

# Netbackup Virtual infrastructure:Implementation

Platform: Windows Server Systems

Author and Design Engineer : Anup Sreedharan

## System Requirements:

- Base OS: Windows -7 and above (64 bit preferred, 32 bit can be used)
- Processor: Quad Core, Intel Core-i3 and above.
- RAM: 8 Gigabytes and above for maximum performance( 4 Gigabytes can be used)
- Motherboard: Proprietary Boards with Intel chipset( Eg: DELL), Intel Boards, ASUS, ASROCK, Gigabyte ( Make sure to have VT enabled in BIOS)
- Virtualization tool kit: VMWARE workstation 6.5 and above / Oracle Virtual BOX (Earlier Sun Virtual BOX)/Hyper-v.

## Hardware Used:

- ✚ DELL XPS L401-X LAPTOP
- ✚ Processor: Intel Core-i5 460M( First Gen)
- ✚ Base OS: Windows-7 Home Premium, 64 bit SP1
- ✚ MotherBoard: DELL 069C9F With Intel Chipset ( Havendale/Clarkdale Host Bridge)
- ✚ Firmware (BIOS): DELL A06 ( VT enabled)
- ✚ RAM:8 Gigabytes
- ✚ Virtualization toolkit: VMWARE workstation 10
- ✚ Subnet Range used: 192.168.x.x
- ✚ VRAM: VPROC:VMDK= 1:2:40
- ✚ Guest OS: Windows Server 2008 R2 Enterprise
- ✚ Symantec Netbackup 7.0
- ✚ Critalink Firestreamer VTL (Virtual Tape Library: 1 Robot, 5 Tape Drives & 200 Storage Slots)
- ✚ Starwind ISCSI SAN ( Storage with no Robot. This can be used to create/export virtual storage & physical storage which includes harddisks, optical drives & tape drives)

## Prerequisite Checklist:

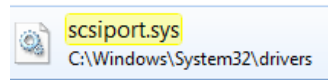
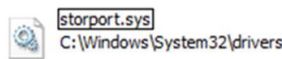
1. Make sure that the DNS is properly configured, if using within a **Domain**/Workgroup space.
2. Also setup static routes between the servers to ensure smooth connectivity.
3. For Windows 2003 Enterprise( both 32 and 64 bit), the following are required:
  - a. Microsoft ICSI Initiator software needs to be installed so as to bind with the Starwind software.

- b. Storport MiniDriver(Storport.sys)→ suitable for use with high-performance buses, such as fibre channel buses, and RAID adapters.
- c. Microsoft .NET Framework 3.5.

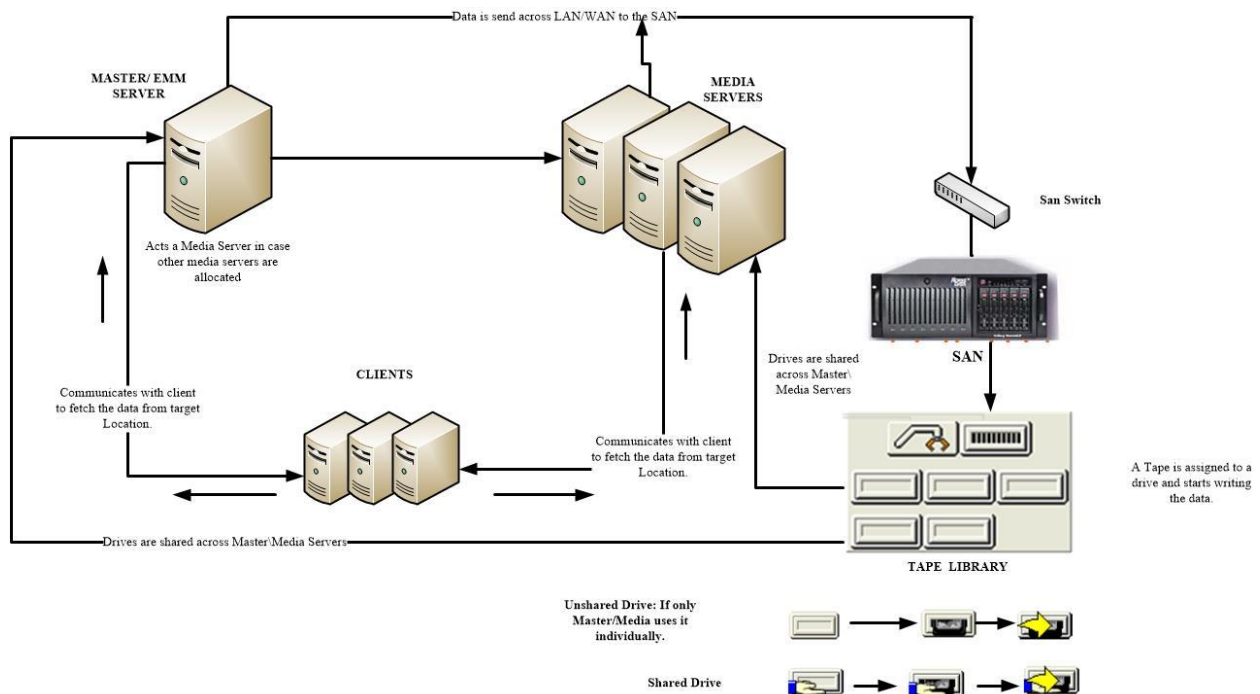
Note: b & c can be installed from Microsoft Support site.

- 4. For Windows 2008 R2 Enterprise, Microsoft .NET Framework 3.5 should be installed from Server Manager( Under Features), whereas ISCSI initiator and storport driver comes pre-installed with OS.

- **IMP: Storport is a major prerequisite to bind with Firestreamer and Starwind VTL.**
- **As Starwind uses its SCSI service to binf with MS-ISCSI, scsiport.sys is equally important.**

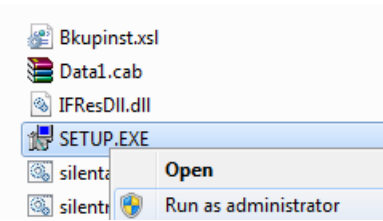


### Netbackup Architecture Diagram

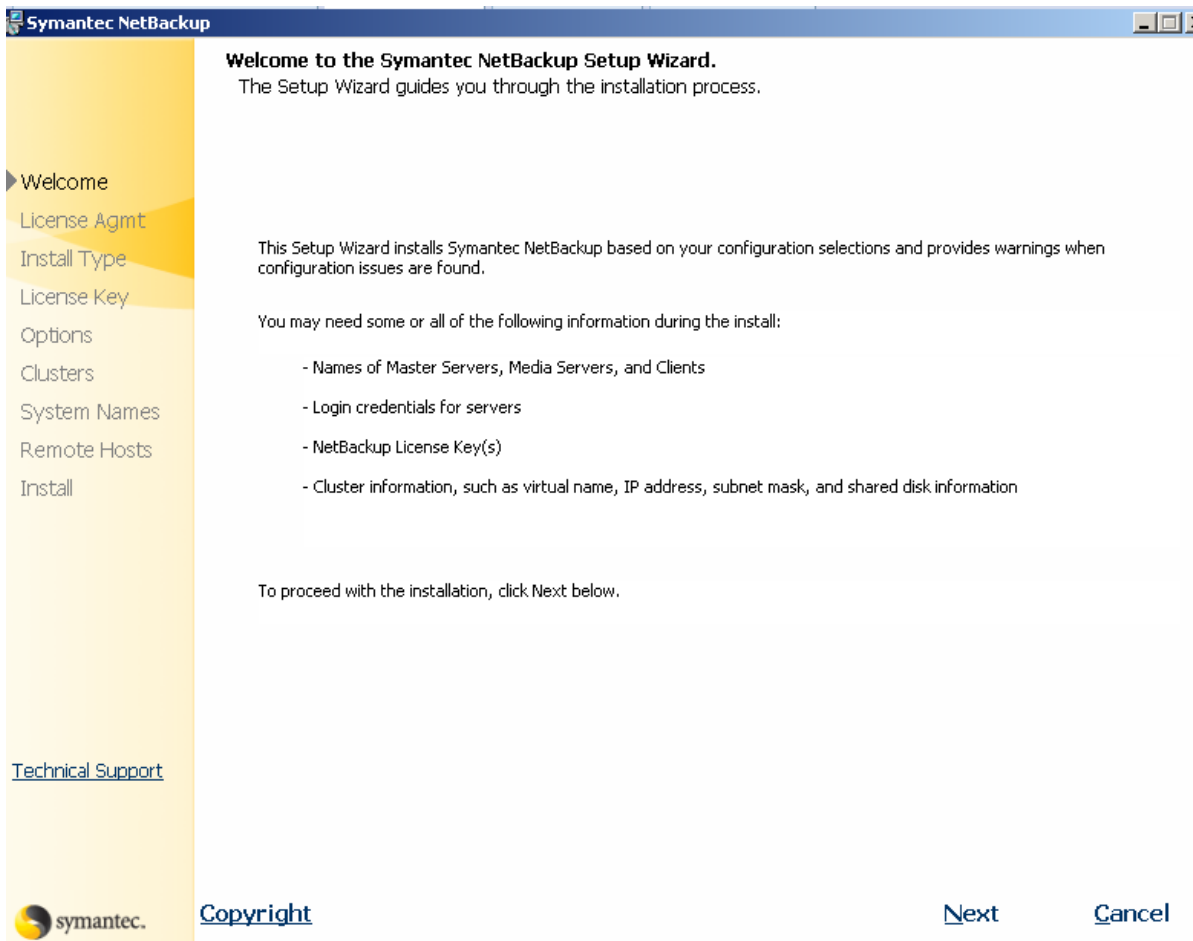


## Netbackup Master & Media Server Installation

1. Run the set up with admin priveledges.



2. Setup Wizard pops up, which is shown below:



### 3. Accept the Licensing Terms to proceed.

**License Agreement**  
Please read the following agreement carefully.

**SYMANTEC SOFTWARE LICENSE AGREEMENT**

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**1. DEFINITIONS.**

**"Content Updates"** means content used by certain Symantec products which is updated from time to time, including but not limited to: updated anti-spyware definitions for anti-spyware products; updated antispam rules for antispam products; updated virus definitions for antivirus and crimeware products; updated URL

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 I do not agree to or accept the terms of the license agreement.

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### 4. Choose: "install to this computer only" and set the type to installation to custom.

**Symantec NetBackup Installation Type**  
Specify how you would like to install Symantec NetBackup.

Install to this computer only.  
 Install to multiple computers on your network.  
 Install a clustered Master Server.

If you choose the "Install to multiple computers on your network" option, the wizard prompts you to select from the available computers on your network.

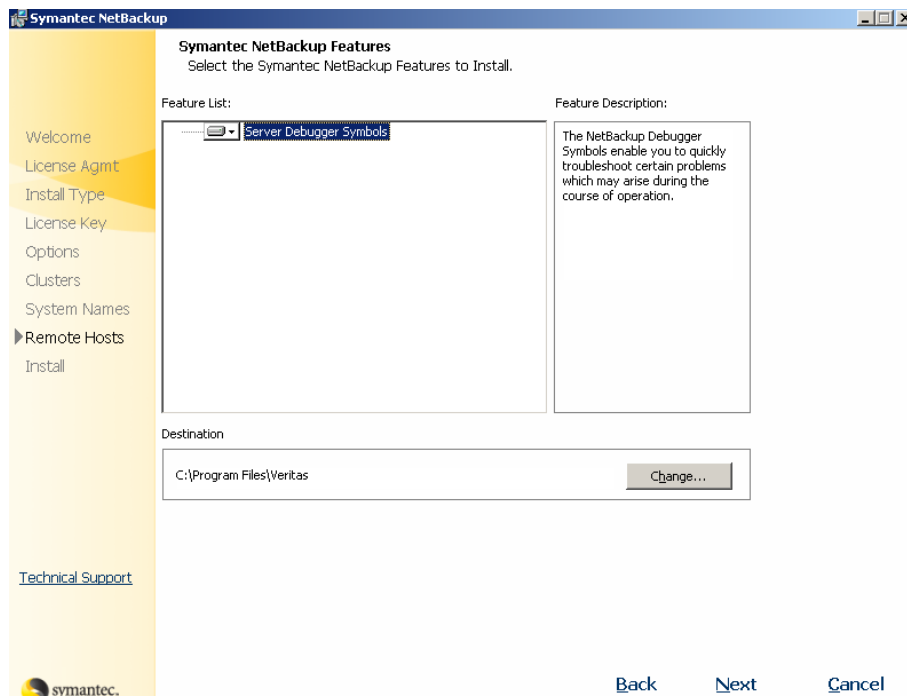
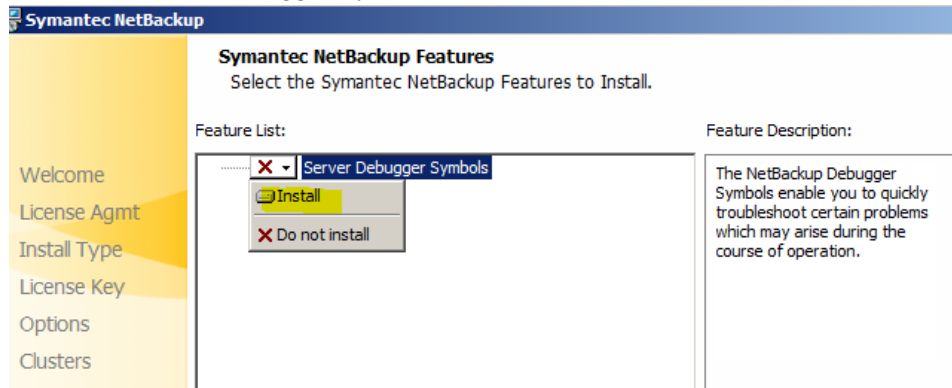
**Typical**  
Perform a typical installation. Default settings for program features, installation location, and Symantec NetBackup settings such as port numbers will be used.

**Custom**  
Perform a customized installation. Choose which program features you want installed and the settings with which NetBackup will be installed, such as port numbers. Recommended for advanced users. This option also allows you to change the location where Symantec NetBackup will be installed, currently: C:\Program Files\Veritas.

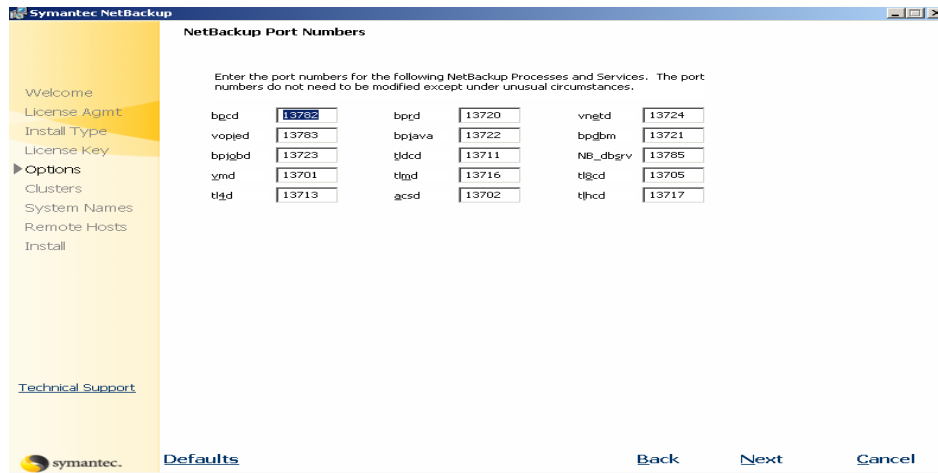
[Back](#)      [Next](#)      [Cancel](#)



## 6. Install the Server Debugger Symbols.



## 7. Netbackup ports info:

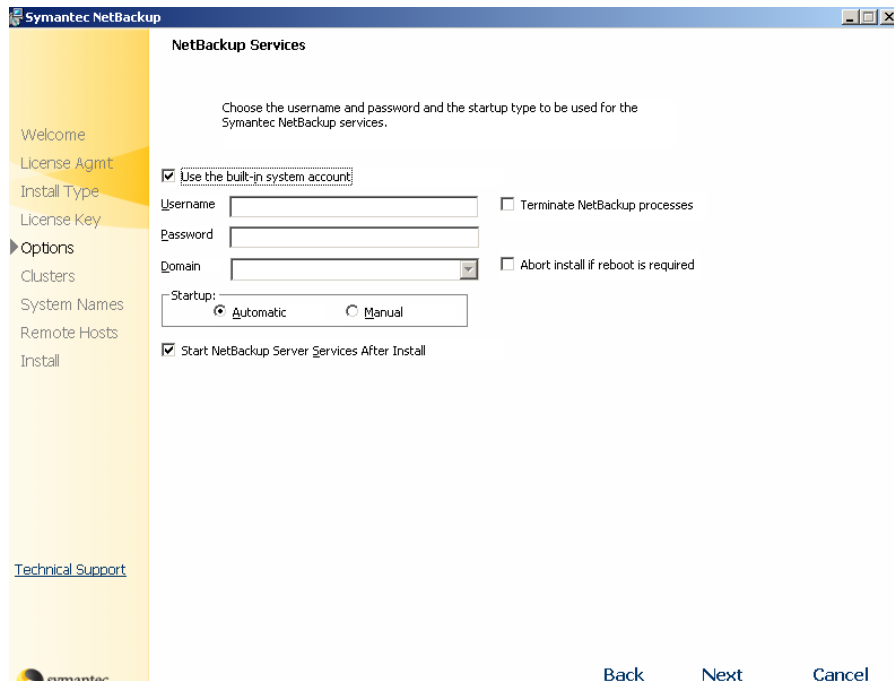


The screenshot shows the 'NetBackup Port Numbers' dialog box in the Symantec NetBackup installer. It contains a list of port numbers for various services, with '13782' highlighted in the 'bpcd' field.

Process/Service	Port Number
bpcd	13782
vopied	13783
bpjgbd	13723
ymd	13701
tlgd	13713
bpcd	13720
bpjava	13722
tlcdc	13711
tlgd	13716
qcsd	13702
vngtd	13724
bpqbm	13721
NB_dbgrv	13785
tlgcd	13705
tlhcd	13717

Buttons: Defaults, Back, Next, Cancel

## 8. Netbackup Services Page



The screenshot shows the 'NetBackup Services' dialog box in the Symantec NetBackup installer. It contains fields for Username, Password, and Domain, and checkboxes for 'Use the built-in system account', 'Start NetBackup Server services After Install', 'Terminate NetBackup processes', and 'Abort install if reboot is required'. The 'Automatic' startup type is selected.

Options:

- Use the built-in system account
- Terminate NetBackup processes
- Abort install if reboot is required
- Start NetBackup Server services After Install

Startup:  Automatic  Manual

Buttons: Back, Next, Cancel

9. Enter the Master server details:

The screenshot shows the 'NetBackup System Names' configuration window. The left sidebar contains a navigation menu with 'System Names' selected. The main area has the following fields and text:

- Master Server Name:**
- Additional Servers:**
- EMM Server Name:**
- OpsCenter Server:** A text box with the following text: "OpsCenter is the next-generation monitoring, reporting, and administrative solution designed to centrally manage one or more NetBackup installations from a web browser. If you have an OpsCenter server in your environment or are planning on installing one, please provide the name or IP (for clusters do not use the virtual name) for your OpsCenter server." Below this is an optional text box labeled "OpsCenter Server Name (Optional)".

Buttons at the bottom: Back, Next, Cancel.

10. **Media Server must be installed only after master installation is complete.**

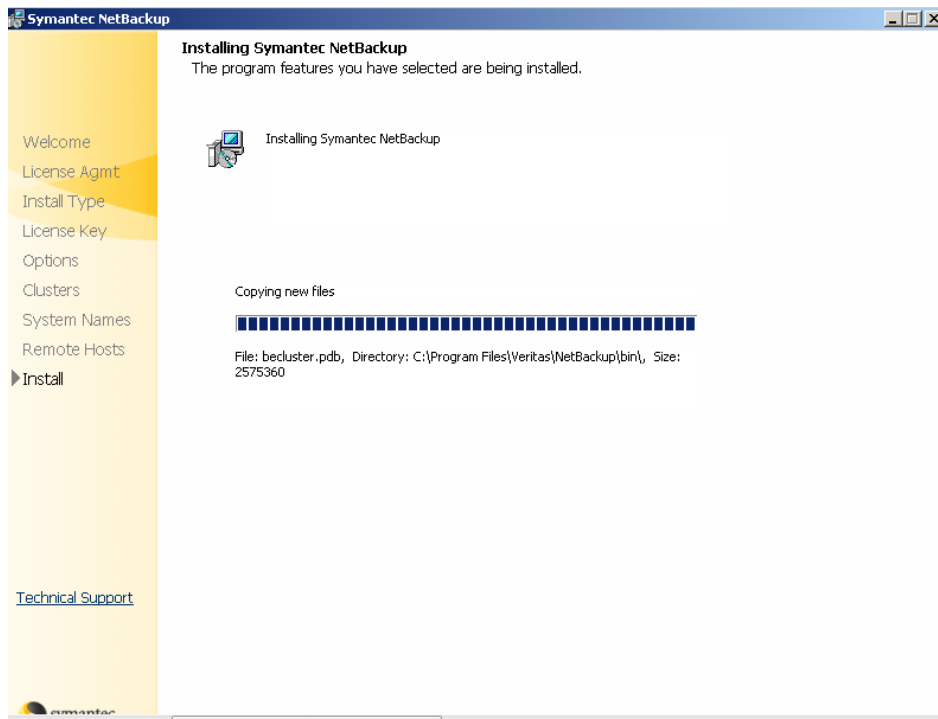
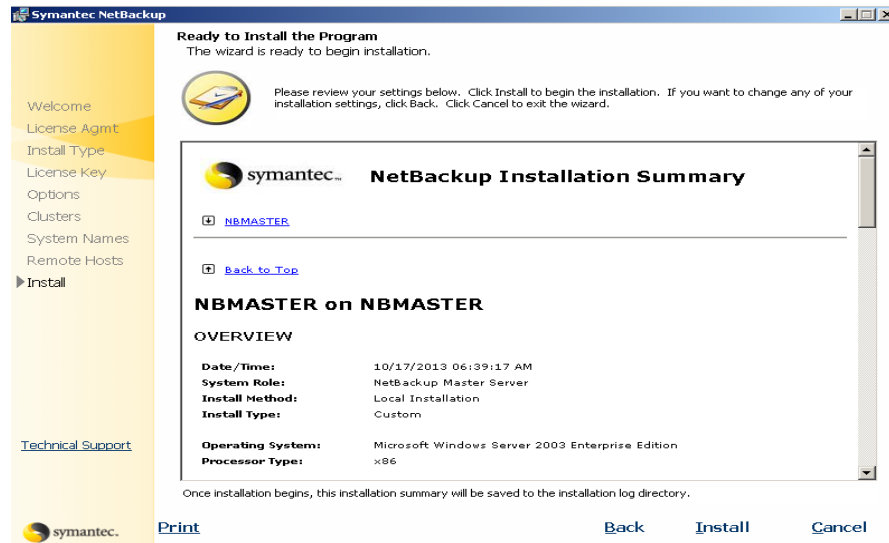
This screenshot is similar to the previous one but includes an additional field:

- Media Server Name:**
- Master Server Name:**
- Additional Servers:**
- EMM Server Name:**

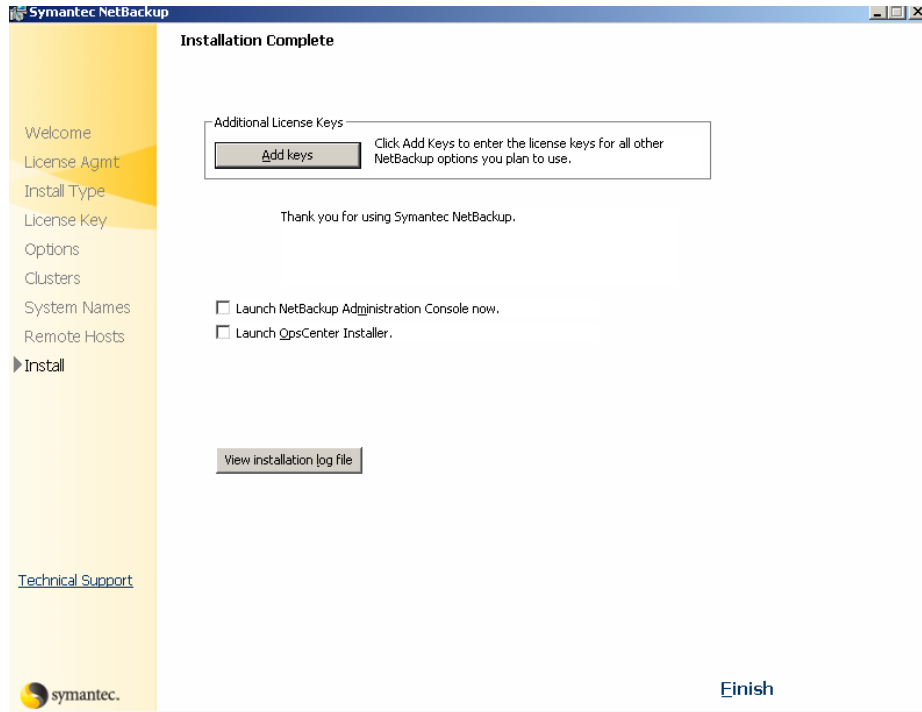
Buttons at the bottom: Back, Next, Cancel.



## 11. Install Summary Precheck.

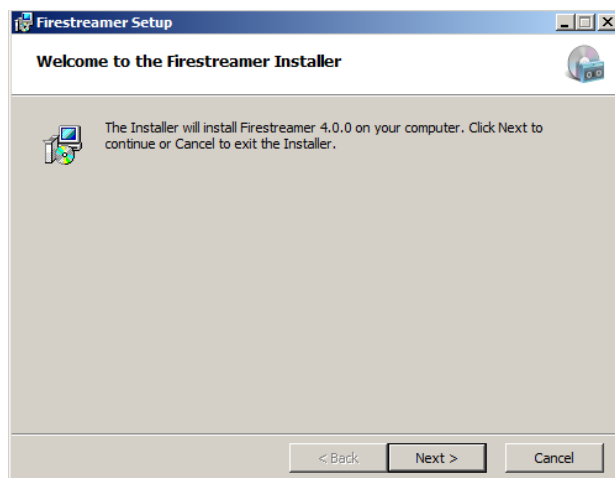


## 12. Install complete Window.



## Library Configuration:

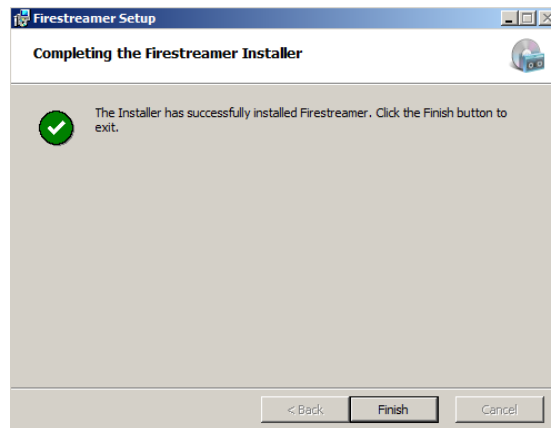
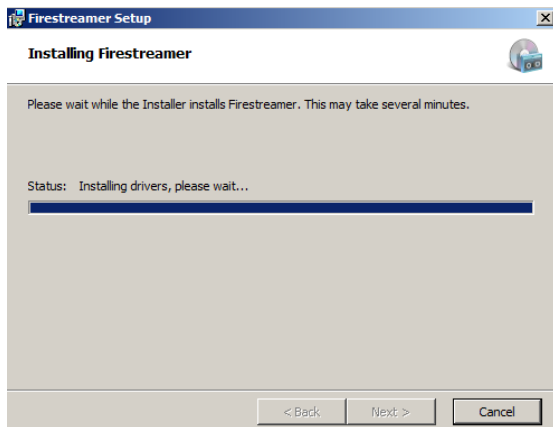
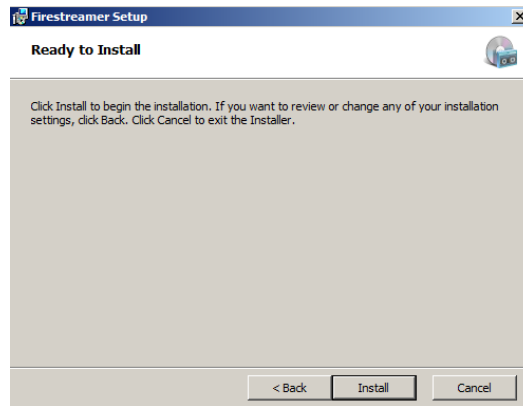
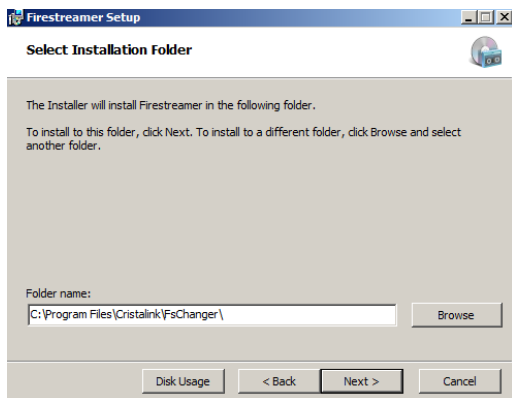
1. Kick start the Fire streamer installer.



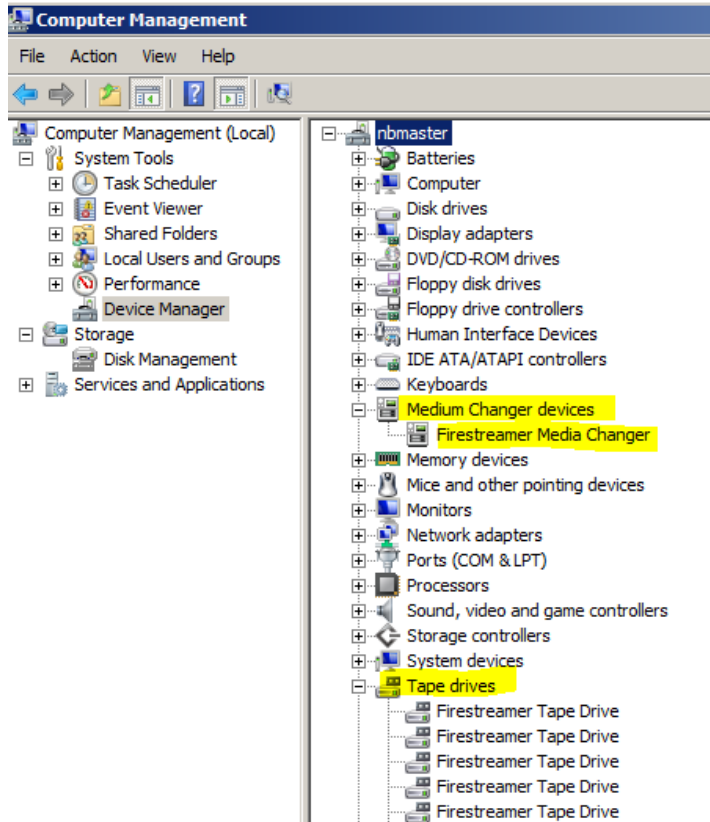
2. Accept the licensing.



3. Proceed with the defaults until completion.

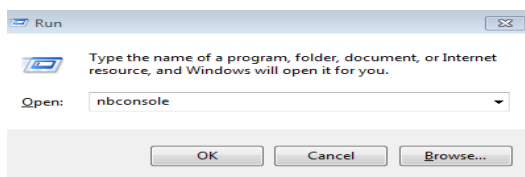
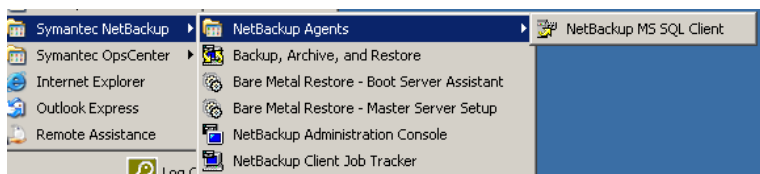


4. Navigate to computer management to notice the installed Robotic Library along with Tape Drives.

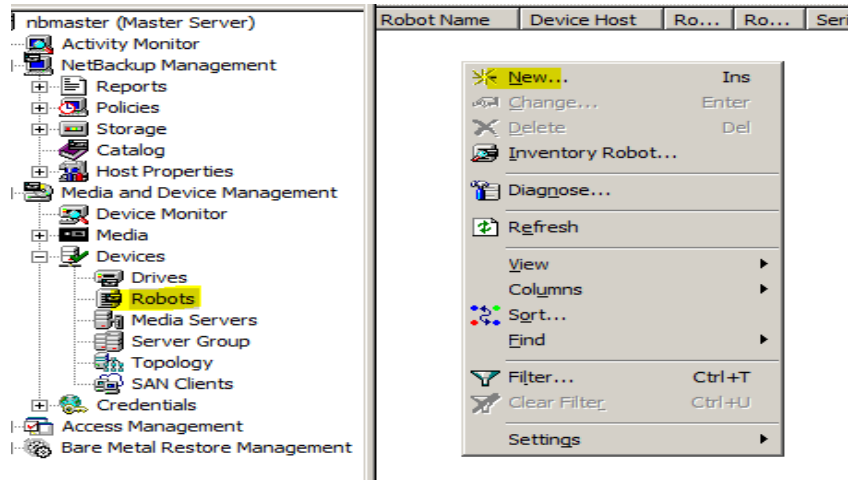


### **Robot & Drive Configuration:**

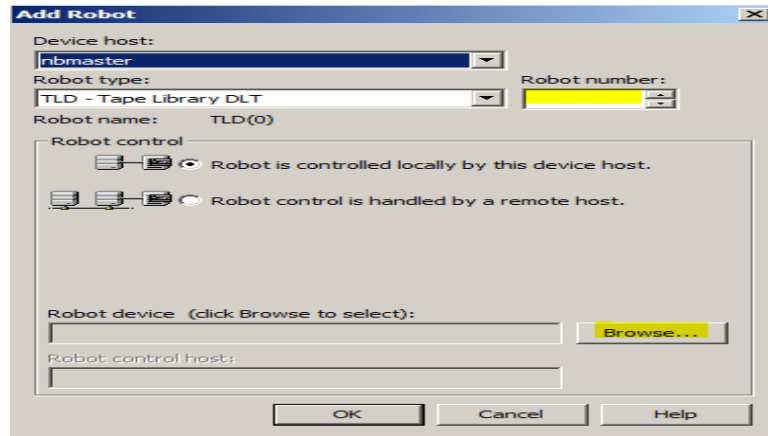
1. Launch the netbackup admin console. You can also type the command “nbconsole” from run prompt. Make sure to configure the paths under Environment variables (Man path configuration) for the commands to work.

