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: Properietory 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 Initator software needs to be installed so as to bind with the Starwind software.

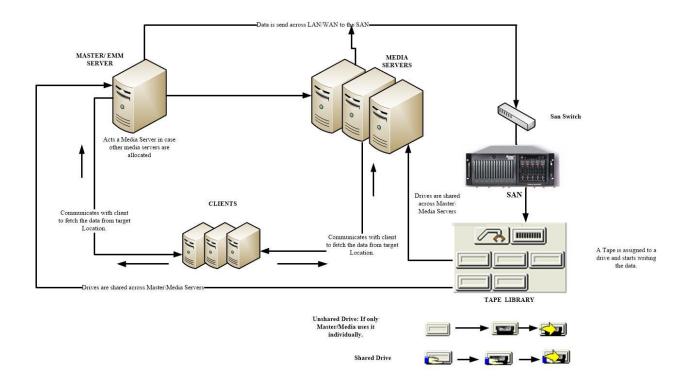
- b. Storport MiniDriver(Storport.sys)→ suitable for use with high-performance buses, such as fibre channel buses, and RAID adapters.
- c. Microsoft .NET Framework 3.5.

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 ISCI initator 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

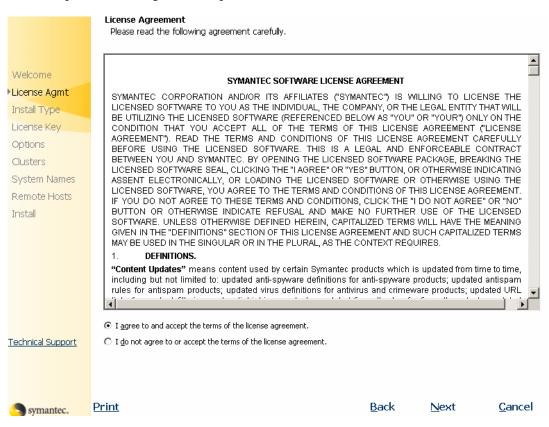
1. Run the set up with admin priveledges.

😰 Bkupinst.xs	I				
📜 Data1.cab					
🚳 IFResDII.dll					
BETUP.EXE					
🚳 silenta	Open				
🚳 silentr 💡	Run as administrator				

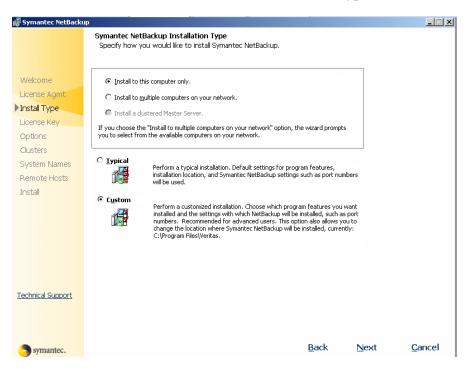
2. Setup Wizard pops up, which is shown below:

😽 Symantec NetBackı	up	
	Welcome to the Symantec NetBackup Setup Wizard. The Setup Wizard guides you through the installation process.	
▶ Welcome		
License Agmt		
Install Type	This Setup Wizard installs Symantec NetBackup based on your configuration selections and provides warnings when configuration issues are found.	
License Key		
Options	You may need some or all of the following information during the install:	
Clusters	- Names of Master Servers, Media Servers, and Clients	
System Names	- Login credentials for servers	
Remote Hosts	- NetBackup License Key(s)	
Install	- Cluster information, such as virtual name, IP address, subnet mask, and shared disk information	
	To proceed with the installation, click Next below.	
Technical Support		
Symantec.	Copyright Next Ca	ancel

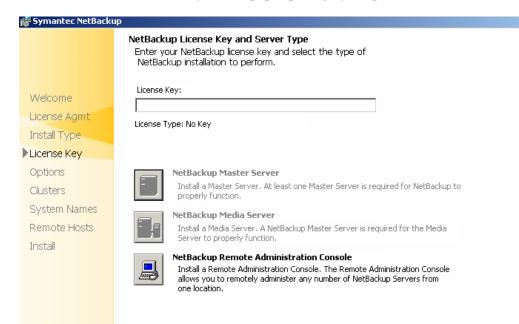
3. Accept the Licensing Terms to proceed.



