_user [<DOMAIN\_NAME>\]<WINDOWS\_NAME>

DOMAIN\_NAME is the domain that the Windows user belongs to (optional). WINDOWS\_NAME is the account name of the Windows user.

If you wish to set the default mapping to nobody (i.e. denying the request), type two double quotes (empty string) as follows:

options wafl.default\_nt\_user ""

#### **General Form**

Generally, the mapping entry looks as follows in the mapping file:

[<DOMAIN\_NAME>\]<WINDOWS\_NAME> </Pre>

DOMAIN NAME is the domain that the Windows user belongs to (optional). WINDOWS NAME is the name of the Windows account user. UNIX NAME is the name the Unix of user. MAPPING DIRECTION is either ==, => or <=, for bidirectional mapping, left-to-right mapping and right-to-left mapping respectively.

Example: Assume we have a Unix user with the name unixClient, and we want to map this Unix user to the Windows user windowsUser whose account belongs to the myDomain domain. The mapping entry should look as follows:

myDomain\windowsUser == unixClient

(Please refer to your Network Appliance<sup>TM</sup> documentation for more instructions.)

#### **Mapping Directions**

There are three mapping operators that can be used per mapping entry to define the mapping direction:

- Bidirectional Mapping (==): maps the Unix user to the Windows user, and vice versa.
- Left-to-right Mapping (=>): maps the Windows user to the Unix user.
- Right-to-left Mapping (<=): maps the Unix user to the Windows user.

**Note:** NTP Software QFS<sup>®</sup> is not concerned with the mapping from Windows user to Unix users. Hence, the usage of left-to-right mapping direction (=>) is not needed in the mapping mechanism.

#### Wildcards and Symbol Conventions

The asterisk (\*) is considered as a wildcard character, meaning any user. If the source contains a wildcard, this means any user will be mapped to the destination. Note that Data ONTAP® does not map explicit sources to destinations with wildcards. However, if both the source and the destination contain wildcards, the mapping is fine. The wildcard can be used in place of any of the DOMAIN\_NAME, WINDOWS\_ACCOUNT\_NAME and UNIX\_NAME with respect to the previous note.

The null string ("") is used to specify nobody, where the mapping matches no name and rejects the user. It can be used with the asterisk as well. Examples:

# maps any user belonging to the myDomain domain to the Unix user unixClient: myDomain $\ =>$  unixClient

# maps any user with the name windowsUser belonging to any domain to the Unix user unixClient:

\*\windowsUser => unixClient

# maps any Unix user to the Windows User myDomain\windowsUser: myDomain\windowsUser <= \*</pre>

# maps any user belonging to the myDomain domain to nobody
myDomain\\* => ""

# maps any user with the name windowsUser belonging to any domain to nobody:
\*\windowsUser => ""

## **Mounting NFS Exports on Unix Clients**

NFS exports are similar to CIFS shares. To access any of your NFS exports from a Unix client machine, the export should be mounted first (refer to the "Support" section). To do that, follow the next steps:

1. Open a terminal window on your Unix client machine, and type the following commands:

sudo mkdir /mnt/<mount\_dir>
sudo mount -t nfs4 <filer\_ip\_address>:<path> /mnt/<mount\_dir>

Where <mount\_dir> is the name of your choice to mount the filer's path on, <filer\_ip\_address> is the address to the filer, and <path> it the actual path to the volume, qtree or folder you wish to mount.

Example: The following commands will create a directory with the name myfiler and mount the path /vol/vol0/home on the filer at the IP address 10.0.0.10 to it:

sudo mkdir /mnt/myfiler sudo mount –t nfs4 10.0.0.10:/vol/vol0/home /mnt/myfiler

2. If the process was successful, you should access the path stated on the filer using the following command:

cd /mnt/<mount\_dir>

Example: Continuing the previous example, the path on the filer could be accessed using the following command:

cd /mnt/myfiler

To dismount the path, use the following command:

sudo umount /mnt/<mount\_dir>

**IMPORTANT**: If you want to use NFSv3 protocol instead of NFSv4 protocol, just use nfs instead of nfs4 in step 1 above.

# Requirements

NTP Software QFS components must meet the following minimum requirements.