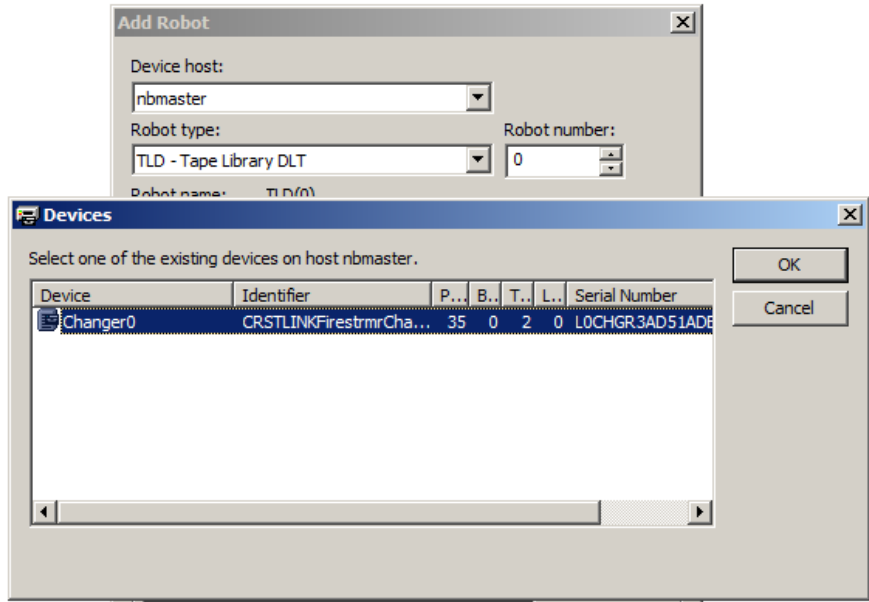


2. On Nbconsole, navigate to Robots under Devices.



3. Choose the device host and provide a robot number ( Default: Starts from Numeric value 0)

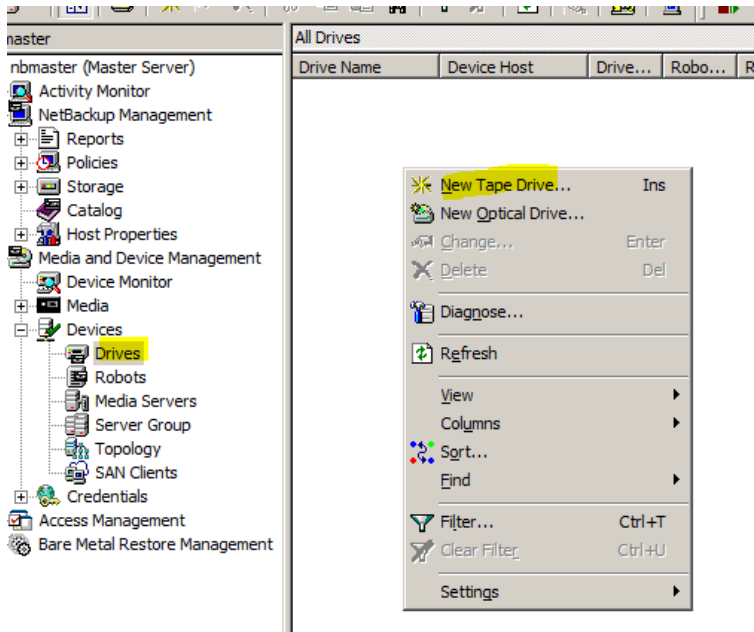




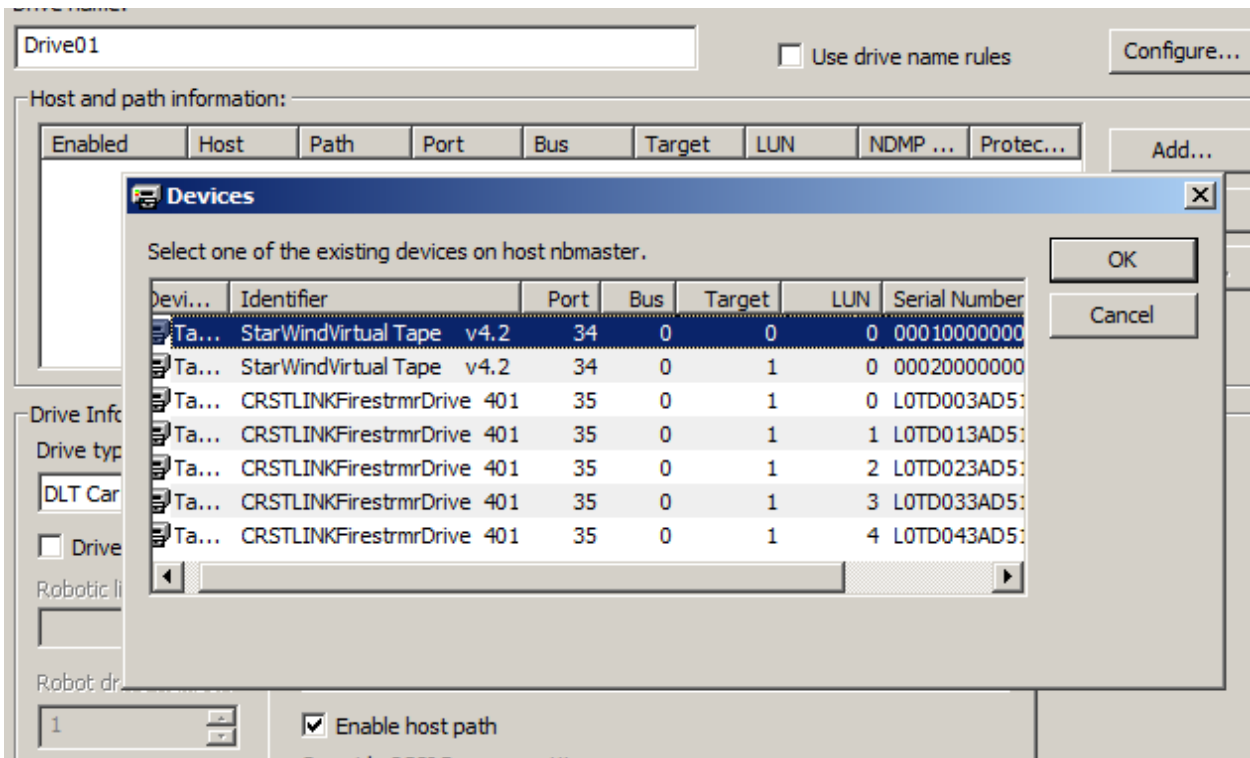
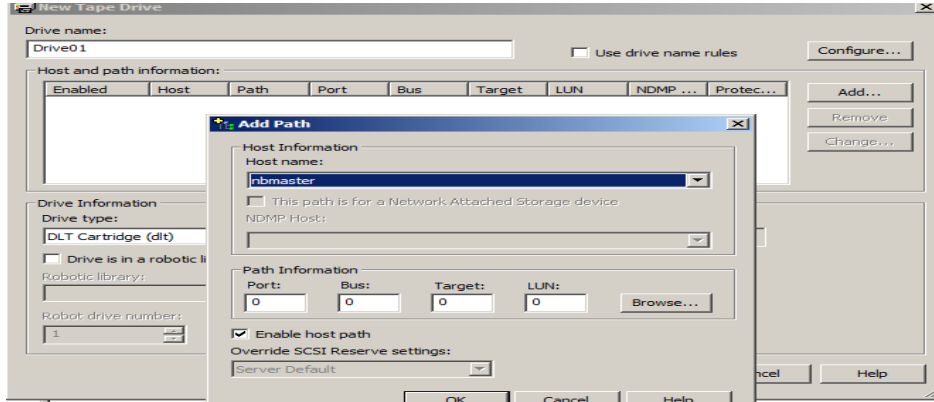
4. Robot is configured. The same appears on the right pane.

Robot Name	Device Host	Ro...	Ro...	Serial Number	Robot Control Host	Inquiry Information	Robotic Path	NDMP Host	Port	Bus	Ta...	LUN	Enabled
TLD(0)	nbmaster	TLD	0	L0CHGR3AD51ADE8639E31190A200C2		CRSTLINKFirestrmrChanger-401			35	0	2	0	Yes

5. Now swing to the top and pull up Drives.



6. Provide a Drive name. Click Add on Right, select the dropdown under hostname to choose the server. Make sure Enable host path is checked.



7. Change the media to DLT Cartridge, check the box “Drive is in robotic Library, choose a robot drive number (Default, Starts from 1) and click OK.

Drive name: Drive01  Use drive name rules Configure...

Host and path information:

Enabled	Host	Path	Port	Bus	Target	LUN	NDMP ...	Protec...
Yes	nbmaster		35	0	1	0		DEFAULT

Add...  
Remove  
Change...

Drive Information

Drive type: DLT Cartridge (dlt) Cleaning Frequency (In hours): 0 Serial Number: LOTD003AD51ADE86

Drive is in a robotic library.

Robotic library: TLD(0) - nbmaster

Robot drive number: 1

8. This would prompt to restart Netbackup Device Manager Service to accept the drive and update in EMM (Enterprise Media Manager) Database. The same works for the Robot configuration when getting updated.

**Restart Device Manager**

The device configuration has been updated on the device hosts listed. In order for the changes to take effect the device manager service (daemon) must be stopped and restarted. If multiple changes are being made wait until all changes are made to restart the device manager service for the device host.

Would you like to stop and restart the device manager service (daemon) now?

Device Host
<input checked="" type="checkbox"/> nbmaster

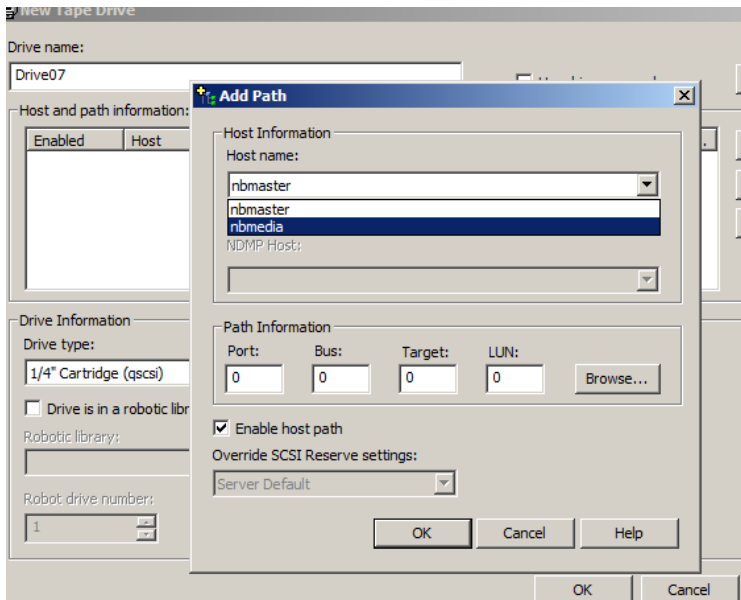
Yes No



8a. Configure the rest of the drives in a similar fashion.

All Drives										
Drive Name	Device Host	Drive...	Robo...	Robo...	Robo...	Enabled	Drive Path	Port	Bus	Target
Drive01	nbmaster	DLT	TLD	0	1	Yes		35	0	1
Drive02	nbmaster	DLT	TLD	0	2	Yes		35	0	1
Drive03	nbmaster	DLT	TLD	0	3	Yes		35	0	1
Drive04	nbmaster	DLT	TLD	0	4	Yes		35	0	1
Drive05	nbmaster	DLT	TLD	0	5	Yes		35	0	1

b. For robot and drive configuration on **media server**, change the host name as shown below:



Note:

Since the library is not a shared system, the Robot and Drive must be configured on Media Server itself.

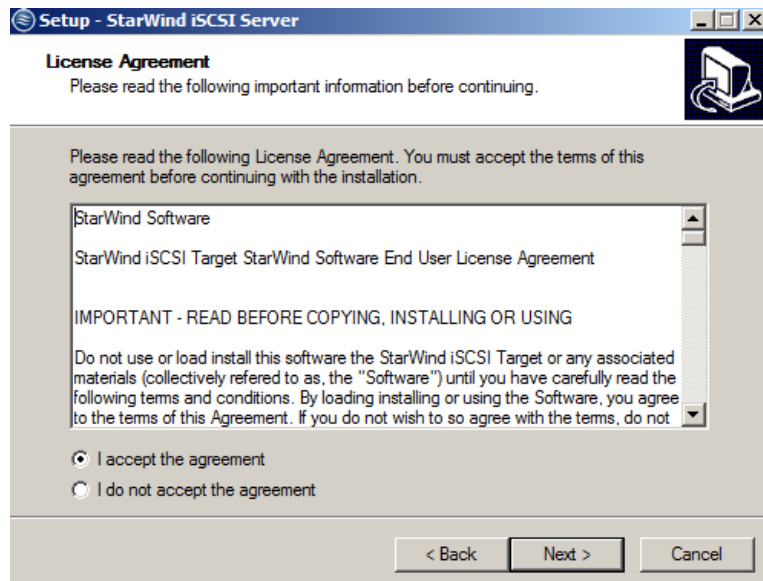
c. On installing Starwind software, you can configure the drives the same way as performed for Firestreamer.

# Starwind iSCSI SAN SERVER

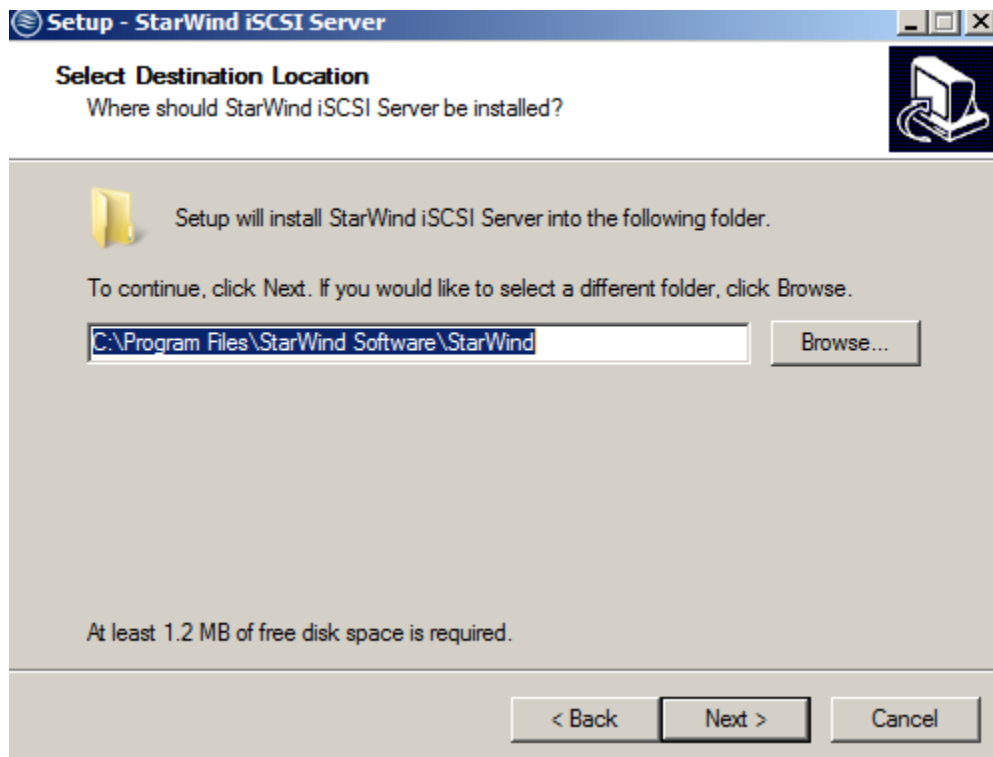
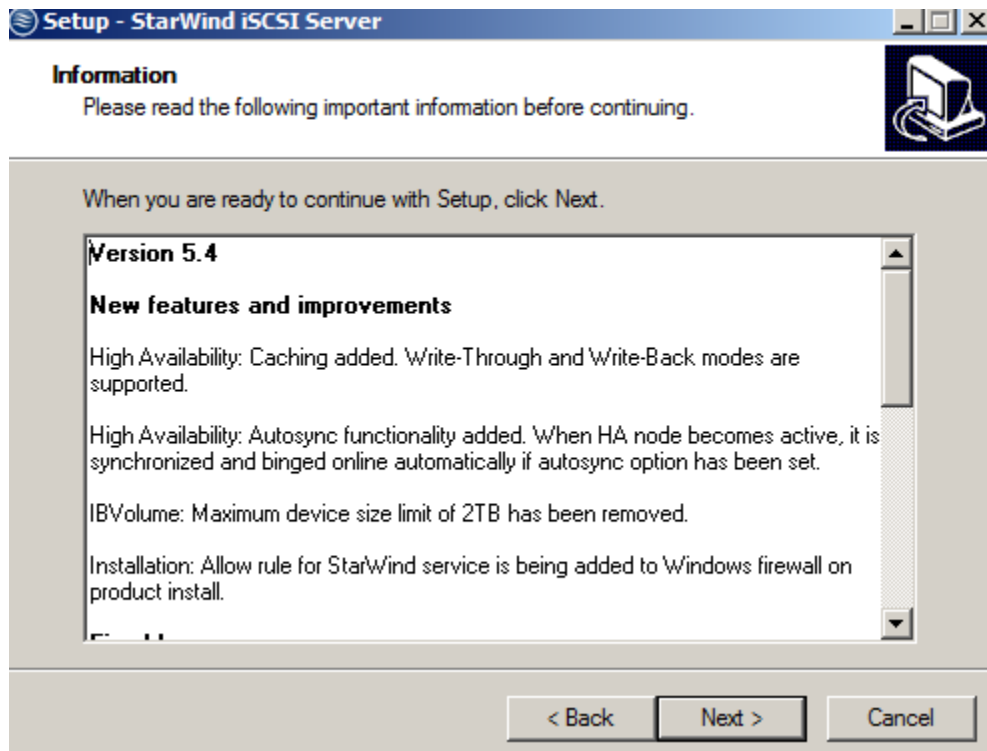
1. Startup the wizard.



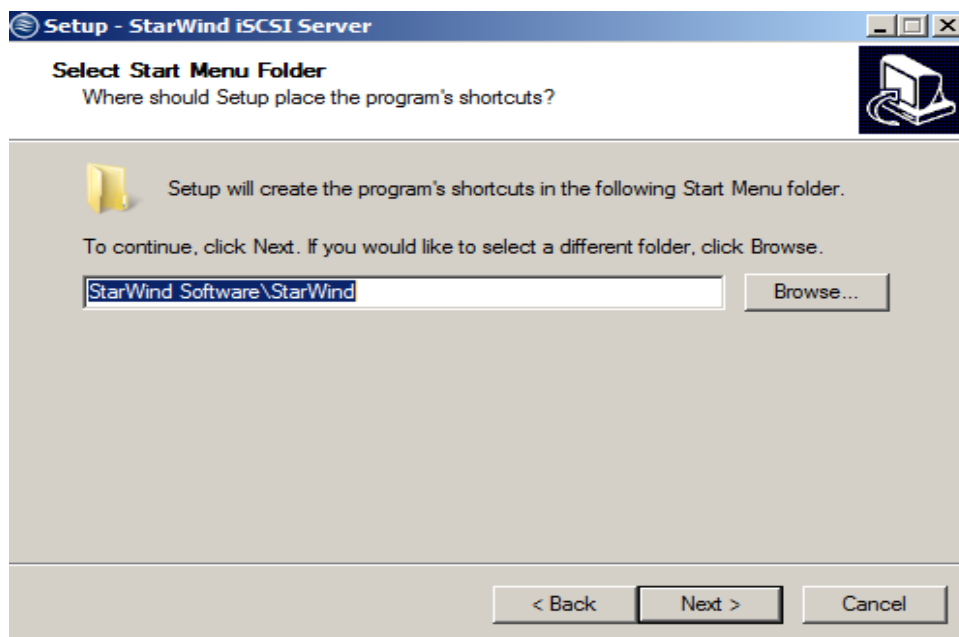
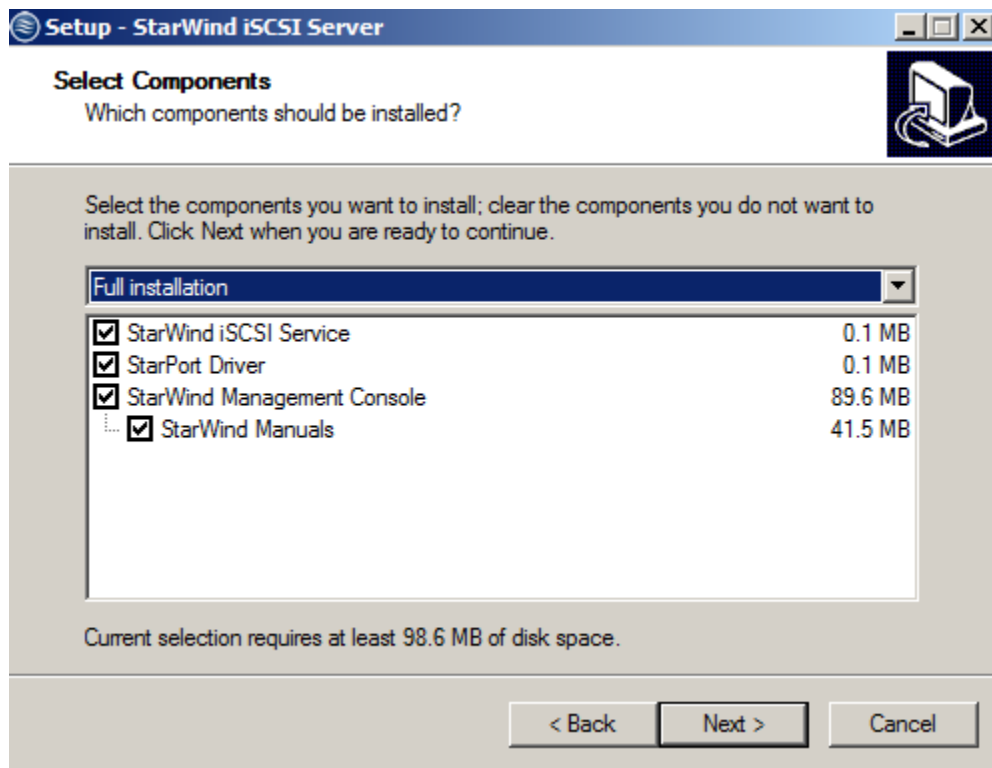
2. Accept the licensing terms.

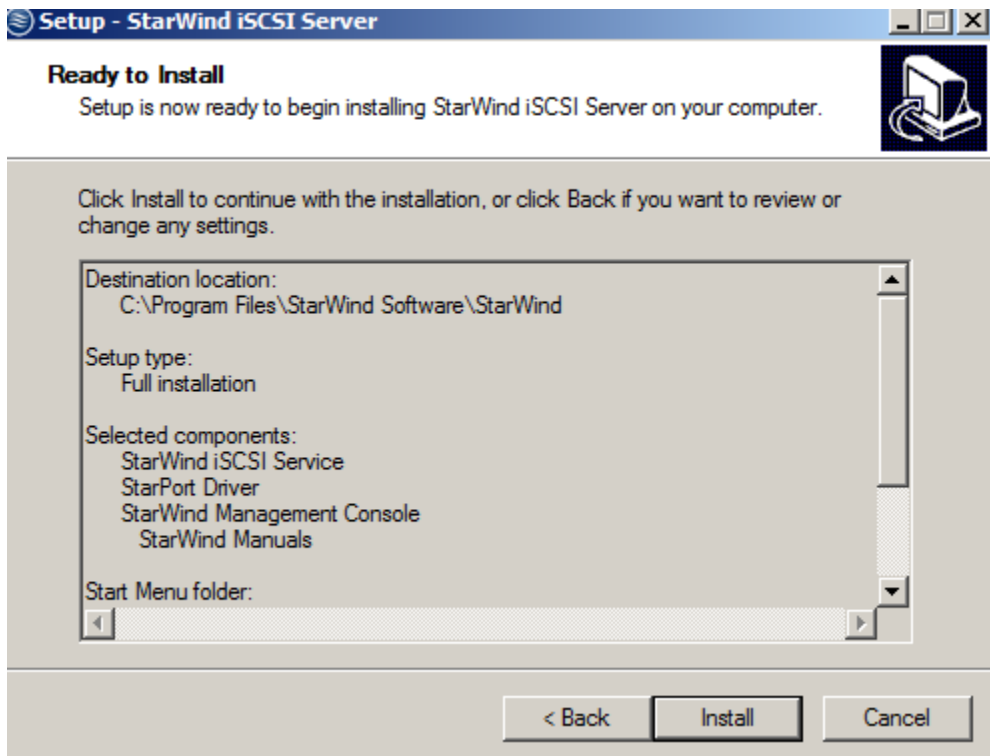
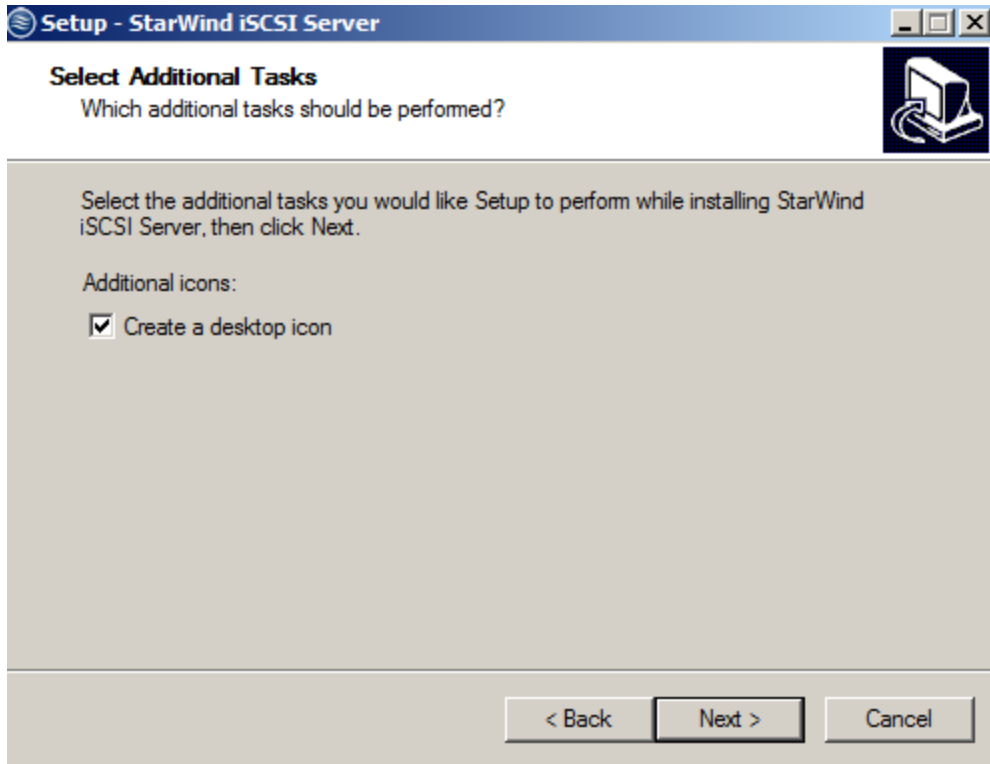


3. Accept the defaults and proceed.

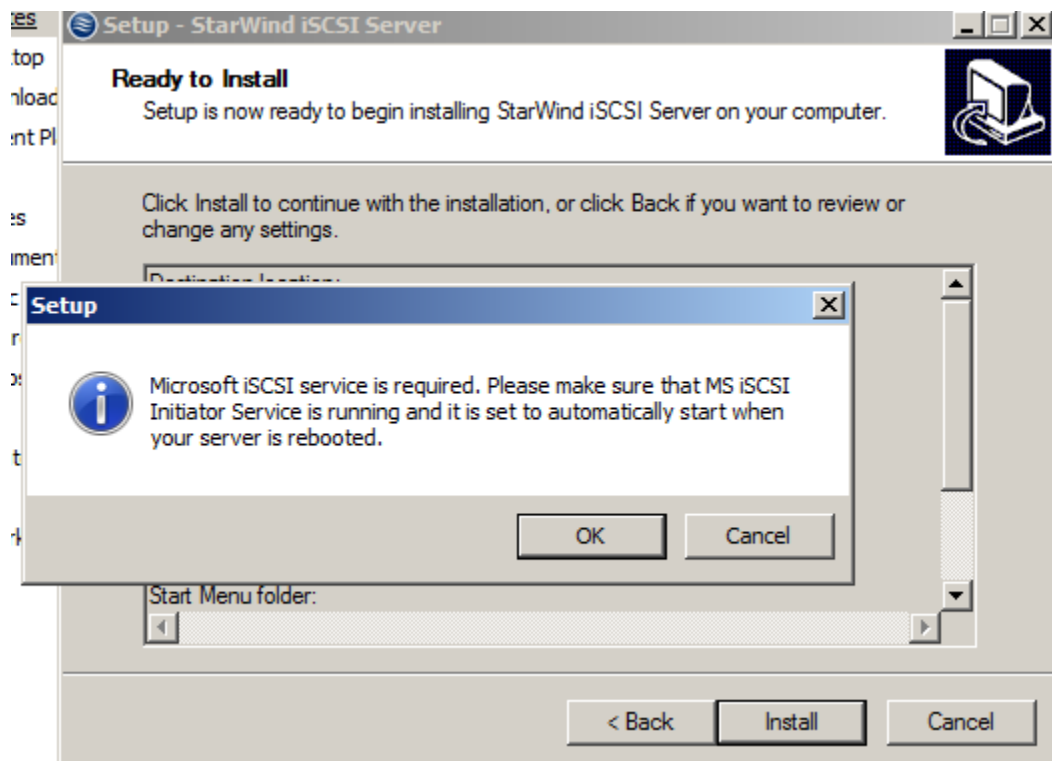


#### 4. Important Services Required

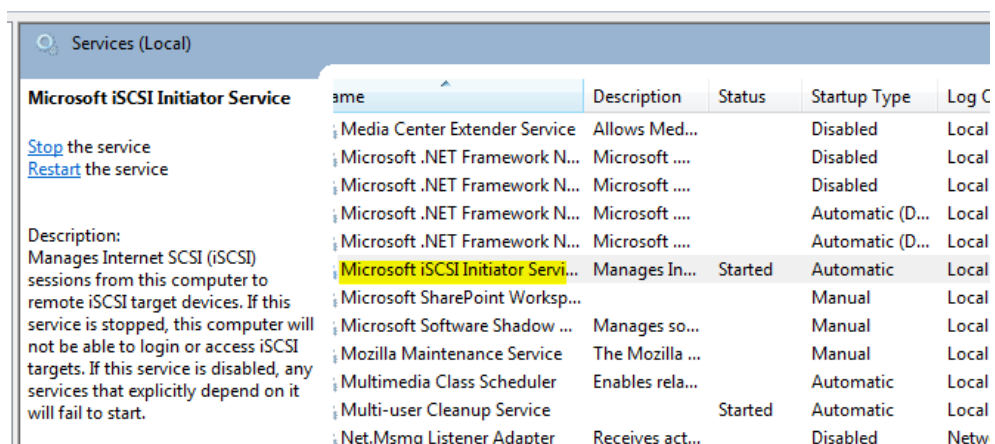




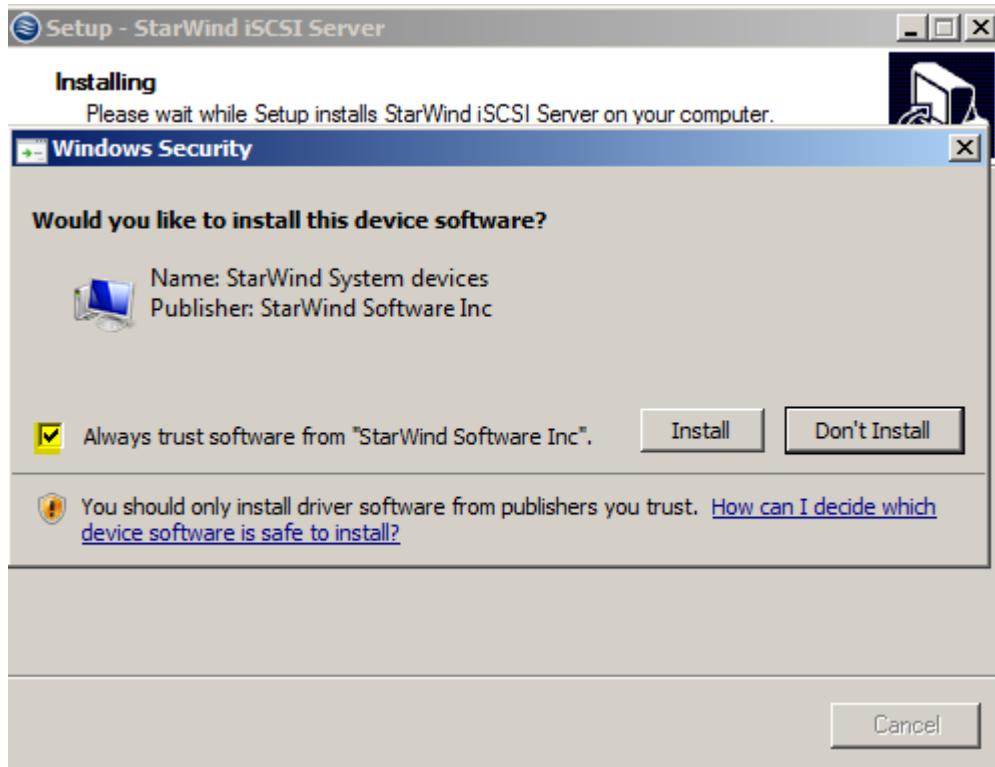
5. Microsoft ISCSI service should be running/ is mandatory before install; else the iSCSI binding would fail.



6. M-ISCASI, by default is set to disabled. Choose start type as “automatic” and enable the service.



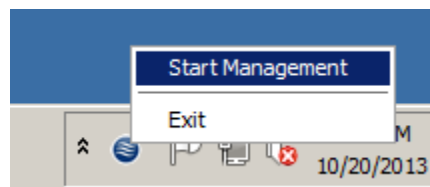
7. Accept Trust and install the software.