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



5. Enter the License Key, which pops up the greyed options.





6. Install the Server Debugger Symbols.

🖥 Symantec NetBackı	ıp	
	Symantec NetBackup Features Select the Symantec NetBackup Features	to Install.
	Feature List:	Feature Description:
Welcome License Agmt Install Type	X ▼ Server Debugger Symbols Install X Do not install	The NetBackup Debugger Symbols enable you to quickly troubleshoot certain problems which may arise during the course of operation.
License Key		
Options		
Clusters		

/// Symantec NetBackt	db		
	Symantec NetBackup Features Select the Symantec NetBackup Features to Install.		
	Feature List:	Feature Description:	
Welcome License Agmt Install Type License Key Options Clusters	Server Debugger Symbols	The NetBackup Debugger Symbols enable you to quickly troubleshoot certain problems which may arise during the course of operation.	
System Names			
Remote Hosts			
Install	Destination		
	C:\Program Files\Veritas	C <u>h</u> ange	
Technical Support			
Symantec.		<u>B</u> ack <u>N</u> ext	<u>C</u> ancel

7. Netbackup ports info:

🚰 Symantec NetBackuj								
	NetBackup	Port Number	s					
Welcome	Enter th numbers	e port numbers f s do not need to l	or the following be modified exce	NetBackup Proce pt under unusua	sses and Service I circumstances.	s. The port		
License Agmt	becd	13782	bprd	13720	vnetd	13724		
Install Type	vopjed	13783	bpjava	13722	bpdbm	13721		
License Key	bpjobd	13723	ţldcd	13711	NB_dbsrv	13785		
Options	⊻md	13701	timd	13716	tl <u>8</u> cd	13705		
Clusters	ti4d	13713	acsd	13702	thed	13717		
System Names	_		-		-			
Remote Hosts								
Install								
Taskalad Oreant								
Technical Support								
	Defaults					Back	Next	Cancel

8. Netbackup Services Page

😽 Symantec NetBacki	up	
	NetBackup Services	
Welcome License Agmt	Choose the username and password and the startup type to be used for the Symantec NetBackup services.	
Install Type	☑ Use the built-in system account	
License Key	Username Terminate NetBackup processes	
Options	Password	
Clusters	Domain	
System Names	Startup: © <u>Automatic</u> C <u>Manual</u>	
Remote Hosts Install	▼ Start NetBackup Server Services After Install	
Technical Support		
cumantec	Back Next Ca	incel

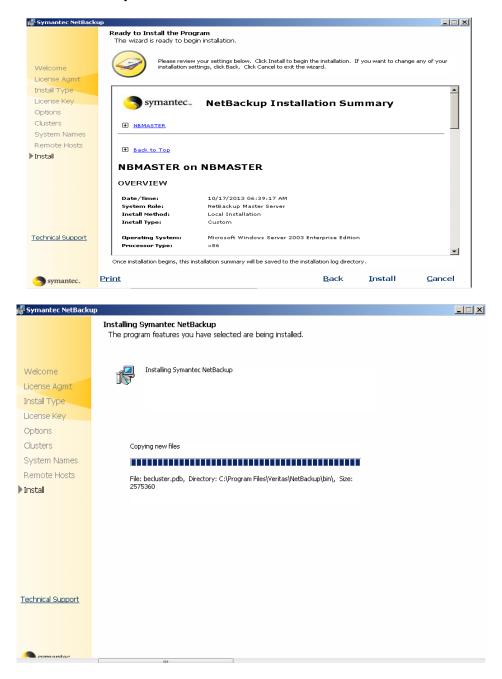
9. Enter the Master server details:

👹 Symantec NetBack	lb		_ 🗆 X
	NetBackup System Names Enter the names of the servers in	your environment.	
Welcome License Agmt	Master Server Name:	nbmaster	
Install Type	Additional Servers:		
License Key Options Clusters	Enter the names of all additional NetBackup master and media servers that communicate with this machine.	.	
System Names Remote Hosts Install	EMM Server Name: For most installations, the Enterprise Media Manager Server can remain the same as the Master Server Name.	nbmaster	
Technical Support	centrally manage one or more Net	monitoring, reporting, and administrative solution designed to Backup installations from a web browser. If you have an OpsCenter planning on installing one, please provide the name or IP (for me) for your OpsCenter server.	
Symantec.		<u>B</u> ack <u>N</u> ext (Cancel

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

🕌 Symantec NetBackt	ıp				_ 🗆 🗙
	NetBackup System Names Enter the names of the servers in	n your environment.			
	M <u>e</u> dia Server Name:	nbmedia			
Welcome License Agmt	Master Server Name:	nbmaster			
Install Type	Additional Servers:			^	
License Key Options	Enter the names of all additional NetBackup master and media servers that communicate with				
Clusters	this machine.			v	
▶System Names Remote Hosts Install	EMM Ser <u>v</u> er Name: For most installations, the Enterprise Media Manager Server can remain the same as the Master Server Name.	nbmaster			
Technical Support					
Symantec.			<u>B</u> ack	<u>N</u> ext	<u>C</u> ancel

11. Install Summary Precheck.



12. Install complete Window.

😽 Symantec NetBacku	up	×
	Installation Complete	
Welcome	Additional License Keys Click Add Keys to enter the license keys for all other	
License Agmt	Add keys NetBackup options you plan to use.	
Install Type		
License Key	Thank you for using Symantec NetBackup.	
Options		
Clusters		
System Names	Launch NetBackup Administration Console now.	
Remote Hosts	Launch OpsCenter Installer.	
▶Install		
	View installation log file	
<u>Technical Support</u>		
Symantec.	Einish	

Library Configuration:

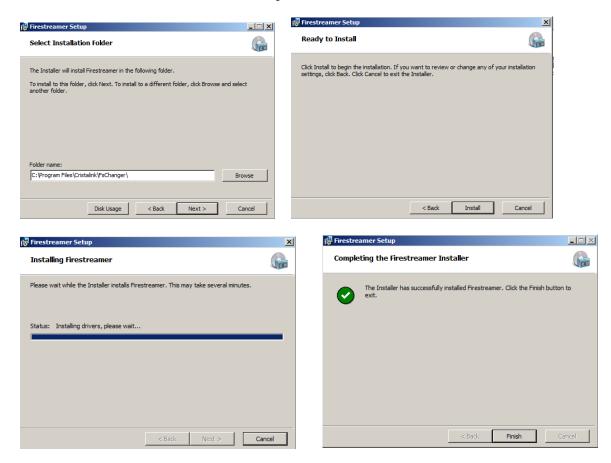
1. Kick start the Fire streamer installer.



2. Accept the licensing.



3. Proceed with the defaults until completion.

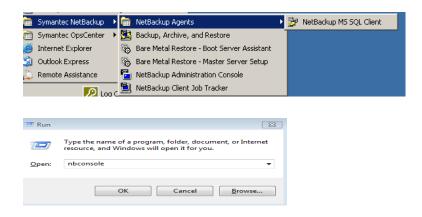


4. Navigate to computer management to notice the installed Robotic Library along with Tape Drives.

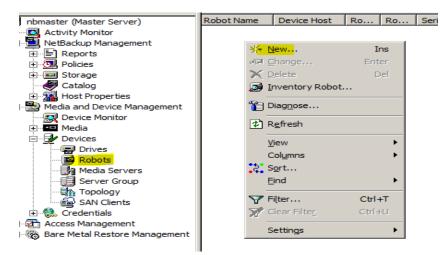
💭 Computer Management	
File Action View Help	
🗢 🔿 🖄 🖬 🛛 🖬 🔕	
Computer Management (Local) System Tools Task Scheduler Stream Colders Computer Viewer Schared Folders Computer Viewer Performance Device Manager Storage Disk Management Services and Applications	Index and press and p

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)

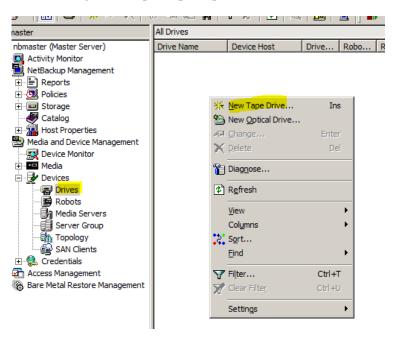
Add Robot	×
Device host:	
nbmaster 🔽	
Robot type: Robot number:	
TLD - Tape Library DLT	
Robot name: TLD(0)	
Robot control	
B C Robot is controlled locally by this device host.	
「見」「 圏 C Robot control is handled by a remote host.	
Robot device (dick Browse to select):	
Browse	
Robot control host:	
OK Cancel Help	

Ado	d Robot				×		
De	evice host:						
n	nbmaster		•				
Ro	obot type:			Robot number:			
Т	TLD - Tape Lil	brary DLT	•	0 -			
	ohot name:	ח) ח ד					
🖶 Devices							×
Select one of th	ne existing de	evices on host nbmaster.				ОК	٦.
Device		Identifier		. T., L., Serial Nu		Cancel	1
Changer0		CRSTLINKFirestrmrCha	. 35 () 2 0 LOCHGR	BAD51ADE		_
					•		

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

All Robots														
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	L0CHGR3AD51ADE8639E31190A2000C2		CRSTLINKFirestrmrChanger401			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.

Drive name:			=	drive name rules	Configure
Host and path information			I Use	drive name rules	comgare
Enabled Host	Path Port	Bus Target		NDMP Protec	Add
					Aud
	🐂 Add Path			×	Remove
	Host Information				Change
	Host name:				
	nbmaster				
Drive Information	This path is for a	Network Attached S	storage device		
Drive type:	NDMP Host:				
DLT Cartridge (dlt)					
Drive is in a robotic li	1				
Robotic library:	Path Information				
	Port: Bus:	Target:	LUN:		
Robot drive number:	0 0	0	0	Browse	
1	Enable host path				
	Override SCSI Reserve	settings:			
	Server Default	v l			
	Joerver Deradic			hce	
		OK	Cancel	Help	//

Drive01									Use driv	ve name rules	C	onfigure
-Host and path	n inform	ation: -										
Enabled	Hos	t	Path	Port		Bus	Targe	et LUN	N	DMP Prote	:c	Add
5	Device	25										×
S	elect on	e of th	e existing (devices	s on ho	st nbmas	ter.				ОК	_] [
	evi	Identi				Port	Bus	Target	LUN	Serial Number	Cance	
			indVirtual 1			34	0	0		00010000000		
	-		indVirtual 1			34	0	1	_	00020000000		
-Drive Into -	∦Ta ⊒⊤-		INKFirestri			35	0	1	-	LOTD003AD5:		
Drive typ			INKFirestri			35	0	1		LOTD013AD5:		
			INKFirestri			35 35	0	1	_	L0TD023AD51 L0TD033AD51		
			INKFirestri INKFirestri			35	0	1		LOTD033AD51		
Drive P		CROIL	TIMP ILESU		2 401			1	-			
Robotic li 📙	▲									•		
Robot dr												
1	× 7	[Enable	host p	ath							