## NTP Software QFS for NAS, NetApp Edition Server Requirements

NTP Software QFS for NAS is installed on a server in your environment. The hardware must be suitable for our software operation, and our requirements are the minimum necessary. If your server is also hosting antivirus or other programs, your environment's requirements may be greater than those in the following list:

#### Hardware Specification

The following hardware components are the minimum requirements to support NTP Software QFS for NAS, NetApp Edition. If the NTP Software QFS for NAS server is also hosting antivirus or other programs, the requirements may be greater than those in the following list:

- 1 GHz CPU
- 1 GB RAM
- 150 MB free disk space
- Network interface card

#### **Software Specification**

- Windows Server<sup>®</sup> 2008 or later
- WoW 64

#### **NetApp Filer Requirements**

The NetApp Filer to which NTP Software QFS for NAS, NetApp Edition will be connected requires the following:

- Data ONTAP v. 6.5 or later (excluding versions7.1.x). If the QFS license key supports NFS, the managed Filer ONTAP version need to be 7.3 or newer. If QFS is running on Windows Server 2008 or newer, it is recommended to upgrade to ONTAP version 7.3.3 or newer.
- NTP Software QFS for NAS, NetApp Edition requires the Cluster mode NetApp Filer to run Data ONTAP version 8.2 or later.
- Network interface card

**NOTE:** It is strongly recommended that two network adapters be installed in both the Filer and Windows server. The connection between the server and Filer should be a dedicated connection (i.e., separate from the public network connection). Using a single network adapter will greatly increase the time required to process data, and may cause excessive delays in the environment.

# **Network Configuration**

# NTP Software QFS for NAS, NetApp Edition Installation Best Practice



**IMPORTANT**: One network connection on the NTP Software QFS machine should be configured as a dedicated and direct connection between the Windows host and the NetApp Filer.

# Installation

Prior to installing NTP Software QFS for NAS, NetApp Edition, NTP Software recommends verifying that the installation server meets the requirements listed in the Requirements section of this document.

#### Installing NTP Software Smart Policy Manager<sup>™</sup>

- 1. Log on to your server by using an account with administrator privileges.
- 2. Run the NTP Software QFS installer. If NTP Software Smart Policy Manager<sup>™</sup> is not installed, the following installer will launch automatically.



If NTP Software Smart Policy Manager is installed, you can skip to the section on Installing NTP Software QFS for NAS, NetApp Edition.

3. When prompted to install NTP Software Smart Policy Manager, click the **Yes** button.



4. The NTP Software Smart Policy Manager Installation Wizard opens. Click Next to begin the installation.



5. In the License Agreement dialog box, read the end-user license agreement. If you agree to the terms, click I accept the terms of the license agreement and then click Next. If you do not accept the terms, click Cancel to exit the installation.

NTP Software Smart Policy Manager Setup Wizard
License Agreement Please read the following license agreement carefully.
NTP Software Smart Policy Manager(TM) End-User License By using or copying the accompanying software you are indicating your acceptance of the terms of this license. If you do not agree to the terms of this license, please return the product UNOPENED to your place of purchase for a full refund. GRANT OF LICENSE. NTP Software grants you the right to use Smart Policy Manager ("PRODUCT") on one computer, solely for your or your company's own internal use. In addition to the specified quantity of copies, you may make one (1) additional copy as a backup to the original. However, you may not cause the software to execute or be loaded into the active memory of more computers than the above-specified quantity at any one time. In addition the PRODUCT is licensed solely for the management of local storage
<pre>Cancel</pre>

6. In the **Choose Destination Location** dialog box, click **Browse** to choose the location where you want to install NTP Software Smart Policy Manager, and then click **Next**.

NTP Software Smart Policy Manager Setup Wizard	×
Choose Destination Location Select folder where setup will install files.	Software <sup>®</sup>
Setup will install NTP Software Smart Policy Manager in the following folder.	
To install to this folder, click Next. To install to a different folder, click Browse another folder.	and select
Destination Folder C:\Program Files\Smart Policy Manager	Browse
InstallShield <u>Amerika (Next &gt;</u>	Cancel

7. In the **Select Features** dialog box, select the components you want to install, and then click **Next**.

NTP Software Smart Policy Manager Setup Wizard	×
Select Features Select the features setup will install.	Software®
Select the features you want to install, and deselect the fe	eatures you do not want to install.
Smart Policy Manager Service Smart Policy Manager Admin	Selecting this option will install all of the components required for the Smart Policy Manager service. The service installation will automatically install the client components.
4.48 MB of space required on the C drive 18092.04 MB of space available on the C drive InstallShield	
< <u>B</u> ac	k <u>N</u> ext≻ Cancel

8. In the **Service Account** dialog box, when prompted for a Windows domain user account to run the NTP Software Smart Policy Manager service, enter the username and password for a domain user account with administrative rights on the local machine. Click **Next**.

