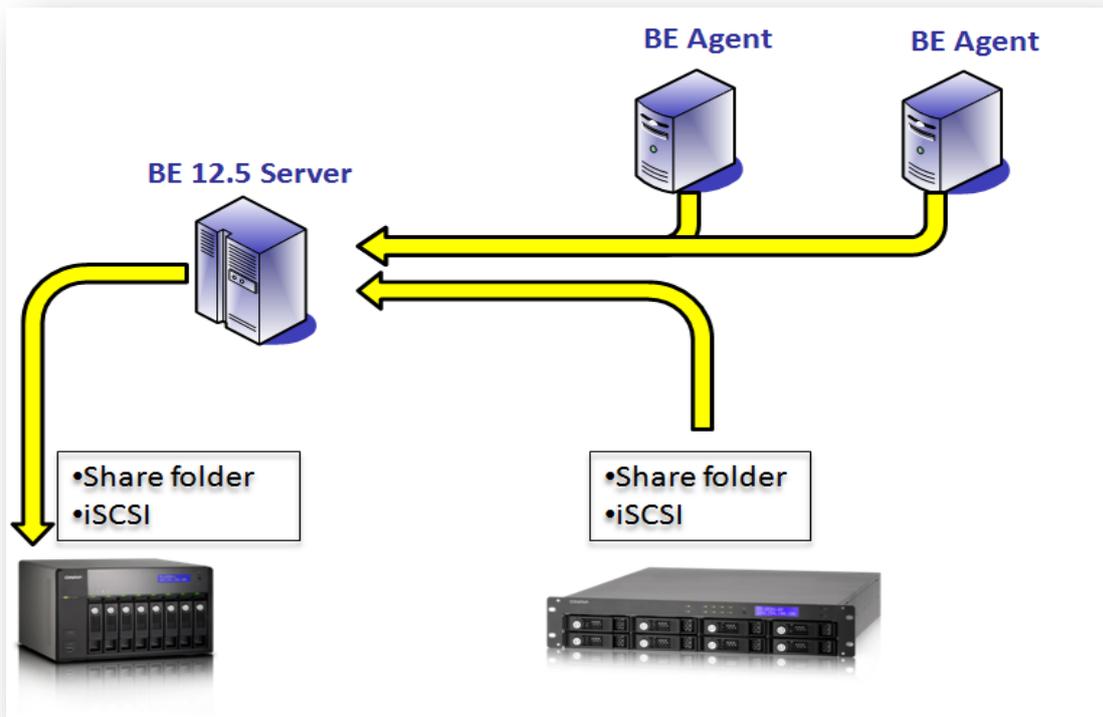


Use QNAP NAS for Backup



BACKUP EXEC 12.5 WITH QNAP NAS



Document revision history:

Date	Version	Changes
Apr 2010	1.0	Initial release

Note:

Information presented is subject to change without notice.

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Intended Audience

The guide is intended for system administrators and backup administrators who are familiar with storage and backup technologies.

This document assumes that the reader is familiar with the following topics:

- Backup Exec
- Active Directory
- Windows Server administration
- iSCSI



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Before starting

If you are using Windows Server 2008 R2, make sure you have an up-to-date version of Backup Exec to avoid the following error:

336357: Remote Windows Server 2008 R2 backup fails with error - 0xe00fec9 - A failure occurred accessing the Writer metadata

<http://support.veritas.com/docs/336357>

Definition:

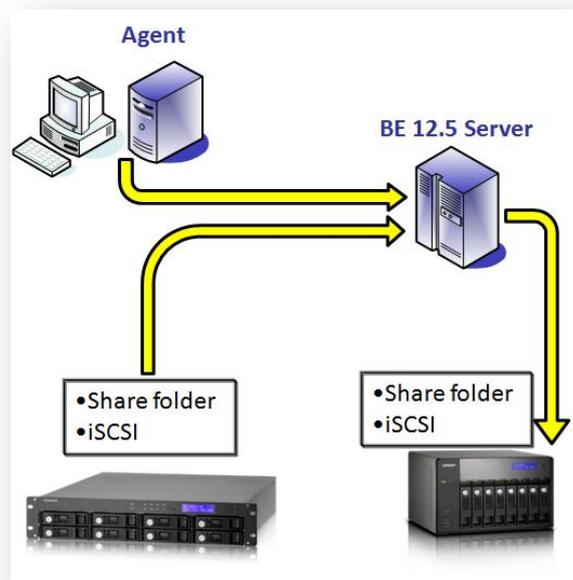
- BE stands for Backup Exec
- IDR stands for Intelligent Disaster Recovery

Notes:

- This application note has been written and tested with Symantec BE SP3 with Windows Server 2008 R2 and with Windows Server 2003 SP2 (for IDS), in **Active Directory environment** for accessing the shared folders.
- This application note describes the connection between BE 12.5 and a QNAP NAS, and specific points you have to pay attention. **It will not describe full usage of the backup software.**
- You must use a domain user account to connect to the shared folders on QNAP NAS with BE 12.5 if the NAS has been joined to an Active Directory.
- In this application note we use a domain called 'adtest.local'. This is an example and needs to be changed to match your domain information.
- Please read Symantec BE documentation for more information about the backup software.
- To use file archive bit, the NAS firmware must be updated to version 3.3.0 or later (for more details, please refer to page 29).

Minimal configuration:

- You need a shared folder on the QNAP NAS, with Read/Write access granted to a domain user.
- BE services on the Windows server must run with the same domain user account used for the shared folder on the NAS (to be described later), with administrative privileges on that server.
- For Active Directory integration, make sure:
 - o You have the DNS entry of your NAS on the DNS server
 - o The Windows server with BE is the client of the correct DNS server: your domain DNS server.
 - o The DNS suffix has been correctly set up in the Windows server with BE.
- If necessary, you can use an iSCSI drive to store the backups from Backup Exec.



Backup Exec is composed of 3 parts:

- A central backup server (BE 12.5 Server): It controls and manages the backup source and destination.
- Backup source: It can be a server or PC with Backup Exec agent installed on it, or a standard network shared folder (NAS).
- Backup destination: It can be the backup server itself or network storage connected by iSCSI or Microsoft Networking.

Backup Exec Server 12.5 for Windows can be used with QNAP NAS:

- To back up data to QNAP NAS
- To back up data from QNAP NAS

You can back up the shared folder contents of QNAP NAS with Backup Exec server to a backup storage device. You can also back up the data from an iSCSI drive through Backup Exec agent running on a server and also the contents of a shared folder.

There are two possible configurations to back up data to QNAP NAS:

- Back up to an iSCSI drive: It is easier to set up. You only need to create an iSCSI target and LUN on the QNAP NAS and connect to the NAS from a server running Backup Exec Server.
- Back up to a shared folder: It requires more settings on Backup Exec. You need to set additional configuration in order to browse the NAS shared folders correctly and to authenticate the user account used to connect to the shared folder where the backup data will be stored.

Back up to an iSCSI drive on QNAP NAS

Create an iSCSI target on the NAS

Create an iSCSI target on the NAS and connect the iSCSI drive to your Windows server. For the instructions, see this application note: http://qnap.com/pro_application.asp?ap_id=135

For example, if you have connected your iSCSI drive as M:\ on your server, you can use the new iSCSI drive as the media repository and specify the Backup-to-Disk Folder to M:\

Connect BE to the iSCSI drive (NAS) as a media repository

In this example, the BE server is named 'TESTSERVER'.

Start your BE console. Go to 'Devices', locate your BE Server. Right click 'Backup-to-Disk Folders' and select 'New Backup-to-Disk Folder' in order to add a backup destination.

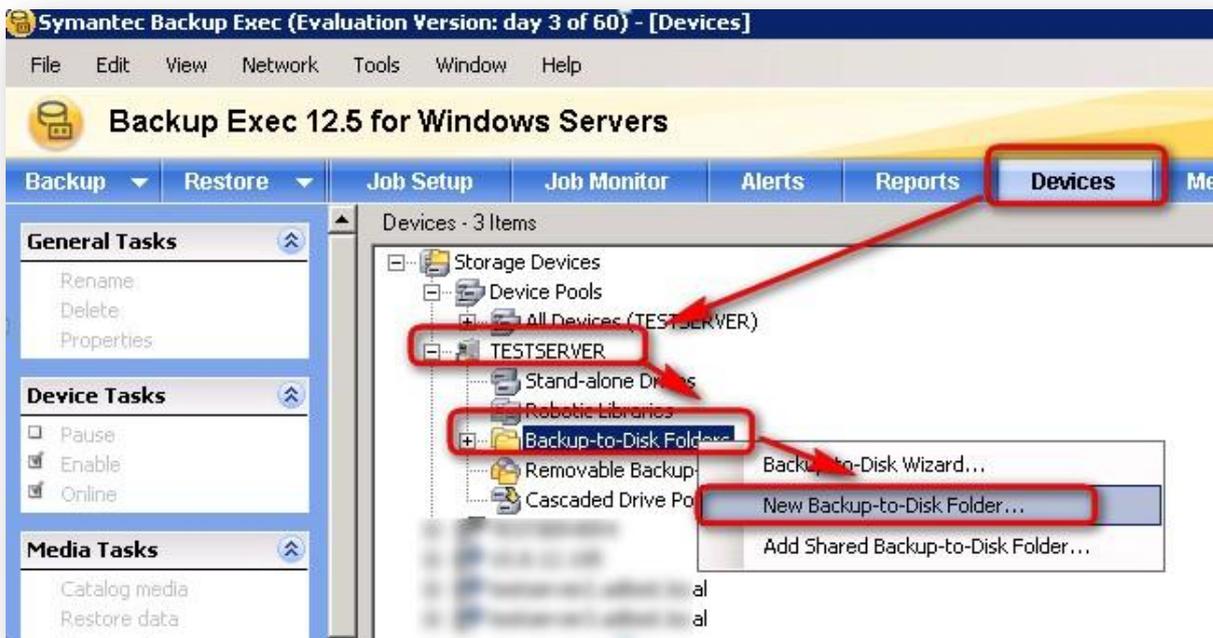


Figure 1

Enter the name of the Backup-to-disk folder that will appear in BE, for example 'My new iSCSI Backup Destination'. This name will be used in the future to select the destination of your backup jobs. Specify the path of the Backup-to-disk folder that you want to use in 'Path'. In this example, the path M:\ corresponds to the iSCSI drive which was connected previously (in Create an iSCSI target on the NAS).