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.

ost and path ir	formation: -						Jse drive name rules	Configure
Enabled Yes	Host nbmaster	Path	Port 35	Bus 0	Target 1	0	NDMP Protec DEFAULT	Add Remove Change
rive Informatio Prive type: DLT Cartridge		_		aning Freque	ency (In hou	ırs)	Serial Number:	

8. This would prompt to restart Netbackup Device Manager Service to accept the drive and update in EMM (Enterprise Media Managar) 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	[
✓ 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
Prive05	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:

New Tape Drive				
Drive name:				
Drive07				(
Host and path information:	Add Path Host Information Host name: nbmaster nbmaster nbmaster nbmedia NDMP Host:			
Drive Information Drive type: 1/4" Cartridge (qscsi)	Path Information Port: Bus: Target: 0 0 0		rowse	
Drive is in a robotic libr Robotic library: Robotic drive number: 1	Enable host path Override SCSI Reserve settings: Server Default OK	Cancel	Help	Note: Since the library is not a shared system, the Rol and Drive must be configured on Media Server its
		ОК	Cancel	

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.

Setup - StarWind iSCSI Se	rver 📃 🗙
	Welcome to the StarWind iSCSI Server Setup Wizard
	This will install StarWind iSCSI Server v.5.4.1579 (build 20100708) on your computer.
	It is recommended that you close all other applications before continuing.
	Click Next to continue, or Cancel to exit Setup.
	Next > Cancel

2. Accept the licensing terms.

🛞 Setup - StarWind iSCSI Server	<u> </u>
License Agreement Please read the following important information before continuing.	
Please read the following License Agreement. You must accept the terms of this agreement before continuing with the installation.	
StarWind Software	
StarWind iSCSI Target StarWind Software End User License Agreement	-
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING	
Do not use or load install this software the StarWind iSCSI Target or any associated materials (collectively refered to as, the "Software") until you have carefully read the following terms and conditions. By loading installing or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree with the terms, do not	•
I accept the agreement	
C I do not accept the agreement	
< Back Next > Ca	ncel

3. Accept the defaults and proceed.

up - StarWind iSCSI Server	
ormation Please read the following important informati	on before continuing.
When you are ready to continue with Setup	, click Next.
Version 5.4	
New features and improvements	
High Availability: Caching added. Write-Thr supported.	ough and Write-Back modes are
High Availability: Autosync functionality add synchronized and binged online automatica	
IBVolume: Maximum device size limit of 2TE	} has been removed.
Installation: Allow rule for StarWind service product install.	is being added to Windows firewall on
F	

🛞 Setup - StarWind iSCSI Server	_ 🗆 🗙
Select Destination Location Where should StarWind iSCSI Server be installed?	
Setup will install StarWind iSCSI Server into the following folder.	
To continue, click Next. If you would like to select a different folder, click Browse.	
C:\Program Files\StarWind Software\StarWind Brows	e
At least 1.2 MB of free disk space is required.	
< Back Next >	Cancel

4. Important Services Required

Setup - StarWind iSCSI Server _ 🗆 🗡 Select Components Which components should be installed? Select the components you want to install; clear the components you do not want to install. Click Next when you are ready to continue. Full installation ▼ StarWind iSCSI Service 0.1 MB StarPort Driver 0.1 MB StarWind Management Console 89.6 MB StarWind Manuals 41.5 MB Current selection requires at least 98.6 MB of disk space. < Back Next > Cancel

🖲 Setup - StarWind iSCSI Server	_ 🗆 🗡
Select Start Menu Folder Where should Setup place the program's shortcuts?	
Setup will create the program's shortcuts in the following Start Menu folder.	
To continue, click Next. If you would like to select a different folder, click Browse.	
StarWind Software\StarWind Browse	
< Back Next > C	Cancel

Setup - StarWind iSCSI Server			_ 🗆 🗙
Select Additional Tasks Which additional tasks should be performed	?		
Select the additional tasks you would like Se iSCSI Server, then click Next.	etup to perform wh	nile installing Star	Wind
Additional icons:			
Create a desktop icon			
	< Back	Next >	Cancel

tup - StarWind iSCSI Server		
e ady to Install Setup is now ready to begin installing StarN	Wind iSCSI Server on your computer.	<u>S</u>
Click Install to continue with the installation change any settings.	n, or click Back if you want to review (Dr
Destination location: C:\Program Files\StarWind Software\	StarWind	-
Setup type: Full installation		
Selected components: StarWind iSCSI Service StarPort Driver StarWind Management Console StarWind Manuals		
Start Menu folder:		•
	< Back Install	Cancel