NTP Software	Smart Policy Manager Setup Wizard	×
Service Act	count:	Software <sup>®</sup>
Enter the se	rvice account the Smart Policy Manager service is to run under.	
Service	Administrator	
Password:	•••••	
Confirm:	••••••	
InstallShield —	< <u>B</u> ack <u>N</u> ext >	Cancel

9. In the **Smart Policy Manager Database Location** dialog box, enter the directory name where you want to install the NTP Software Smart Policy Manager database, or just accept the default location. Click **Next**.

NTP Software Smart Policy Manager Setup Wizard	×
Smart Policy Manager Database Location	Software*
Setup will install the Smart Policy Manager database in the following folder.	
To install to this folder, click Next. To install to a different folder, click Browse another folder.	and select
Destination Folder C:\Program Files\Smart Policy Manager\data store InstallShield < <u>B</u> ack	Browse

10. In the Setup Type dialog box, select the NTP Software Smart Policy Manager installation type for your environment. If installing to a new environment with no prior NTP Software Smart Policy Manager installations, click Next. If installing in an environment where NTP Software Smart Policy Manager is already running, choose Adding to an enterprise installation and click Next.

NTP Software Smart Policy Manager Setup \	Vizard	×
Setup Type Select the setup type that best suits your needs	3.	Software <sup>®</sup>
Choose the type of Smart Policy Manager insta	llation you are doing.	
<ul> <li>First time installation in the enterprise</li> </ul>		
C Adding to an enterprise installation		
InstallShield		
	< <u>B</u> ack <u>N</u> ext >	Cancel

11. In the Smart Policy Manager Initial Setup Parameters dialog box, provide NTP Software Smart Policy Manager with a name for your organization and a location name for this NTP Software Smart Policy Manager instance, or accept the default settings. Click Next.

NTP Software Smart	Policy Manager Setup Wizard	×
Smart Policy Man	ager Initial Setup Parameters	Software*
Enter the initial orga	inization and location names.	
Organization:	My Organization	
Location:	My Site	
InstallShield	< Back	Next > Cancel

12. In the **Start Copying Files** dialog box, review your configuration information. Click **Back** to make any changes; otherwise, click **Next** to begin copying the files.

NTP Software Smart Policy Manager Setup Wizard	×
Start Copying Files Review settings before copying files.	are®
Setup has enough information to start copying the program files. If you want to review or change any settings, click Back. If you are satisfied with the settings, click Next to begin copying files.	
Current Settings:	
Destination Path: C:\Program Files\Smart Policy Manager Smart Policy Manager database directory: C:\Program Files\Smart Policy Manager\data store Components to install: Smart Policy Manager Service Smart Policy Manager Administration Tool	
InstallShield Kext > Can	;el

13. If you want to view the NTP Software Smart Policy Manager readme file, check the **Yes, I want to view the readme file** checkbox, and then click **Finish**.

NTP Software Smart Policy Manager Setup Wizard		
	NTP Software Installation Wizard for Smart Policy Manager Complete	
	The Installation Wizard has successfully installed Smart Policy Manager. Click Finish to exit the wizard.	
	✓ Yes, I want to view the readme file.	
Sectionare"		
	< <u>B</u> ack. <b>Finish</b> Cancel	

### **Installing NTP Software QFS for NAS**

1. When the **NTP Software QFS for NAS** setup wizard opens, click **Next** to begin the installation.



2. Read the end-user license agreement. If you agree to the terms, click I accept the terms of the license agreement and then click Next. If you do not accept the terms, click Cancel to exit the installation.