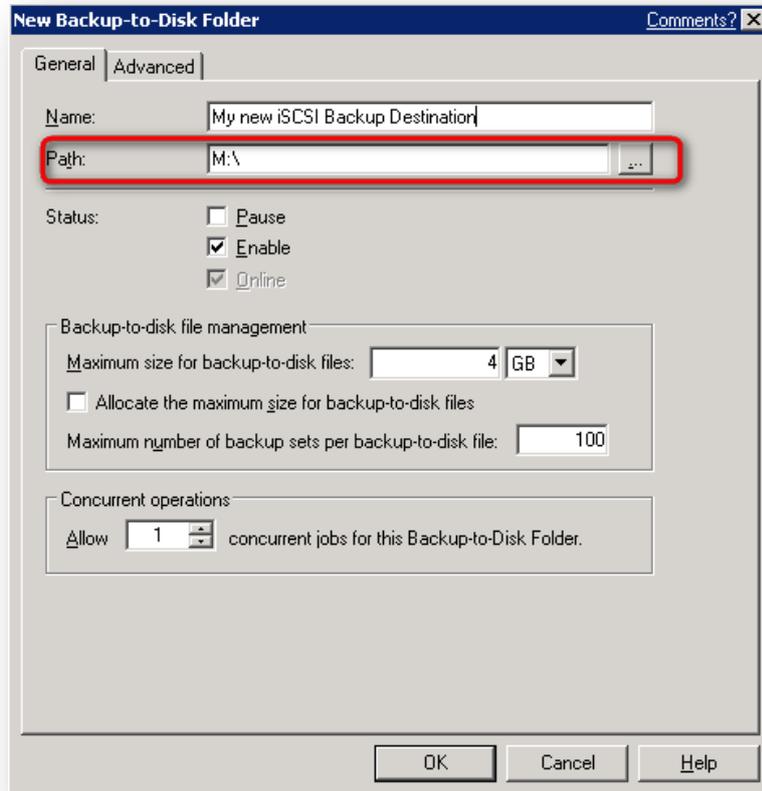


Figure 2

Change other options wherever necessary (refer to Symantec documentation for more details). Then click 'OK'.

Your Backup-to-disk folder is ready to be used by BE. Please continue the application note to create a new backup job and select this Backup-to-disk folder.

Select the NAS as destination

- Start the backup wizard, choose custom settings.
- Follow the wizard until you are prompted to choose the backup device and media.

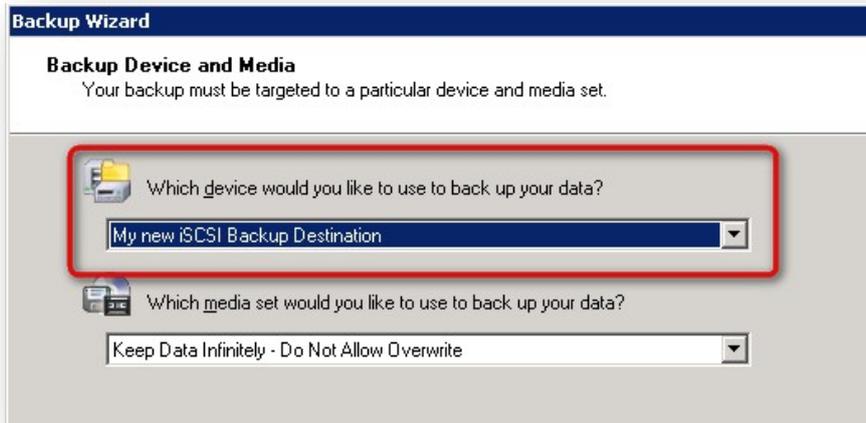


Figure 3

- Select your Backup-to-disk folder created previously: 'My new iSCSI Backup Destination', corresponding to the iSCSI storage on your NAS.

Note:

This solution does not require any domain integration because the iSCSI drive is directly mounted on the BE server. It is the easiest way to use QNAP NAS as a backup destination.

Back up to a shared folder on QNAP NAS

Shared folder and permission

To use BE with the shared folders on QNAP NAS, you need to:

- Create a shared folder on the NAS to store the backup data
- Assign read/write access right of the shared folder to a domain user.

Follow the steps below to set up the connection between QNAP NAS and BE v12.5.

Make sure your NAS is a member of the Active Directory. See this application note to join the NAS to an AD: http://qnap.com/pro_application.asp?ap_id=153

Login the NAS with an administrator account. Go to 'Access Right Management' > 'Share Folders'. Click 'New Share Folder' to create a shared folder as the backup destination. In this example, we called it 'BackupFolder'.

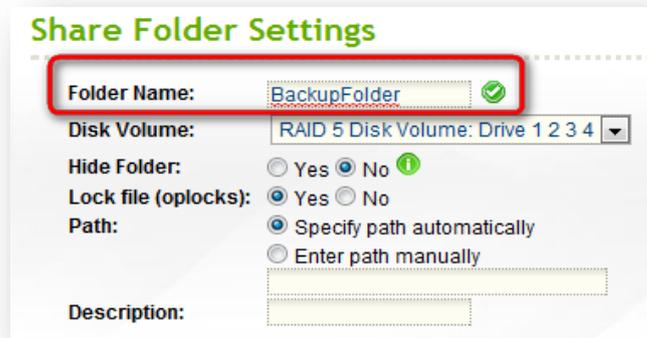


Figure 4

Assign the folder access right to system administrator only.

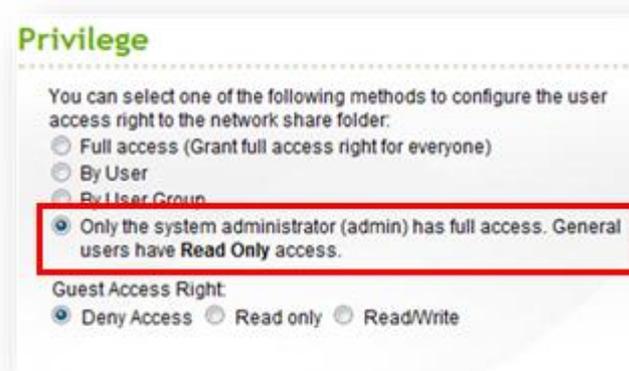


Figure 5

The new shared folder (BackupFolder) is shown on the list.

<input type="checkbox"/>	Folder Name	Size	Folders	Files	Hidden	Action
<input type="checkbox"/>	BackupFolder	4 KB	0	0	No	NFS
<input type="checkbox"/>	Network Recycle Bin 1	4 KB	0	0	No	NFS

Figure 6

Click (Access Control) on the same row of the new shared folder.

<input type="checkbox"/>	Folder Name	Size	Folders	Files	Hidden	Action
<input type="checkbox"/>	BackupFolder	4 KB	0	0	No	NFS
<input type="checkbox"/>	Network Recycle Bin 1	4 KB	0	0	No	NFS

Figure 7

Select 'Domain Users' from the drop-down menu. Assign read/write access to the domain user you are going to use with BE.

Access Right to the Share Folder: X

Network Share Name: BackupFolder

Domain Users Total: 15 1 / 2

Name	Read only	Read/Write	Deny Access
ADTEST+administrator	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ADTEST+Guest	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ADTEST+krbtot	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Figure 8

To connect to QNAP NAS and authenticate the access correctly:

- If your NAS is joined to an **Active Directory**, you must assign the access right to a **domain user account**.

- If your NAS is in **standalone mode** (not joined to an Active Directory), you may use a local user account to login the NAS. The **user name and password on the NAS must be the same as the user name and password used by BE services** (to be explained later).
- It is highly recommended to use Active Directory.
- In this example the domain user we use is 'adtest\administrator'. You can use other domain user account.

The domain user must have administration privileges on the local BE server (see Symantec documentation for more details).

This domain user is chosen during BE installation.