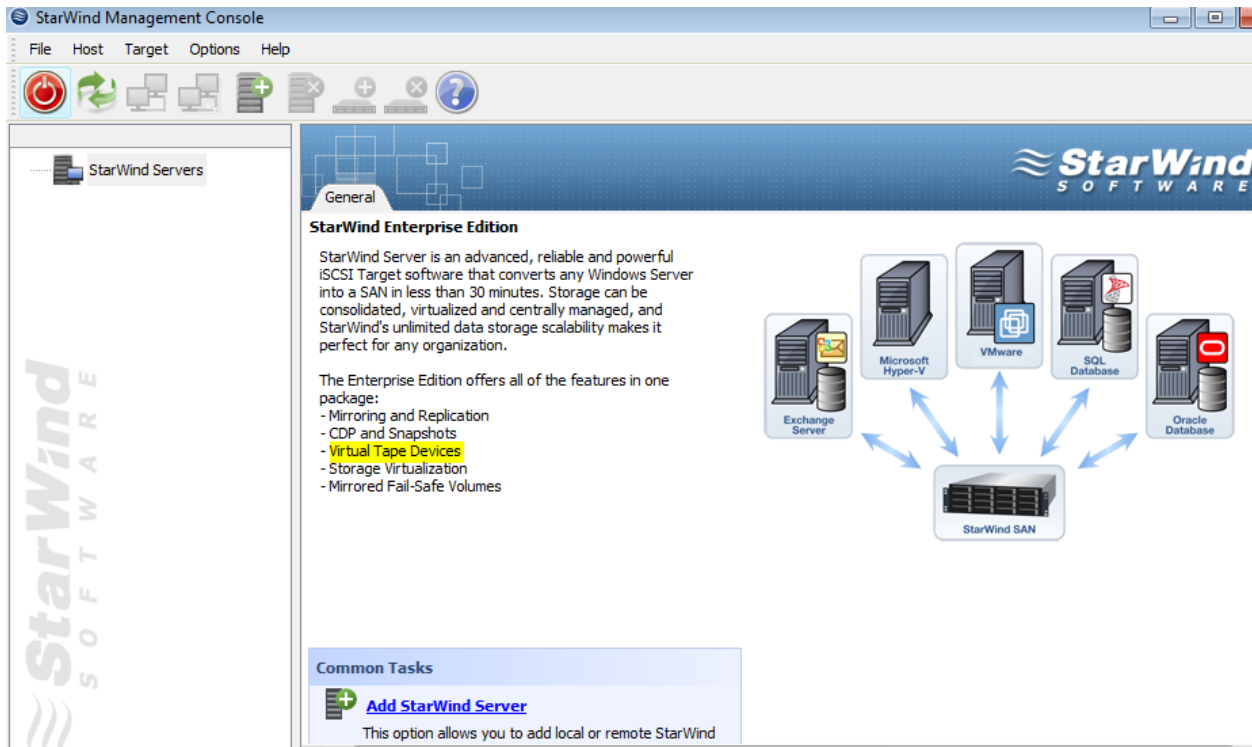
8. Launching the application would pull the Welcome Screen and then disappear to the **task bar**.



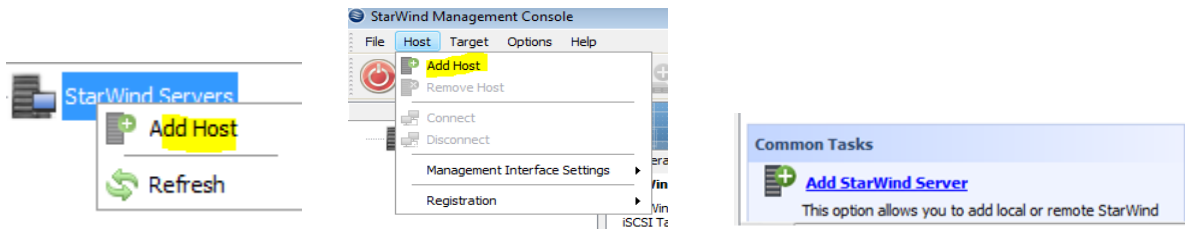
9. Right click the wavy symbol and click on "Start management" to bring forward the Management Console.



10. Sneak Peak → Management Console: **Focus on Virtual Tape Devices.**

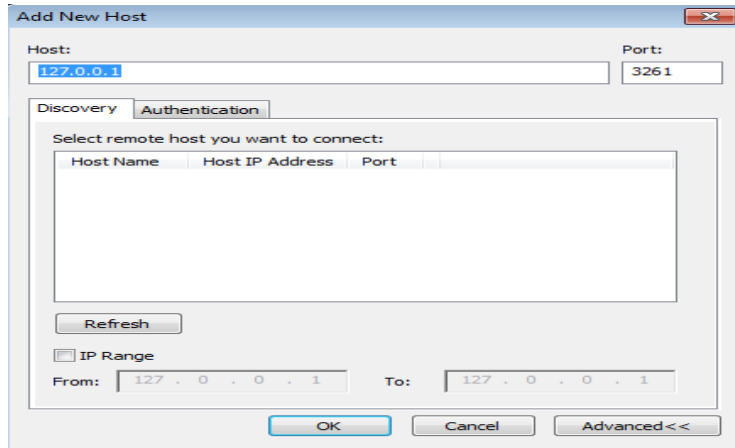


11. Three ways to add host.

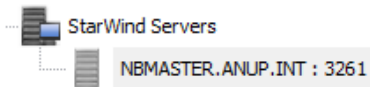
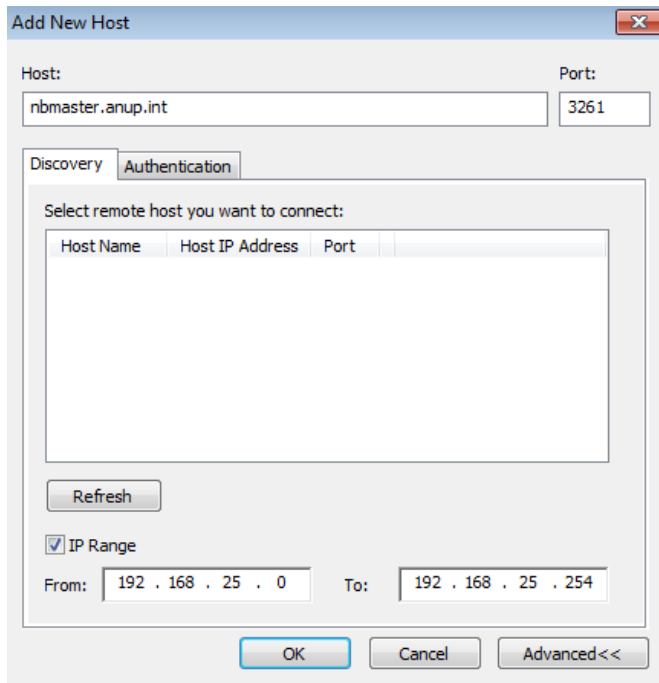




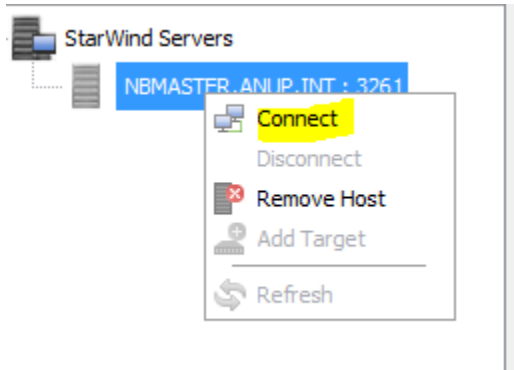
12. The default screen looks like this.



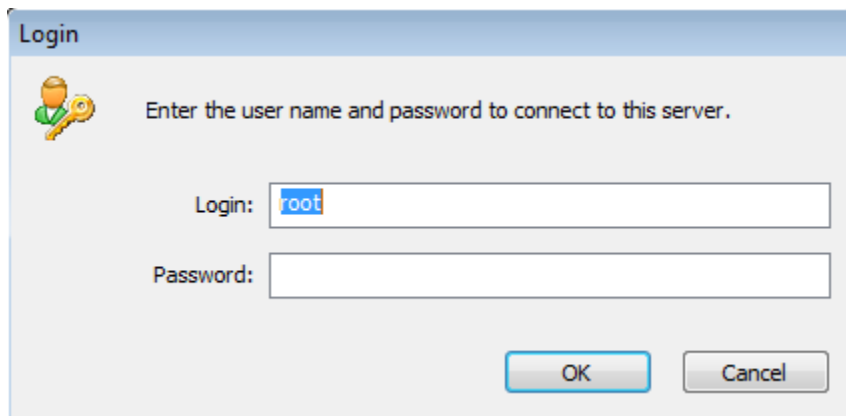
13. Define the host and ip Range and click ok to add the server.



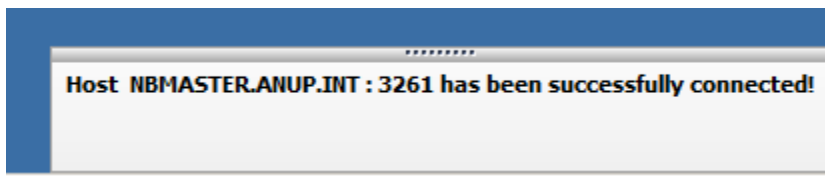
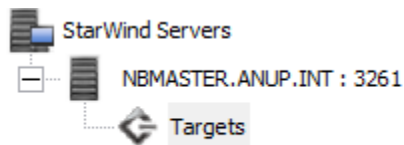
14. Right click on the added server and click to connect to login.



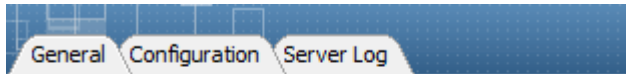
15. Login to the starwind system.



16. Upon Logging, the target symbol pops up and followed by a “successful connection” message near the task bar.



17. Look out for the three tabs as shown below:

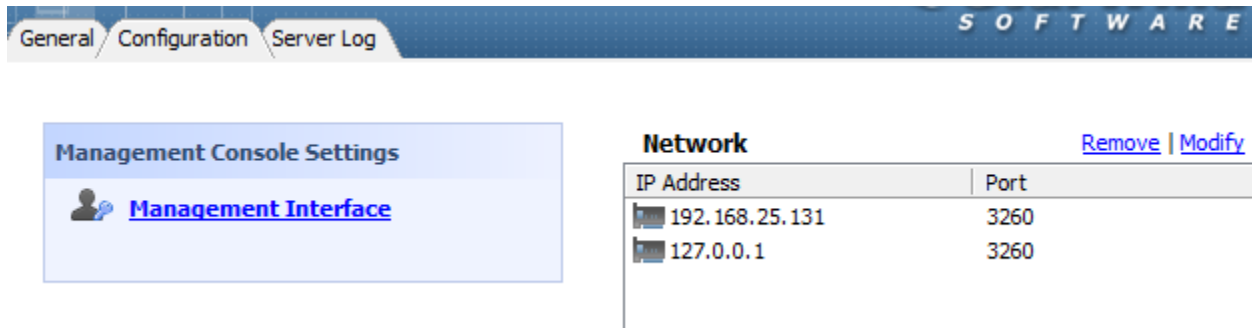


Server Name: NBMASTER.ANUP.INT  
Port: 3261

Full view of **General tab**:

Server Name: NBMASTER.ANUP.INT  
Port: 3261  
Authentication: Basic  
Status: Logged In  
License Type: [REDACTED]  
Trial days left: [REDACTED]

Full view of **Configuration tab**:



The screenshot shows the Configuration tab with the following elements:

- Navigation tabs: General, Configuration, Server Log
- Header: SOFTWARE
- Management Console Settings section:
  - Management Interface (with a user icon)
- Network table:

IP Address	Port
192.168.25.131	3260
127.0.0.1	3260

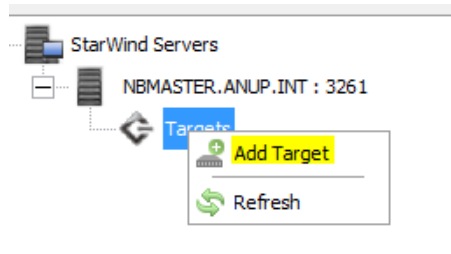
Remove | Modify

Note:

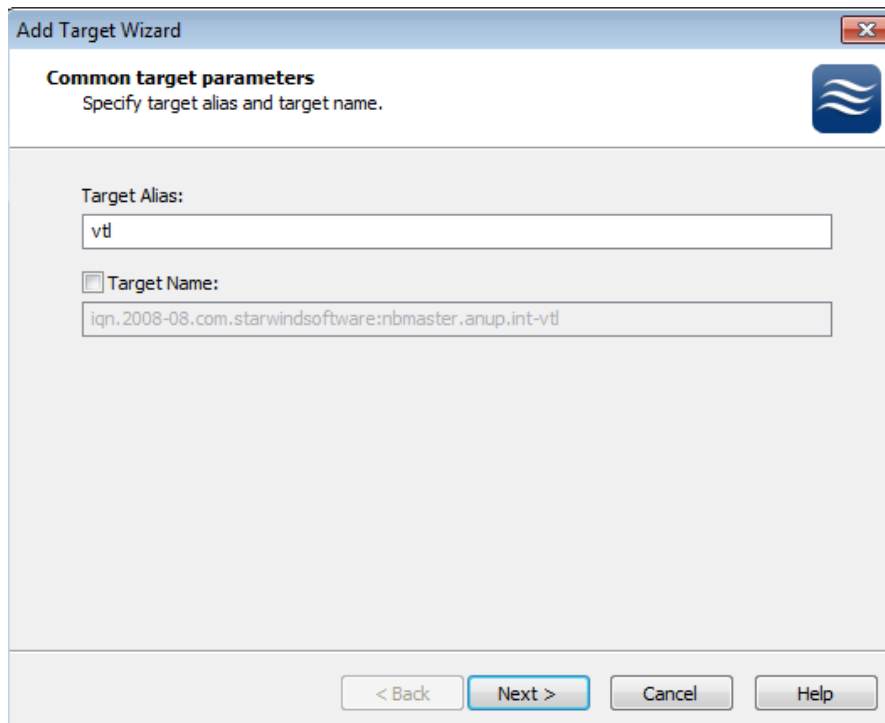
→MS-ISCSI initiator port=3260

→Starwind-ISCSI port=3261

18. Right Click on target symbol and click on “add target”

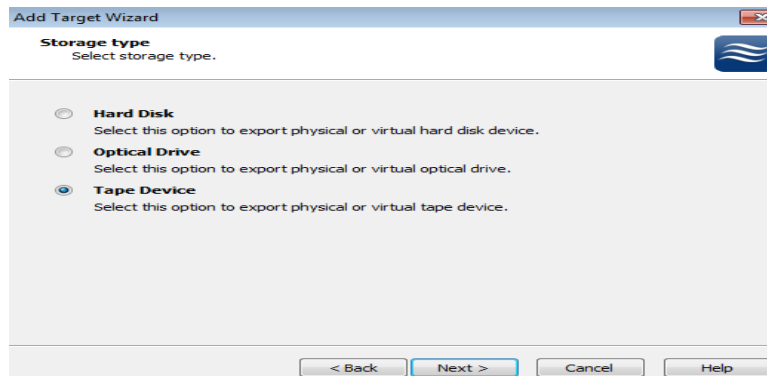


19. Enter a target alias and click next.

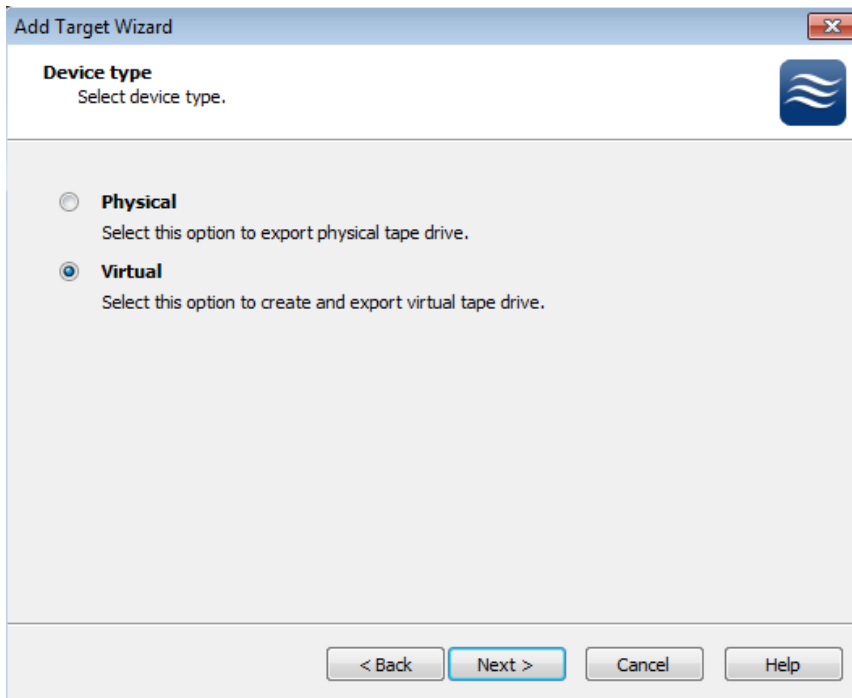


Note: the target name which is shown above is otherwise known as ISCSI FQDN(Fully Qualified Domain Name)

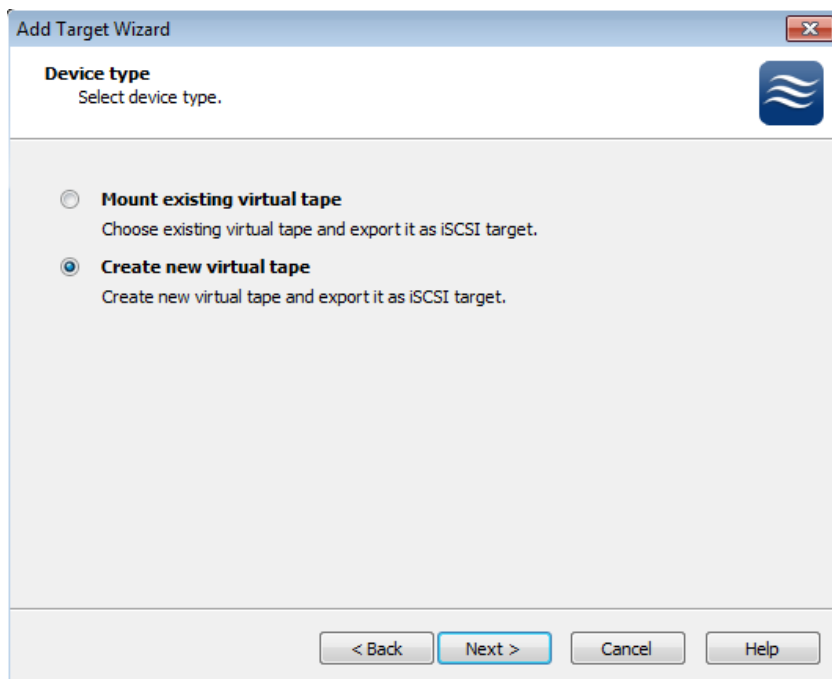
20 . Select Tape Device and click next.



21. Choose virtual and click on next.



22. Choose create new virtual tape and click next.

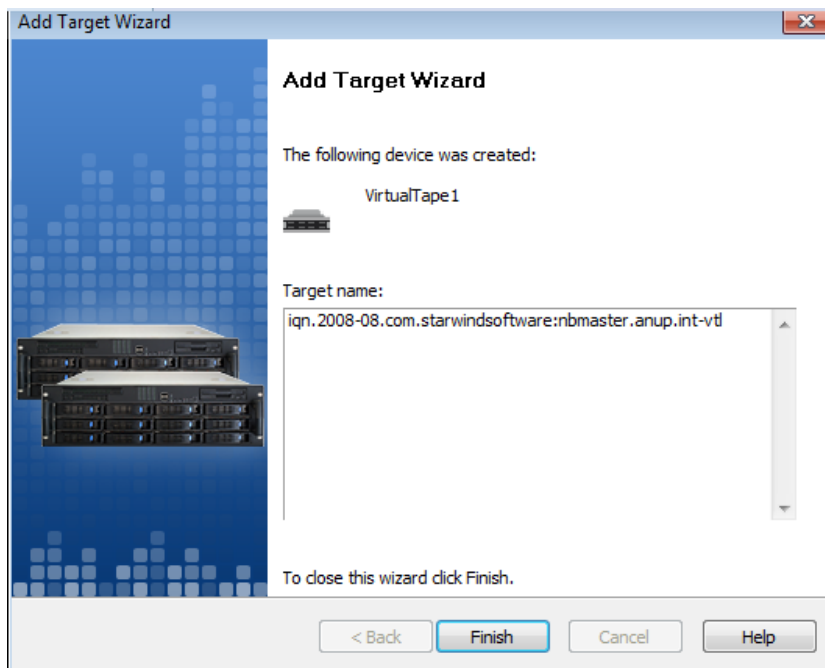
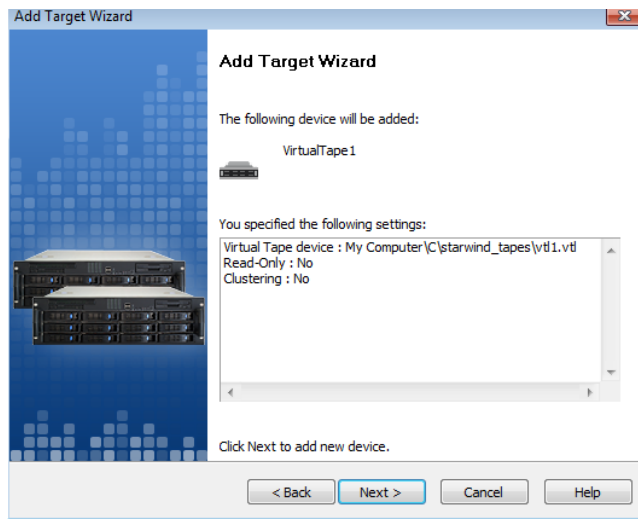


23. Create a virtual tape with **.vtl extension** and choose the location to save it and click next.

The screenshot shows the 'Add Target Wizard' dialog box, specifically the 'Virtual tape parameters' step. The title bar reads 'Add Target Wizard' with a close button. The main heading is 'Virtual tape parameters' with the instruction 'Specify virtual tape parameters.' and a blue wave icon. The 'New virtual tape location and name:' field contains 'My Computer\C\starwind\_tapes\vt1.vtl'. The 'Size in MBs:' is set to 256. There are checkboxes for 'Compressed' and 'Encrypted', both of which are unchecked. Below these is a section for 'User account that will have access to this image' with 'Name' and 'Password' input fields. At the bottom left, there is a checkbox for 'Fill with zeroes' with a note: 'By checking this box, you have chosen to fill the virtual tape image file with zeroes. As a result, it may take more time to create the file.' The bottom of the dialog features four buttons: '< Back', 'Next >', 'Cancel', and 'Help'.

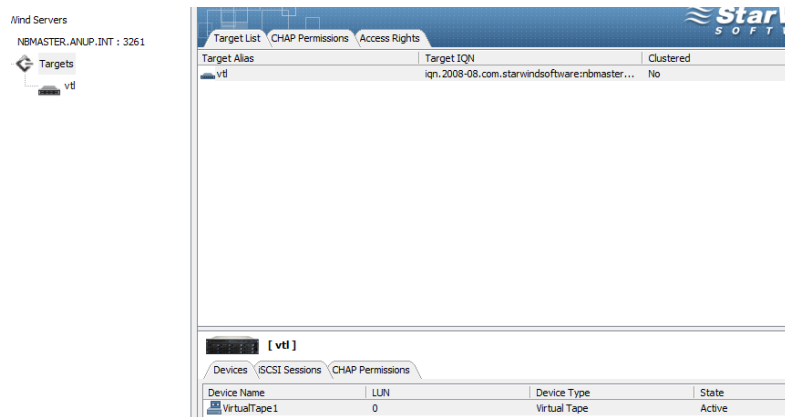
The screenshot shows the 'Add Target Wizard' dialog box, specifically the 'Virtual Tape device parameters' step. The title bar reads 'Add Target Wizard' with a close button. The main heading is 'Virtual Tape device parameters' with the instruction 'Specify Virtual Tape device parameters.' and a blue wave icon. The 'Select virtual tape you want to make accessible via iSCSI:' field contains 'My Computer\C\starwind\_tapes\vt1.vtl'. There are checkboxes for 'Read-Only mode' and 'Allow multiple concurrent iSCSI connections (clustering)', both of which are unchecked. The bottom of the dialog features four buttons: '< Back', 'Next >', 'Cancel', and 'Help'.

## 24. Final Target Device and Target Name Check.

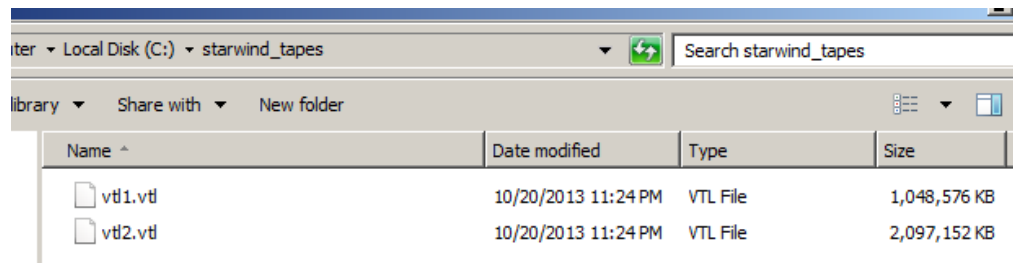


Note: The target name is the complete FQDN with regards to ISCSI standards.

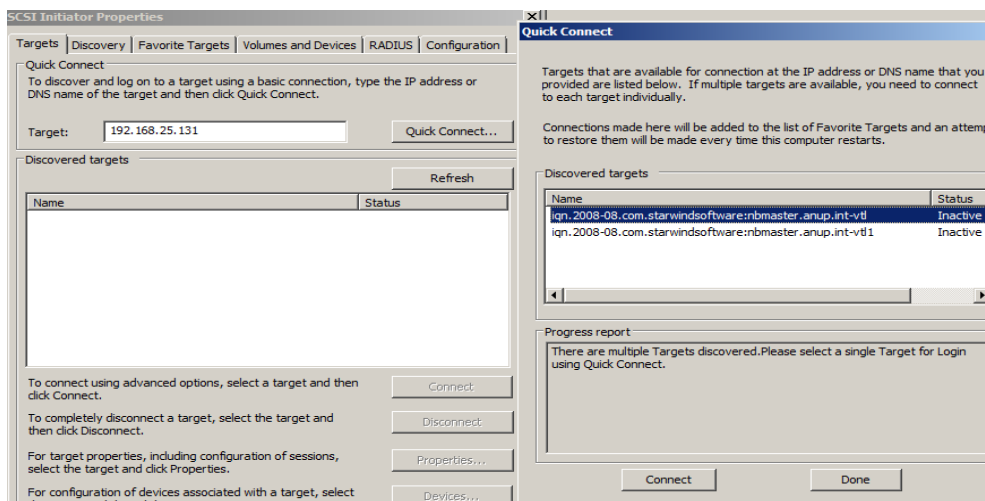
25. Configured Target shoots up on the right pane.



26. Tape Directory on Server.

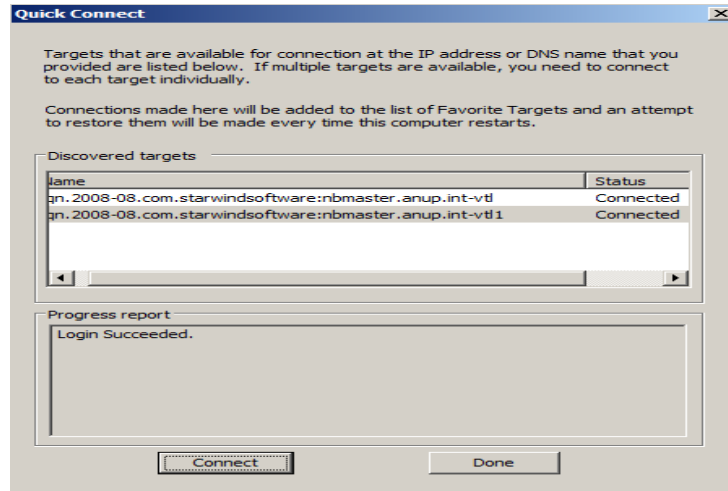


27. Pull up MS-ISCSI initiator and navigate to target tab. Input the target ip(Server ip) and click on **Quick connect**.

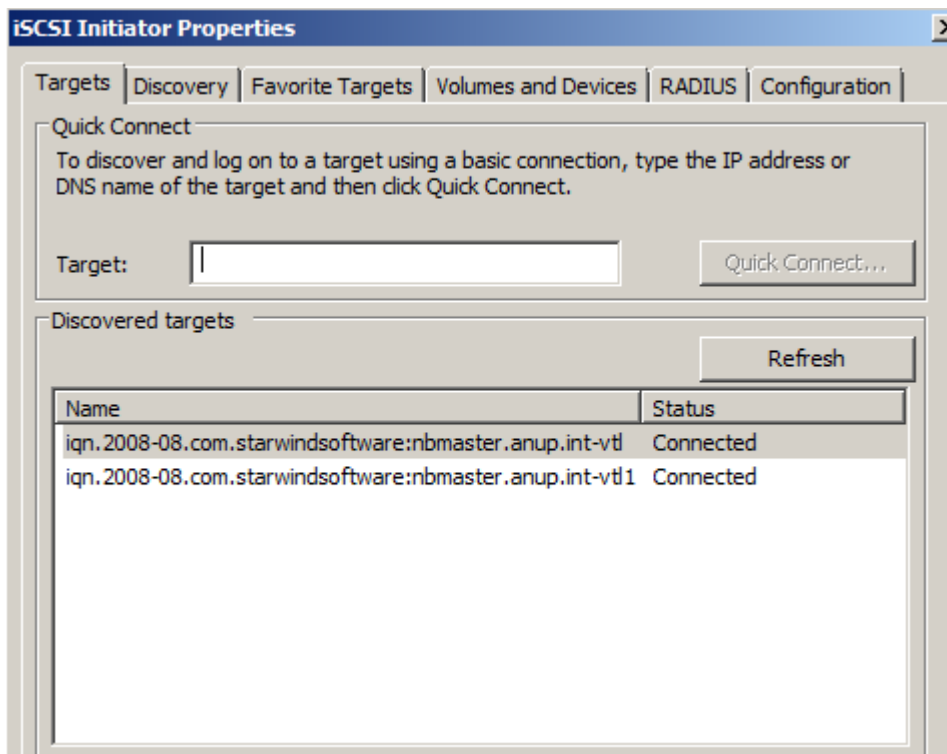




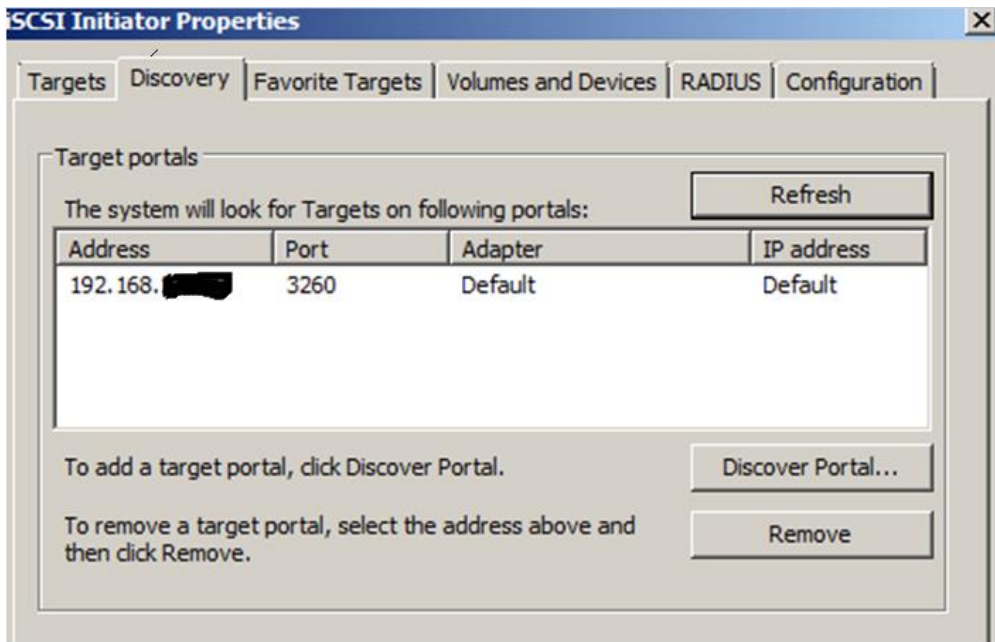
28. Select available targets and click on connect.



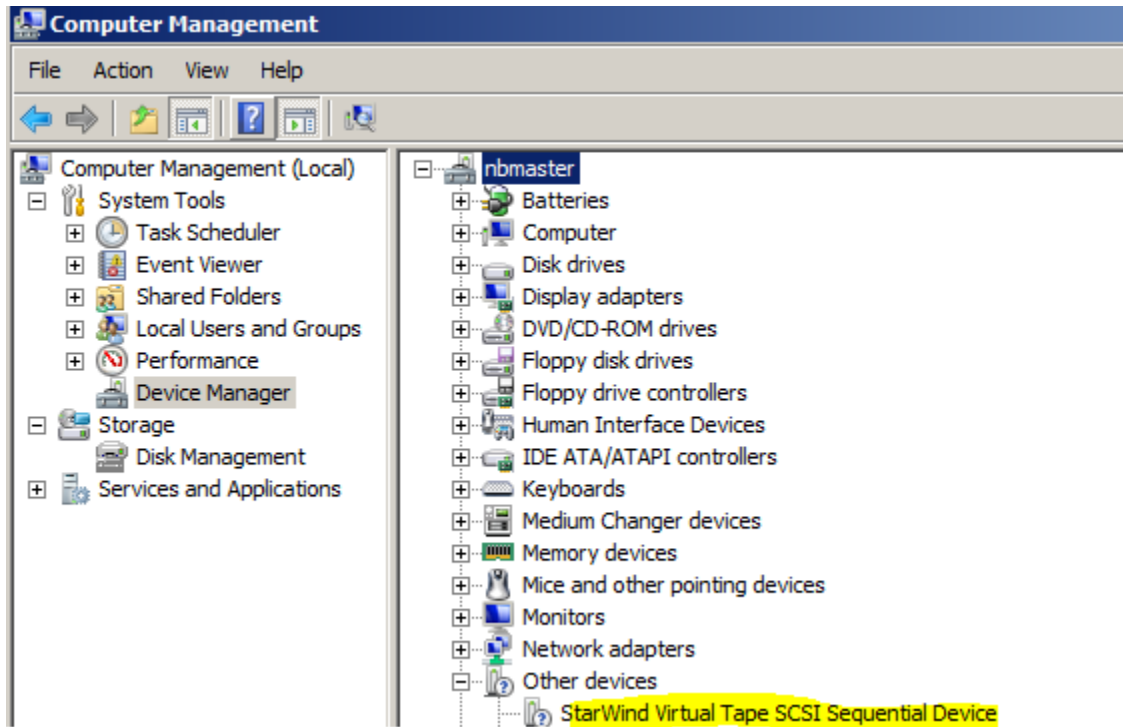
29. Connected Devices appear under Target Tab.