NTP Software QFS for NAS	×
License Agreement Please read the following license agreement carefully.	e®
NTP Software QFS for NAS®         End User License         By using or copying the accompanying software you are indicating your acceptance of the terms of this license. If you do not agree to the terms of this license, please return the product UNOPENED to your place of purchase for a full refund.         GRANT OF LICENSE. NTP Software grants you the right to use NTP Software QFS for NAS ("the PRODUCT") to manage the number of NAS systems for which you have paid a license fee, provided the use is solely for your personal or your company's own internal use. NTP Software grants you the rights to run the Windows connector components of NTP Software QFS for NAS on one or more Windows systems, up to the number of NAS         I accept the terms of the license agreement         I do not accept the terms of the license agreement	
Installishreid Kext > Cancel	

3. Choose the location where you want to install NTP Software QFS and then click Next.

NTP Software QFS for NAS	×
Choose Destination Location Select folder where setup will install files.	Software
Setup will install QFS for NAS in the following folder.	
To install to this folder, click Next. To install to a different folder another folder.	; click Browse and select
Destination Folder C:\Program Files\NTPSoftware\QFS for NAS	Browse
InstallShield Kack	Next > Cancel

4. Select the components to be installed on the local machine. The Admin component allows administration of the NTP Software QFS service. The NAS Connector component is required if this machine will need to communicate with a Filer for quota management purposes.

NTP Software QFS for NAS	×
Select Features Select the features setup will install. Select the features you want to install, and deselect Admin Service NAS Connector	the features you do not want to install. Description Selecting this option will install all of the components required to run the NTP Software QFS administrative client. If you choose not to install these components you may still install the NTP Software QFS service, but you will not be able to configure it from this
 16.36 MB of space required on the C drive 16586.14 MB of space available on the C drive InstallShield	
	< <u>B</u> ack <u>N</u> ext > Cancel

5. Provide your company name, the serial number for NTP Software QFS, and the serial number for the NAS Connector. Click **Next**.

NTP Software QFS for NAS	×
User Information Enter your registration information.	Software®
Please enter the name of the company f to install an evaluation version or the pro	or whom you work and select whether you want iduction version.
Company Name: Company Name	
O Install Evaluation Version	
<ul> <li>Install Production Version</li> </ul>	
QFS Serial Number:	JUFS SERIAL NUMBER
NAS Connector Serial Number:	NAS CONNECTOR SERIAL NUMBER
InstallShield	
	< Back Next > Cancel

6. Specify the account type to be used. Click **Next**.

NTP Software QFS for NAS	×
Account Type Please specify the type of account to use.	Software <sup>®</sup>
The Quota & File Sentinel service can run as a specified account or the built- account.	in system
Specify an account to use.	
<ul> <li>Use the built-in system account. The following features are disabled:</li> <li>Active Directory/LDAP email address lookups.</li> <li>User account lookups across multiple domains.</li> </ul>	
InstallShield <u>ABack Next &gt;</u>	Cancel

7. On specifying an account, enter a username with local administrative privileges. This account will be used to log on to and enforce quotas. Click **Next**.

NTP Software	QFS for NAS
Service Acc	sount
Enter the Se	ervice account QFS for NAS is to run under.
Service	Administrator
Password:	XXXXX
Confirm:	XXXXX
InstallShield —	< <u>B</u> ack <u>N</u> ext > Cancel

8. Specify an installation directory. Click Next.

NTP Software QFS for NAS	×
Select Program Folder Please select a program folder.	Software <sup>®</sup>
Setup will add program icons to the Program Folde name, or select one from the existing folders list.	er listed below. You may type a new folder Click Next to continue.
Program Folder:	
NTP Software QFS for NAS	
Existing Folders: Microsoft SQL Server Microsoft SQL Server - Switch Microsoft SQL Server 2005 Microsoft Visual SourceSafe Microsoft Visual Studio 2005 Microsoft Visual Studio 6.0 Microsoft Windows SDK v6.1 Notepad++ NTP Software QFS for NAS	▲ 
InstallShield	< <u>B</u> ack <u>N</u> ext > Cancel

9. Review your components and NAS connector information. Click **Back** to make any changes; otherwise, click **Next** to begin copying the files.