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

<u>es</u>	🕲 Set	up - StarWind iSCSI Server
top nload Int Pl		eady to Install Setup is now ready to begin installing StarWind iSCSI Server on your computer.
:s iment		Click Install to continue with the installation, or click Back if you want to review or change any settings.
se	tup	
r x t	i	Microsoft iSCSI service is required. Please make sure that MS iSCSI Initiator Service is running and it is set to automatically start when your server is rebooted.
4		OK Cancel
		Start Menu folder:
		< Back Install Cancel

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

Services (Local)					
Microsoft iSCSI Initiator Service	ame	Description	Status	Startup Type	Log (
	Media Center Extender Service	Allows Med		Disabled	Loca
<u>Stop</u> the service Restart the service	Microsoft .NET Framework N	Microsoft		Disabled	Local
Restart the service	Microsoft .NET Framework N	Microsoft		Disabled	Local
	Microsoft .NET Framework N	Microsoft		Automatic (D	Local
Description:	Microsoft .NET Framework N	Microsoft		Automatic (D	Local
Manages Internet SCSI (iSCSI) sessions from this computer to	Microsoft iSCSI Initiator Servi	Manages In	Started	Automatic	Local
remote iSCSI target devices. If this	Microsoft SharePoint Worksp			Manual	Local
service is stopped, this computer will	Microsoft Software Shadow	Manages so		Manual	Local
not be able to login or access iSCSI	Mozilla Maintenance Service	The Mozilla		Manual	Local
targets. If this service is disabled, any services that explicitly depend on it	Multimedia Class Scheduler	Enables rela		Automatic	Local
will fail to start.	Multi-user Cleanup Service		Started	Automatic	Local
	Net.Msmq Listener Adapter	Receives act		Disabled	Netw

7. Accept Trust and install the software.

Setup - StarWind iSCSI Server	
Installing Please wait while Setup installs StarWind iSCSI Server on your computer.	
👬 Windows Security	×
Would you like to install this device software?	
Name: StarWind System devices Publisher: StarWind Software Inc	
Always trust software from "StarWind Software Inc".	n't Install
You should only install driver software from publishers you trust. How can I dec device software is safe to install?	<u>tide which</u>
	Cancel

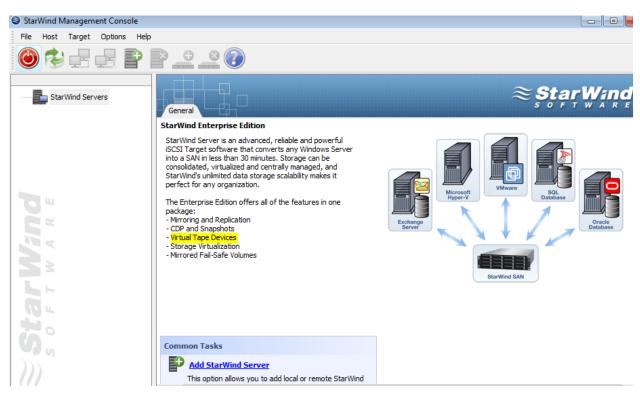
8. Launching the application would pull the Welcome Screen and then disappear to the **task bar**.



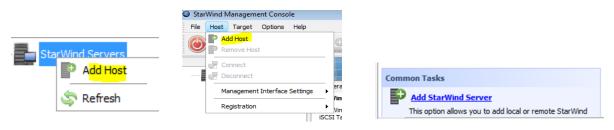
9. Right click the wavy symbol and click on "Start management" to bring forward the Management Console.







11. Three ways to add host.



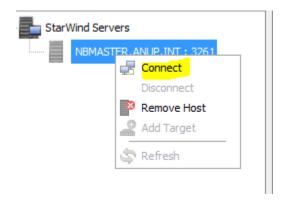
12. The default screen looks like this.

Add New Host	— ———————————————————————————————————
Host: Port:	
127.0.0.1 326	1
Discovery Authentication	
Select remote host you want to connect:	
Host Name Host IP Address Port	
Refresh	
IP Range	
From: 127 . 0 . 0 . 1 To: 127 . 0 . 0 . 1	
OK Cancel Advanced	<<

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

Add New Host	×
Host: Port:	
nbmaster.anup.int 3261	L
Discovery Authentication	
Select remote host you want to connect:	
Host Name Host IP Address Port	
Refresh	
✓ IP Range	
From: 192 . 168 . 25 . 0 To: 192 . 168 . 25 . 254	
OK Cancel Advanced	<<
StarWind Servers	
NBMASTER.ANUP.INT: 3261	

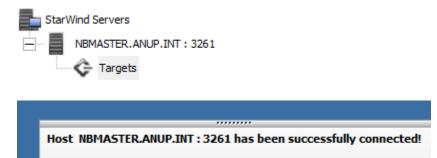
14. Right click on the added server and click to connect to login.