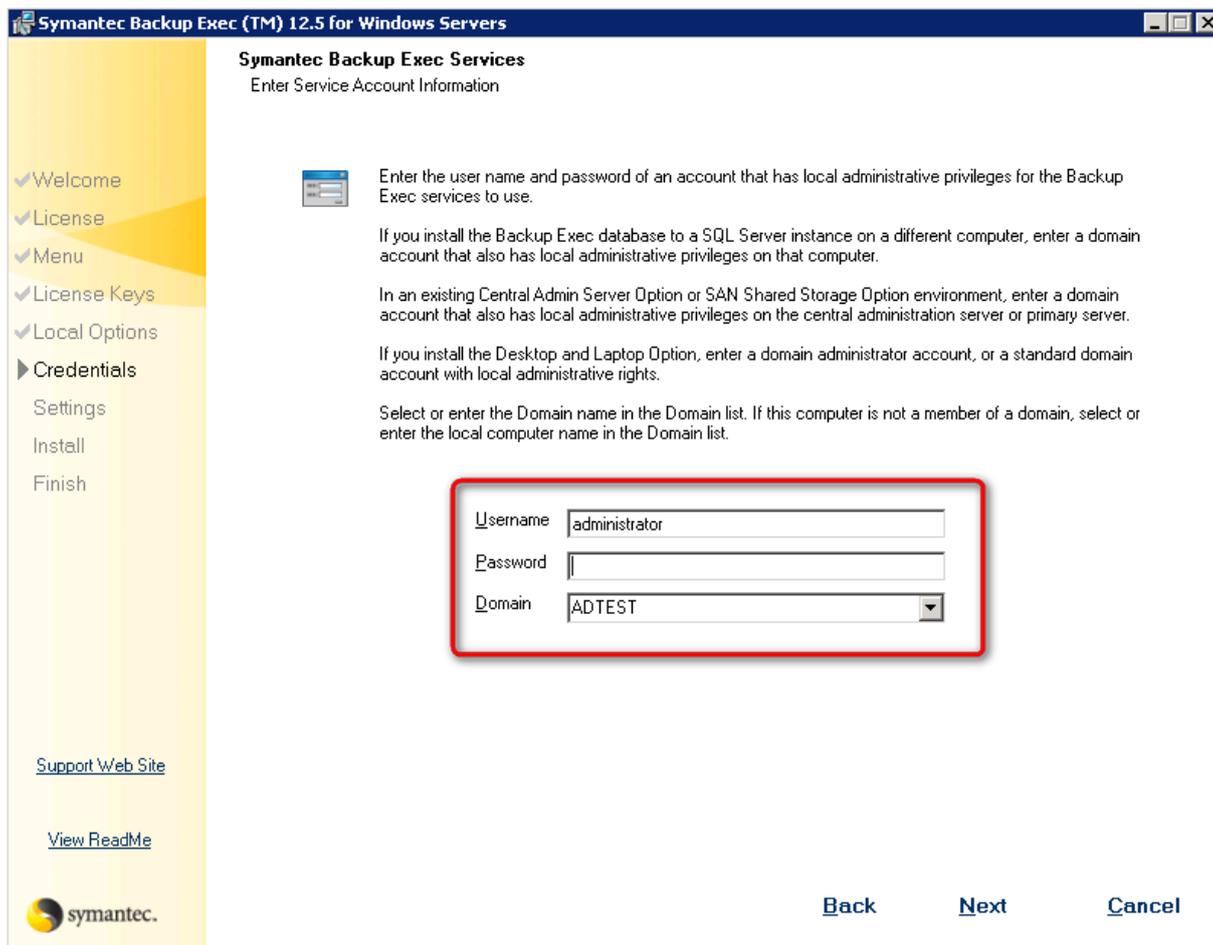


Figure 9

If you have already installed BE, you can verify the user used by BE services from your Windows server in the services management console.

See the user used for 'Backup Exec Device & Media Service' in the services management console on your Windows server:

- From the server with BE server, click 'Start'.
- Go to 'Administrative Tools' > 'Services'.
- On the list, you can see the user running 'Backup Exec Device & Media Service'.
- In this example, it is ADTEST\Administrator.

Backup Exec Agent Browser	Allows the Backup Exec job engine...	Started	Automatic	ADTEST\Administrator
Backup Exec Device & Media Service	Provides several COM server inter...	Started	Automatic	ADTEST\Administrator
Backup Exec Job Engine	Receives job requests from the B...	Started	Automatic	ADTEST\Administrator
Backup Exec Remote Agent for Windo...	Provides Backup and Restore serv...	Started	Automatic	Local System
Backup Exec Server	Implements job scheduling, server...	Started	Automatic	ADTEST\Administrator
Base Filtering Engine	The Base Filtering Engine (BFE) is ...	Started	Automatic	Local Service

Figure 10

To change the domain user used by BE, follow the steps below (see Symantec documentation for more details):

From the BE console:

- Select 'Backup Exec Services...' from the 'Tools' menu.

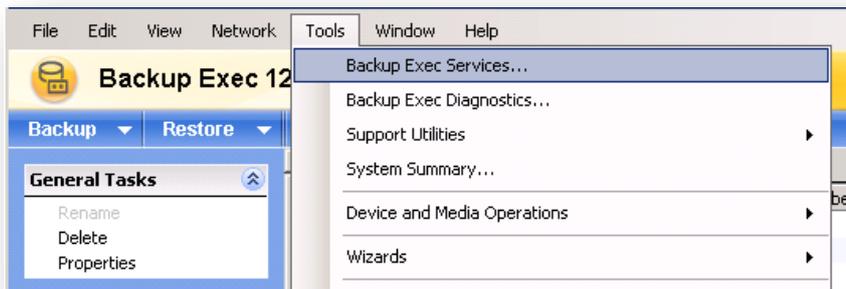


Figure 11

Click 'Services credentials...' to edit the services credentials.

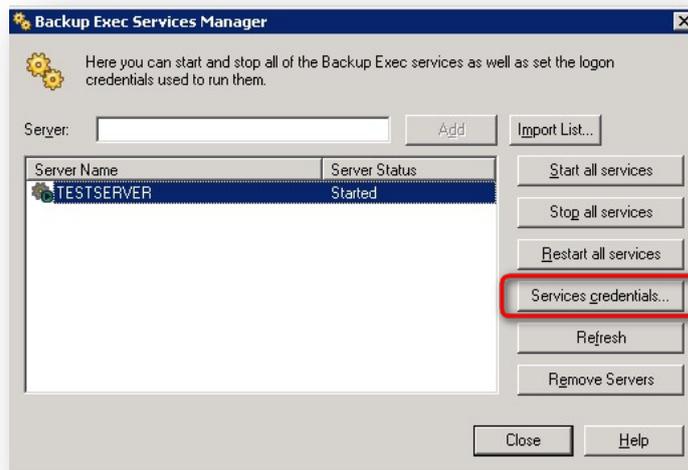


Figure 12

Enter the account information of a domain user who has administration privileges on the Windows server and read/write access to the shared folder on the NAS. In this example we use ADTEST\administrator: the username is administrator, the domain name is ADTEST. Then click 'OK'.

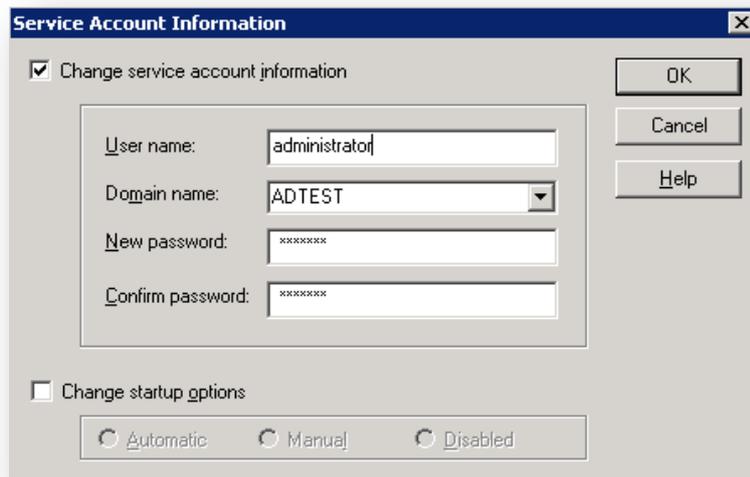


Figure 13

Click 'Restart all services' to restart BE services.

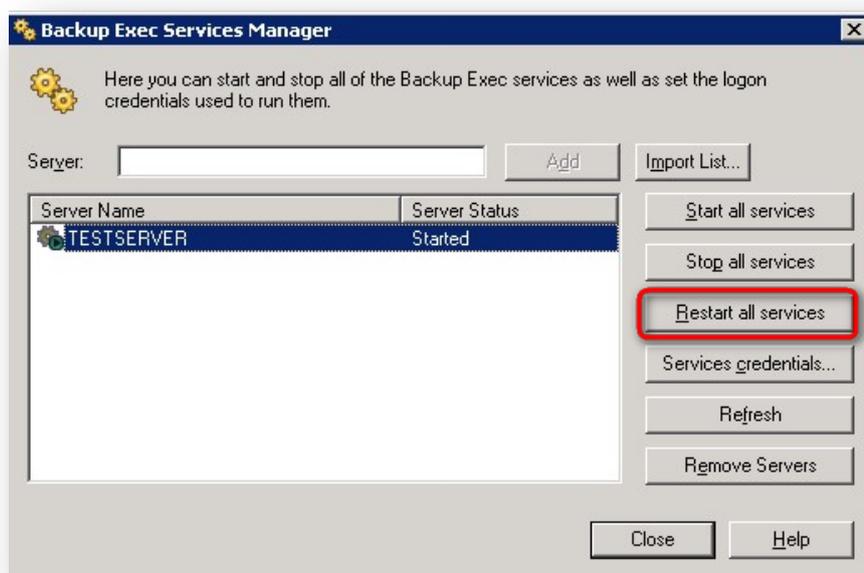


Figure 14

Connect BE to the NAS shared folder as a media repository

Once your shared folder has been created on the NAS with correct permission (see the procedure above), you can connect your BE server to the NAS shared folder. Please follow the steps below:
In BE console, go to 'Devices', develop your BE Server. Right click 'Backup-to-Disk Folders' and select 'New Backup-to-Disk Folder' in order to add a backup destination.

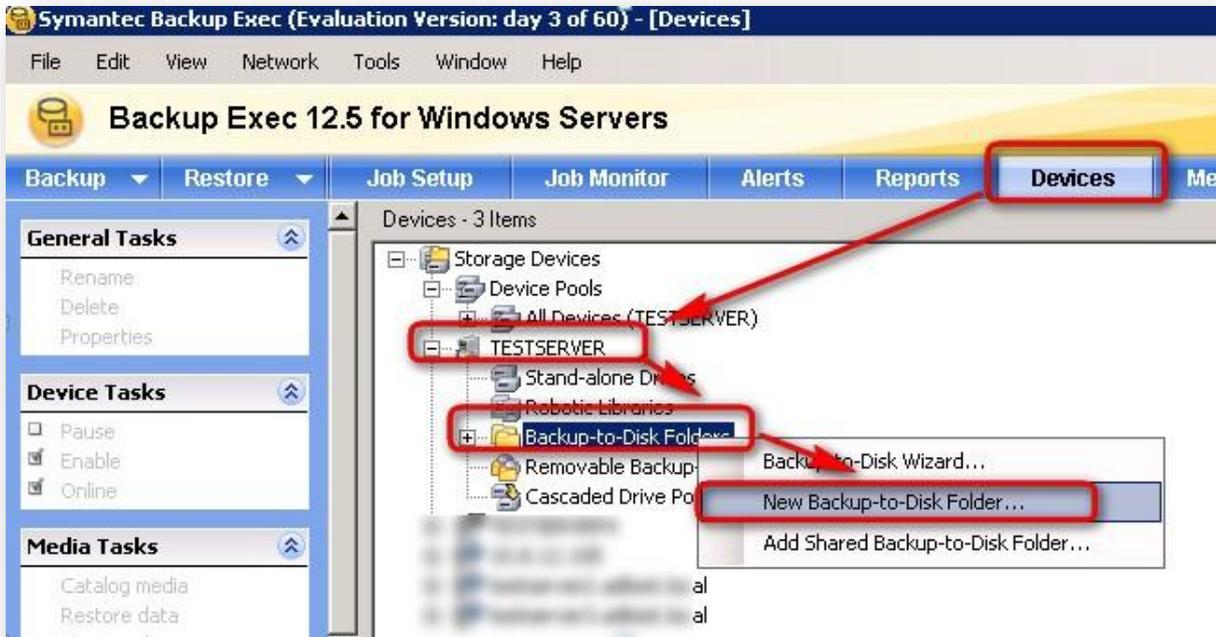


Figure 15

In 'Name' enter the name of the Backup-to-disk folder that will appear in BE, for example 'My New Backup Destination'. This name will be used in the future to select the destination of your backup jobs. In 'Path' specify the path of the Backup-to-disk folder that you want to use. You can specify the path manually browse the Active Directory or browse the Windows Network to obtain the Shared Folder list (see below).