NTP Software QFS for NAS	×
Start Copying Files Review settings before copying files.	Software <sup>®</sup>
Setup has enough information to start copying the program files. If you want to change any settings, click Back. If you are satisfied with the settings, click N copying files.	to review or lext to begin
Current Settings:	
Destination Path: C:\Program Files\NTPSoftware\QFS for NAS Components to install: Quota & File Sentinel Service Quota & File Sentinel Administration Tool Quota & File Sentinel NAS Connector Start Menu Folder: NTP Software QFS for NAS	
InstallShield	
< <u>B</u> ack ( <u>N</u> ext>	Cancel

10. Click the Validate button to validate the Firewall Settings and Everyone group includes anonymous users pre-requisites. If you are sure that the prerequisite setting is met, you may click Next without running the validation.

NTP Software QFS for NAS	×
Pre-requisite validation	8
QFS for NAS, NetApp Edition requires the following pre-requisite. It is recommended that this pre-requisite be validated before continuing with the installation.	
Click the "Validate" button below to initiate validation. If you are sure that the pre-requisite is met, you may click the "Next" button without validating.	
· ? Firewall Settings.	
? Everyone group includes anonymous users	
Validate	
InstallShield	
Cancel	

- You can click the Next button without clicking the Validate button and thereby skipping the validation of the pre-requisites.
  - If the Validate button is not clicked before clicking the Next button, a Yes/No warning message box will be displayed asking you either to proceed with the installation without validation or not. You are prompted to choose either Yes or No as follows:

If **Yes** is clicked, you will be allowed to proceed to the next installer step.

If **No** is clicked, you will be returned to the same installer step.

- If the Validate button is clicked, the pre-requisites will be validated
- 11. If you do not want to view the NTP Software QFS for NAS readme file, clear the Yes, I want to view the readme file checkbox. When you click Finish, the NTP Software QFS for NAS, NetApp Edition configuration wizard will open.

NTP Software QFS for NAS		x			
	NTP Software Installation Wizard for QFS for NAS Complete				
	The Installation Wizard has successfully installed QFS for NAS. Click Finish to exit the wizard.				
	✓ Yes, I want to view the readme file.				
Steware"					
	< <u>B</u> ack <b>Finish</b> Cancel				

# Using the NTP Software QFS for NAS Configuration Wizard

- 1. Click Start > All Programs > NTP Software QFS for NAS > NTP Software QFS for NAS Configuration Wizard.
- 2. Click the **View Pre-Wizard Checklist** button and gather the required information before continuing. Click **Next**.

QFS For NAS Configuration Wizard	×
Software *	
To complete the installation of your QFS for NAS product we will require information about your NAS device, Email Notification System, and identity mapping directory.	
Please make sure you know all of the answers of the below Configuration Checklist before continuing on this wizard.	
View Pre-Wizard Checklist	
<u>N</u> ext > Finish Cancel	

3. Choose the Filer ONTAP mode; click either **7-mode or cluster-mode**. Click **Next**.

5 For NAS Configuration Wizar	d			3
NTP				
Software				
Choose Filer ONTAP Mode				
Supported Devices				
C 7 Mode				
C Cluster Mode				
		Mayt 5	Finish	Capital
		ilicxr >	1-111511	

4. For 7-mode filers, enter the name of your Filer or vFiler in the first text box. If you're using a vFiler, enter the name of the hosting Filer in the second text box.

TP.				
Deware				
he QFS connector will need informa	tion about your File	r to be able to ma	nage its resources	
Filer Information				
Netbios name of your Filer or vFiler:	733-ng-filer			
If the above is a vEiler please enter	the hosting Filers r	ame below:		
Mathias name of your besting Filer				
Necolos name or your nosting Filer.	1			

5. For cluster-mode filers, enter the name of your CIFS server, cluster IP address, user name and password for account on the cluster that has permission to execute some ONTAPI APIs required by QFS. For more details about that user account, please read the Appendix section about "Assign Permissions to User Account to Execute cDOT APIs". Click **Next**.

NTP Software QFS Wiz	zard				×
Software <sup>®</sup>					
Enter the informat	ion used to manage	the NetApp CIF	S server		
CIFS Server Name	:				
NetApp Cluster Da	ta				
IP Address		•			
User Name					
Password					
	1				
Confirm					
·				,	
		< <u>B</u> ack	Next >	Finish	Cancel

6. If you do not want to send email notifications to users when a quota status changes, clear the **Yes! We do want email notifications enabled** checkbox. Select which email system your environment uses. Click **Next**.