30. The Target IP would appear in the Discovery Tab.



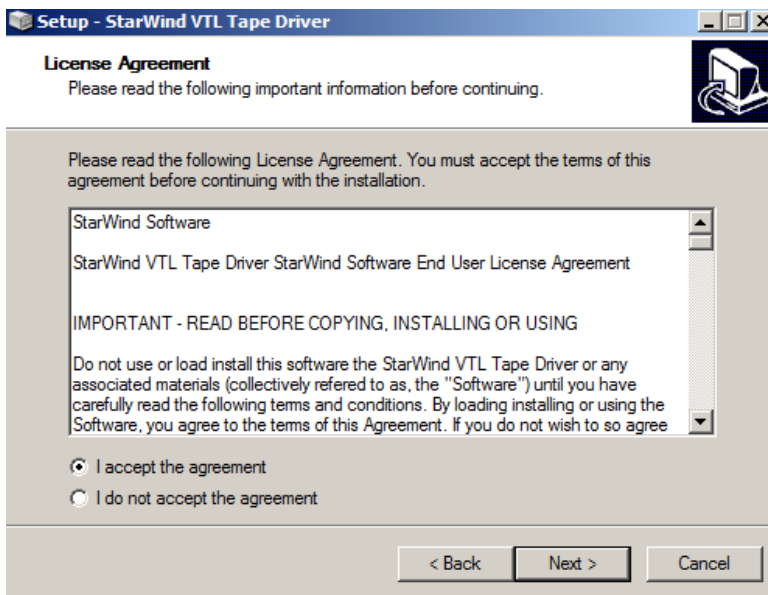
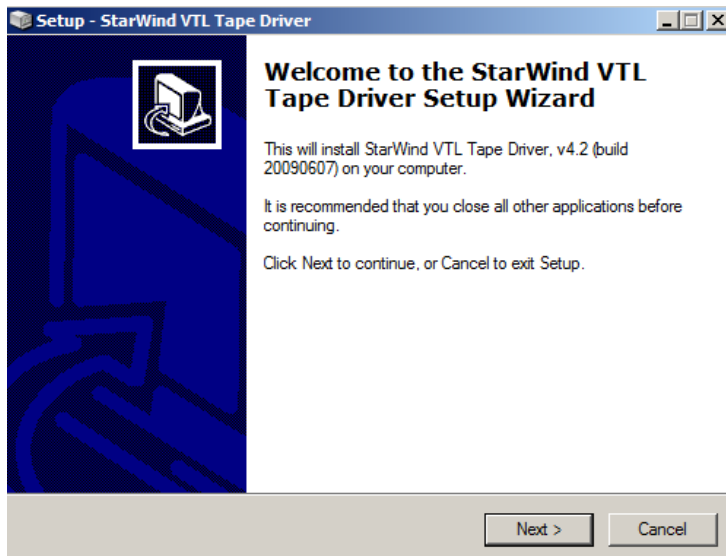
31. Navigate to Computer management and notice the added device.

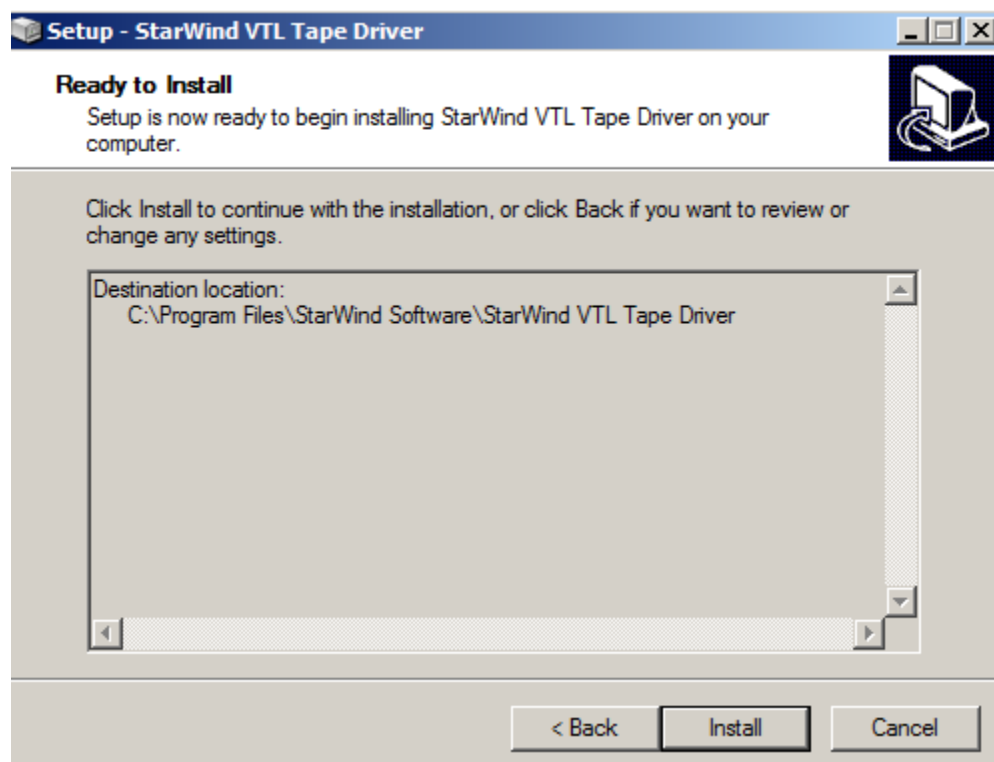
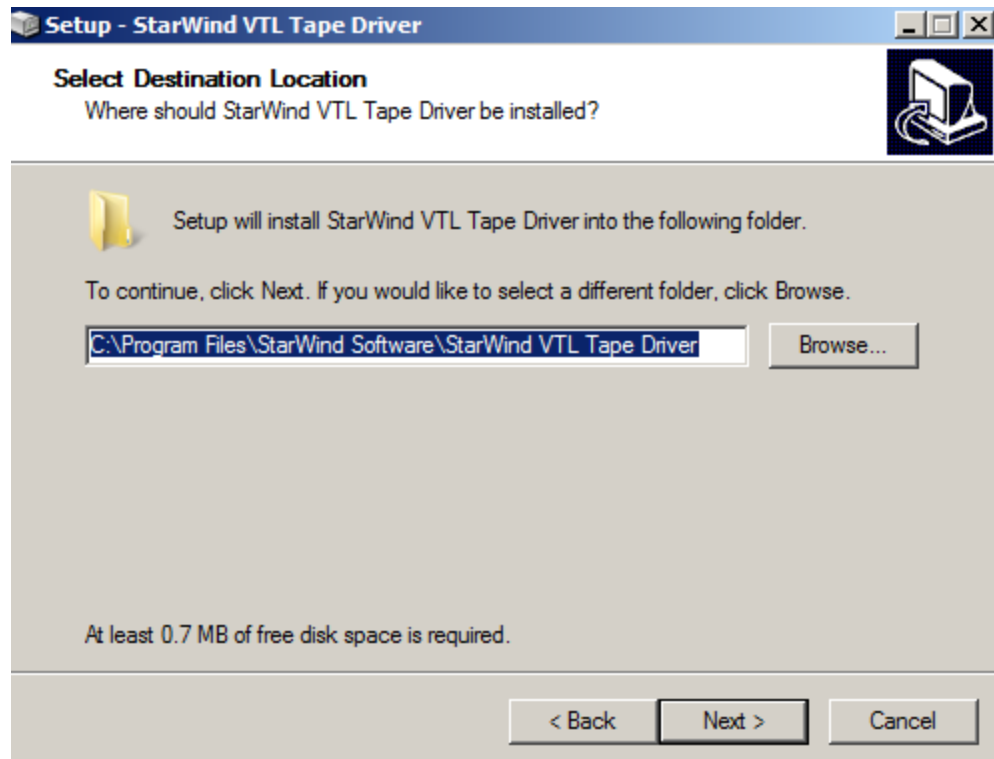


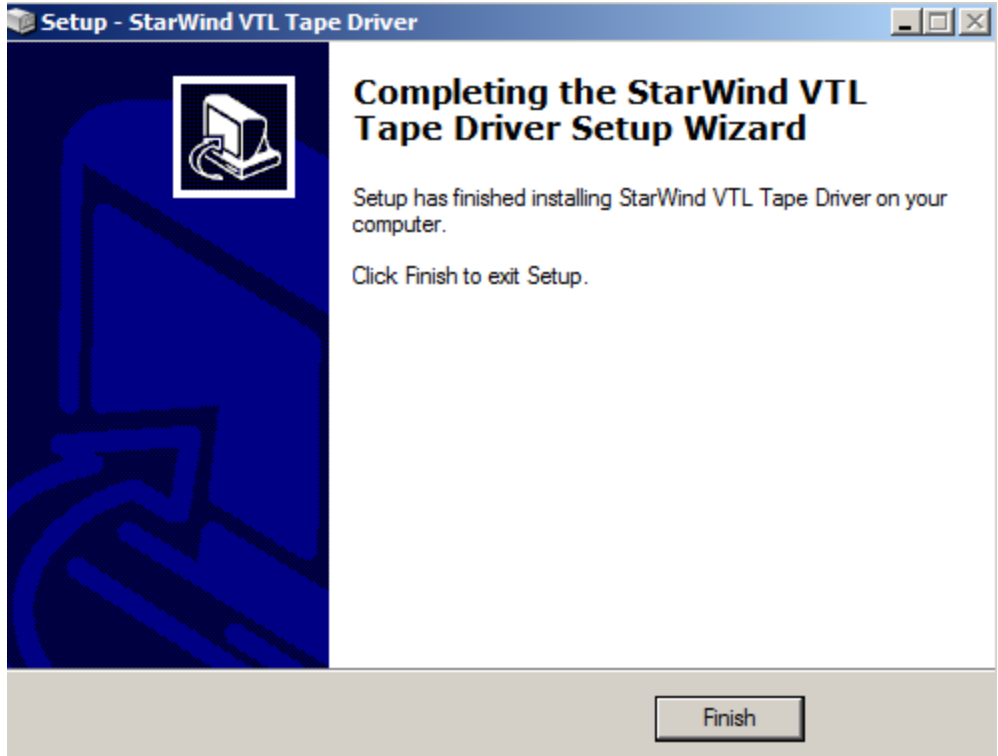
32. To setup the device, the tape driver software needs to be installed.



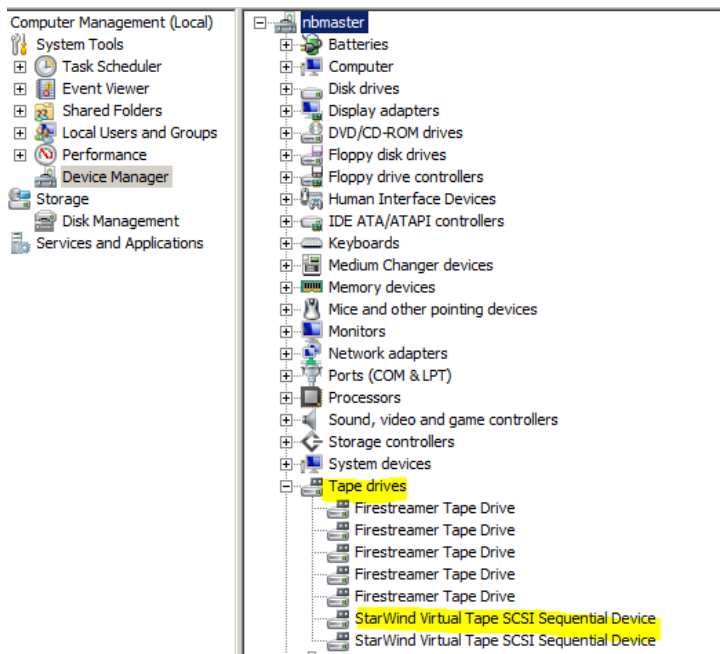
33. Proceed with the installation, taking the default values.







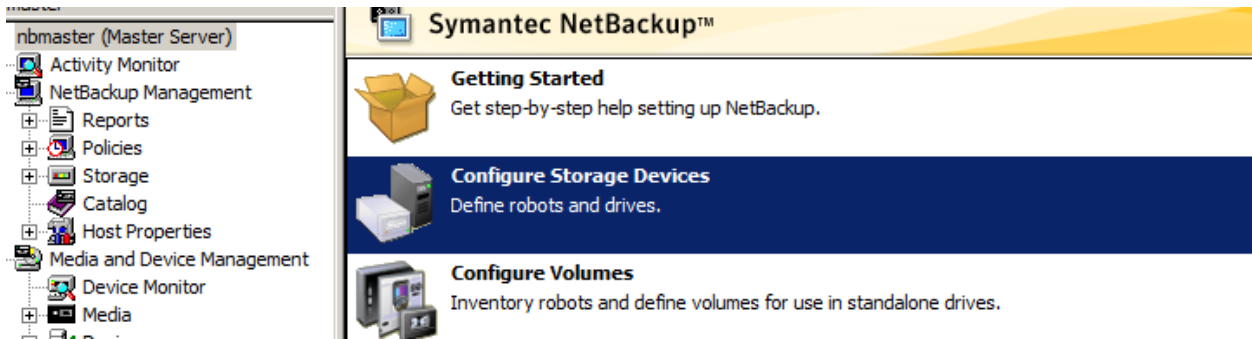
34. The tape device appears as shown below:



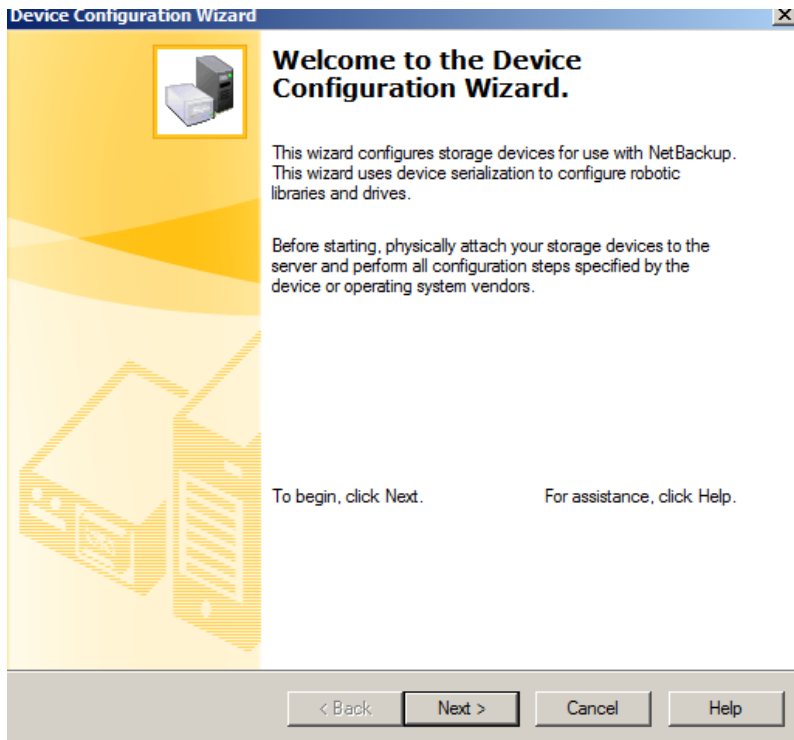
9. Final view with Firestreamer and Starwind Tape Drives.

All Drives												
Drive Name	Device Host	Drive...	Robo...	Robo...	Robo...	Enabled	Drive Path	Port	Bus	Target	LUN	Se
Drive01	nbmaster	DLT	TLD	0	1	Yes		35	0	1	0	LC
Drive02	nbmaster	DLT	TLD	0	2	Yes		35	0	1	1	LC
Drive03	nbmaster	DLT	TLD	0	3	Yes		35	0	1	2	LC
Drive04	nbmaster	DLT	TLD	0	4	Yes		35	0	1	3	LC
Drive05	nbmaster	DLT	TLD	0	5	Yes		35	0	1	4	LC
Starwind_drive01	nbmaster	DLT	NONE			Yes		34	0	0	0	00
Starwind_drive02	nbmaster	DLT	NONE			Yes		34	0	1	0	00

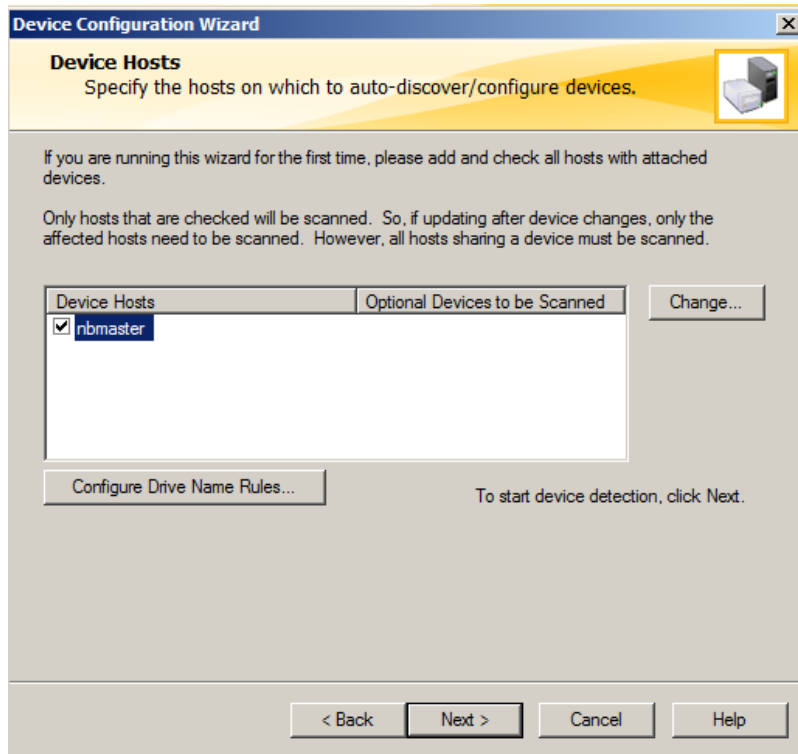
10. Go back to server view and click on Configure Storage Devices.



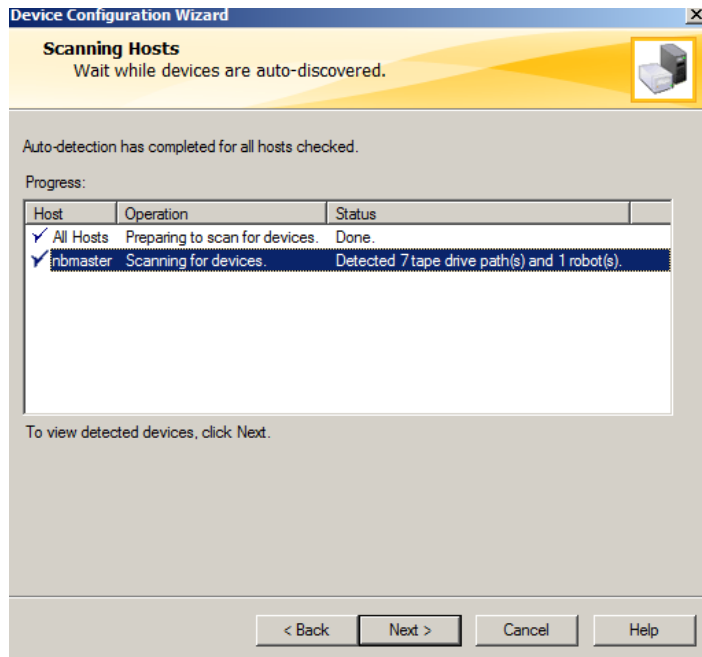
11. Proceed with Device Config Wizard.



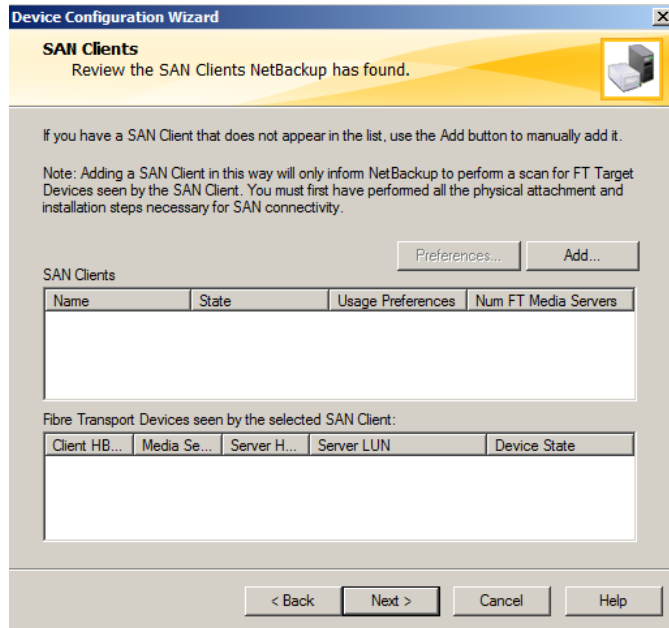
12. Select the device host and click next.



13. Device Scan detects the Library.

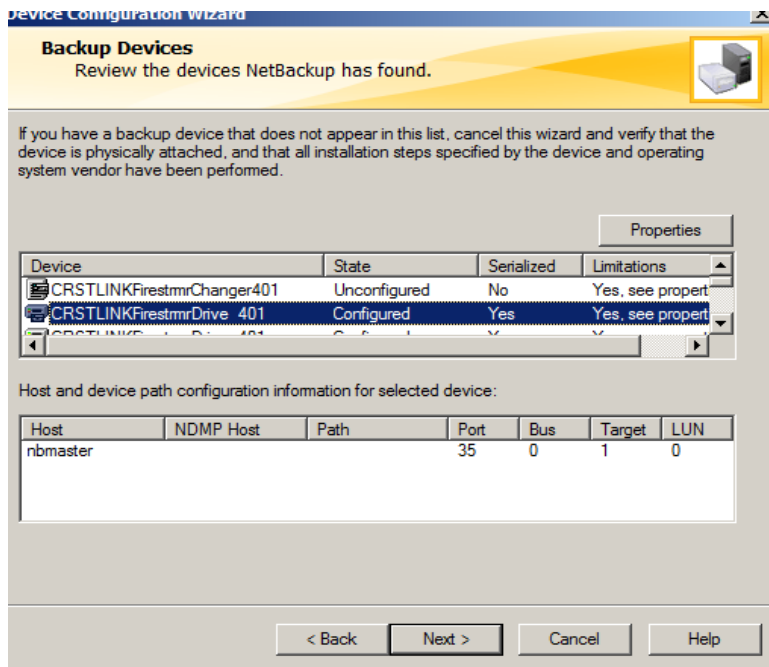


14. As there are no SAN clients configured, click on Next on the San client page.



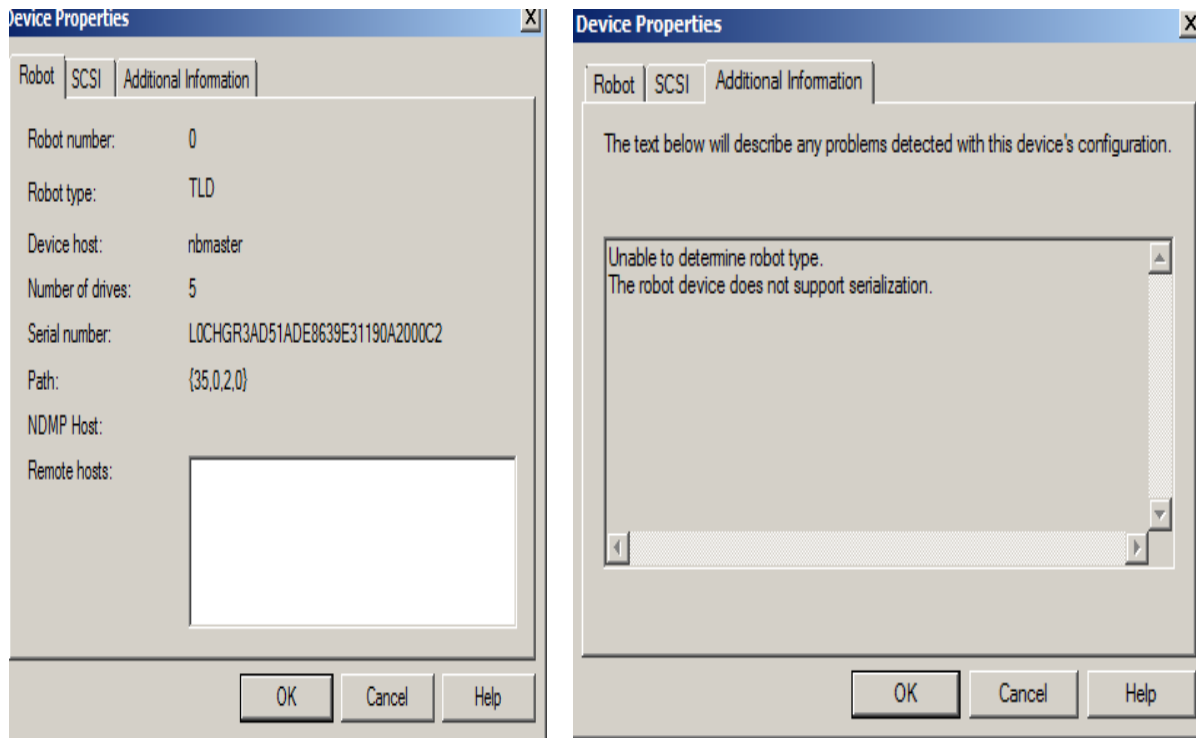
15. **Medium** shows unconfirmed, while **Drive** shows configured. You can ignore that as the OS is unable to determine the serial number, even though it is configured.

❖ No harm done to Backups

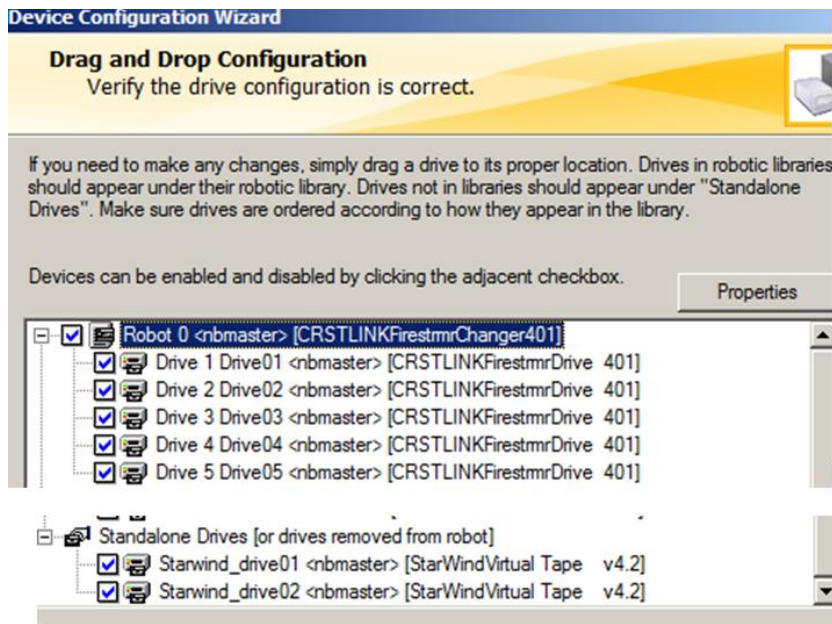




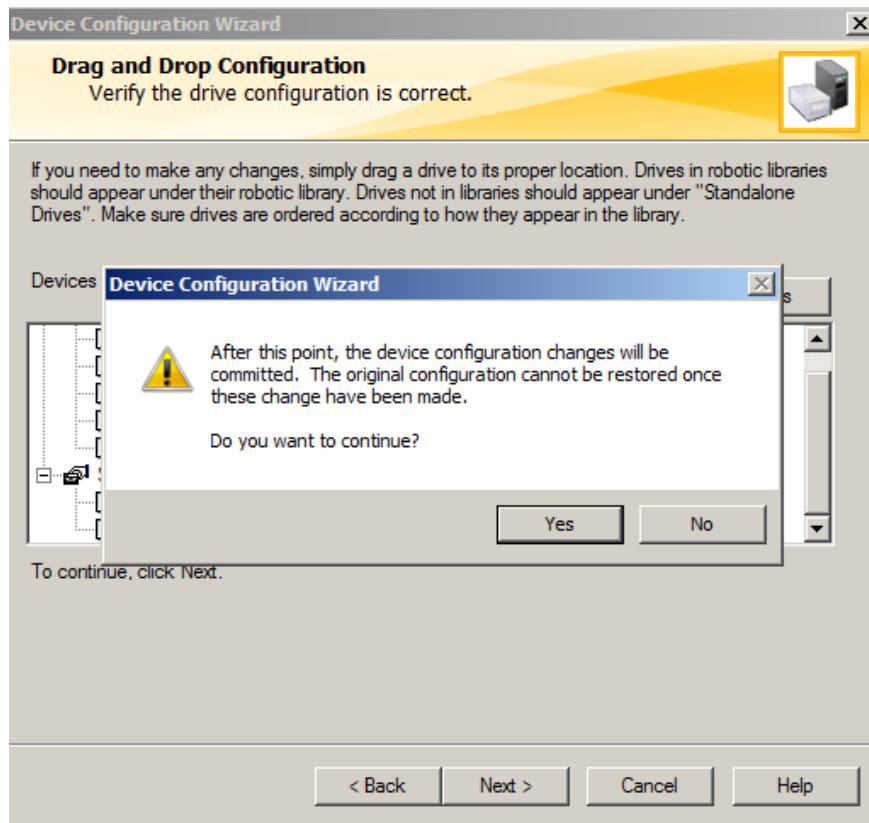
16. Unconfigured Device does have a valid serial number.

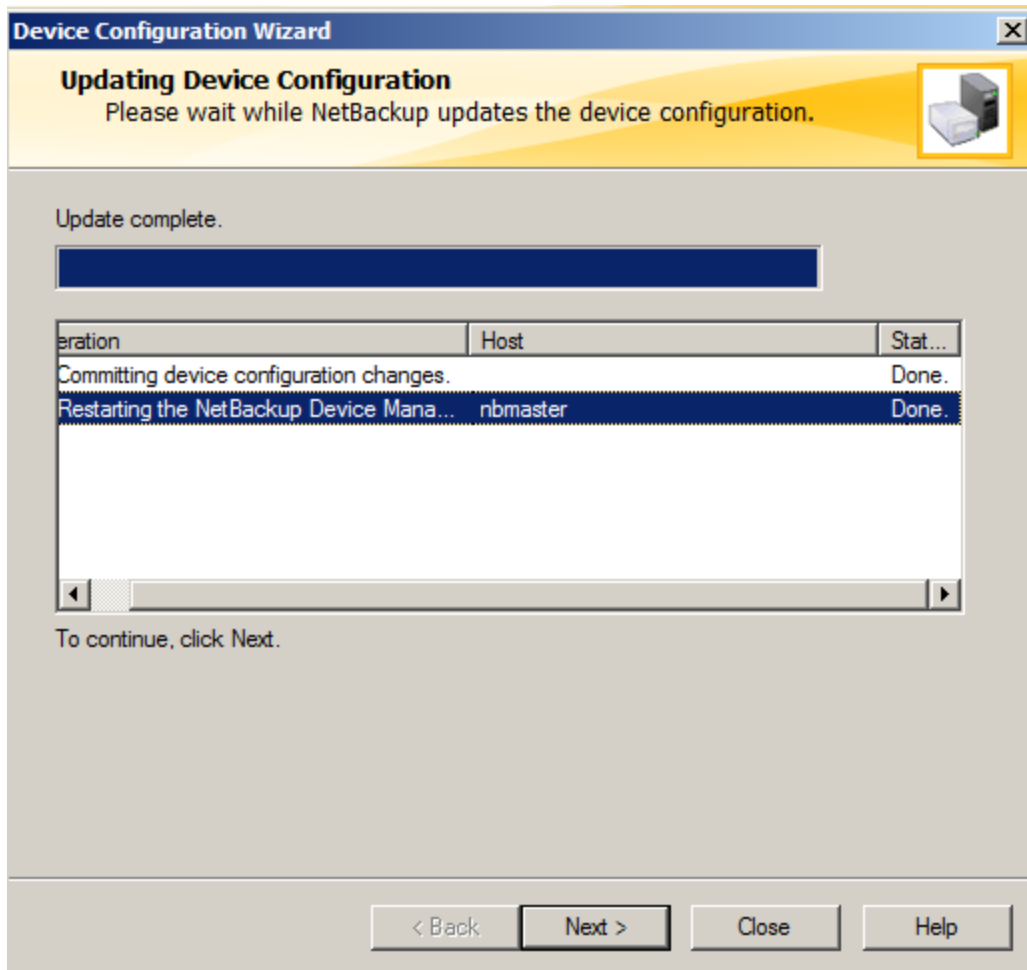


17. Make sure to check Robot so as to include the drives. The stand alone drives are separated by default.

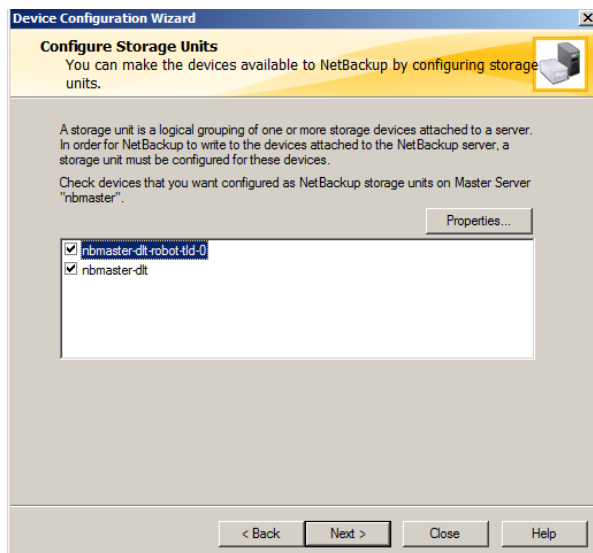


18. Commit the changes.





19. The configured devices must be added to a storage unit and click next.

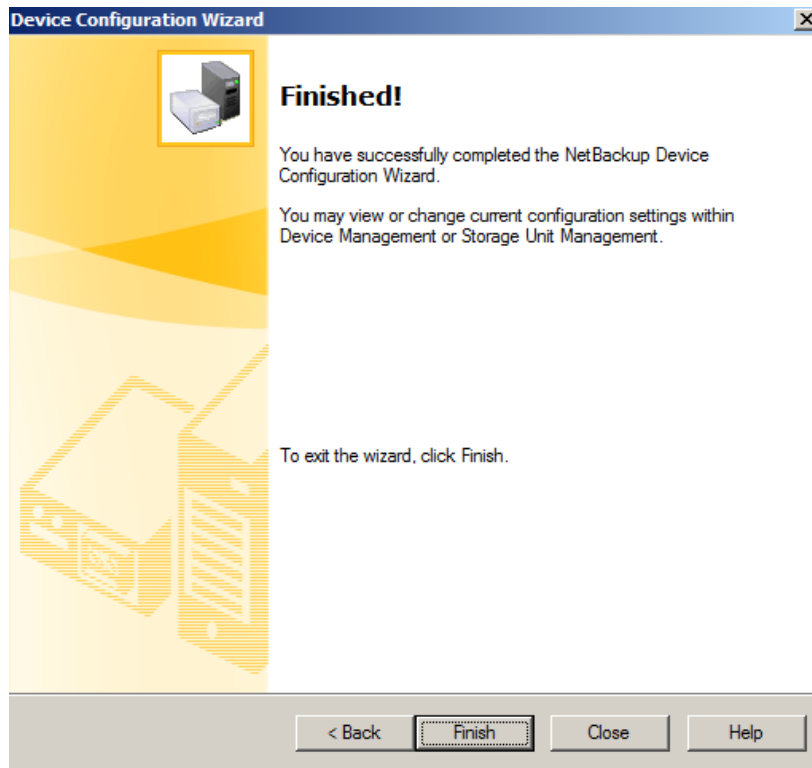


Note:

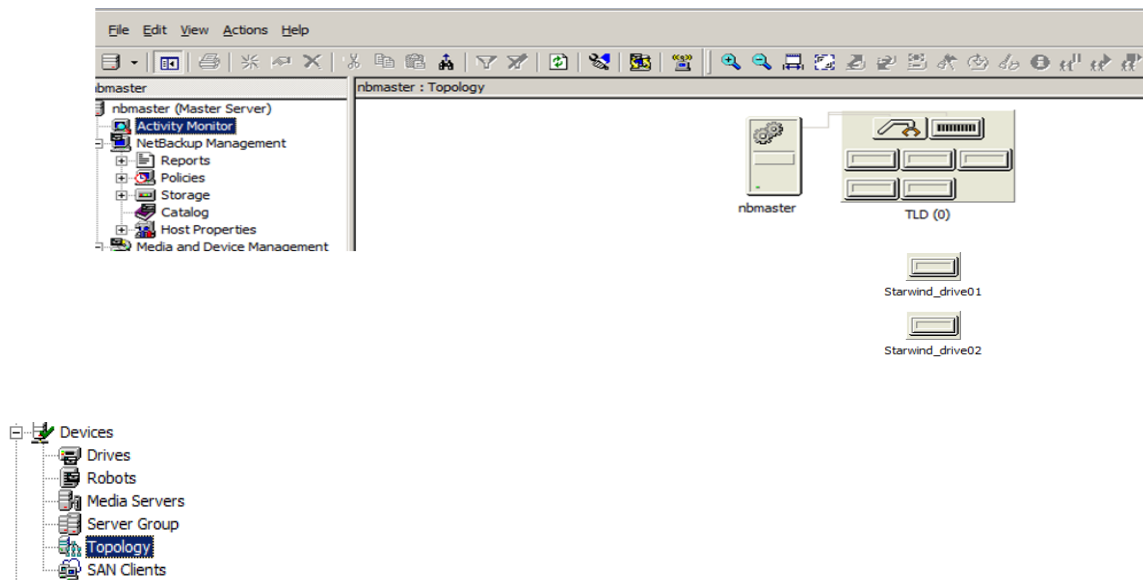
nbmaster-dlt-robot-tld-0--> Firestreamer Tape Library

nbmaster-dlt-->Starwind Tape Library

20. Click on finish to complete the config.

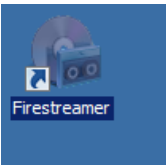


21. Navigate to Activity monitor or Topology( under Devices) to view the design.

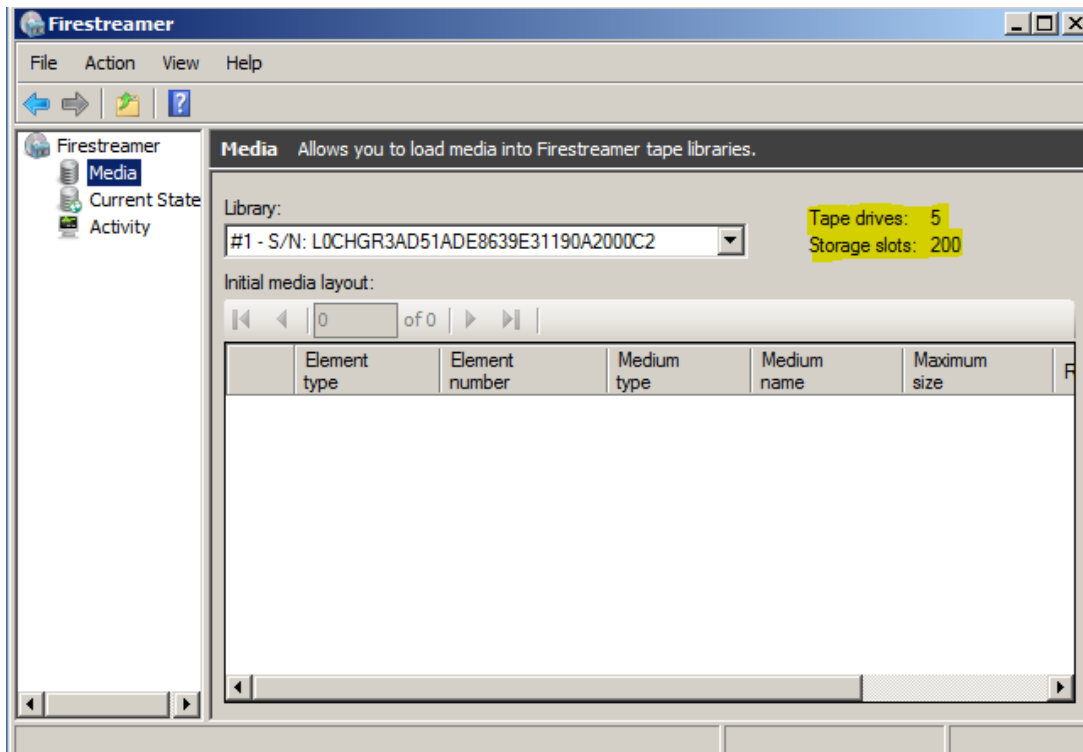


## Tape Configuration:

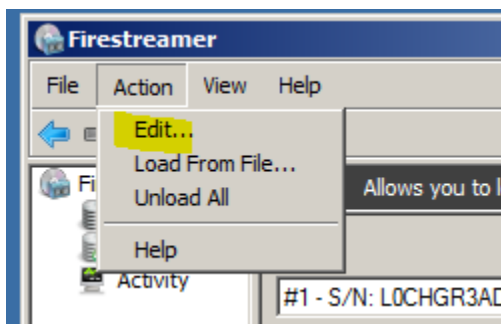
1. Look out for the Fire streamer icon in the desktop.



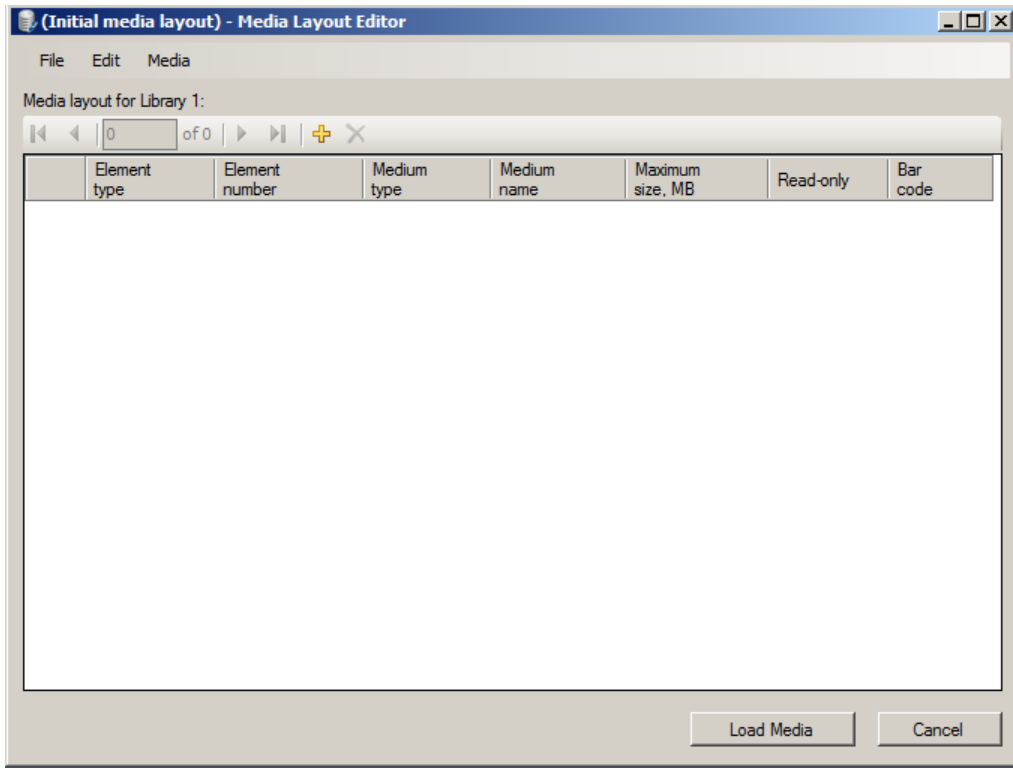
2. When the system launched, it shows up with empty media.  
Note: Firestreamer comes with a default of 5 Tape Drives and 200 Storage Slots.



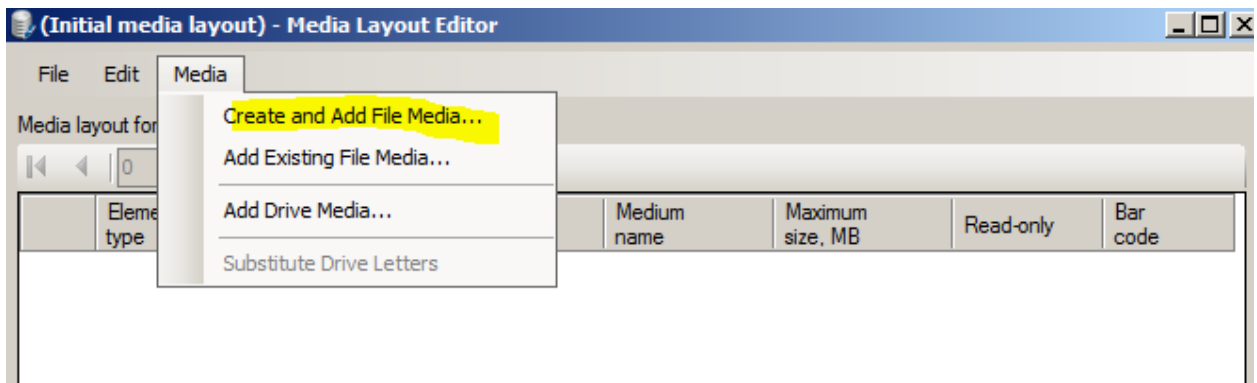
3. Click on Action→Edit.



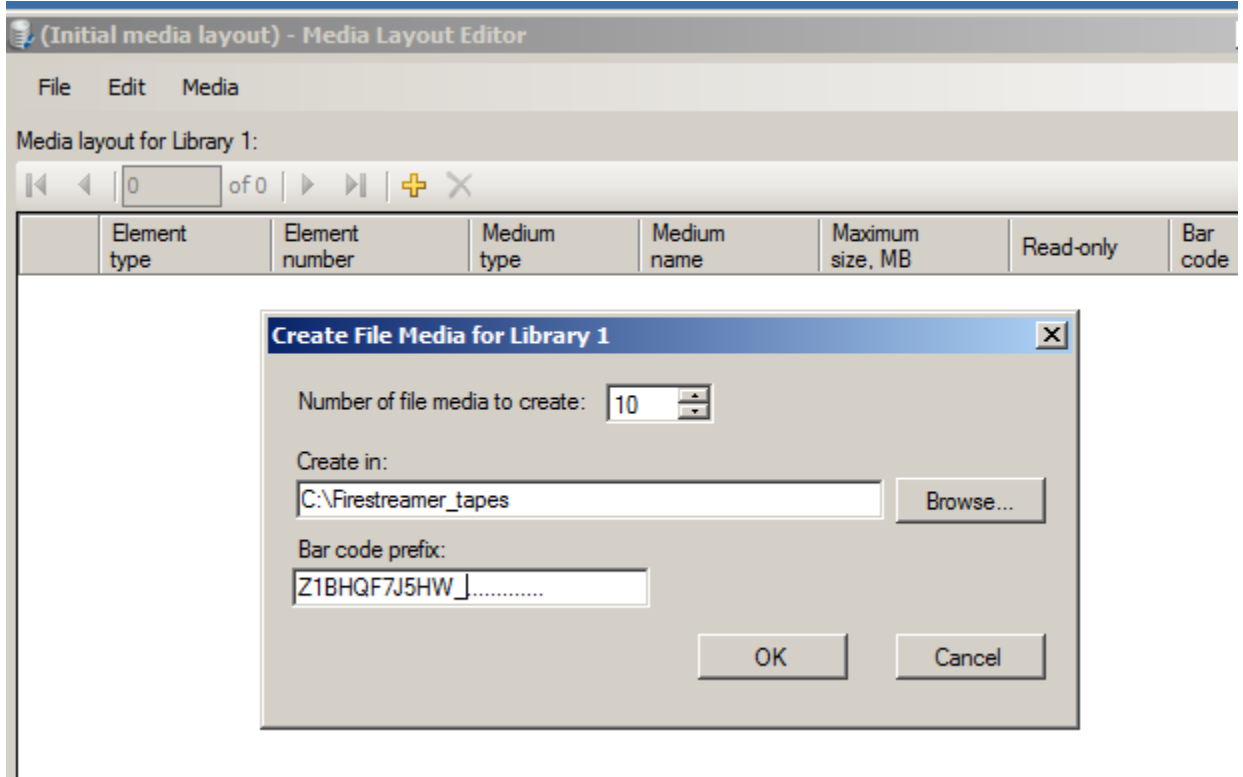
4. The initial media layout appears as shown below:



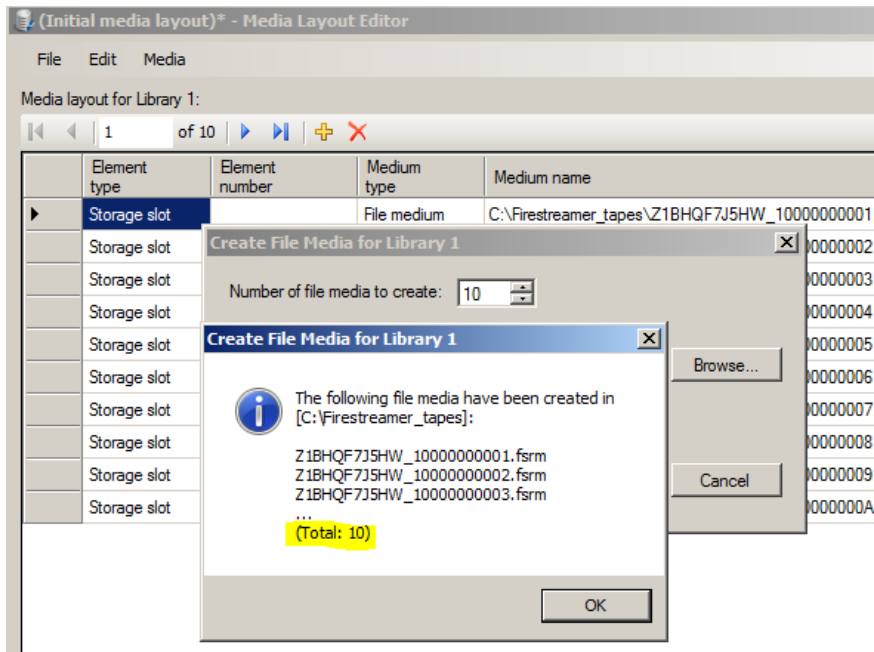
5. Navigate to Media → Create and Add File Media



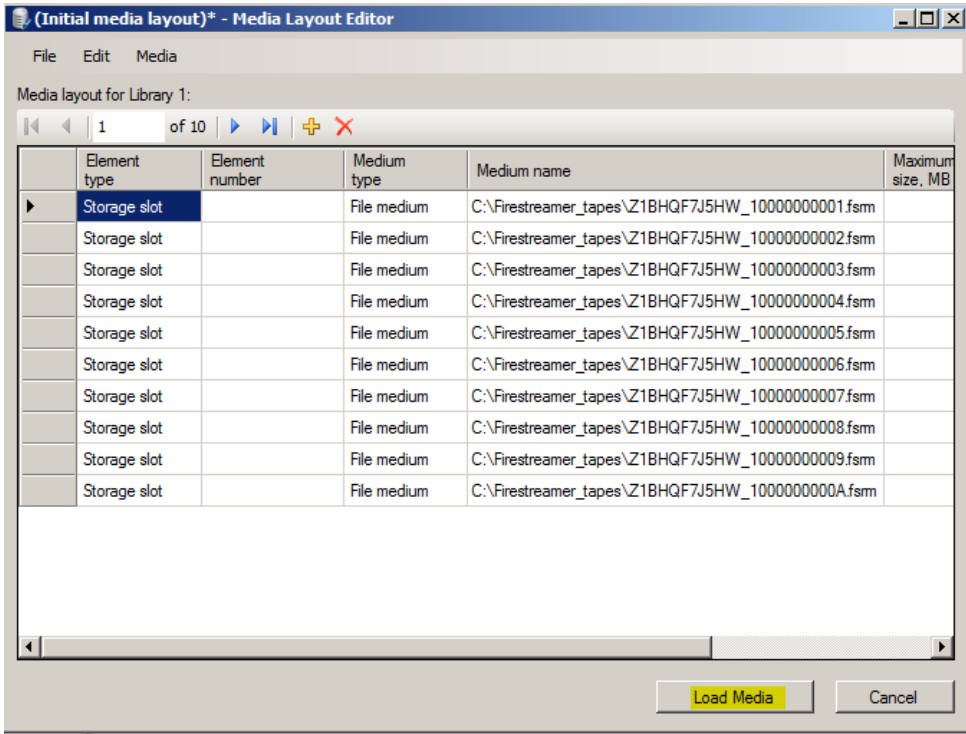
6. Create a number of tapes required and save in the directory as shown below:



7. This creates 10 tapes(media) and with the default barcode as shown below:

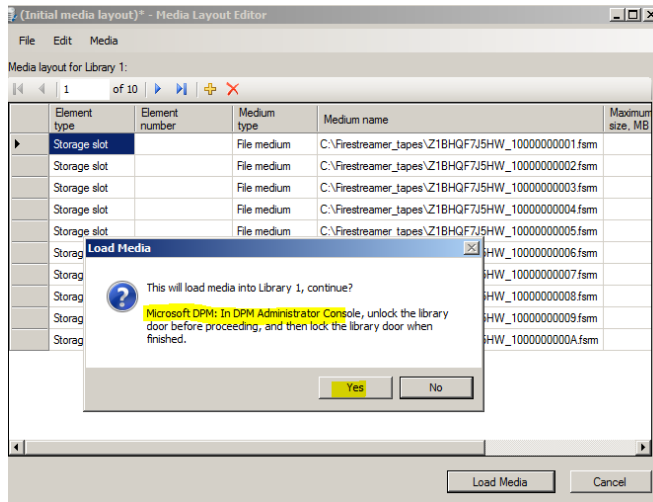


8. This appears in the media layout.



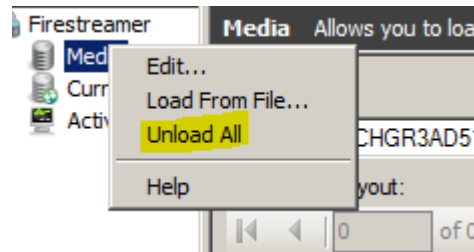
9. When load media is selected, a DPM pop up appears to unlock and lock the library door before running an inventory. This is similar to the MAP (Media access port) door or Library door , taking a Iscalar Library into account.

**Note:** Firestreamer has been designed exclusively for Microsoft System Center Data protection protection Manager, however the test results are successful with Netbackup.

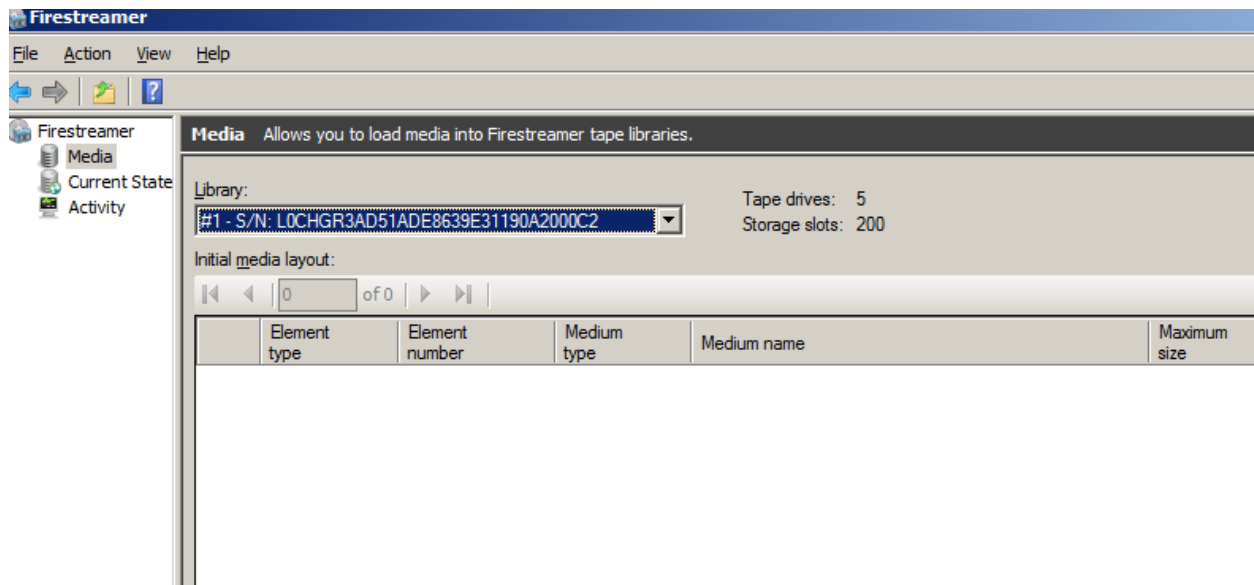




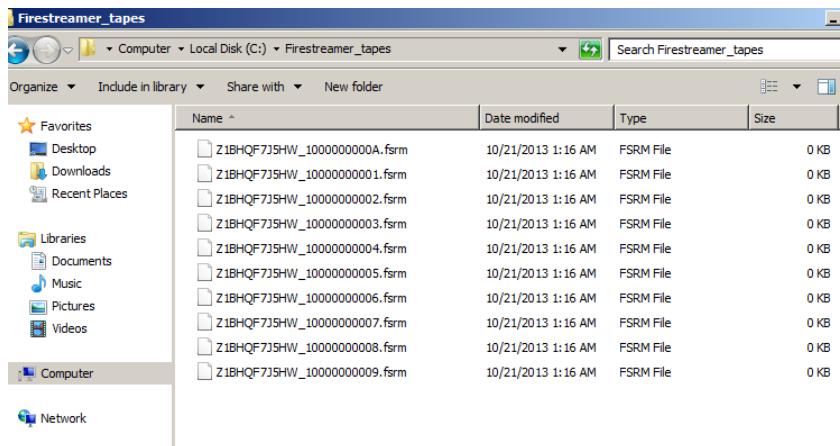
- The next step is to unload the media as Barcodes needs to be changed. If a Barcode is used, it would be easier to netback up to identify the media assigned and update it accordingly on the Netbackup DB.



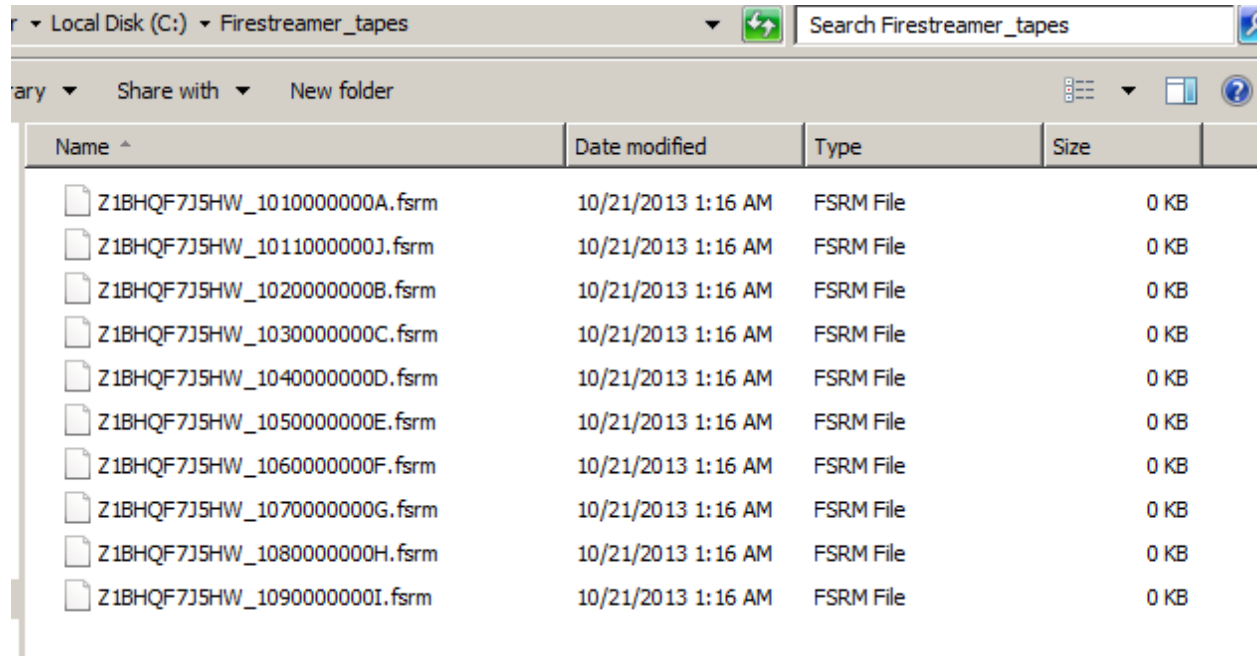
- The media has been unloaded.



**Barcode before:**



## After Barcode Change:



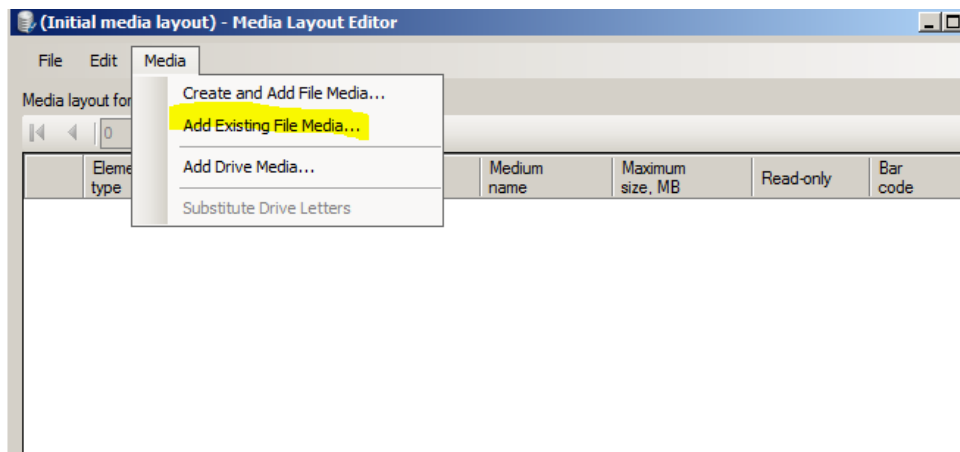
Note:

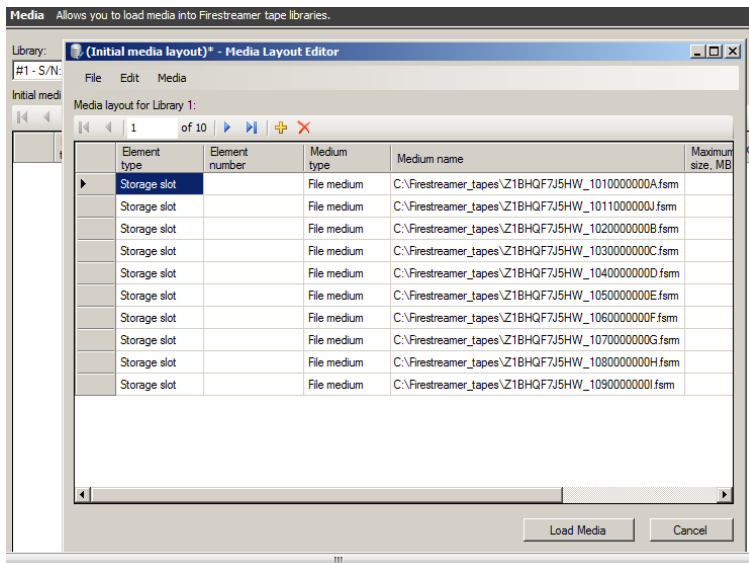
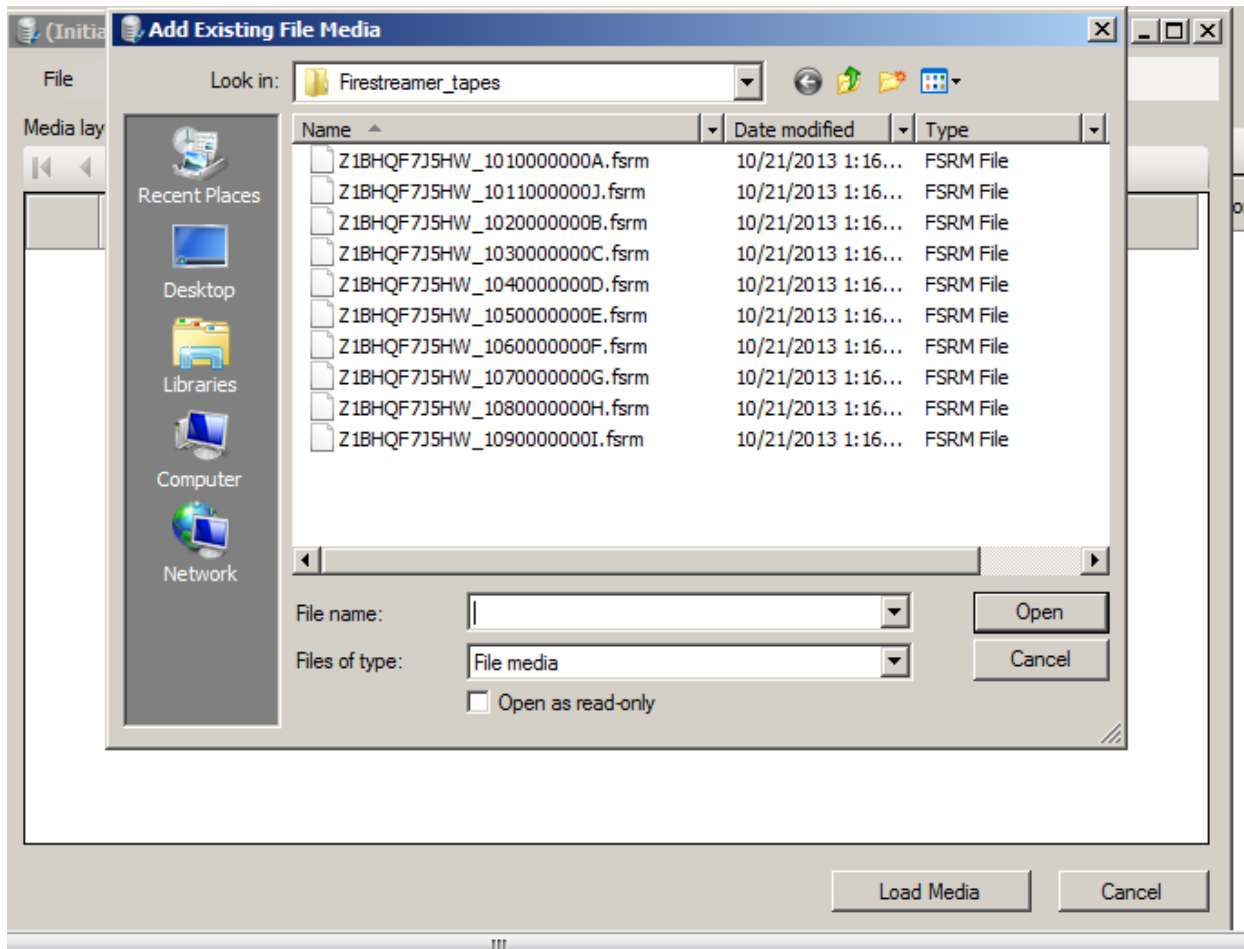
When the new barcode is change and media is injected, the last letter in the media prefix, along with the first 4 digits will be added to the media pool.

eg:

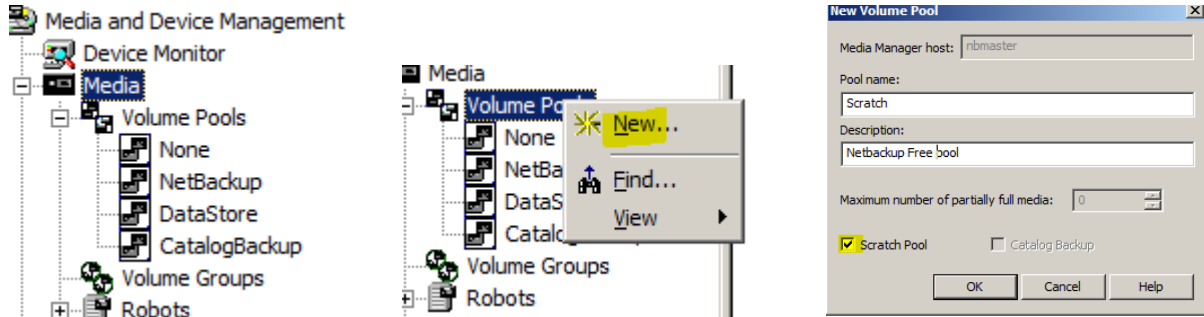
In this case , it would be W\_1010, W\_1011...  
You can also change the barcode according to your requirement. Based on this you can design your infrastructure.d

12. Perform Step 5-8 to load the newly changed Barcode.





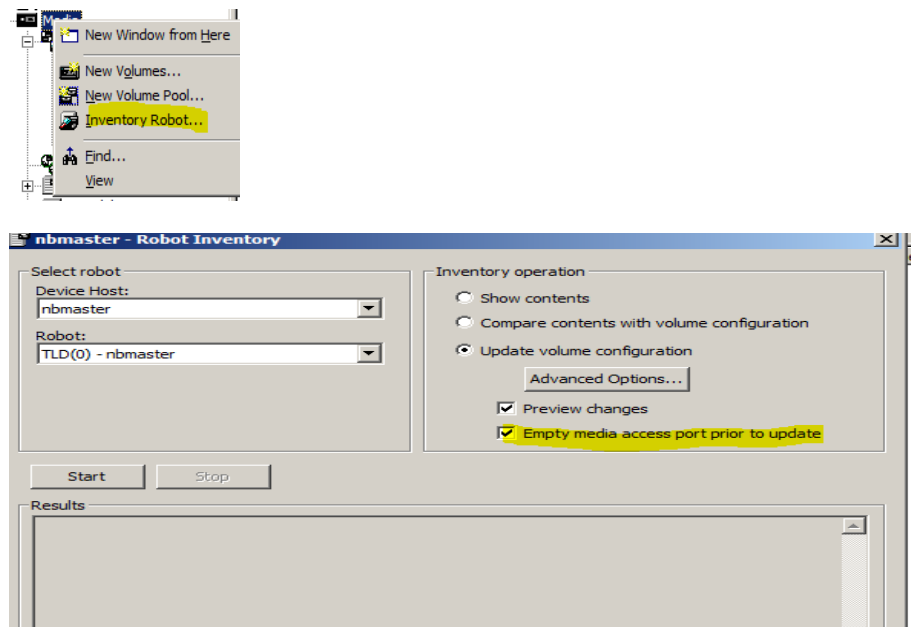
13. Go back to netbackup and create a scratch pool to load the free media. In this case, I have injected all the 10 media and have 5 of them moved to scratch pool.