1. Specify the NAS shared folder as the destination in 'Path'.

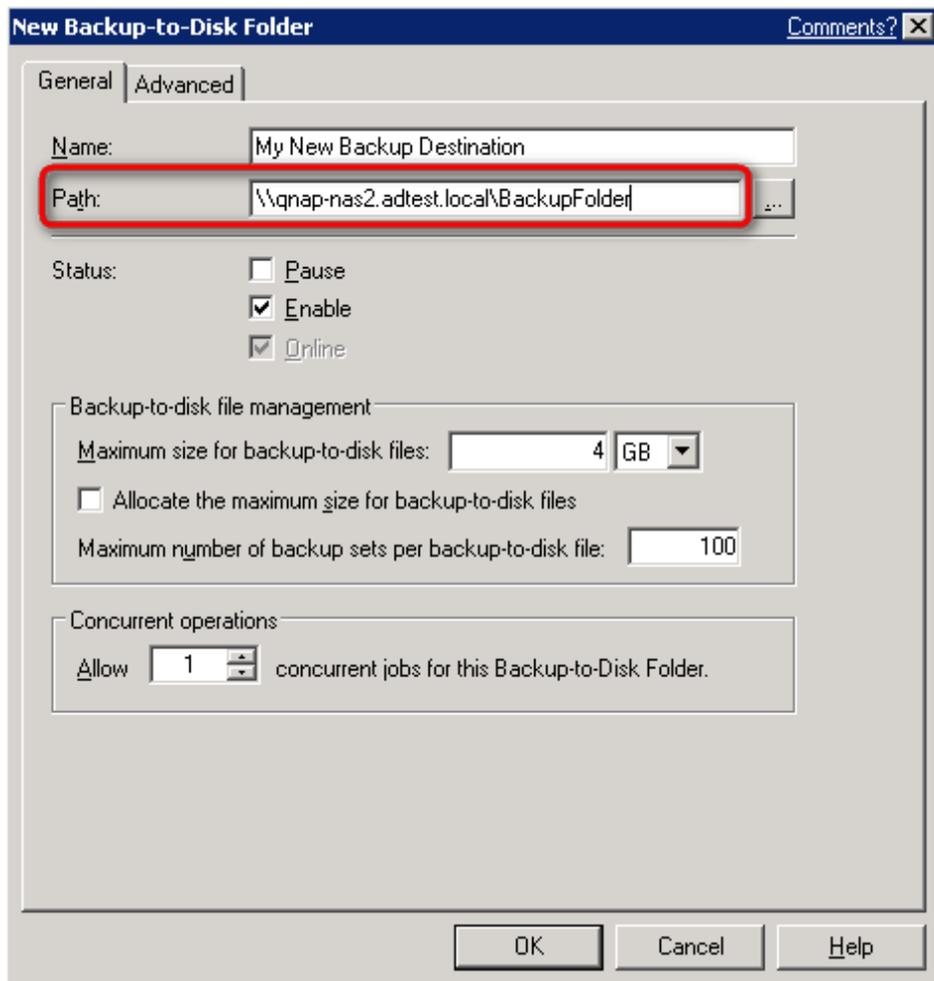


Figure 16

You can use different paths to connect to the same destination, depending on your network configuration:

- \\x.x.x.x\BackupFolder (No name resolution)
- Or
- \\qnap-nas2\BackupFolder (NetBIOS name resolution or DNS name resolution if the DNS suffix is set up correctly)
- Or
- \\qnap-nas2.adtest.local\BackupFolder (**preferred**, DNS Name resolution. 'adtest.local' has to be replaced by the domain name)

2. Or browse to the NAS using Active Directory (the NAS must be joined to the Active Directory):

Click the browse button.

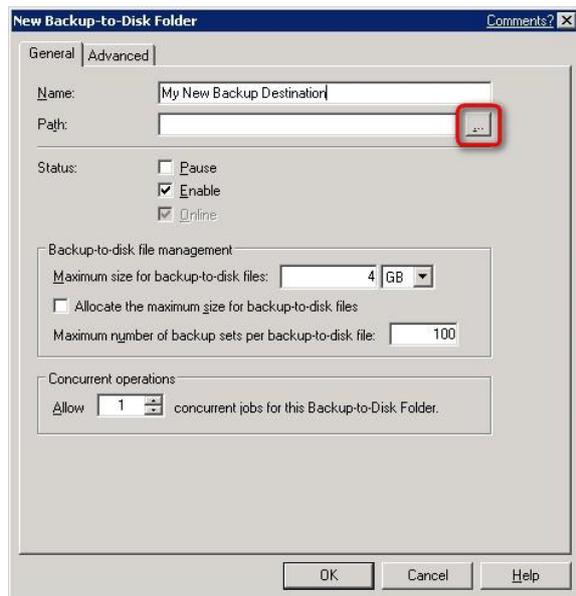


Figure 17

- Develop 'Domains'.
- Develop 'Active Directory Domains'.
- Develop your domain. In this example the domain is 'adtest.local'.
- Develop the server where is your shared folder. In this example we created the shared folder 'BackupFolder' on the QNAP NAS named 'qnap-nas2'.
- Select the shared folder to use for backup. In this example we use the shared folder 'BackupFolder' created previously.
- Then click 'OK'.

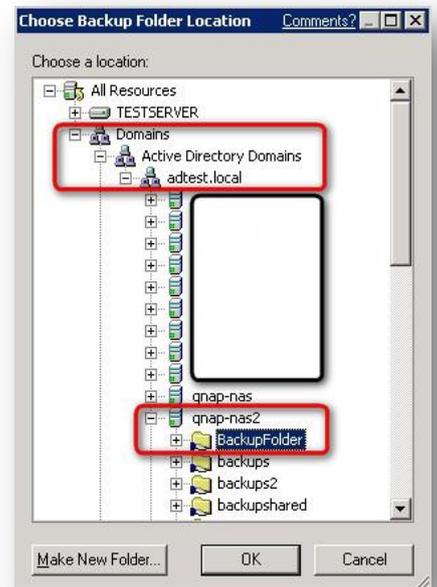


Figure 18

3. Or use the NetBIOS name resolution on the same subnet by browsing Microsoft Windows Network.

Click the browse button.

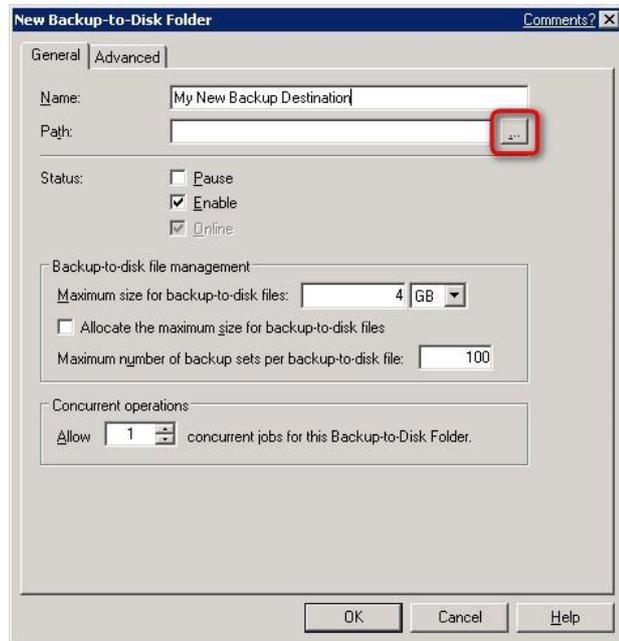


Figure 19

- Develop 'Domains'.
- Develop 'Microsoft Windows Network'.
- Develop your domain. In this example the domain is 'ADTEST'.
- Develop the server where is your shared folder. In this example we created the shared folder 'BackupFolder' on the QNAP NAS named 'QNAP-NAS2'.
- Select the shared folder to use for backup. In this example we use the shared folder 'BackupFolder' created previously.
- Then click 'OK'.