Mail Notification Setup (Optional)	×
Soptware	
If you plan on notifying your users via email of quota thresholds they cross, file removal events, or file restriction violations we will need information about your email system.	
Yes! We do want email notifications enabled	
Email System Information	
Exchange 2000 or greater	
C Other (Lotus Notes, Send Mail, etc)	
< <u>B</u> ack <u>N</u> ext > Finish Cancel	

7. Enter the name of your Active Directory server. (Optional: Enter a second server, if desired.) Click the **Test Active Directory Lookup** button and test at least one email address to verify connectivity. Then click **Next**.

Exchange 2000 or Greater Setup (Optional)	×
Software <sup>®</sup>	
When a user crosses a threshold on a quota policy or violates a file restriction policy we will need to find that user email address. We can use your existing Active Directory to get the needed information. Please provide the information below:	
Active Directory Settings	
Primary Active Directory Server: Primary Server Port: 389	
Secondary Active Directory Server: Seconday Server Port: 389	
Test Active Directory Lookup	
< <u>B</u> ack <u>N</u> ext > Finish Cancel	

8. Enter the SMTP gateway, the SMTP domain, and the email address to use for notifications. If your SMTP server requires authentication, enter the required username, domain, password and confirm password to be used to authenticate with your SMTP server. Click **Test Mail Settings** to verify that the information is correct. Then click **Finish**.

Mail Server Info (Op	tional)			X
NTP Software®				
QFS will send email ( your email gateway	utilizing your own mail serv	ver. Please supply the below	needed information about	
Email System Info	rmation			
SMTP Gateway Ac	ldress:	smtp.mydomain.com		
SMTP Domain (Exa	ample: ntpsoftware.com):	mydomain.com		
Reply Email Addre	ss for Notifications:	reply@mydomain.com		
My ser	ver requires authenticatio	n		
Username	:	Username		
User Dom	ain:	mydomain.com		
Password	:	,  ***********		
Confirm P	assword:	****		
		Test Mail Settings	Status: Not sent yet	
		< <u>B</u> ack	Finish Cancel	

# Adding the Filer to NTP Software QFS for NAS Admin

Before you can use NTP Software QFS for NAS, the Filer must be added to the NTP Software Smart Policy Manager hierarchy. Follow these steps to add the Filer:

- 1. Click Start > All Programs > NTP Software QFS for NAS > NTP Software QFS for NAS Admin.
- 2. In the hierarchy presented, expand the location name you entered earlier. The default location is My Site. Your Filer is listed in the right pane, below the server on which NTP Software QFS is installed.

E NTP Software Smart Policy Manager (TM)						
<u>File E</u> dit <u>V</u> iew <u>O</u> ptions <u>H</u> elp						
🎒 🕺 🖻 🖻 🗙 😭 🏪 🗁 🚟 🏢						
🖃 🤀 My Organization	Name 🗸	Туре	Status	Description	Created	Modified
🗈 🔛 Quota & File Sentinel	LRASHAD-DEV	Server	Available		6/9/13 23:35:55	6/9/13 23:35:59
	RashadNas	Filer	Available		6/12/13 13:51:05	6/12/13 13:51:05
H. B RASHAD-DEV						

3. In the left pane, expand the server on which NTP Software QFS is installed and rightclick **Quota & File Sentinel**. From the pop-up menu, choose **Properties**.



4. Click the NAS Connector tab. Your Filer should be listed; if it is not, click Add.

TP Software QFS® Configuration	×
Email Configuration SNMP Configuration Event Options Misc. Options Dashboard Configuration Security NAS Connector	) 77
Please enter the NAS devices to be managed by the NAS Connector.           Filer, vFiler or CIFS Server         Host Filer or Cluster Data           RashadNas	
Add Edit Remove  Prohibited File Disposition  Quarantine Note: The share OESQuarantine or OESQuar must exist on each	
C Delete	
Lable File Blocking Hecovery	
OK Cancel Apply Help	

5. Choose Filer ONTAP mode; click 7-mode or cluster-mode. Click **Next**.



6. For 7-mode filers, enter the name of your Filer or vFiler. If you're using a vFiler, select the "**This is a NAS vFiler**" checkbox, then enter the Hosting NAS Filer name. Click **OK**.