15. Login to the starwind system.

Login	
P	Enter the user name and password to connect to this server.
	Login: root
	Password:
	OK Cancel

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



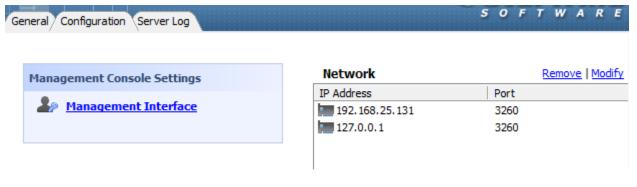
17. Look out for the three tabs as shown below:



Full view of General tab:

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

Full view of **Configuration tab**:

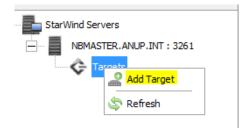


Note:

→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.

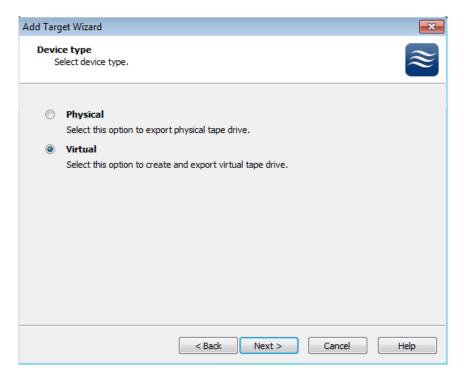
Add Target Wizard	x
Common target parameters Specify target alias and target name.	
Target Alias:	
vt	
Target Name:	
iqn.2008-08.com.starwindsoftware:nbmaster.anup.int-vtl	
< Back Next > Cancel Help	

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.

Add Targ	get Wizard			
	Storage type Select storage type.			
0	Hard Disk Select this option to export physical or virtual hard disk device. Optical Drive			
۲	Select this option to export physical or virtual optical drive. Tape Device Select this option to export physical or virtual tape device.			
	< Back Next > Cancel Help			

21. Choose virtual and click on next.



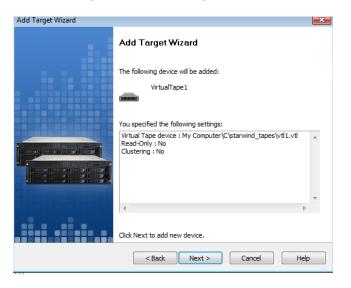
22. Choose create new virtual tape and click next.

Add Target Wizard	— X
Device type Select device type.	\approx
 Mount existing virtual tape Choose existing virtual tape and export it as iSCSI target. Create new virtual tape Create new virtual tape and export it as iSCSI target. 	
< Back Next > Cancel He	elp

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

Add Target Wizard
Virtual tape parameters Specify virtual tape parameters.
New virtual tape location and name: My Computer\C\starwind_tapes\vt1.vt1
Size in MBs: 256
Compressed
Encrypted
User account that will have access to this image
Name
Password
Fill with zeroes 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.
< Back Next > Cancel Help Add Target Wizard X
Virtual Tape device parameters Specify Virtual Tape device parameters.
Select virtual tape you want to make accessible via iSCSI:
My Computer\C\starwind_tapes\vt1.vt1
Read-Only mode
Allow multiple concurrent iSCSI connections (clustering)
< Back Next > Cancel Help

24. Final Target Device and Target Name Check.



Add Target Wizard		×
	Add Target Wizard	
	The following device was created:	
	VirtualTape1	
	Target name:	
	iqn.2008-08.com.starwindsoftware:nbmaster.anup.int-vtl	*
		-
	To close this wizard click Finish.	
	< Back Finish Cancel He	lp

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

25. Configured Target shoots up on the right pane.

Target Alias	Target IQN	Clustered
vt	ign. 2008-08. com. starwindsoftware:nbmas	ter No
Vevices (SCSI Session	s (CHAP Permissions \	

26. Tape Directory on Server.

r ▼ Local Disk (C:) ▼ starwind_tapes	▼ 100	Search starwind_t	apes
ary 🔻 Share with 🔻 New folder			= -
Name *	Date modified	Туре	Size
vtl.vtl	10/20/2013 11:24 PM	VTL File	1,048,576 KB
vtl2.vtl	10/20/2013 11:24 PM	VTL File	2,097,152 KB

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

SCSI Initiator	Properties		xII	
Targets Disc	overy Favorite Targets Volumes and Devices		Quick Connect	
-Ouick Conne		[KAD105 Conliguration]		
	and log on to a target using a basic connection, t	vpe the IP address or	Targets that are available for connection at the IP address or DNS nam provided are listed below. If multiple targets are available, you need to	
	f the target and then click Quick Connect.		to each target individually.	connect
Target:	192.168.25.131	Quick Connect	Connections made here will be added to the list of Favorite Targets and to restore them will be made every time this computer restarts.	an attempt
Discovered to	argets			
		Refresh	Discovered targets	
Name		Status	Name	Status
			ign.2008-08.com.starwindsoftware:nbmaster.anup.int-vtl	Inactive
			ign.2008-08.com.starwindsoftware:nbmaster.anup.int-vtl1	Inactive
				F
			Progress report	
			There are multiple Targets discovered.Please select a single Target for	r Login
I			using Quick Connect.	
To connect u click Connect	using advanced options, select a target and then t.	Connect		
To complete then click Dis	ly disconnect a target, select the target and sconnect.	Disconnect		
	roperties, including configuration of sessions, rget and click Properties.	Properties	Connect Done	
	ation of devices associated with a target, select	Devices	Done	