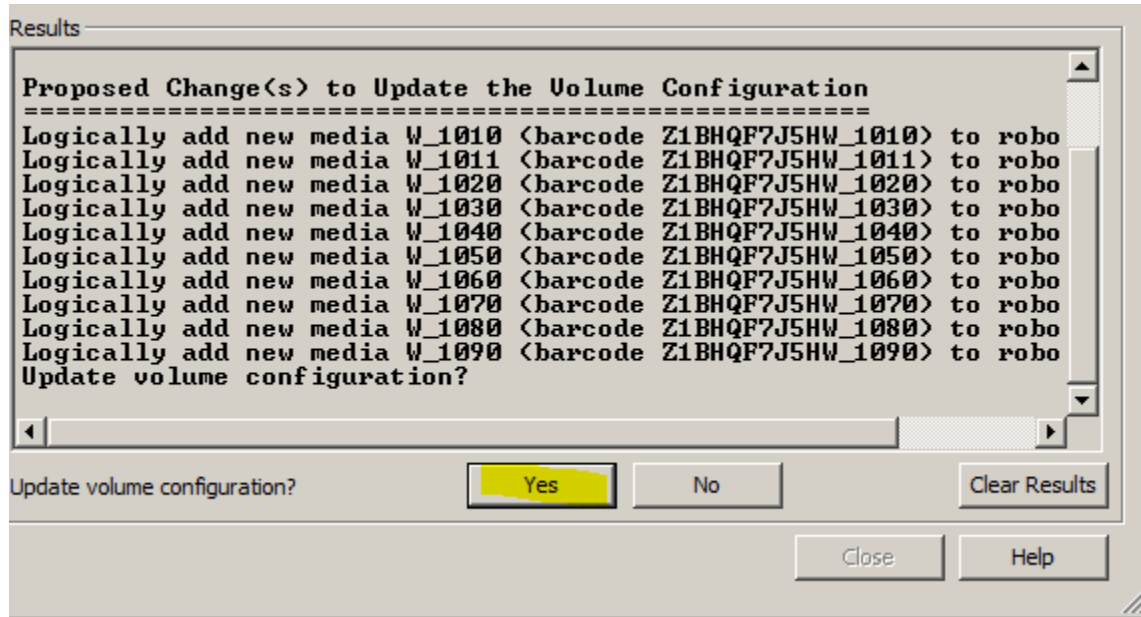
14. Note the volume pools are identified by numbers: 0:None; 1: Netbackup etc..

Volume Pool	Number	Max Partially Filled Media	Description	Scratch	Catalog Backup
CatalogBackup	3	0	NetBackup Catal...	No	Yes
DataStore	2	0	the DataStore pool	No	No
NetBackup	1	0	the NetBackup pool	No	No
None	0	0	the None pool	No	No
Scratch	4	0	Netbackup Free ...	Yes	No

15. Perform an inventory.



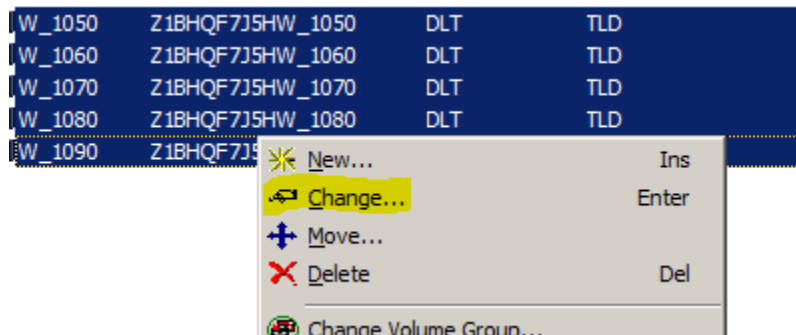
16. The updated media configuration is as shown:



0 Volume(s)

Media ID	Barcode	Media Type	Robot Type	Robot Num...	Robot Cont...	Slot	Volume Group	Volume Pool
W_1010	Z1BHQF7J5HW_1010	DLT	TLD	0	nbmaster	1	000_00000_TLD	NetBackup
W_1011	Z1BHQF7J5HW_1011	DLT	TLD	0	nbmaster	2	000_00000_TLD	NetBackup
W_1020	Z1BHQF7J5HW_1020	DLT	TLD	0	nbmaster	3	000_00000_TLD	NetBackup
W_1030	Z1BHQF7J5HW_1030	DLT	TLD	0	nbmaster	4	000_00000_TLD	NetBackup
W_1040	Z1BHQF7J5HW_1040	DLT	TLD	0	nbmaster	5	000_00000_TLD	NetBackup
W_1050	Z1BHQF7J5HW_1050	DLT	TLD	0	nbmaster	6	000_00000_TLD	NetBackup
W_1060	Z1BHQF7J5HW_1060	DLT	TLD	0	nbmaster	7	000_00000_TLD	NetBackup
W_1070	Z1BHQF7J5HW_1070	DLT	TLD	0	nbmaster	8	000_00000_TLD	NetBackup
W_1080	Z1BHQF7J5HW_1080	DLT	TLD	0	nbmaster	9	000_00000_TLD	NetBackup
W_1090	Z1BHQF7J5HW_1090	DLT	TLD	0	nbmaster	10	000_00000_TLD	NetBackup

17. Move 5 Medias to scratch.



### Change Volumes

Media ID	Media ...	Descri...	Max M...	Volum...	Volum...	Cleani...
W_1050	DLT	Added ...	0		NetBac...	-
W_1060	DLT	Added ...	0		NetBac...	-
W_1070	DLT	Added ...	0		NetBac...	-
W_1080	DLT	Added ...	0		NetBac...	-
W_1090	DLT	Added ...	0		NetBac...	-

Do not change  
 Unlimited  
 Number

Do not change  
 Never  
 Date

Do not change  New description

Do not change  New pool
 

- None
- NetBackup
- DataStore
- CatalogBackup
- Scratch

Do not change  New count

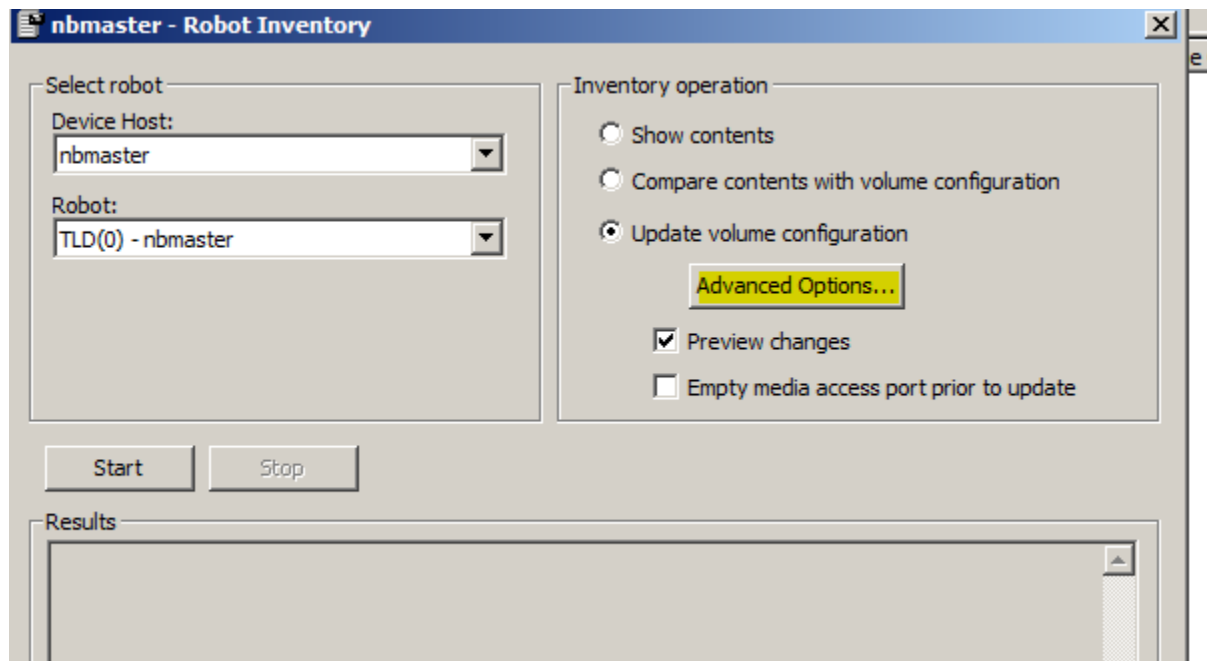
OK Cancel Help

0 Volume(s)

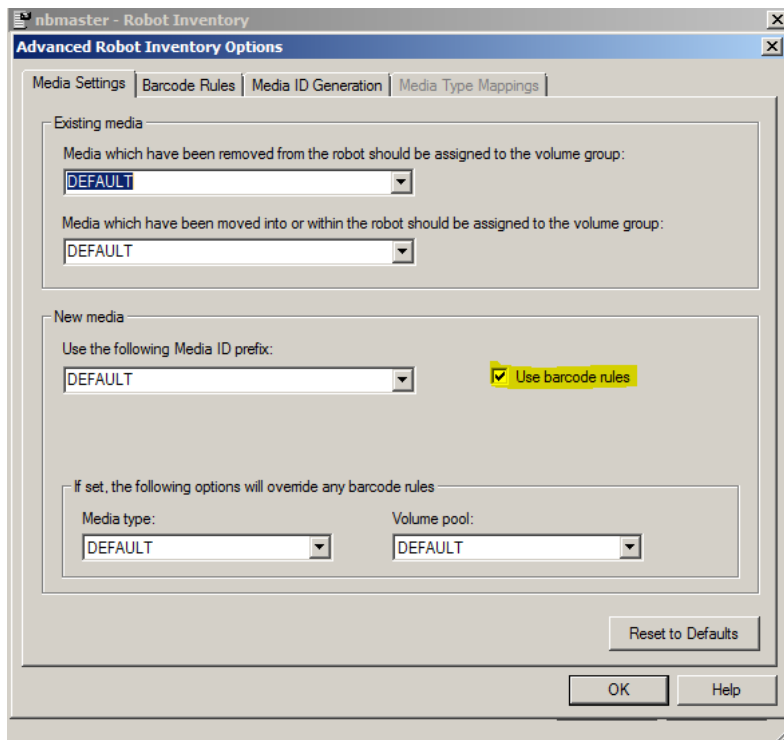
Media ID	Barcode	Media Type	Robot Type	Robot Num...	Robot Cont...	Slot	Volume Group	Volume Pool
W_1010	Z1BHQF7J5HW_1010	DLT	TLD	0	nbmaster	1	000_00000_TLD	NetBackup
W_1011	Z1BHQF7J5HW_1011	DLT	TLD	0	nbmaster	2	000_00000_TLD	NetBackup
W_1020	Z1BHQF7J5HW_1020	DLT	TLD	0	nbmaster	3	000_00000_TLD	NetBackup
W_1030	Z1BHQF7J5HW_1030	DLT	TLD	0	nbmaster	4	000_00000_TLD	NetBackup
W_1040	Z1BHQF7J5HW_1040	DLT	TLD	0	nbmaster	5	000_00000_TLD	NetBackup
W_1050	Z1BHQF7J5HW_1050	DLT	TLD	0	nbmaster	6	000_00000_TLD	Scratch
W_1060	Z1BHQF7J5HW_1060	DLT	TLD	0	nbmaster	7	000_00000_TLD	Scratch
W_1070	Z1BHQF7J5HW_1070	DLT	TLD	0	nbmaster	8	000_00000_TLD	Scratch
W_1080	Z1BHQF7J5HW_1080	DLT	TLD	0	nbmaster	9	000_00000_TLD	Scratch
W_1090	Z1BHQF7J5HW_1090	DLT	TLD	0	nbmaster	10	000_00000_TLD	Scratch

## BARCODE RULES:

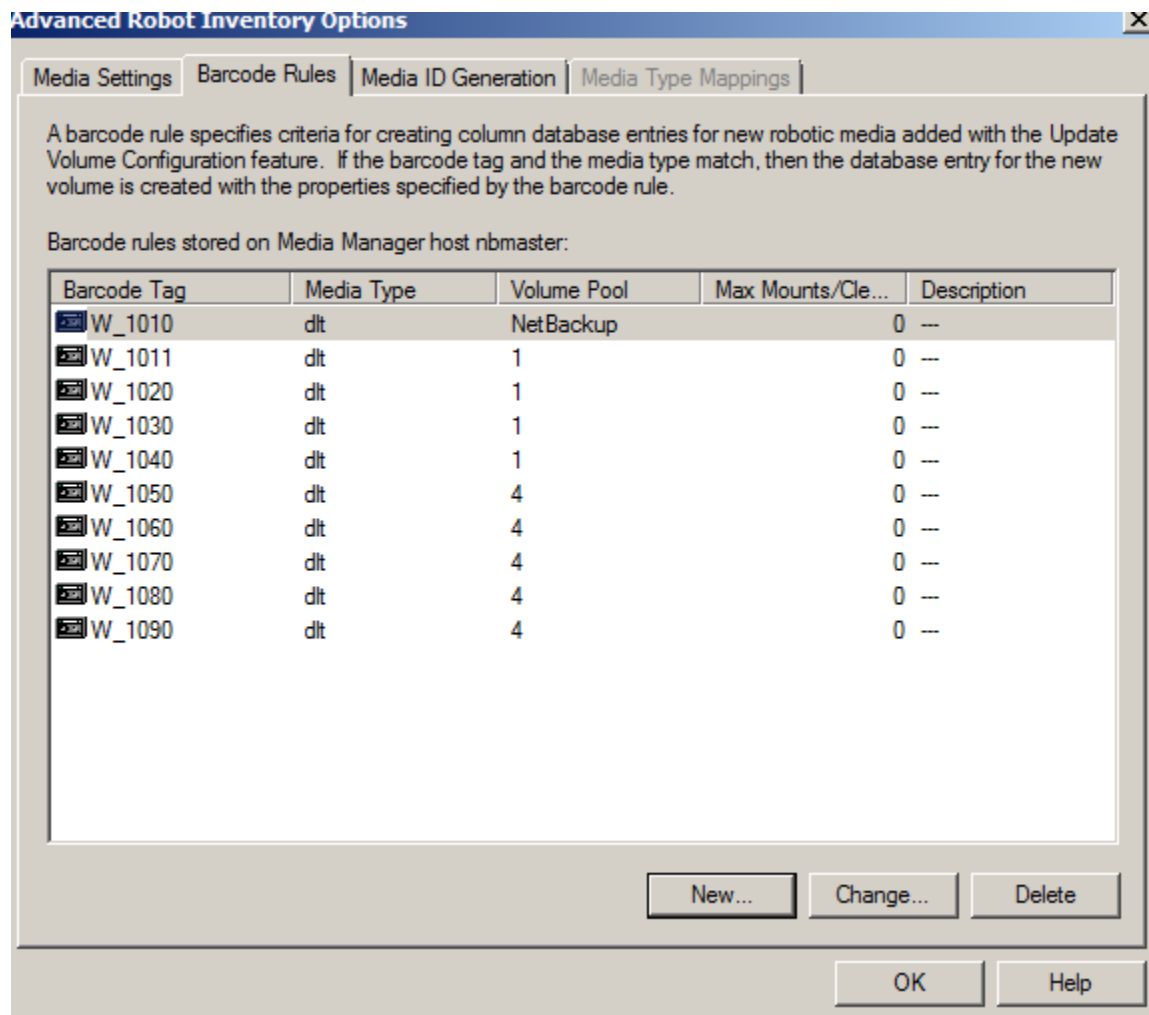
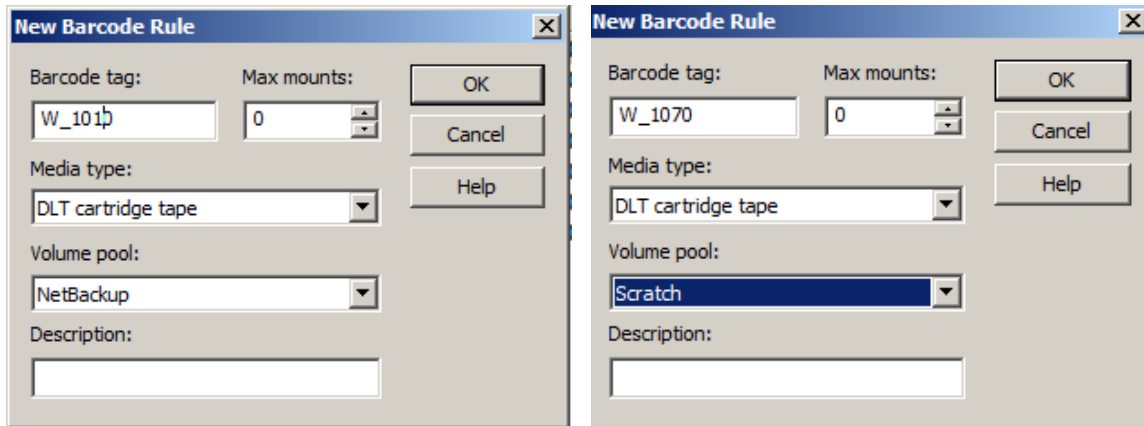
18. Under Robot inventory, go to advanced options.



19. Make sure that Barcode rules are selected.

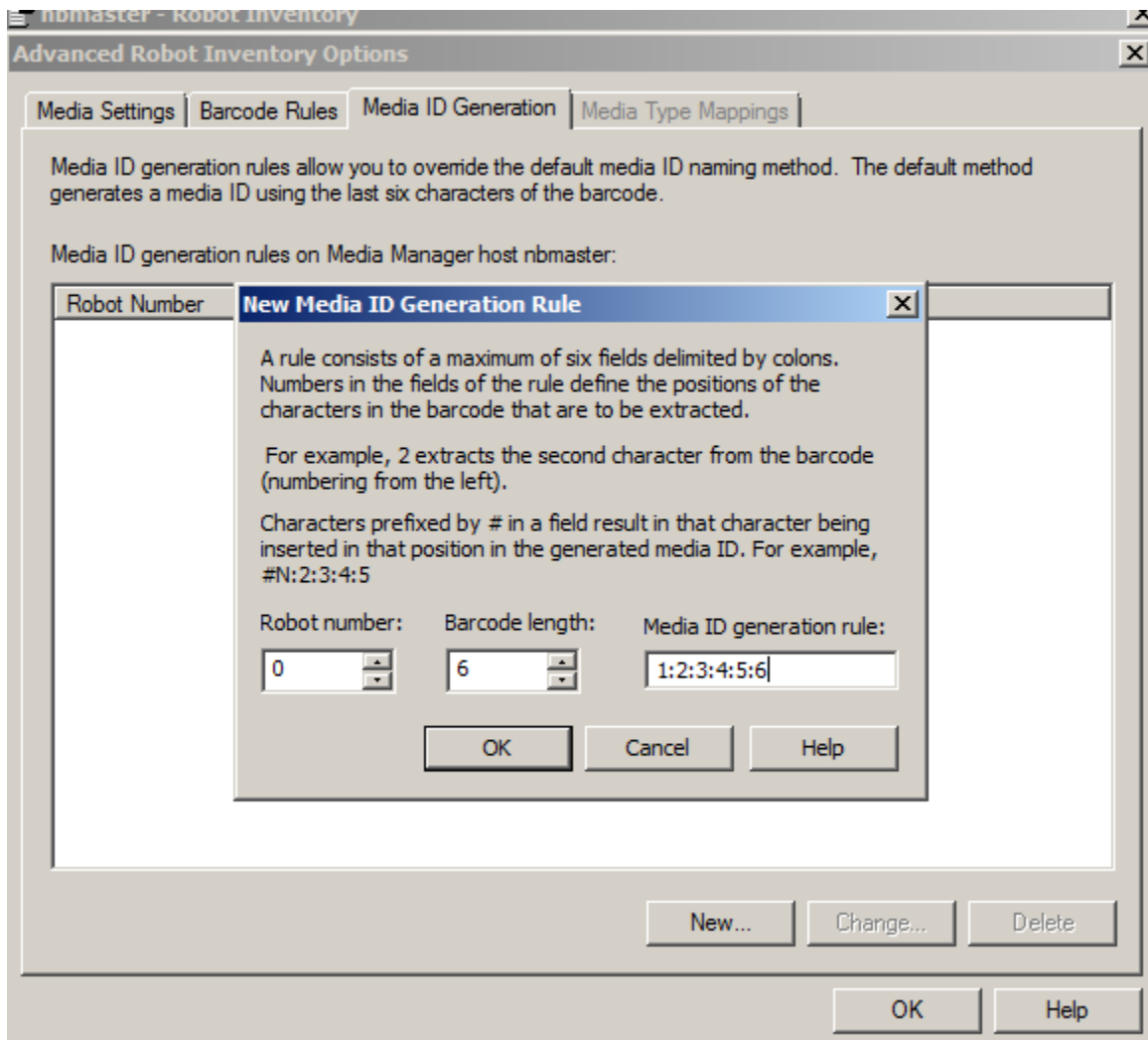


20. Perform the steps as shown below:





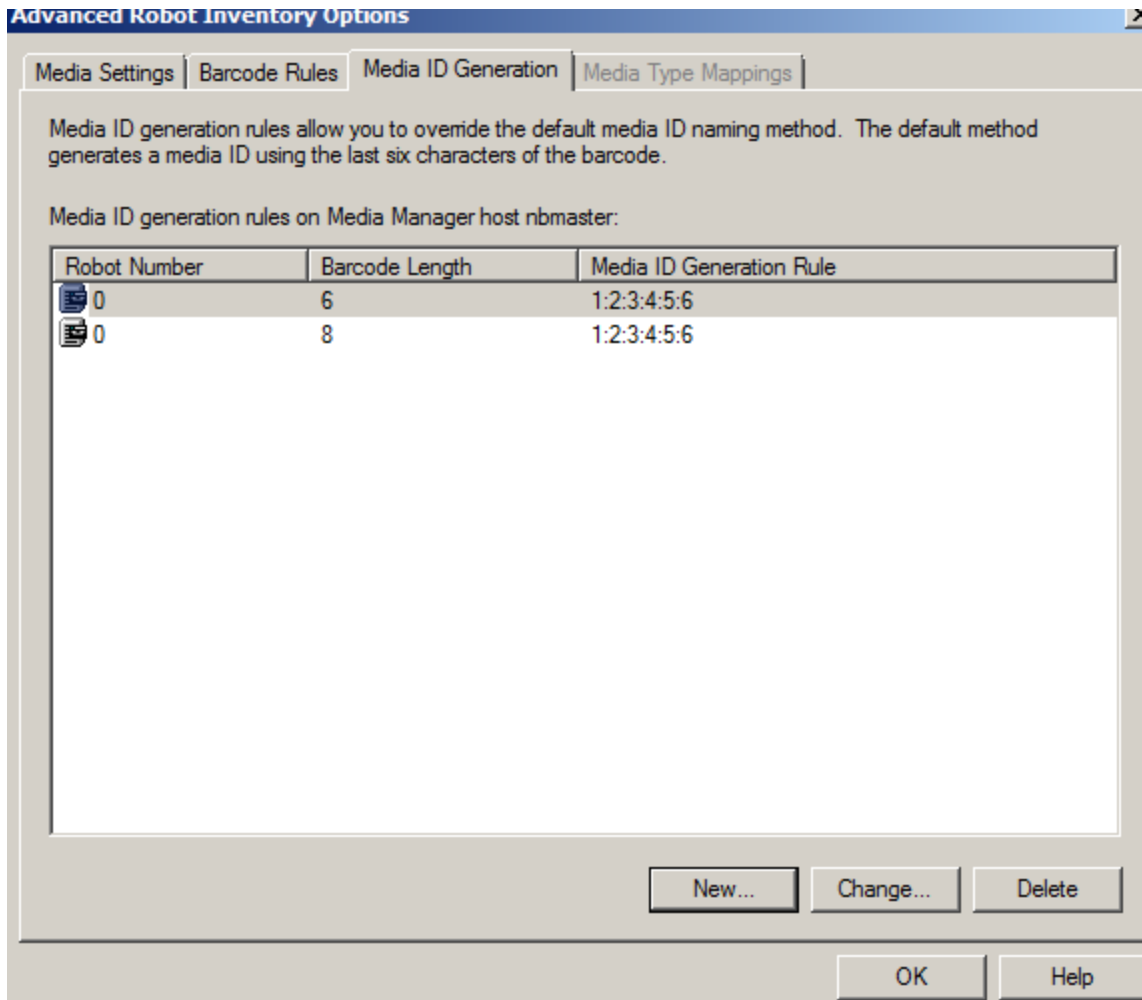
21. Under Media ID generation, choose the barcode length based on your design and provide the media generation rule corresponding to the Robot.



#### Media ID Generation Rule:

If netbackup wishes to read the first 6 digits of the barcode, one can set it up as 1:2:3:4:5:6.

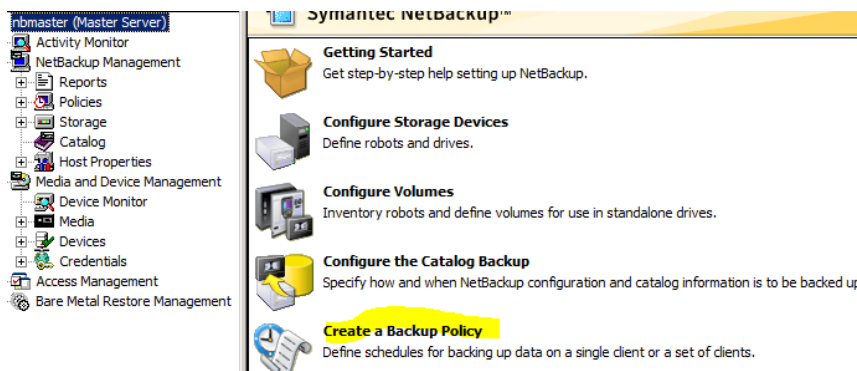
Say if the barcode length is 10 and one wishes to read 6 digits from 4th, then the rule can be changed to 4:5:6:7:8:9



## Policy Configuration

Let's configure a Catalog policy now.

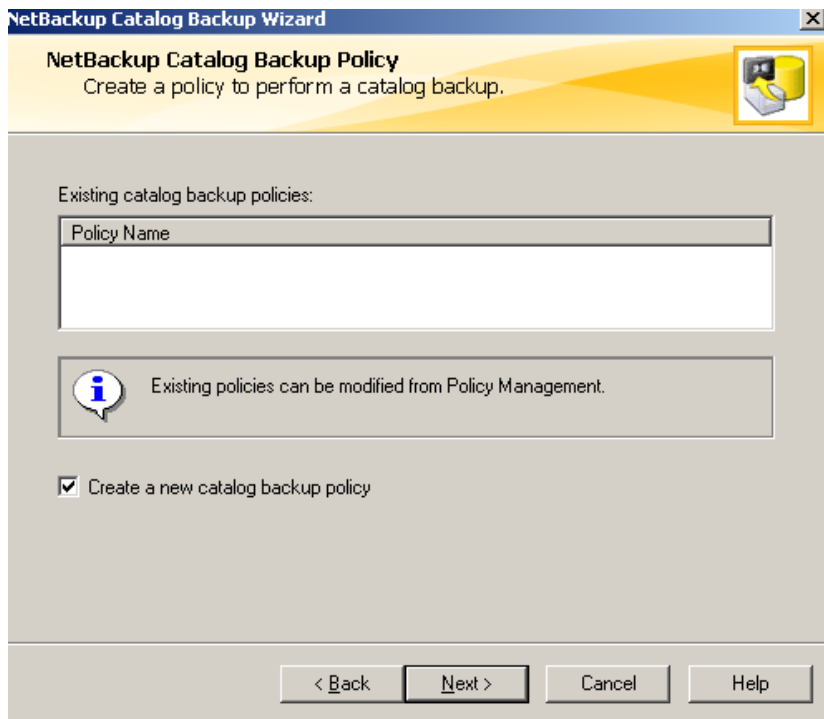
1. Go to the top of the console and click on the master server and choose **configure the Catalog Backup Policy** on the right pane.



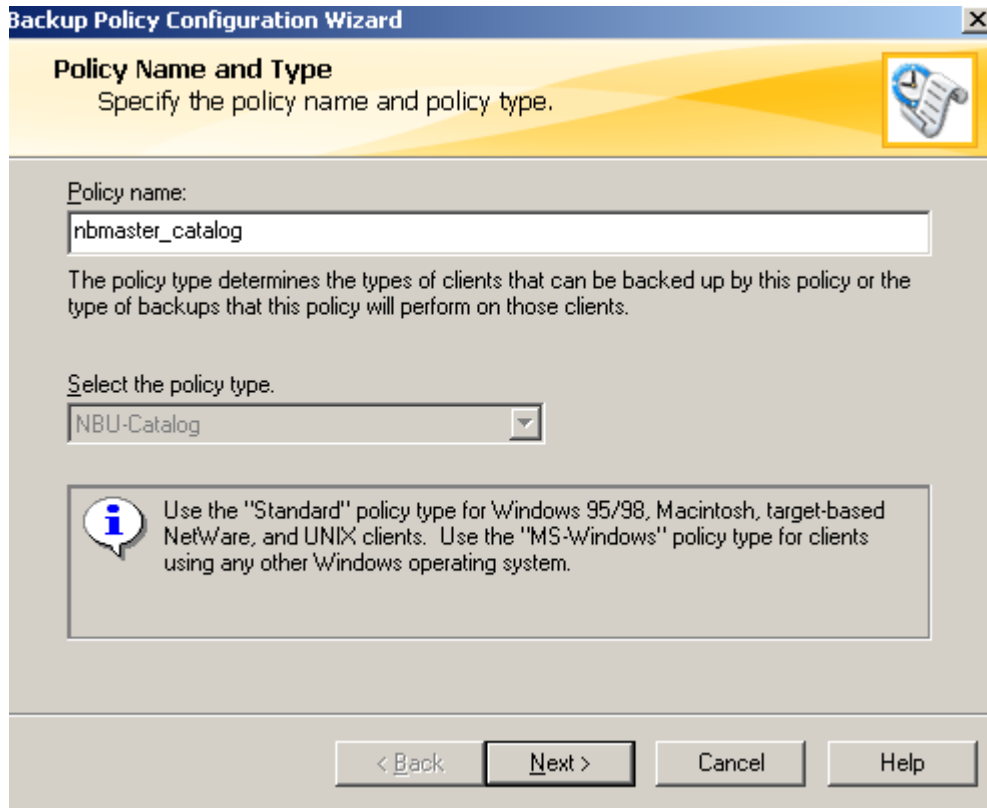
2. This launches the Catalog Backup Wizard. Click next.



3. Place a check to create a new catalog policy as shown below:

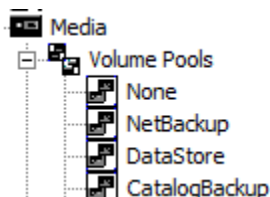


4. Give it a name. Please note the default policy greyed out would be **NBU-Catalog**.



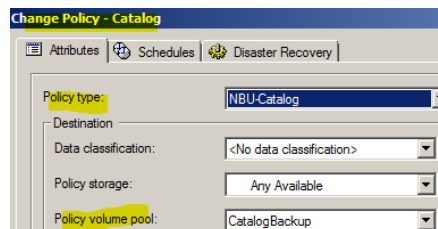
Note:

After installing netbackup, the default volume pools created are as shown below:

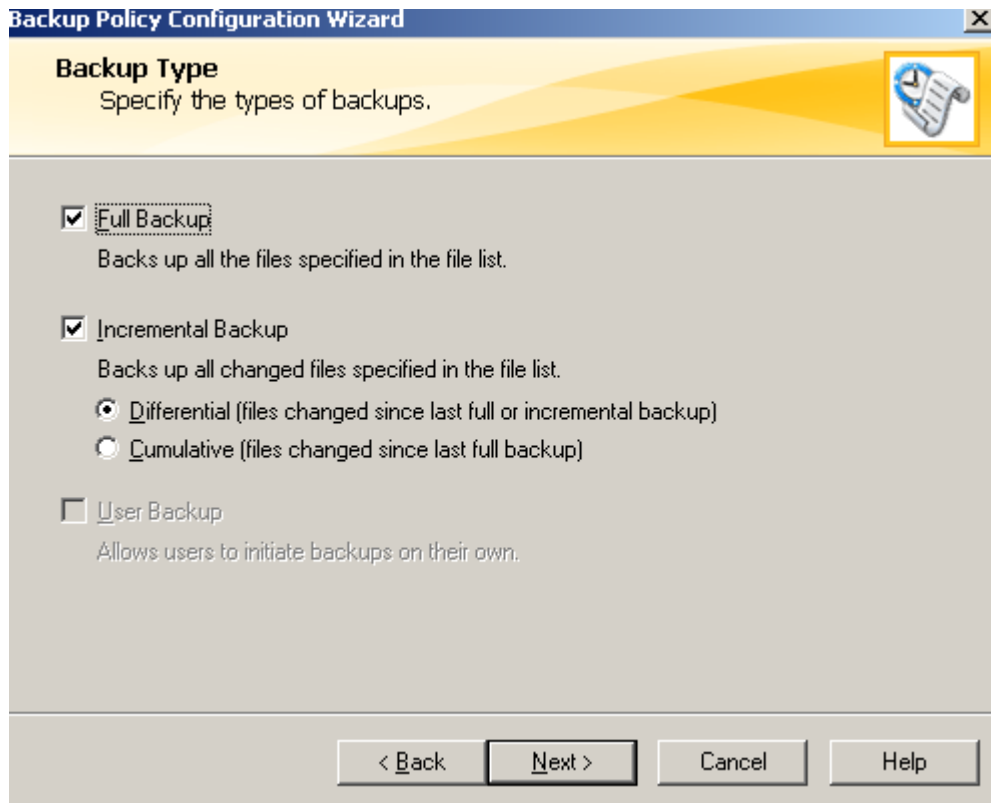


So for the catalog policy, the volume pool would be **Catalog Backup** and policy type set to **NBU-Catalog**.