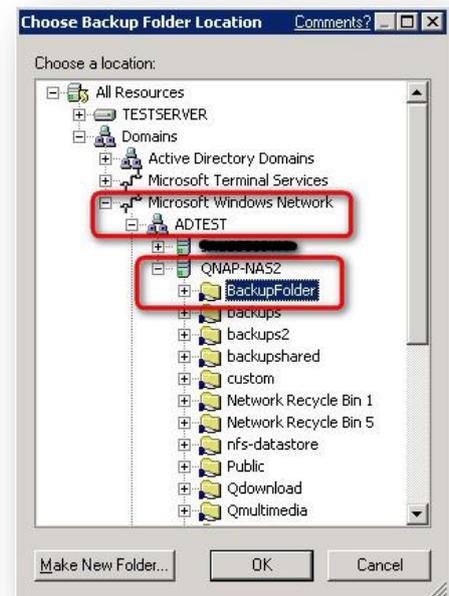


Figure 20

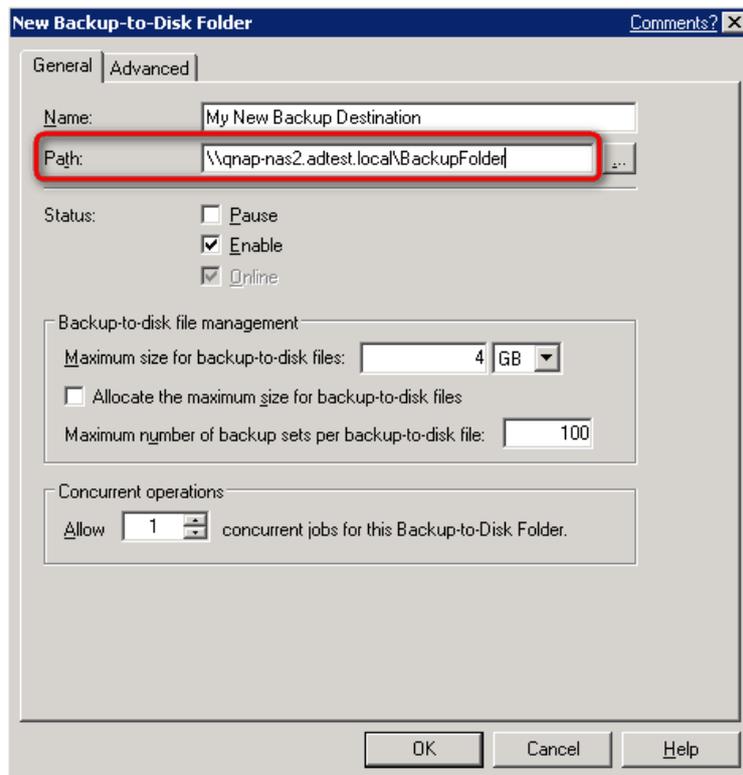


Figure 21

After you have specified the Name and Path, you can change other options wherever necessary (refer to Symantec documentation). Then click 'OK'.

Your Backup-to-disk folder is ready to be used by BE. Please continue the application note to create a new backup job and select this Backup-to-disk folder.

Once you have added your NAS as Backup-to-disk in BE, this Backup-to-disk folder will be available and ready to be used as a backup destination.

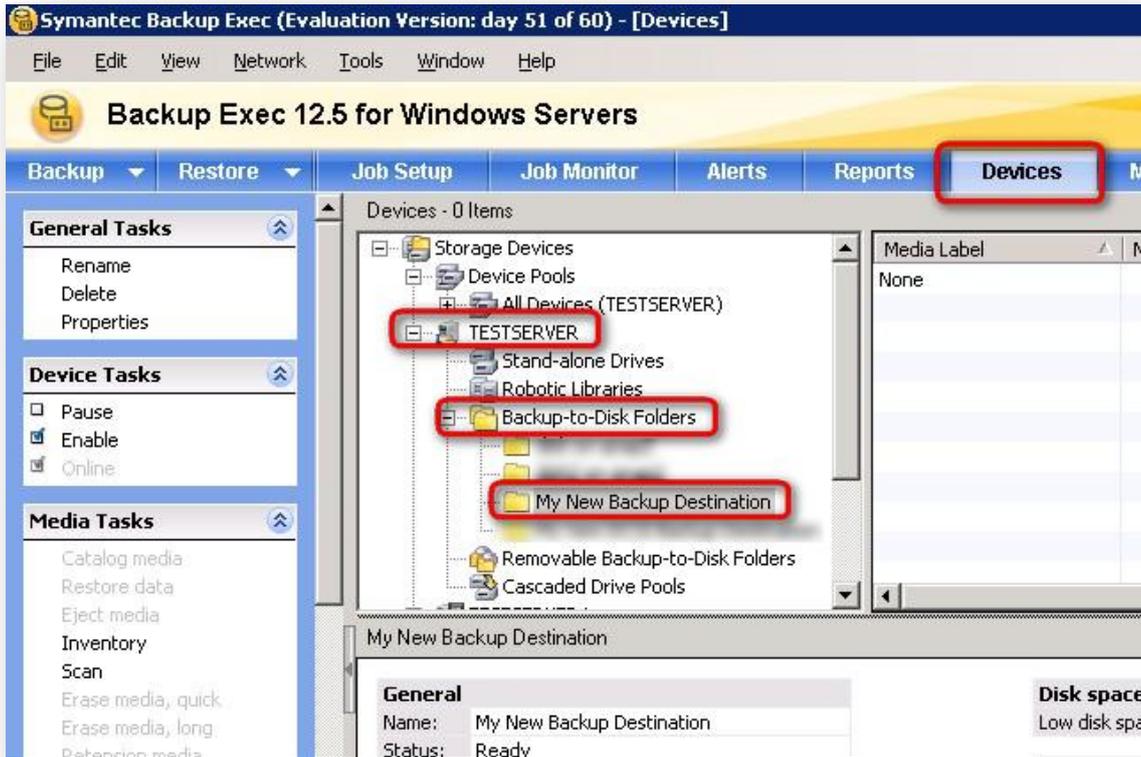


Figure 22

On the same window you can see information of your new backup destination.

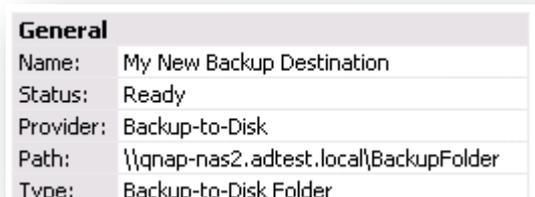


Figure 23

Select the shared folder as the backup destination

- Start the backup wizard, choose custom settings.
- Follow the wizard until you are prompted to choose the backup device and media.

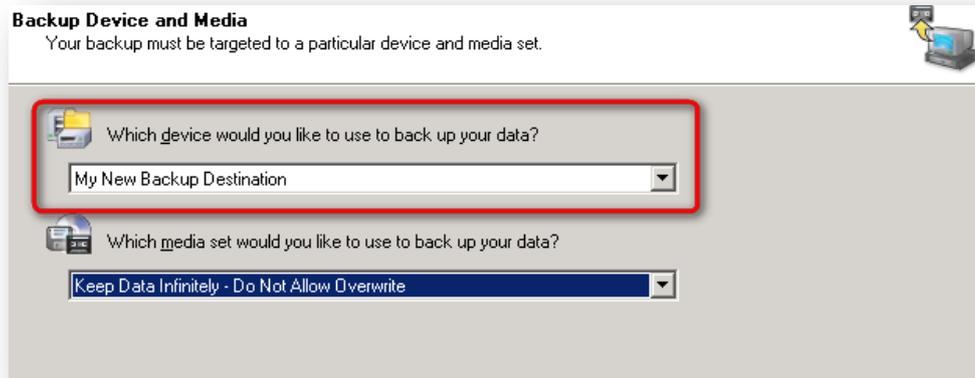


Figure 24

- Select your Backup-to-disk folder created previously (My New Backup Destination) corresponding to the shared folder on your NAS.
- Complete the wizard until the end.

When you run the backup job, the backup data will be stored in 'My New Backup Destination' corresponding to the shared folder on the NAS.

For the other options regarding backup with Backup Exec, please refer to Symantec documentation.

Restore with Intelligent Disaster Recovery (IDR) from the NAS

Symantec IDR allows you to restore a complete server after a disaster, for example in case of hardware failure, even if the system cannot start anymore, by booting the server on a recovery CD. You can back up your servers with IDR backups, store your backups on QNAP NAS, and restore the complete server.

This solution has been tested with a Windows Server 2003 R1 SP2 backup. You have to create an IDR backup first to be able to restore the data using IDR. Please refer to Symantec documentation to learn how to use IDR and create the recovery CD.

- Boot the server you want to restore using the IDR CD.
- Select Automated Recovery.
- Follow the wizard to restore the server until you are prompted for the Restore Method.
- You can use your Windows server with BE media server. Select the option 'Install networking and then restore from a remote media server'. The remote media server is the BE server that manages the backup stored on QNAP NAS.

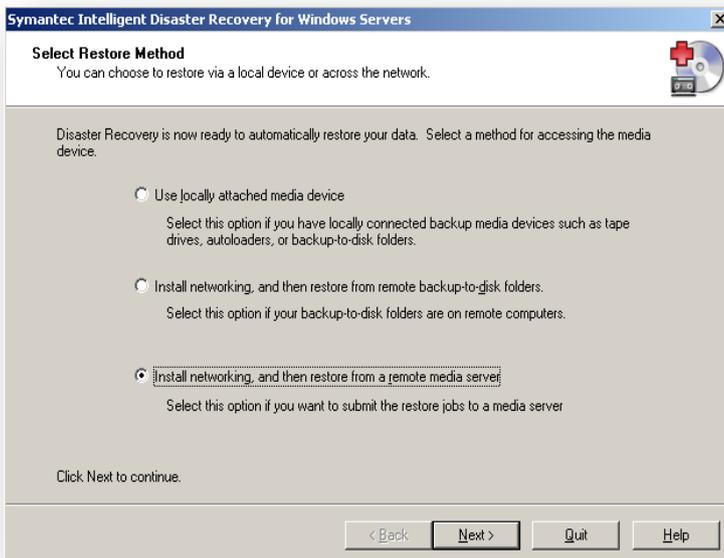


Figure 25

When prompted for the network configuration, remember to set up your network configuration by clicking 'Configure'. For example, if you do not use DHCP, you may need to set up the IP address, the DNS or WINS server, and add your domain DNS suffix.