28. Select available targets and click on connect.

iick Connect	
Targets that are available for connection at the IP address or DNS name provided are listed below. If multiple targets are available, you need to o to each target individually.	
Connections made here will be added to the list of Favorite Targets and a to restore them will be made every time this computer restarts.	an attempt
Discovered targets	
lame St	atus
n.2008-08.com.starwindsoftware:nbmaster.anup.int-vtl Co	onnected
n.2008-08.com.starwindsoftware:nbmaster.anup.int-vtl1 Co	onnected
	Þ
Progress report	
Login Succeeded.	
Connect Done	

29. Connected Devices appear under Target Tab.

iSCSI Initiator P	Properties	×
Targets Discov	very Favorite Targets Volume	es and Devices RADIUS Configuration
Quick Connect		
	nd log on to a target using a basi the target and then click Quick C	ic connection, type the IP address or onnect.
Target:	1	Quick Connect
Discovered tar	rgets	
		Refresh
Name		Status
ign.2008-08.	com.starwindsoftware:nbmaster	r.anup.int-vtl Connected
iqn.2008-08.	com.starwindsoftware:nbmaster	r.anup.int-vtl1 Connected

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

gets Discove	ry Favorite Targe	ets Volumes and Devices	RADIUS Configuration
arget portals The system wi	ll look for Targets o	n following portals:	Refresh
Address	Port	Adapter	IP address
192.168.	3260	Default	Default
Fo add a targe	et portal, click Disco	over Portal.	Discover Portal
To remove a t then click Rem		the address above and	Remove

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

🛃 Computer Management	
File Action View Help	
🗢 🔿 🙍 📊 🚺	
Computer Management (Local) System Tools System Tools Task Scheduler Event Viewer Shared Folders School Users and Groups Performance Device Manager Storage Disk Management Services and Applications	Imaster Batteries Gomputer Computer Disk drives Display adapters Display adapters DVD/CD-ROM drives Floppy disk drives Floppy disk drives Floppy drive controllers Floppy drive controllers DIDE ATA/ATAPI controllers Medium Changer devices Medium Changer devices Medium Changer devices Medium Changer devices Monitors Monitors Network adapters Other devices Monitors StarWind Virtual Tape SCSI Sequential Device

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



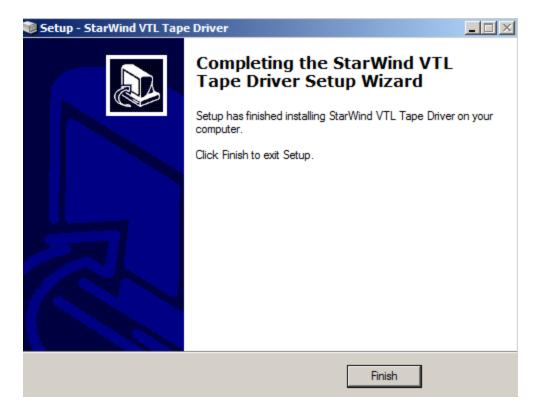
33. Proceed with the installation, taking the default values.

😻 Setup - StarWind VTL Tape Driver	
	Welcome to the StarWind VTL Tape Driver Setup Wizard
	This will install StarWind VTL Tape Driver, v4.2 (build 20090607) on your computer.
	It is recommended that you close all other applications before continuing.
	Click Next to continue, or Cancel to exit Setup.
	Next > Cancel

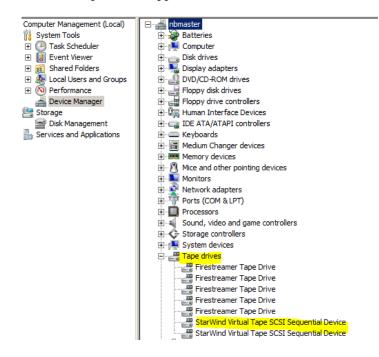
💗 Setup - StarWind VTL Tape Driver	_ 🗆 🗙
License Agreement Please read the following important information before continuing.	
Please read the following License Agreement. You must accept the terms of this agreement before continuing with the installation.	
StarWind Software	
StarWind VTL Tape Driver StarWind Software End User License Agreement	
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING	
Do not use or load install this software the StarWind VTL Tape Driver or any associated materials (collectively refered to as, the "Software") until you have carefully read the following terms and conditions. By loading installing or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree	Ŧ
I accept the agreement	
C I do not accept the agreement	
< Back Next >	Cancel