Add or Edit an Item		×
Enter the name of the NAS	Filer or vFiler to control:	
This is a NAS vFiler. Hosting NAS Filer		
	OK Cancel	

7. For cluster-mode filers, enter the name of your CIFS server, , cluster IP address, user name and password for account on the cluster that has permission to execute some ONTAPI APIs required by QFS. For more details about that user account, please read the Appendix section about "Assign Permissions to User Account to Execute cDOT APIs". Click **Next**.

Add or Edit CIFS Server	×
Enter the information use Cluster CIFS server	d to manage the NetApp
CIFS Server Name	
NetApp Cluster Data NetApp Cluster IP	
User Name	
Password	
Confirm	
	OK Cancel

8. To configure the NAS device status refresh rate, click the **Misc**. **Options** tab in the **Quota and File Sentinel properties** dialog. The default refresh rate is 30 seconds while the minimum rate is 10 seconds and the maximum rate is 3600 seconds.

	nfiguration	
Email Configuration	SNMP Configuration Event Options	
	board Conriguration   Security   NAS Connector	
IInherit Daily Em	iail Reminder Properties	
Daily <u>r</u> eminder	: time: 2:00:00 AM	
Maximum <u>n</u> um (0 - do not s	iber of reminders: 7	
	· Connector Breaction	
Imment Directory	e Director i Connector la retrieve email addresses	
C Use LDAF	Connector to retrieve email addresses	
Append th	e SMTP Domain to form email addresses	
Primary Host:	Secondary Host: LDAP Mail Name:	
	mail	
LDAP Port:	LDAP Port: LDAP Eilter Name:	
389	389 uid	
- Johorit Tuning P	Properties	
Iv Innent i <u>u</u> ning i	ct Sizing	
€ Low Impar		
C High Impa	ict Sizing	
<ul> <li>Inherit NAS De</li> </ul>	vice Status Properties	

г

# **Verifying Registration with the Filer**

To verify that the 7-mode Filer has been associated with NTP Software QFS, follow these steps:

- 1. Log on to the Filer.
- 2. Run fpolicy to view fpolicy settings.

Your Filer and the associated policies should be displayed.



To verify that the cluster-mode Filer has been associated with NTP Software QFS, follow these steps:

- 1. Log on to the Filer.
- Run fpolicy show-engine -vserver <vserver name of your managed CIFS server> to view fpolicy settings.

The vserver name of your CIFS server and the associated policies should be displayed with **Server Status** appears as **connected**.

dev-tap82F-cm5::> fpolicy show-engine -vserver vs1-rashad74 (vserver fpolicy show-engine)							
			FPolicy	Server	Server		
Vserver	Policy Name	Node	Server	Status	Туре		
vs1-rask	 nad74			connected	primary		
	NTPSoftware_ QFS	dev-tap82F- cm5-01	10.20.2.121				

# **Appendix:**

### **Enabling Data ONTAP fPolicy Management Service**

#### A. In 7-Mode

Perform the following steps to enable the Data ONTAP fpolicy management service:

- 1. Log on to the NetApp Filer with an account that has administrative privileges.
- 2. At the prompt, enter the following command:

fpolicy create NTPSoftware\_QFS screen

3. Enter the following command:

fpolicy enable NTPSoftware\_QFS

4. To verify that CIFS file policies are now enabled, enter the following command:

fpolicy

These steps create the configuration that allows NTP Software QFS to register with and manage your Filer. They must be completed before you try to configure NTP Software QFS. Later in this document, we will register a file policy server with the Filer. No further Filer administration is required.

#### B. In Cluster Mode

Perform the following steps to enable the Data ONTAP fpolicy management service:

- 1. Log on to the NetApp server with an account that has administrative privileges.
- 2. At the prompt, enter the following commands:

fpolicy policy event create -vserver <*vserver name>* -event-name **NTPSoftware\_QFSEVT** -protocol cifs -file-operations close, create, create\_dir, rename, rename\_dir, delete, delete\_dir, read, write, open

fpolicy policy external-engine create -vserver <*vserver name>* -engine-name **NTPSoftware\_QFSENG** -primary-servers <*QFS connector machine IP addresses* separated by comma> -port <*unused dynamic port number>* -extern-engine-type synchronous -ssl-option no-auth

fpolicy policy create -vserver <vserver name> -policy-name NTPSoftware\_QFS -events NTPSoftware\_QFSEVT -engine NTPSoftware\_QFSENG -is-mandatory false -allowprivileged-access yes -privileged-user-name <QFS connector service domain user account, in the format NetBiosName\UserName>

fpolicy policy scope create -vserver <*vserver name*> -policy-name **NTPSoftware\_QFS** -shares-to-include "\*" -volumes-to-include "\*"

fpolicy enable -vserver <vserver name> -policy-name **NTPSoftware\_QFS** -sequencenumber <unused sequence number>