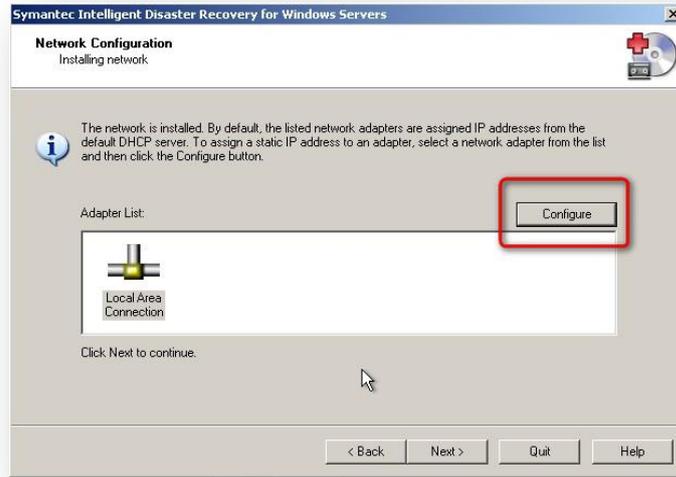


Figure 26

- After the network has been configured, you can connect to your Windows server with BE. In our example, we are using the server TESTSERVER in the ADTEST.LOCAL domain.

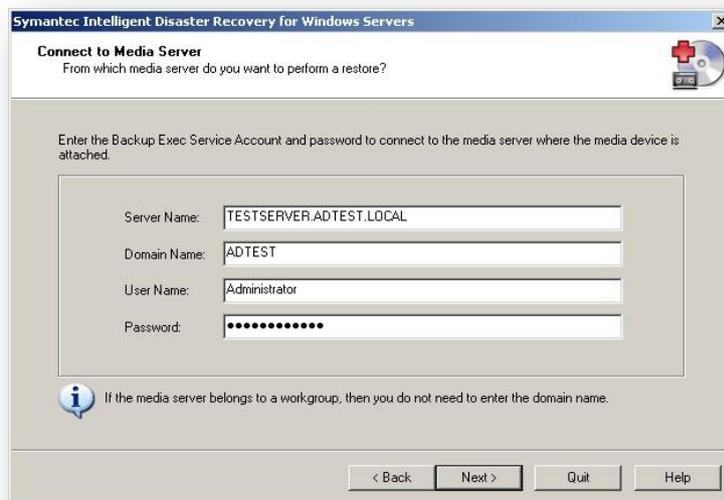


Figure 27

The server name can be:

- TESTSERVER.ADTEST.LOCAL
- TESTSERVER
- X.X.X.X

The data restore can be done with the BE server and the backup stored on QNAP NAS.

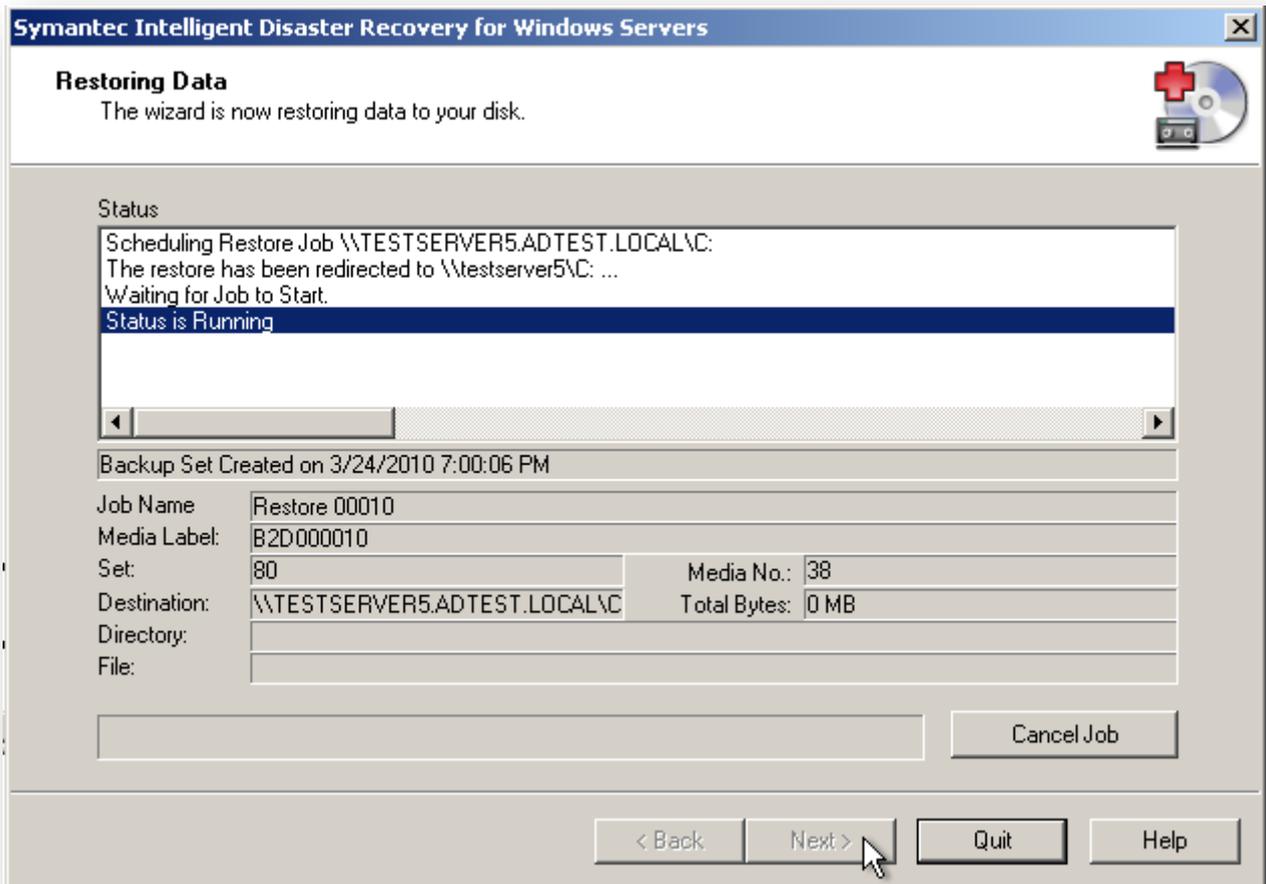


Figure 28

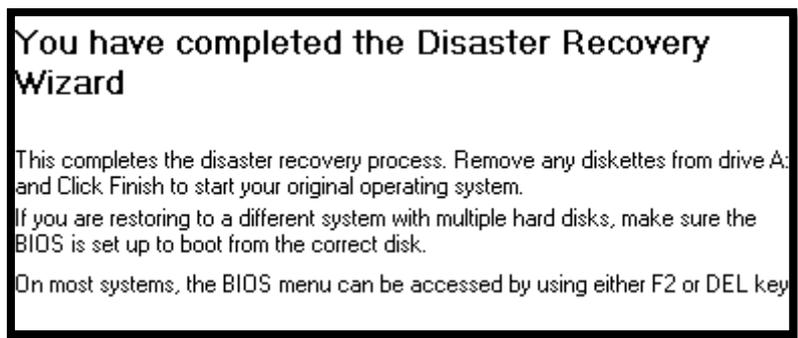


Figure 29

For more information about backup and restoration with BE, please refer to Symantec documentation.

Back up the contents of an iSCSI drive

When you want to backup and iSCSI drive, you simply have to select this drive on the Backup Exec selection for the server that is using the iSCSI drive.

- Start the backup wizard
- Follow the wizard until you are prompted for the resources to back up (source selection).

In this example we want to back up an iSCSI drive, connected the server TESTSERVER with the drive letter (E:).

- Develop your server.

Select the iSCSI drive (E:**Error! Reference source not found.**) that is connected from the server `TESTSERVER`.

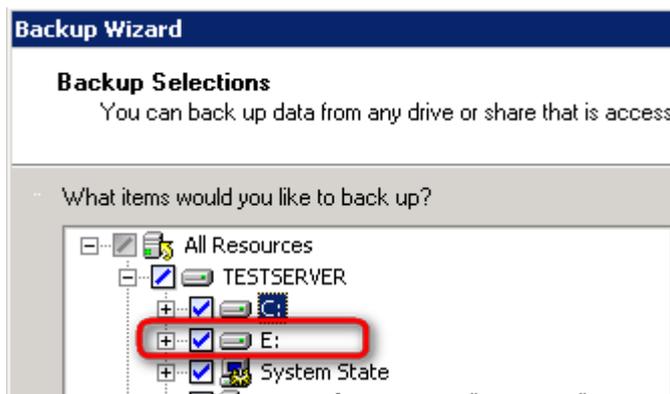


Figure 30

- This will back up the contents of the iSCSI drive when backing up the server TESTSERVER.

Since the iSCSI drive is a dedicated storage, we cannot back up the iSCSI drive directly from BE. You must do it through the agent on the server that is using it.

- Complete the wizard until the end.

When you run the backup job, it will back up all the selected resources, including the contents of the disk (E:), corresponding to the iSCSI drive.

Back up the data from the NAS shared folders

You can back up your shared folders using BE 12.5.

To do so, you need to grant the read/write access to the shared folder to the user used by BE Services (see Shared folder and permission page 10).

Note:

Firmware version 3.3 and above supports the file archive bit.

Firmware version 3.2 and below do not support the file archive bit.

Enable user shares selection

By default, you will not be able to select shared folders by browsing the NAS (to be explained later).

To enable the user shares selection, follow the steps below:

In Backup Exec console, select 'Options' from the 'Tools' menu.

Then Enable the selection of user shares in 'Job Defaults' > 'Network and Security'.