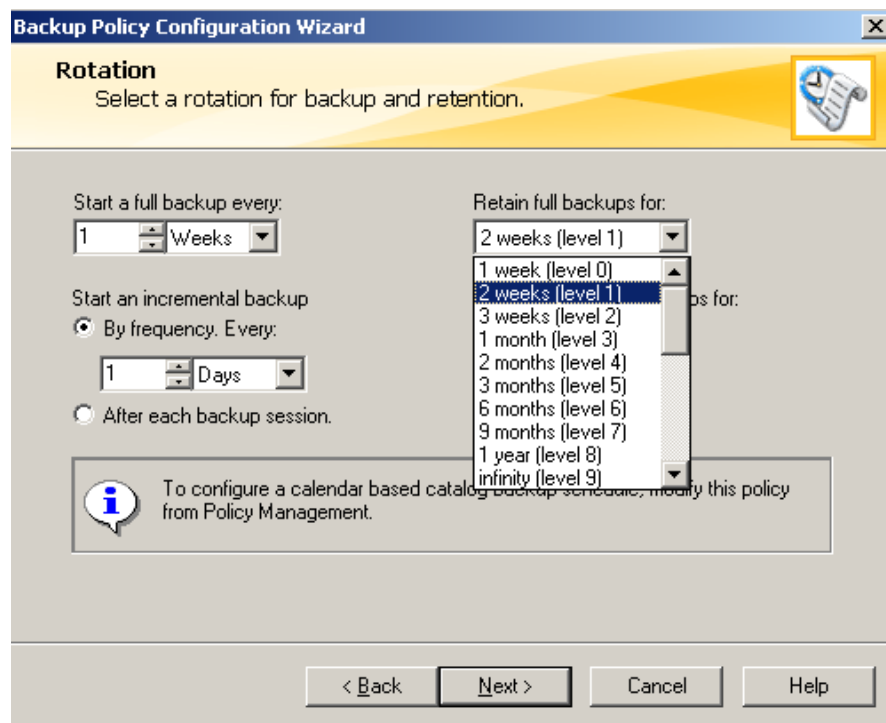
Double clicking the catalog policy would show up this.

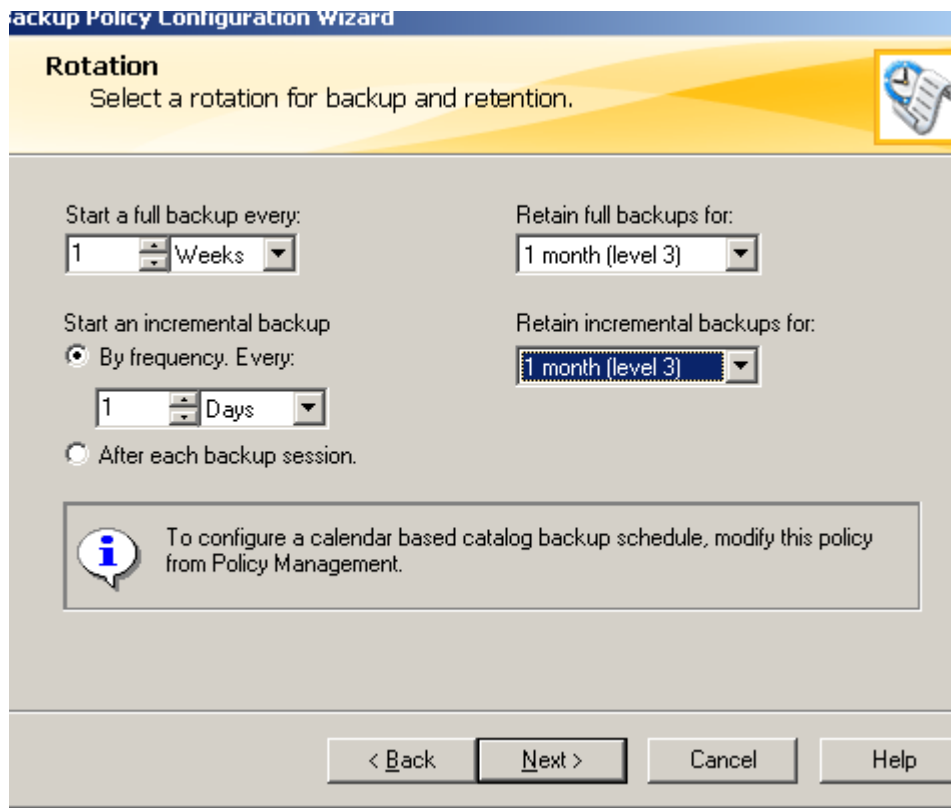


5. Choose the type of backup, which one needs to set as per requirement and click next.

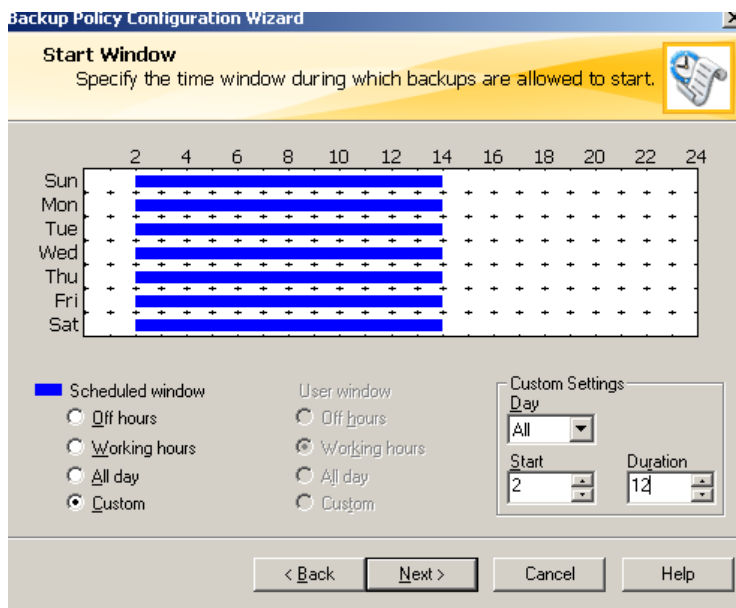


6. This would go to the Rotation page, where one can setup the retention for full and incremental backups to run.





7. Schedule a Change window (Backup window), where your scheduled jobs can run.



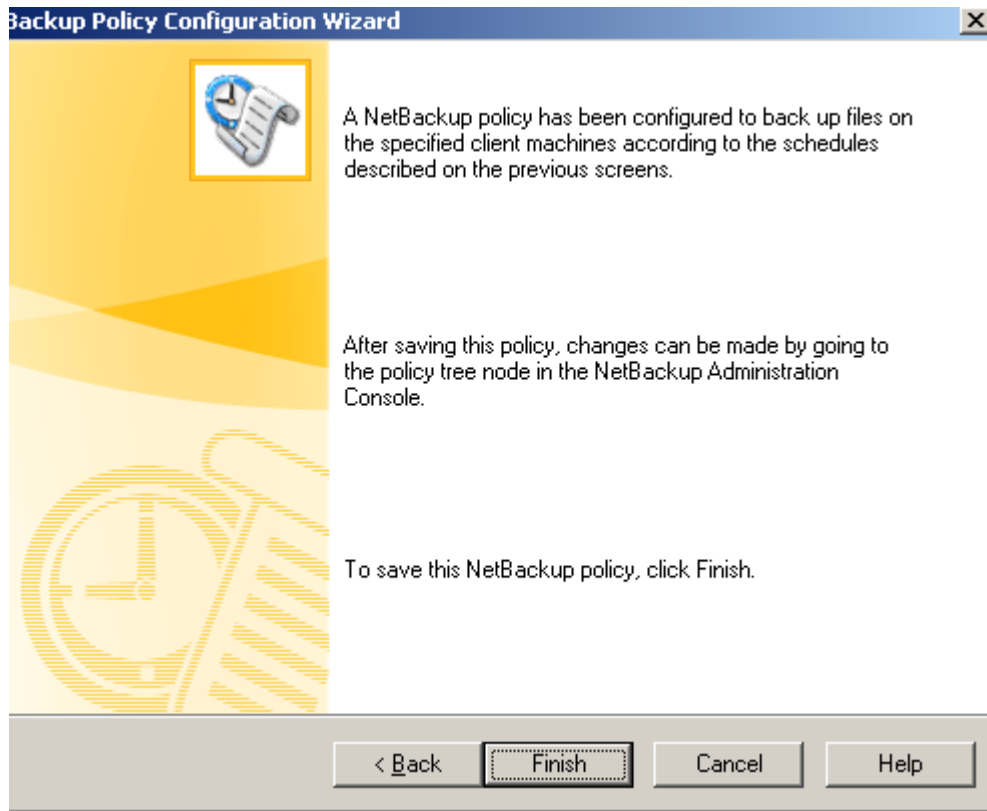
8. Setup a Catalog DR file and choose your directory, where you wish to save them.

The screenshot shows the 'Catalog Disaster Recovery File' step of the Backup Policy Configuration Wizard. The title bar reads 'Backup Policy Configuration Wizard'. The main heading is 'Catalog Disaster Recovery File' with the instruction 'Specify a file location to save the disaster recovery information'. Below this, there are input fields for 'Path:' (containing 'C:\drecovery'), 'Logon:' (containing 'admin'), and 'Password:' (containing '\*\*\*\*\*'). A 'Browse' button is next to the path field. An information box contains the text: 'The disaster recovery file generated for each catalog backup contains information needed to recover the NetBackup catalog. Record the location of this file so that the NetBackup catalog can be recovered if necessary.' At the bottom, there are buttons for '< Back', 'Next >', 'Cancel', and 'Help'.

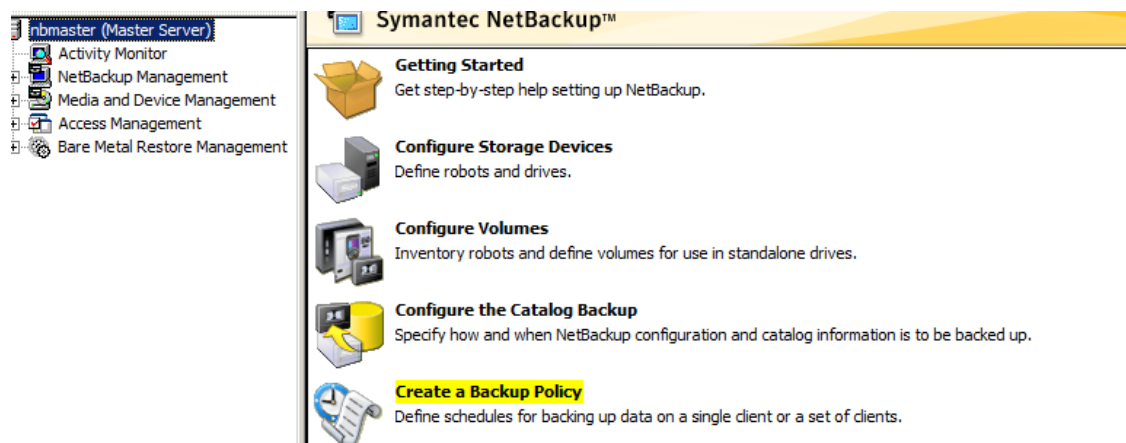
9. Configure your email so that DR file can be send during service disruption.

The screenshot shows the 'E-mail Disaster Recovery Information' step of the Backup Policy Configuration Wizard. The title bar reads 'Backup Policy Configuration Wizard'. The main heading is 'E-mail Disaster Recovery Information' with the instruction 'Specify an e-mail address to receive disaster recovery information.' Below this, there are radio buttons for 'Do you wish to have the disaster recovery file sent to an e-mail address?' with 'Yes (recommended)' selected. An 'E-mail address:' field contains 'anupsreedharan@[REDACTED]'. An information box contains the text: 'The e-mail will contain catalog backup status information, disaster recovery procedures, and an attached disaster recovery file.' At the bottom, there are buttons for '< Back', 'Next >', 'Cancel', and 'Help'.

10. This completes the Catalog policy Completion.

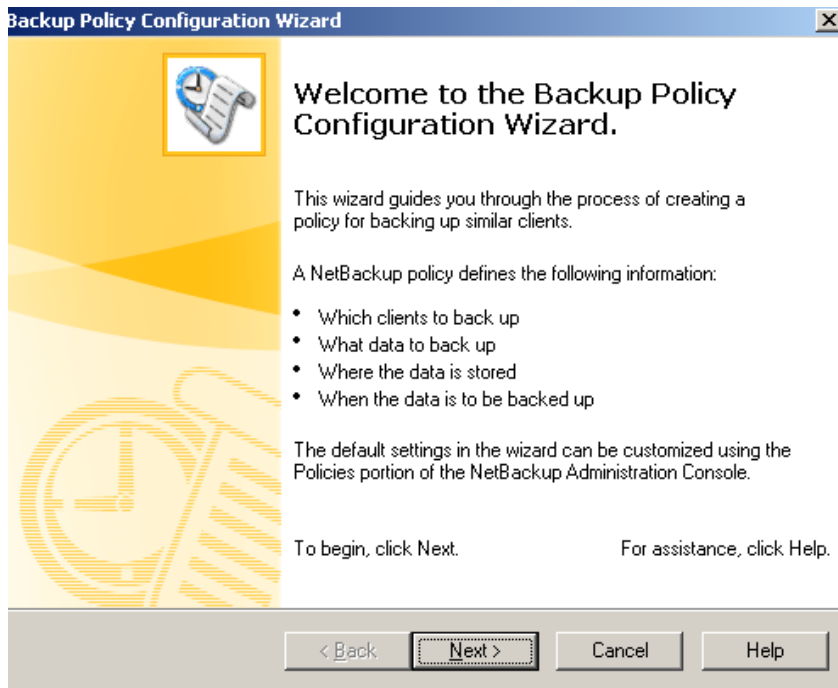


11. Now, let's create a test policy as show below:

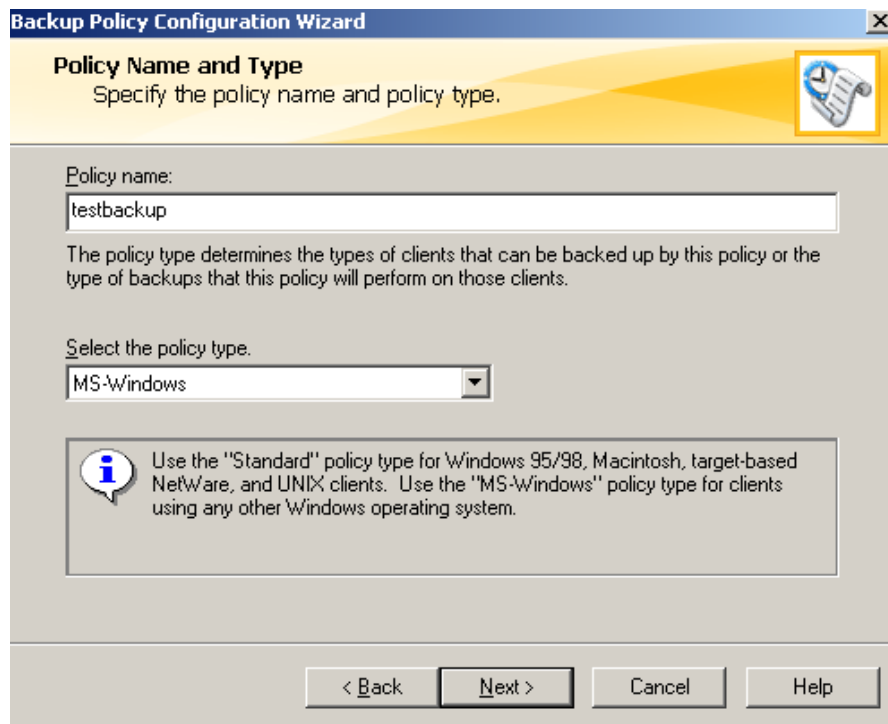




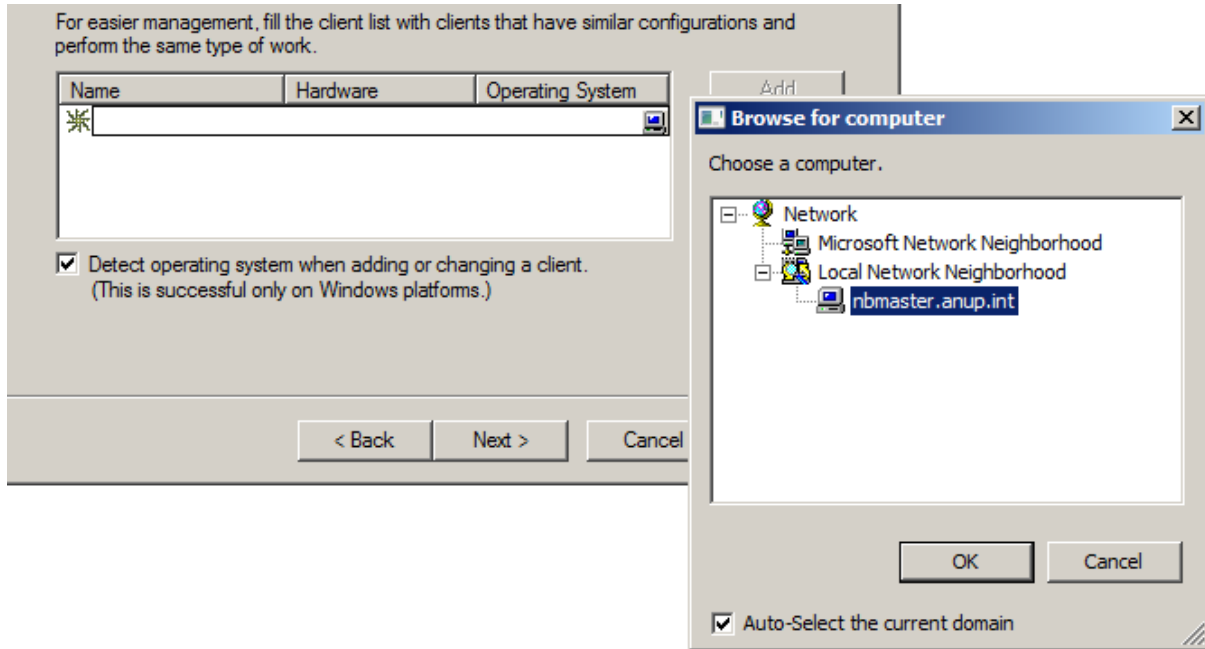
12. This launches the Backup Policy Wizard.



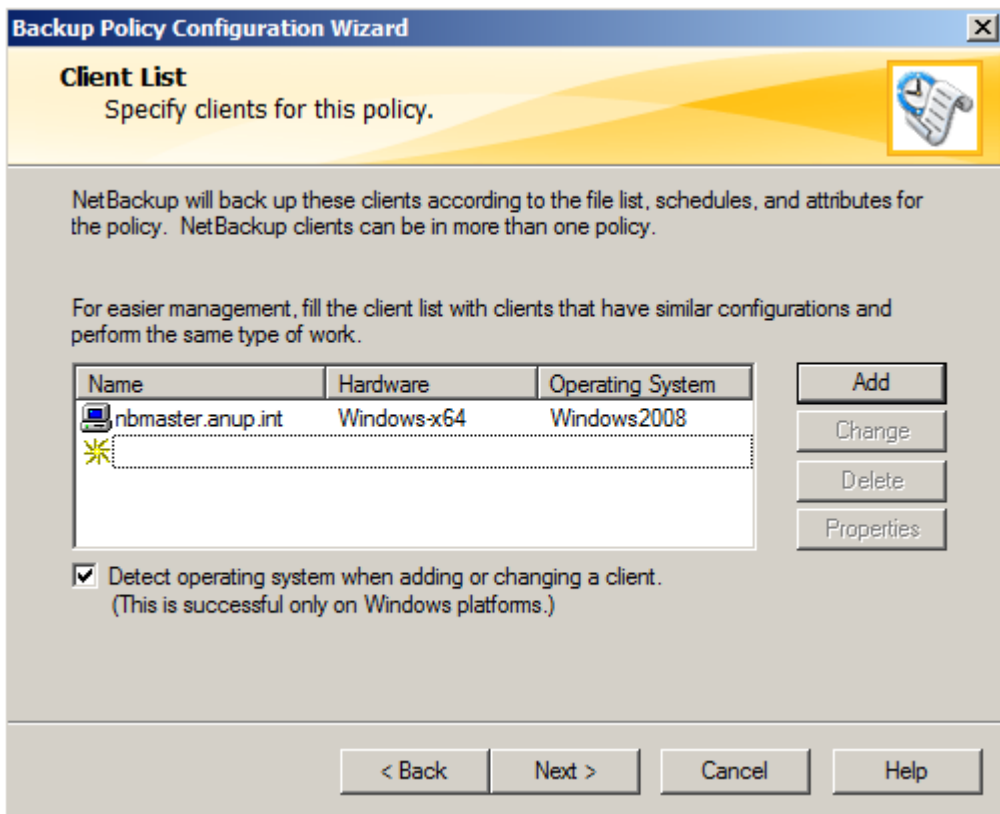
13. Provide the policy name and choose the policy type as MS-Windows ( as the test machine is Windows)



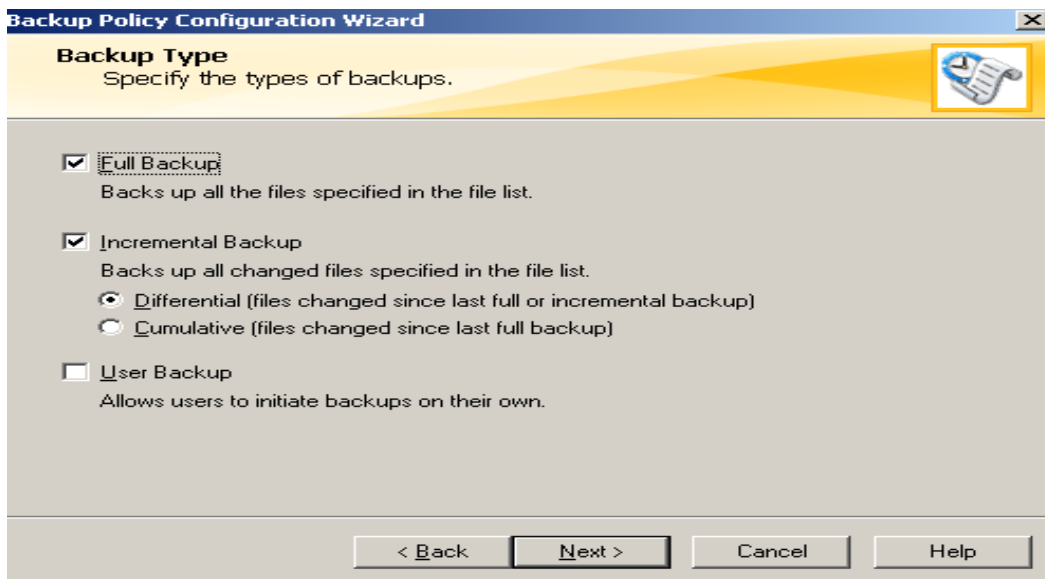
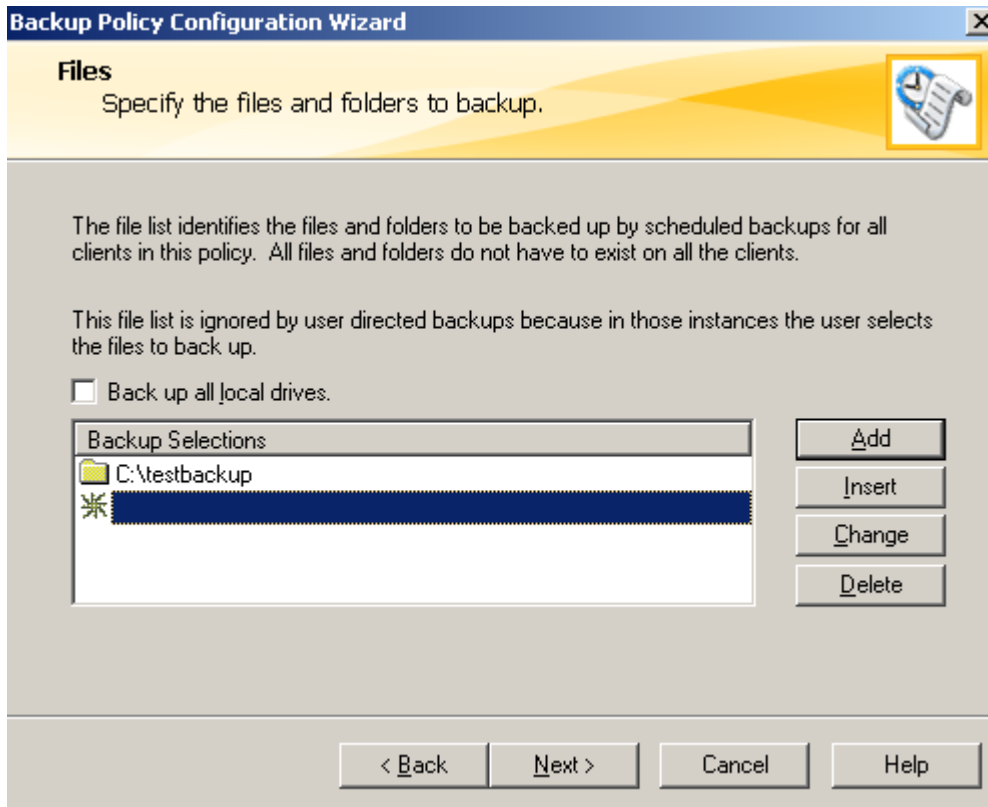
14. Locate the number from the network or add it manually .



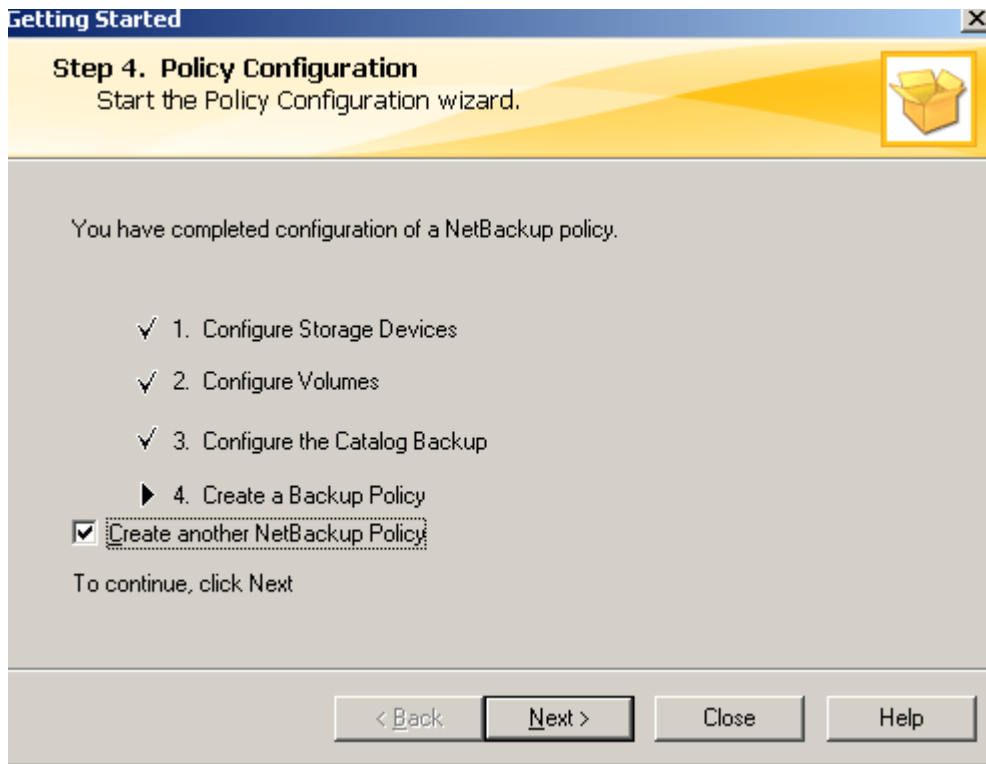
15. Placing a check on the operating system detect box, detects the OS automatically.



16. Choose a directory to be added for backups. The rest of the steps from here, is same as that of the steps included in Catalog policy creation section (5,6,7 only)



17. Here another policy is created for Media server.



**Backup Policy Configuration Wizard**


### Policy Name and Type

Specify the policy name and policy type.

Policy name:

The policy type determines the types of clients that can be backed up by this policy or the type of backups that this policy will perform on those clients.

Select the policy type:

 Use the "Standard" policy type for Windows 95/98, Macintosh, target-based NetWare, and UNIX clients. Use the "MS-Windows" policy type for clients using any other Windows operating system.

< Back   Next >   Cancel   Help



**Backup Policy Configuration Wizard**

### Client List

Specify clients for this policy.

NetBackup will back up these clients according to the file list, schedules, and attributes for the policy. NetBackup clients can be in more than one policy.

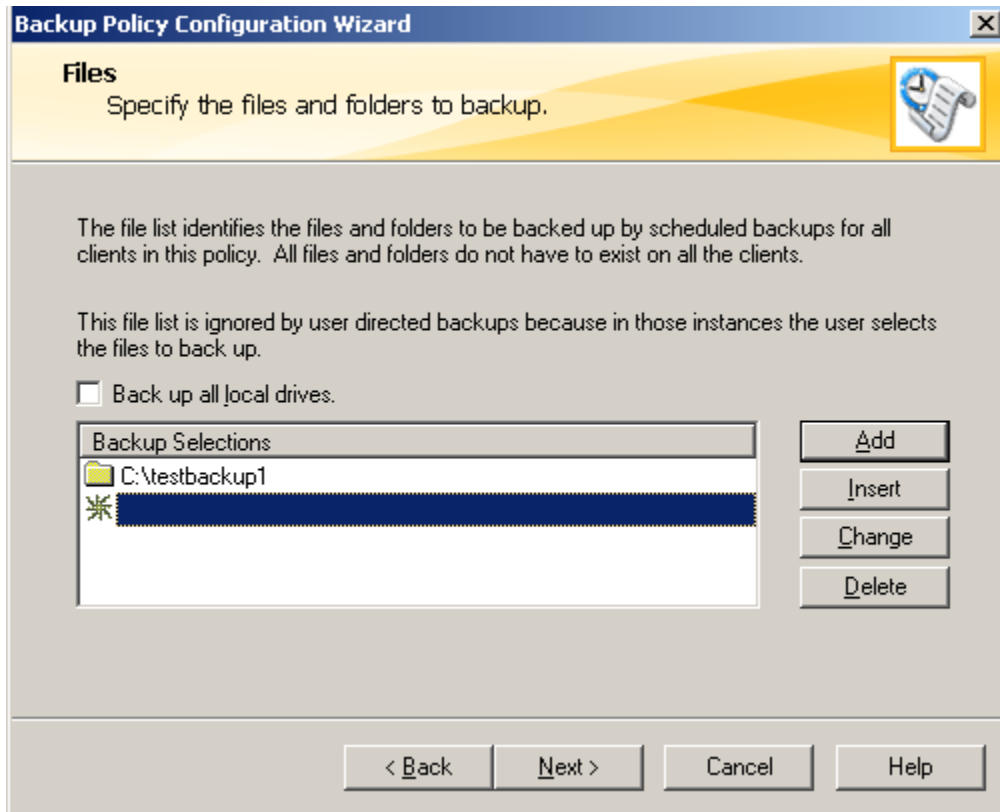
For easier management, fill the client list with clients that have similar configurations and perform the same type of work.

Name	Hardware	Operating System
 nbmedia	Windows-x86	Windows2003
		

Add  
Change  
Delete  
Properties

Detect operating system when adding or changing a client.  
 (This is successful only on Windows platforms.)

< Back   Next >   Cancel   Help



→ Master and media server connectivity status along with created policies

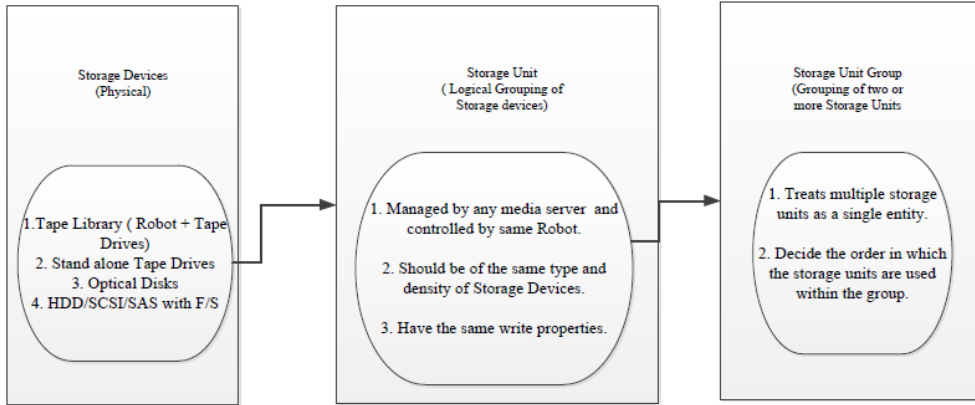
Media Servers of nbmaster						
Host	Operating System	OS Type	Host Type	Version	Status	
nbmaster	Windows2008 (6)	Windows	Master Server	7.0	Connected	
nbmedia	Windows2008 (6)	Windows	Media Server	7.0	Connected	

Also make sure that under devices, the server status shows “Available for Tape and disk”

Host Name	Status	NetBackup Version
nbmaster	Active for Tape and Disk	7.0
nbmedia	Active for Tape and Disk	7.0



### SD vs SU vs SUG



## Storage units

The below storage is created from Step-19(Robot and Drive Configuration)

All Storage Units: 2						
Name	Storage Unit Type	Density	Max Concurrent Drives	Robot Type	Robot Number	On Demand
nbmaster-dlt	Media Manager	dlt	2			Yes
nbmaster-dlt-robot-tld-0	Media Manager	dlt	5 TLD		0	Yes

**Change Storage Unit**

Storage unit name: nbmaster-dlt

Storage unit type: Media Manager  On demand only

Disk type:

Properties

Storage device: Standalone - dlt

Robot type: NONE - Not Robotic  
Density: dlt - DLT Cartridge  
Robot number:

Media server: nbmaster

Maximum concurrent write drives: 2  Reduce fragment size to: 1048576 Megabytes

Enable Multiplexing  
Maximum streams per drive: 1

OK Cancel Help

**Change Storage Unit**

Storage unit name: nbmaster-dlt-robot-tld-0

Storage unit type: Media Manager  On demand only

Disk type:

Properties

Storage device: tld(0) - dlt

Robot type: TLD - Tape Library DLT  
Density: dlt - DLT Cartridge  
Robot number: 0

Media server: nbmaster

Maximum concurrent write drives: 5  Reduce fragment size to: 1048576 Megabytes

Enable Multiplexing  
Maximum streams per drive: 1

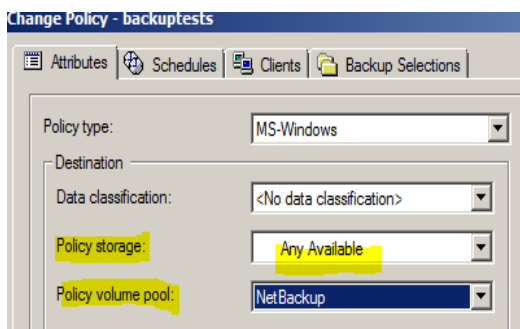
OK Cancel Help

### On Demand only:

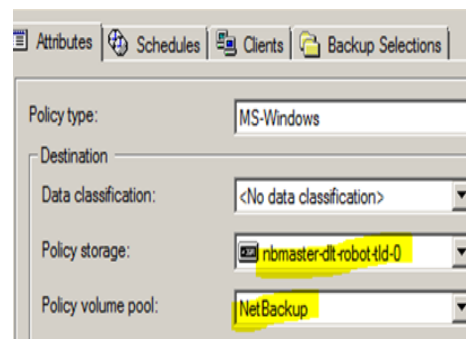
a. Checking this, makes the storage unit available only a particular policy to which it is assigned.

b. Unchecking this, makes the storage unit available to any policy during backups.