3. To verify that CIFS file policies are now enabled, enter the following command:

fpolicy show -vserver <vserver name>

#### NOTES:

- QFS will create and enable fpolicy automatically for the managed CIFS Server on the cluster-mode Filer using default sequence number 1. Since sequence number cannot duplicate.
- QFS will fail to enable fpolicy on cluster-mode Filer if the sequence number is used by another fpolicy on the same VServer.
- QFS will create a registry value named "<*CifsServerName>\_FPolicySeqNum*" inside the connector registry key, with default value 1. If QFS failed to enable fpolicy due to a redundant sequence number, then the user can configure this registry value to any unused sequence number, and run the *Diagnose* process on the managed CIFS server from QFS Admin (on the CIFS server Status node).
- The **Diagnose** process will try to enable the fpolicy automatically using the new sequence number configured in registry.

#### **Assign Permissions to User Account to Execute cDOT APIs**

In order to manage CIFS server on a cDOT filer, you need to provide user name and password for a Unix user on the cDOT filer with specific permissions. The following steps show how to create a Unix user on the cDOT filer, and how to assign this user account the required permissions to manage CIFS servers on that cDOT filer:

- 1. Create Unix user on the cDOT filer:
  - unix-user create -vserver <vserver name> -user <user name> -id <user id> primary-gid <primary group id> -full-name <user full name>
- 2. Create the required role that contains the required permissions:

<u>Note</u>: The role name specified in all of the following commands must be the same, in order to assign this one role at the end to the Unix user you just created by the command above.

- security login role create -role <role name> -cmddirname "network interface show" -access readonly -query ""
- security login role create -role <role name> -cmddirname "version" -access readonly -query ""
- security login role create -role <*role name>* -cmddirname "volume show" -access readonly -query ""
- security login role create -role <role name> -cmddirname "vserver show" -access readonly -query ""
- security login role create -role <role name> -cmddirname "vserver cifs show" access readonly -query ""
- security login role create -role <role name> -cmddirname "vserver fpolicy policy" -access all -query ""
- security login role create -role <*role name>* -cmddirname "vserver fpolicy showengine" -access readonly -query ""
- security login role create -role <role name> -cmddirname "vserver fpolicy show" access readonly -query ""
- security login role create -role <role name> -cmddirname "vserver fpolicy enable" -access all -query ""
- security login role create -role <role name> -cmddirname "vserver fpolicy disable" -access all -query ""
- security login role create -role <role name> -cmddirname "vserver fpolicy engineconnect" -access all -query ""
- security login role create -role <role name> -cmddirname "vserver namemapping" -access all -query ""

- security login role create -role <*role name>* -cmddirname "vserver services unixuser show" -access readonly -query ""
- 3. Assign the role you created in step #2 to the user you created in step #1:
  - security login create -username <user name> -application ontapi -authmethod password -role <role name>

<u>Note</u>: When you execute the command above, the filer will ask you to enter, and confirm, a password for that user. The password you enter here will be used along with the user name in QFS Admin/Wizard UI, when you are adding the CIFS server to be managed by QFS.

# **About NTP Software**

NTP Software is the leading worldwide provider of software solutions for controlling file data across a global infrastructure or at a single site with individual systems. NTP Software delivers a single solution across the entire data storage environment all the way down to the individual user and supports most popular file data storage models and brands. NTP Software products reduce the cost and complexity associated with the exponential growth of unstructured data. NTP Software has been chosen to control file data for the majority of Fortune 1000 companies and thousands of customers in private and public sectors by providing leadership through superior products, services, and experience.

# **NTP Software Professional Services**

NTP Software's Professional Services offers consulting, training, and design services to help customers with their storage management challenges. We have helped hundreds of customers to implement cost-effective solutions for managing their storage environments. Our services range from a simple assessment to in-depth financial analyses.

For further assistance in creating the most cost-effective Storage Management Infrastructure, please contact your NTP Software Representative at 603-622-4400.

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