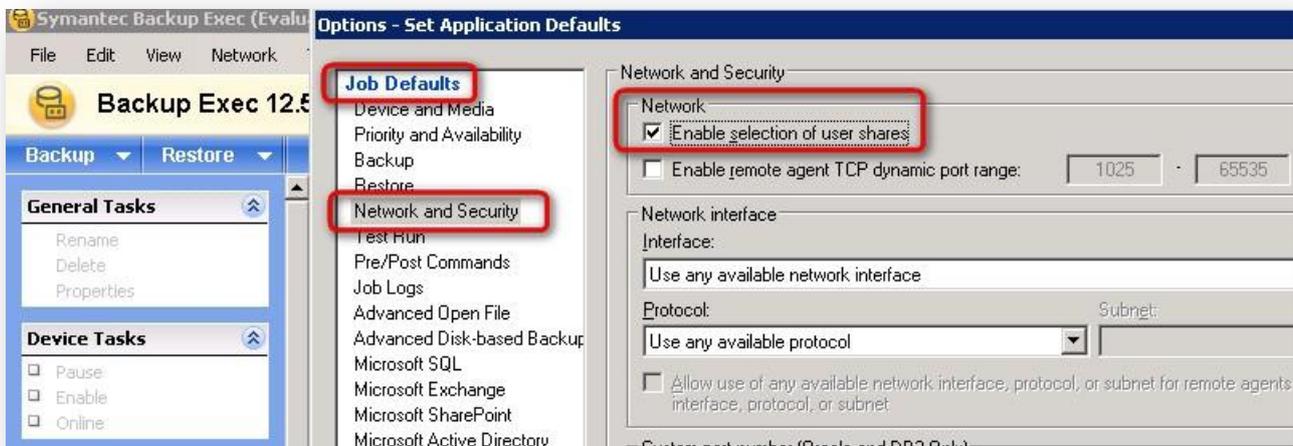


Figure 31

Select the shared folder on the NAS

After you have enabled the user shares selection in BSER, you will be able to select the shared folder on the NAS:

- Start the backup wizard.
- Follow the wizard until you are prompted for the resources to back up (source selection).
- Browse the Microsoft Windows Network to select the shared folders.
- Or browse the Active Directory to select the shared folders.

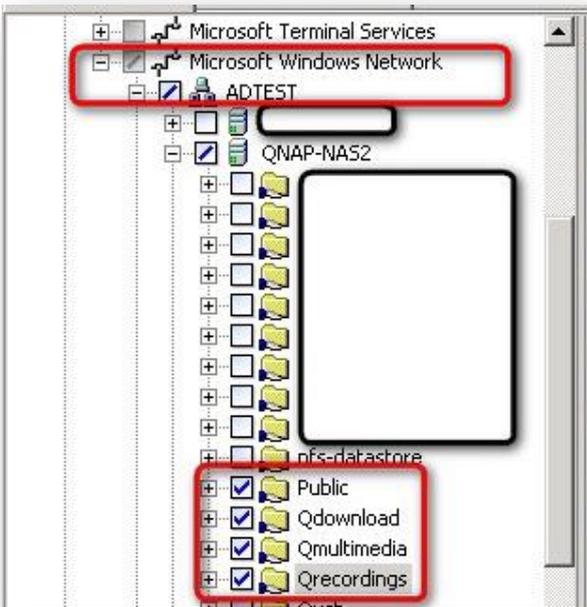


Figure 32

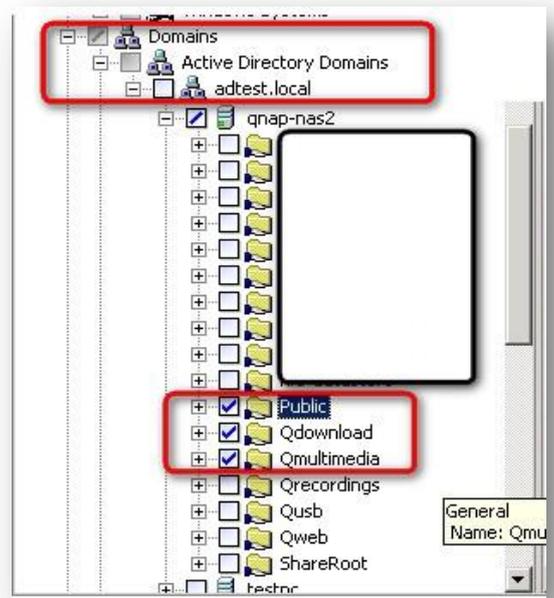


Figure 33

- Or use the 'User-defined Selections'.

On Figure 34, you can see that you can add the NAS shared folder by the IP address, FQDN name or host name. Make sure your name resolution is working correctly. See Appendix on page 32.

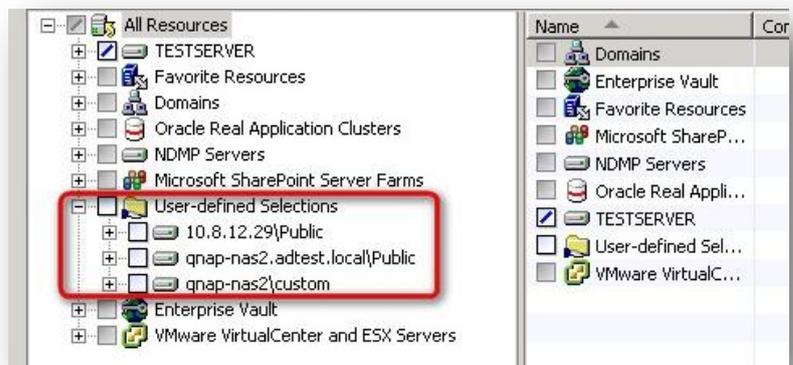


Figure 34

NAS firmware v3.3.0 above

With NAS **firmware 3.3.0** or above, you can use the archive bit as backup reference. Go to 'Job Setup', right click your job and select 'Properties'. Go to 'Settings' > 'General'.

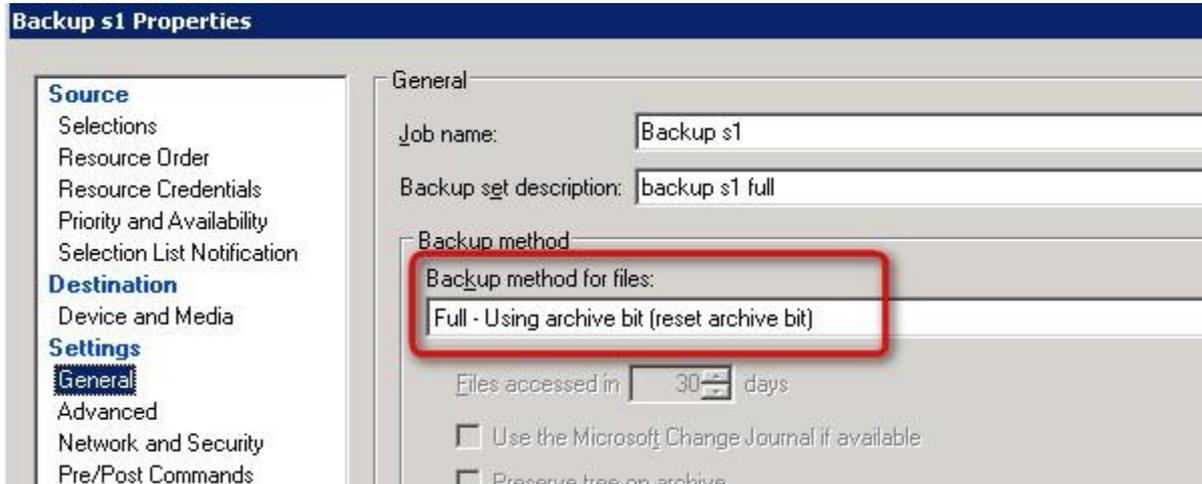


Figure 35 Details of a backup job property

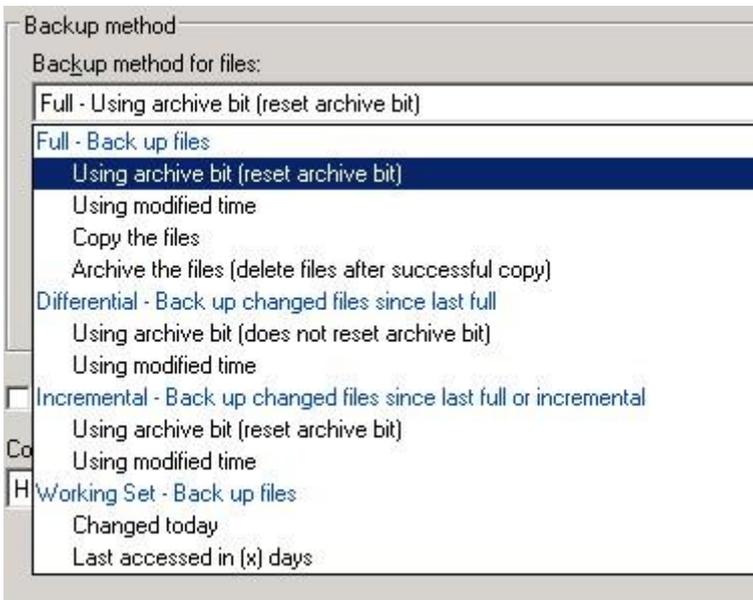
The last access time for files is not supported. Backup methods using last access time cannot be used. You can use archive bit or last modified time.

NAS firmware v3.2.x or older

If you are using NAS firmware version **3.2.x** or older, **the archive bit cannot be reset** by a user other than admin, and the **last access time** is not supported. Therefore, in your backup job properties or in the backup job wizard, all the options using the archive bit or last access time cannot be used.

You can verify and change the backup method of a job.

Go to 'Job Setup', right click your job and select 'Properties'. Go to 'Settings' > 'General'.



With firmware 3.2:

The followings are not supported:

- ❖ Using archive bit (reset archive bit)
- ❖ Using archive bit (does not reset archive bit)
- ❖ Last Accessed in (x) days

Supported features:

- ➔ Using modified time
- ➔ Copy the files
- ➔ Archive the files
- ➔ Changed today

Restore files to the NAS

You can also restore the files to the NAS.

Error in restoring data to the NAS

Keeping the default restore option will result in a failure. The NAS does not support NTFS permission so Backup Exec cannot restore the permission settings of the files.



Figure 36

In this example, we try to restore to the shared folder 'BackupFolder' created previously. The restore failed as shown in the job log: Access denied, error writing security data stream.