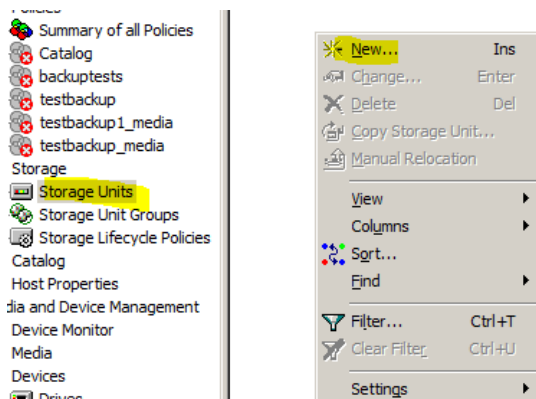
### Any Available Storage



### On Demand Storage

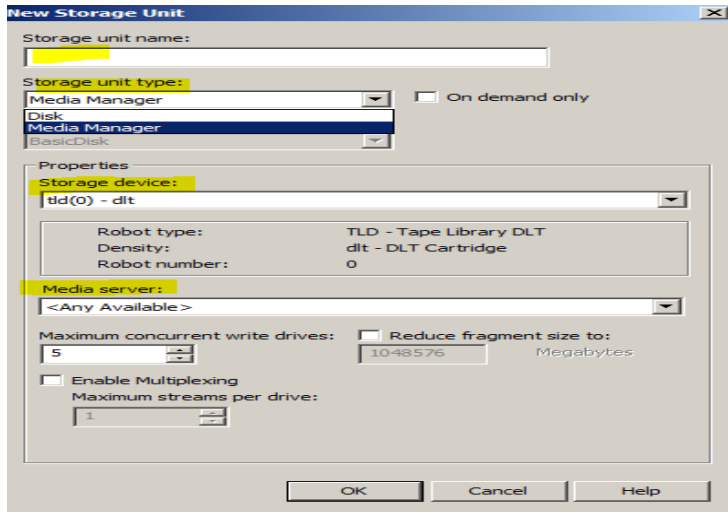


→ If a new storage device is mounted on the system, it can be added manually on netbackup by navigating to storage units and right click on the right-hand pane and click on new.



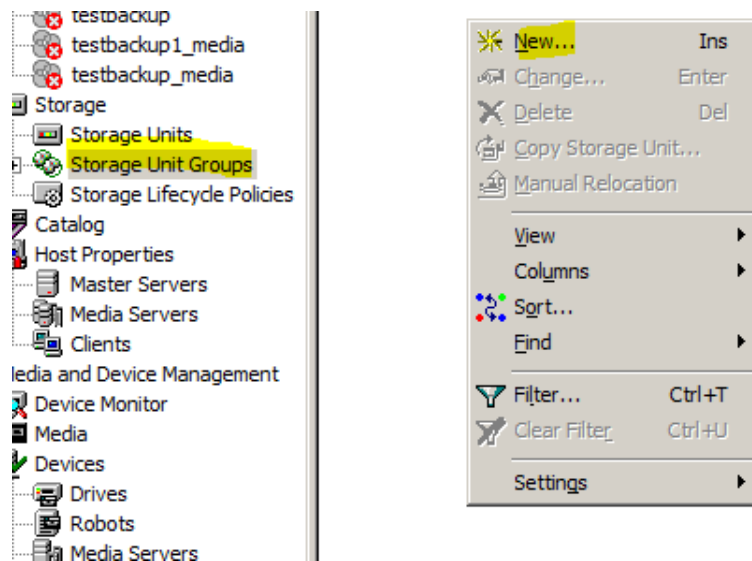
→ Provide a storage unit name, type of storage unit, Storage device (Eg: Robot+Tape Drive), Media server and click on ok. Here as this is a test environment, the default values can be considered.





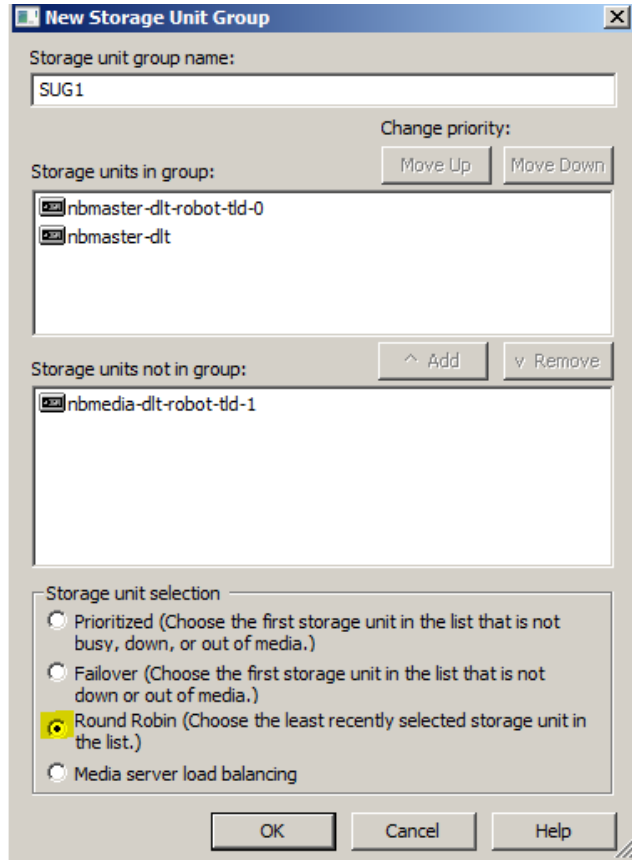
## STORAGE UNIT GROUP

→ To add a storage unit group, navigate as shown and do right click on the right hand pane.



→ Provide a Name, add a storage unit from the available list in second row, change the priority according to the requirement, followed by the algorithm.

In this case, Round Robin is selected.



→ Once the groups are created and desired units are added, the final view appears as shown below:

All Storage Unit Groups: 3		
Name	Number of Storage Units	Storage Units
SUG1	2	nbmaster-dlt-robot-tld-0, nbmaster-dlt
SUG2	2	nbmedia-dlt-robot-tld-1, nbmaster-dlt
SUG3	2	nbmaster-dlt-robot-tld-0, nbmedia-dlt-robot-tld-1

## Startup and Shutdown Scripts:

Once the entire environment is configured, it is always advisable to run a shutdown and startup scripts so that any stopped/hung policy required for netbackup comes up and things are good from an environment standpoint.

```
C:\Program Files\Veritas\NetBackup\bin>bpdown -v -f
NetBackup 7.0 -- shutdown utility

Shutting down services
> NetBackup Bare Metal Restore Boot Server
> NetBackup Bare Metal Restore Boot Server -- STOPPED
> NetBackup Bare Metal Restore Master Server
> NetBackup Bare Metal Restore Master Server -- STOPPED
> NetBackup Service Monitor
> NetBackup Service Monitor -- STOPPED
> NetBackup Agent Request Server
> NetBackup Agent Request Server -- STOPPED
> NetBackup Storage Lifecycle Manager
> NetBackup Storage Lifecycle Manager -- STOPPED
> NetBackup Key Management Service
> NetBackup Key Management Service -- STOPPED
> NetBackup Vault Manager
> NetBackup Vault Manager -- STOPPED
```

```
C:\Program Files\Veritas\NetBackup\bin>bpup /v /f
NetBackup 7.0 -- startup utility

Starting services
> NetBackup Client Service
> NetBackup Client Service -- STARTED
> NetBackup SAN Client Fibre Transport Service
> NetBackup SAN Client Fibre Transport Service -- STARTED
> NetBackup Event Manager
> NetBackup Event Manager -- STARTED
> NetBackup Relational Database Manager
> NetBackup Relational Database Manager -- STARTED
> NetBackup Enterprise Media Manager
> NetBackup Enterprise Media Manager -- STARTED
```

## Drive Status: Online

→The drive status of the currently configured ones can viewed by navigating to **Device Monitor**.

Media and Device Management  
Device Monitor  
Media

Drive Name	Driv...	Con...	Recor...	Ext...	Ready	Writ...	Assi...	Req...	Med...	Driv...	Sha...	Device Host
Drive01	DLT	TLD			No					No		nbmaster
Drive02	DLT	TLD			No					No		nbmaster
Drive03	DLT	TLD			No					No		nbmaster
Drive04	DLT	TLD			No					No		nbmaster
Drive05	DLT	TLD			No					No		nbmaster
Drive06	DLT	TLD			No					No		nbmedia
Drive07	DLT	TLD			No					No		nbmedia
Drive08	DLT	TLD			No					No		nbmedia
Drive09	DLT	TLD			No					No		nbmedia
Drive10	DLT	TLD			No					No		nbmedia
Starwind_drive01	DLT	AVR	A00000		Yes	Yes		0	Yes	No		nbmaster
Starwind_drive02	DLT	AVR	A00001		Yes	Yes		0	Yes	No		nbmaster

→ Here the drives 1-5 and 6-10 are not shared and run on individually on Master and Media server, hence if running from a command line, the drive status needs to be checked from both ends.

```

Administrator: Command Prompt
C:\Program Files\Veritas\Uolmgr\bin>hostname
nbmaster
C:\Program Files\Veritas\Uolmgr\bin>tpconfig -d
Id DriveName Type Residence
SCSI coordinates/Path Status
*****
0 Drive01 dlt TLD<0> DRIVE=1
<35,0,1,0> UP
1 Drive02 dlt TLD<0> DRIVE=2
<35,0,1,1> UP
2 Drive03 dlt TLD<0> DRIVE=3
<35,0,1,2> UP
3 Drive04 dlt TLD<0> DRIVE=4
<35,0,1,3> UP
4 Drive05 dlt TLD<0> DRIVE=5
<35,0,1,4> UP
5 Starwind_drive01 dlt Standalone
<34,0,0,0> UP
6 Starwind_drive02 dlt Standalone
<34,0,1,0> UP

Currently defined robotics are:
TLD<0> SCSI coordinates = <35,0,2,0>
EMM Server = nbmaster
C:\Program Files\Veritas\Uolmgr\bin>

```

```

Administrator: Command Prompt
C:\Program Files\Veritas\Uolmgr\bin>hostname
nbmedia
C:\Program Files\Veritas\Uolmgr\bin>tpconfig -d
Id DriveName Type Residence
SCSI coordinates/Path Status
*****
0 Drive06 dlt TLD<1> DRIVE=1
<35,0,1,0> UP
1 Drive07 dlt TLD<1> DRIVE=2
<35,0,1,1> UP
2 Drive08 dlt TLD<1> DRIVE=3
<35,0,1,2> UP
3 Drive09 dlt TLD<1> DRIVE=4
<35,0,1,3> UP
4 Drive10 dlt TLD<1> DRIVE=5
<35,0,1,4> UP

Currently defined robotics are:
TLD<1> SCSI coordinates = <35,0,2,0>
EMM Server = nbmaster
C:\Program Files\Veritas\Uolmgr\bin>

```

**Note:**

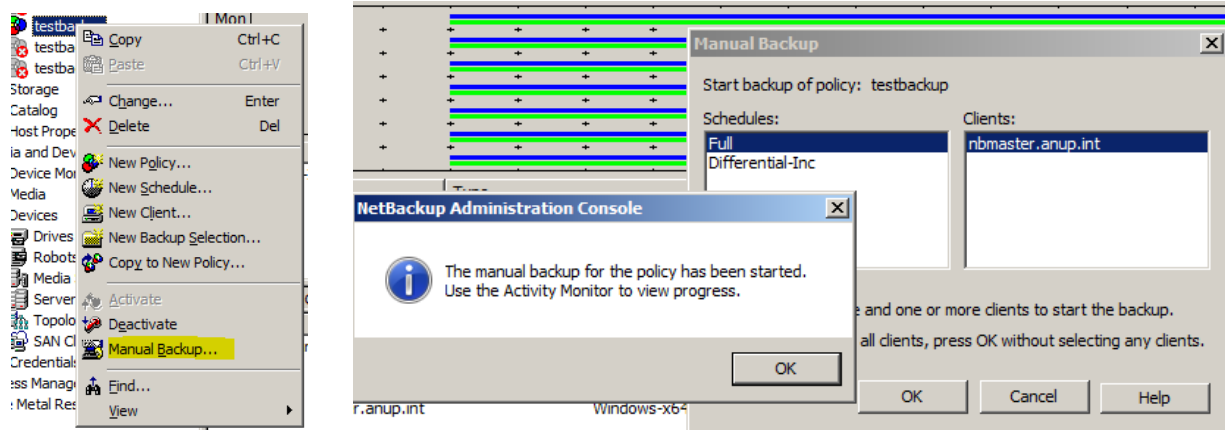
Please make sure the correct EMM server/ Master Server should show up in the result.

**EMM= Enterprise Media Manager**

## Firing backups:

1. Right click on the active policy and initiate a manual backup. Choose full, select client and click on ok.

The backup pop shows up advising one to navigate to activity monitor to view the running jobs.



2. Nbmater (Topology) shows as writing backups with the jobs shows in the bottom section.

The screenshot shows the NetBackup Administration Console interface. The 'Topology' view is displayed, showing a hierarchy of components: 'nbmaster' (parent), 'nbmedia' (child), 'TLD (0)', 'TLD (1)', 'Starwind\_drive01', and 'Starwind\_drive02'. The 'Jobs' section at the bottom shows a list of active backup jobs.

Job ID	Type	Job ...	Sta...	Status	Policy	Schedule	Client	Media Server	Start Time
18	Backup	Active			testbackup	Full	nbmaster....	nbmaster	10/21/201
17	Backup	Active			testbackup	-	nbmaster....	nbmaster	10/21/201

## **Note:**

Always a parent job initiates first and a subsequent child job, which then connects, fetches the data from source, reads and then writes it on to a tape.



→Hyphen under Schedule indicates parent job, while the other is the child job.

3. a. Successful jobs show up as **Done** with blue symbol and **Status=0**.
- b. Partially completed jobs show up as **Done** with yellow symbol and **Status=1**.

Job ID	Type	Job ...	Sta...	Status	Policy	Schedule	Client	Media Server	Start Time	Storage Unit
8	Backup	Done		0	testbackup	-	nbmaster....	nbmaster	10/21/201...	nbmaster-dlt-robot-td-0
5	Backup	Done		0	testbackup	Full	nbmaster....	nbmaster	10/21/201...	nbmaster-dlt-robot-td-0
4	Backup	Done		0	testbackup	-	nbmaster....	nbmaster	10/21/201...	nbmaster-dlt-robot-td-0
9	Backup	Done		0	testbackup	Full	nbmaster....	nbmaster	10/21/201...	nbmaster-dlt-robot-td-0

Job ID	Type	Job ...	Sta...	Status	Policy	Schedule	Client	Media Server	Start Time
16	Backup	Done		0	testbackup1_media	Full	nbmedia	nbmaster	10/21/201...
15	Backup	Done		0	testbackup1_media	-	nbmedia	nbmaster	10/21/201...
14	Image Cleanup	Done		1					10/21/201...
13	Backup	Done		0	testbackup_media	Full	nbmedia	nbmedia	10/21/201...
12	Backup	Done		0	testbackup_media	-	nbmedia	nbmedia	10/21/201...
11	Backup	Done		0	backuptests	Full	nbmaster....	nbmaster	10/21/201...
10	Backup	Done		0	backuptests	-	nbmaster....	nbmaster	10/21/201...
9	Backup	Done		0	testbackup	Full	nbmaster....	nbmaster	10/21/201...
8	Backup	Done		0	testbackup	-	nbmaster....	nbmaster	10/21/201...
7	Image Cleanup	Done		1					10/21/201...
5	Backup	Done		0	testbackup	Full	nbmaster....	nbmaster	10/21/201...
4	Backup	Done		0	testbackup	-	nbmaster....	nbmaster	10/21/201...

4. a. Active jobs show up as green symbol of a running man.

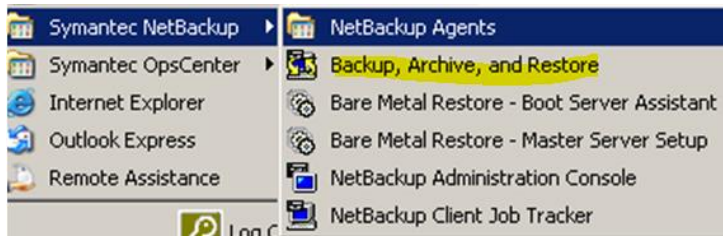
	18 Backup	Active
	17 Backup	Active

- b. Queued job shows as green symbol with multiple people standing in a queue

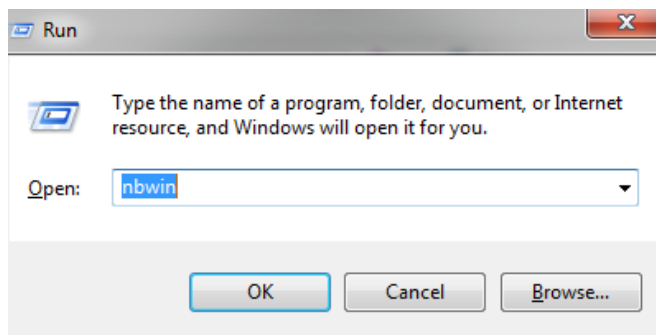
	23 Backup	Done		0	testba	
	22 Backup	Queued			Limit has been reached for requested resour...	testba
	21 Backup	Active			testba	
	20 Backup	Active			testba	

## Restore Setup:

1. To restore the backed up data, navigate to “**Backup, Archive and Restore**” as shown below:



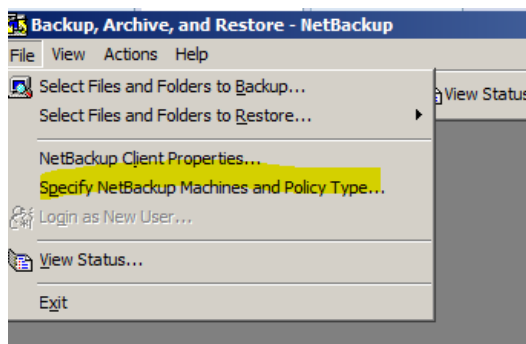
One can also run **nbwin** from the run prompt to launch the same console.



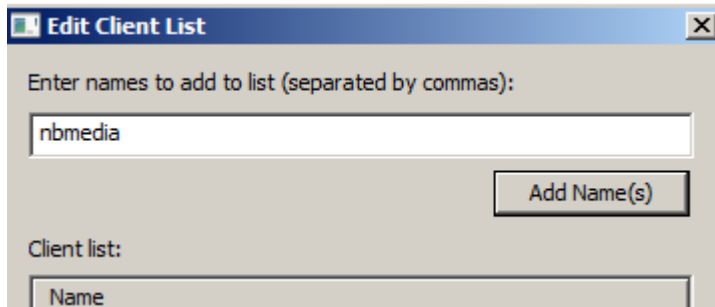
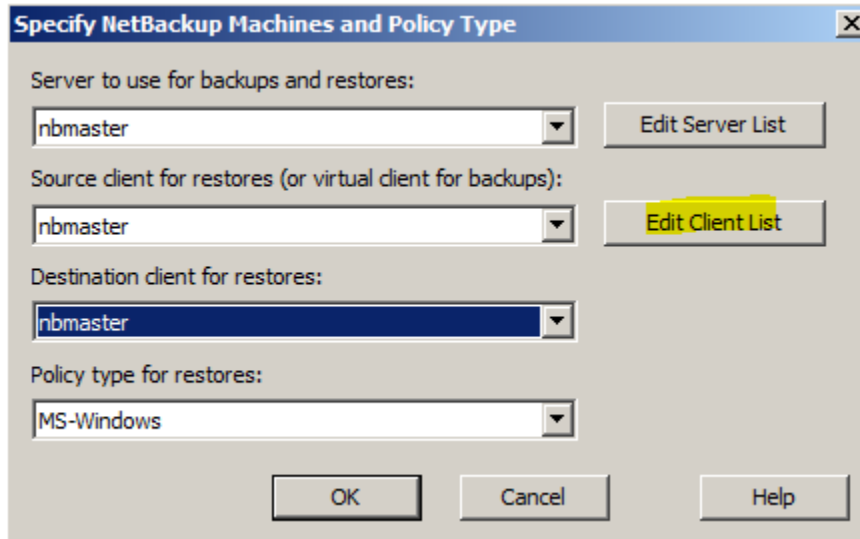
2. The Console looks as shown below:



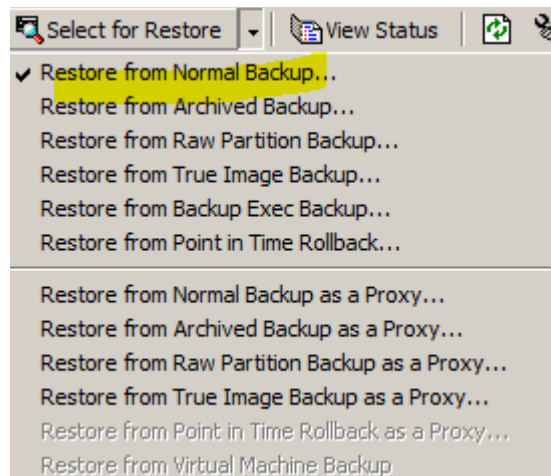
3. Specify the netbackup machine and type: Here the source and destination of restore is nbmedia, hence the corresponding server needs to be added.



4. Edit the client list and add the media server.



5. Choose the source and destination drop down as **nbmedia** and select "Restore from Normal Backup to view the history of the data.





Backup, Archive, and Restore - NetBackup - [Restore: Server: nbmaster Source Client: nbmedia Destination Client: nbmedia]

File Edit View Actions Window Help

Select for Backup Select for Restore View Status

NetBackup History

Time Backed Up	Time Expires	Files	Size	Compressed	Schedule Type	Policy Name	Keyword Phrase
10/21/2013 11:06:34 AM	11/21/2013	3	9	N	Full Backup	testbackup_media	
10/21/2013 11:05:59 AM	11/21/2013	3	9	N	Full Backup	testbackup_media	
10/21/2013 11:05:17 AM	11/21/2013	3	9	N	Full Backup	testbackup_media	
10/21/2013 3:34:45 AM	12/22/2013	14	4455	N	Full Backup	testbackup1_media	
10/21/2013 3:29:48 AM	11/21/2013	3	9	N	Full Backup	testbackup_media	

All Folders

- nbmedia
  - C
    - backups1
    - backups2

Contents of 'C:\backups1'

Name	Time Backed Up	A...	S...	Time Modified
<input type="checkbox"/> New Text Document (2).txt	10/21/2013 11:06:34 AM	----	36	10/21/2013 3:27:41 AM
<input type="checkbox"/> New Text Document.txt	10/21/2013 11:06:34 AM	----	36	10/21/2013 3:27:46 AM

All Folders

- nbmedia
  - C
    - backups1
    - backups2

Contents of 'C:\backups2'

Name	Time Backed Up	A...	Size	Time Modified
<input type="checkbox"/> cygwin1.dll	10/21/2013 3:34:45 AM	----	1872884	11/17/2012 4:20:43 PM
<input type="checkbox"/> dig.exe	10/21/2013 3:34:45 AM	----	73728	11/17/2012 4:20:43 PM
<input type="checkbox"/> host.exe	10/21/2013 3:34:45 AM	----	61440	11/17/2012 4:20:43 PM
<input type="checkbox"/> libbind9.dll	10/21/2013 3:34:45 AM	----	21504	11/17/2012 4:20:43 PM
<input type="checkbox"/> libdns.dll	10/21/2013 3:34:45 AM	----	1007616	11/17/2012 4:20:43 PM
<input type="checkbox"/> libeay32.dll	10/21/2013 3:34:45 AM	----	737280	11/17/2012 4:20:43 PM
<input type="checkbox"/> libisc.dll	10/21/2013 3:34:45 AM	----	217088	11/17/2012 4:20:43 PM
<input type="checkbox"/> libiscfg.dll	10/21/2013 3:34:45 AM	----	53248	11/17/2012 4:20:43 PM
<input type="checkbox"/> liblwres.dll	10/21/2013 3:34:45 AM	----	35328	11/17/2012 4:20:43 PM
<input type="checkbox"/> msvcrt70.dll	10/21/2013 3:34:45 AM	----	344064	11/17/2012 4:20:43 PM
<input type="checkbox"/> resolv.conf	10/21/2013 3:34:45 AM	----	0	11/17/2012 4:20:43 PM
<input type="checkbox"/> sha1sum.exe	10/21/2013 3:34:45 AM	----	19968	11/17/2012 4:20:43 PM
<input type="checkbox"/> whois.exe	10/21/2013 3:34:45 AM	----	80092	11/17/2012 4:20:43 PM

6. Make sure that the files required for restore are selected:

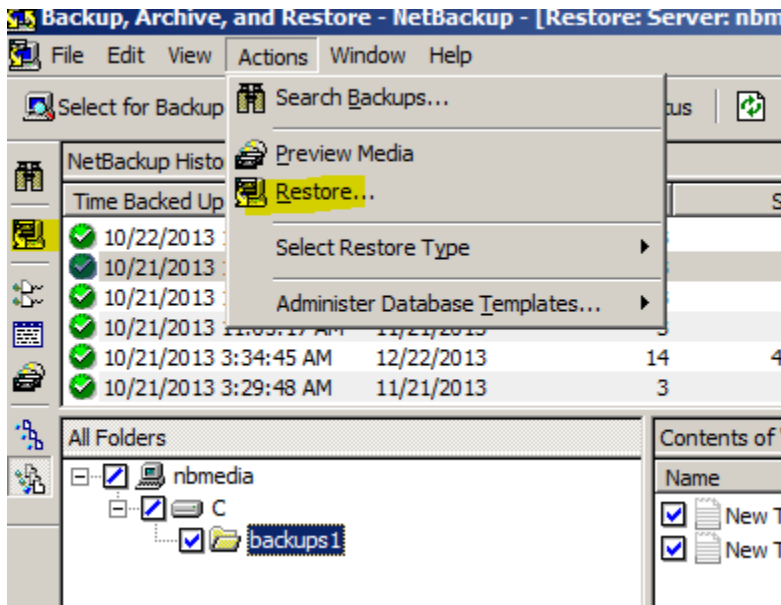
Folders

- nbmedia
  - C
    - backups1

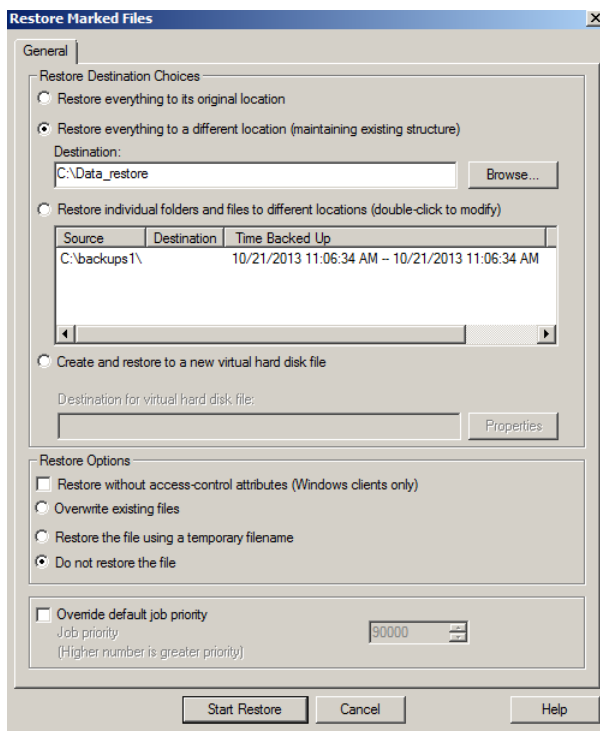
Contents of 'C:\backups1'

Name
<input checked="" type="checkbox"/> New Text Document (2).txt
<input checked="" type="checkbox"/> New Text Document.txt

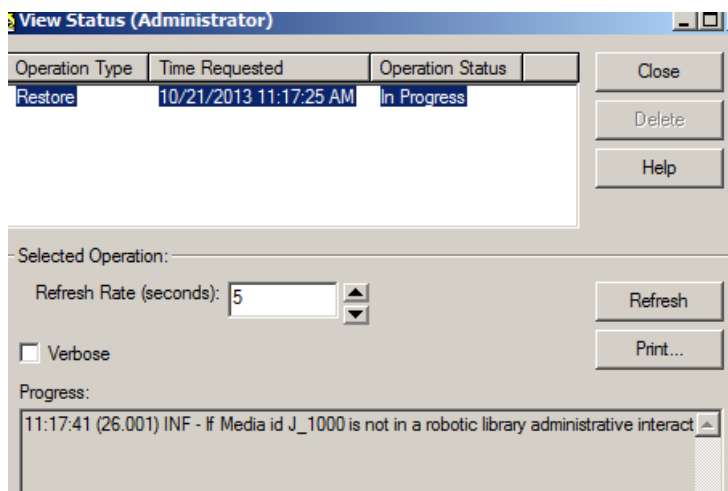
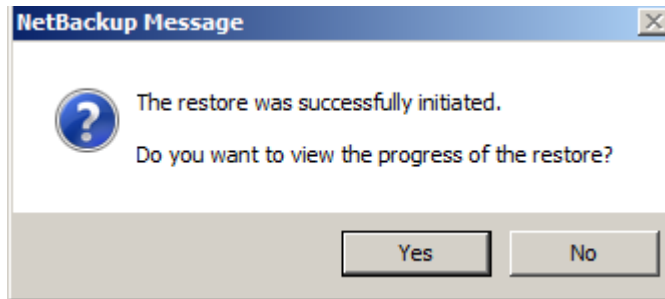
7. Two way for restoration:



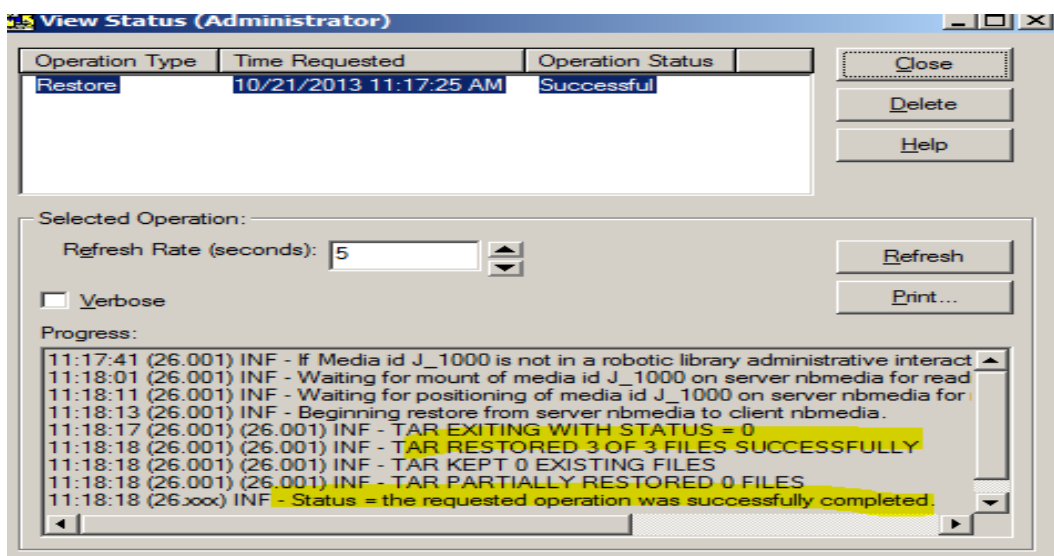
8. Enter the destination path where you need to restore. Here , it is a folder on the same server → C:\Data\_restore



9. The restore initiated message pops up, along with asking if one would like to view the progress of it.

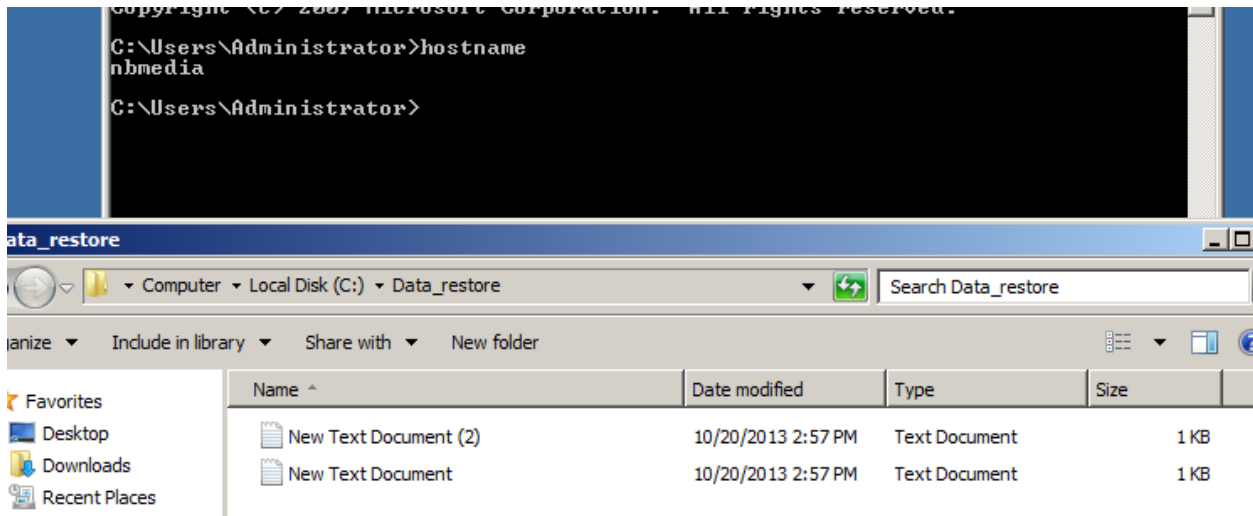


10. The initiated restore is complete and same appears in the restore job as Done.



Job ID	Type	Job...	S...	S...	Policy	Sche...	Client	Media Server	Start Time	Storage Unit	End Time	Attempt	Operation	Kilobytes	Files
26	Restore	Done	0				nbmedia	nbmedia	10/21/201...		10/21/201...	1		9	3

11. Navigate to the destination location and check for the restored file.



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