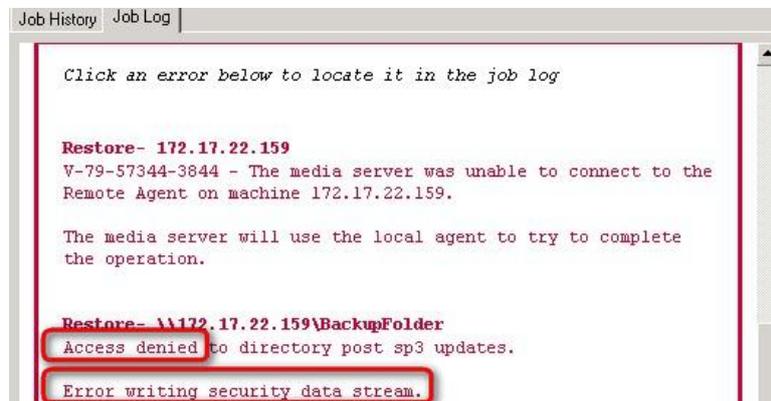


Figure 37

To avoid the error, do the following.

In the restore properties, go to 'Settings' > 'General'. Select 'Restore all information except security for files and directories' under 'Restoring security information'. Click 'Submit'.

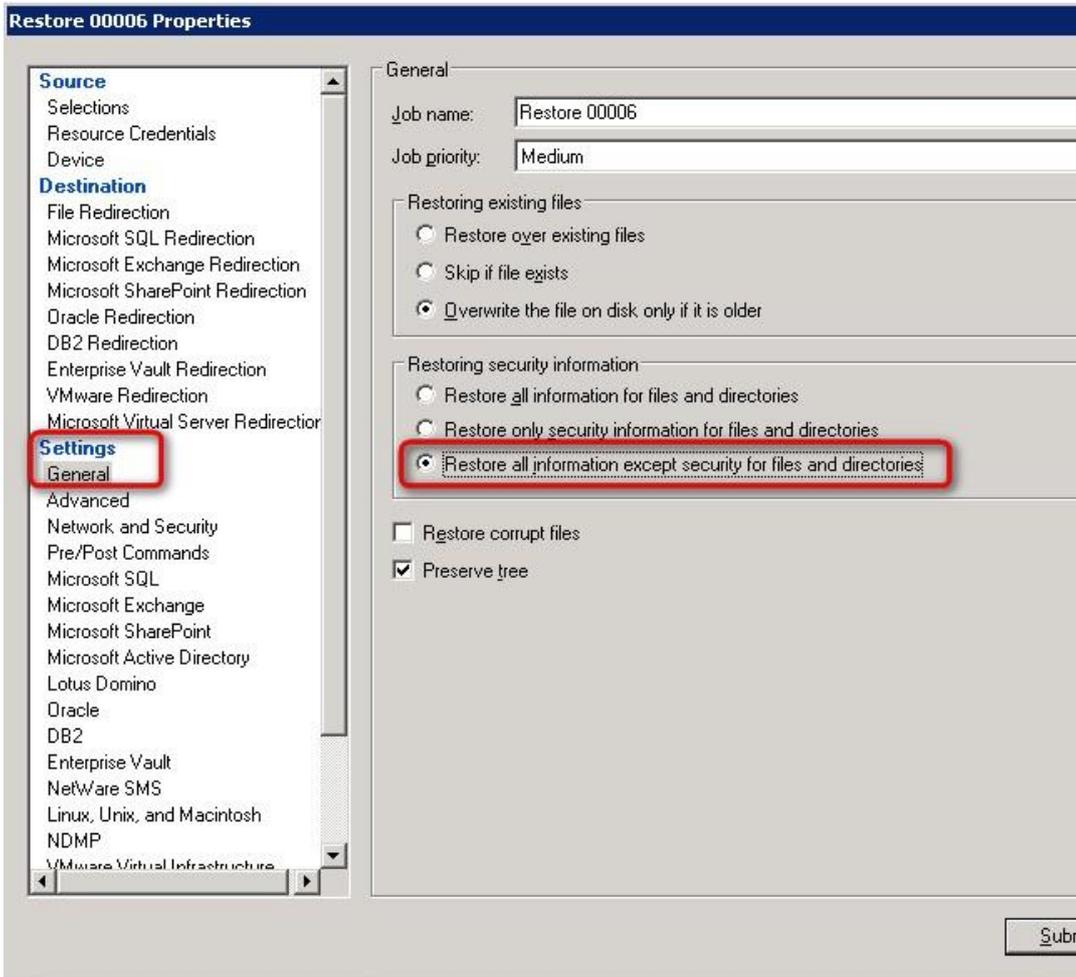


Figure 38

You will be able to restore the data to the NAS correctly.



Figure 39

- Make sure your domain DNS suffix has been correctly set up in your Windows Server (see the picture below Figure 41) in the advanced network interface properties.

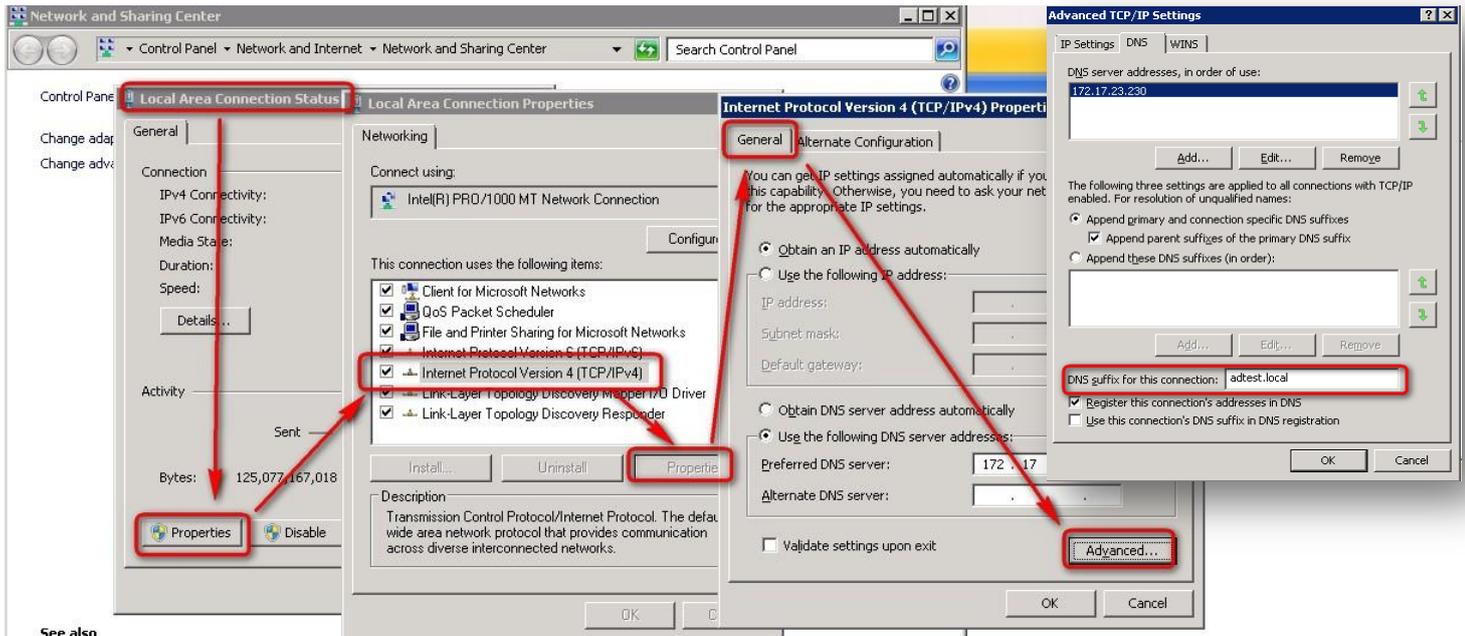


Figure 41

- If you are using DHCP, make sure your DHCP server provides the DNS suffix.

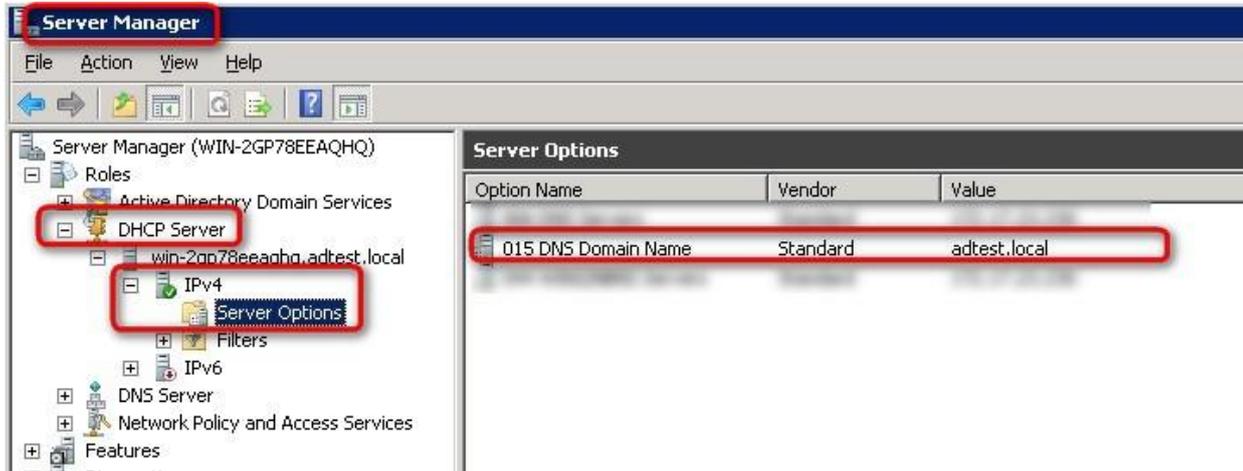


Figure 42

- NetBIOS name resolution works on the same subnet. If your NAS is on a different subnet, it may not appear on the list in 'Microsoft Windows Network'. In such case, you should use DNS name resolution.
- If your NAS is in standalone mode (not joined to an Active Directory) and in a different subnet or with the NetBIOS protocol deactivated on your network, you will not be able to browse the NAS. You must specify the path manually by the IP address of the QNAP NAS or the DNS name of your NAS.