😻 Setup - StarWind VTL Tape Driver
Select Destination Location Where should StarWind VTL Tape Driver be installed?
Setup will install StarWind VTL Tape Driver into the following folder.
To continue, click Next. If you would like to select a different folder, click Browse.
C:\Program Files\StarWind Software\StarWind VTL Tape Driver Browse
At least 0.7 MB of free disk space is required.
< Back Next > Cancel

Ready to Install Setup is now ready to begin installing StarWind VTL Tape Driver on your computer. Click Install to continue with the installation, or click Back if you want to review or change any settings.	B
Destination location: C:\Program Files\StarWind Software\StarWind VTL Tape Driver	
Kack Install Cancel	



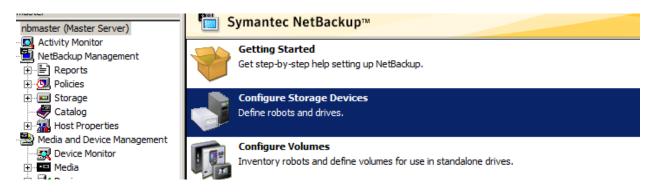
34. The tape device appears as shown below:



9. Final view with Firestreamer and Starwind Tape Drives.

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

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



11. Proceed with Device Config Wizard.

Device Configuration Wizard		×
	Welcome to the Device Configuration Wizard.	
	This wizard configures storage devices for use with NetBackup. This wizard uses device serialization to configure robotic libraries and drives.	
	Before starting, physically attach your storage devices to the server and perform all configuration steps specified by the device or operating system vendors.	
	To begin, click Next. For assistance, click Help.	
	< Back Next > Cancel Help	

12. Select the device host and click next.

Device Configuration Wizard	×
Device Hosts Specify the hosts on which to a	auto-discover/configure devices.
If you are running this wizard for the first tin devices.	ne, please add and check all hosts with attached
	ed. So, if updating after device changes, only the ever, all hosts sharing a device must be scanned.
Device Hosts	Optional Devices to be Scanned Change
nbmaster	
Configure Drive Name Rules	To start device detection, click Next.
< Bz	ick Next > Cancel Help

13. Device Scan detects the Library.

Device Config	juration Wizard		×
	g Hosts while devices are auto-disc	covered.	
	n has completed for all hosts cheo	cked.	
Progress:	1		
Host	Operation	Status	
	Preparing to scan for devices.		
Y nomaster	Scanning for devices.	Detected 7 tape drive path(s) and 1 robot(s).	
, To view deter	cted devices, click Next.		
10 11011 0010			
			_
	< Back	k Next > Cancel Help	1
			1

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

	ion Wizard					
SAN Clients Review the	e SAN Clie	nts NetBackup	o has found.			
If you have a SA	N Client that	does not appea	r in the list, use th	ne Add but	ton to mar	nuallv add it.
Note: Adding a S Devices seen by installation steps	the SAN Cli	ent. You must firs	t have performe			
SAN Clients			F	reference:	s	Add
Name	Sta	e	Usage Prefere	nces N	um FT Me	dia Servers
			- couge riciolo			
Fibre Transport D			, -			
		by the selected	, -		Device S	
	Devices seer	by the selected	SAN Client:			
	Devices seer	by the selected	SAN Client:			

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.

Backup Dev Review th	ices ne devices NetBa	ockup has found.				
levice is physically	up device that does attached, and that e been performed.					
					Prop	perties
Device		State	Seriali	zed l	Limitation	s 🔺
CRSTLINKFire	strmrChanger401	Unconfigured	No	1	Yes, see	propert
	stmrDrive 401	Configured	Yes	١	Yes, see	propert
	· · · · · ·	<u> </u>	~	,	·	
	th configuration inf	ormation for selecte	d device:			
Host and device pa Host nbmaster	NDMP Host	Path	Port	Bus (Target 1	UN 0

16. Unconfigured Device does have a valid serial number.

Device Properties	×	Device Properties	X
Robot SCSI Additiona	I Information	Robot SCSI Additional Information	
Robot number:	0	The text below will describe any problems detected with this device's configuration.	
Robot type:	TLD		
Device host:	nbmaster	Unable to determine robot type.	
Number of drives:	5	The robot device does not support serialization.	
Serial number:	L0CHGR3AD51ADE8639E31190A2000C2		
Path:	{35,0,2,0}		
NDMP Host:			
Remote hosts:			
	/		
	OK Cancel Help	OK Cancel Help	

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

Device Configuration Wizard		
Drag and Drop Configuration Verify the drive configuration is correct.		
If you need to make any changes, simply drag a drive to its proper loca should appear under their robotic library. Drives not in libraries should a Drives". Make sure drives are ordered according to how they appear in	ppear und the librar	ler "Standalone
Devices can be enabled and disabled by clicking the adjacent checkb	ox.	Properties
🖃 🔽 📑 Robot 0 <nbmaster> [CRSTLINKFirestmrChanger401]</nbmaster>		
Drive 1 Drive01 <nbmaster> [CRSTLINKFirestmrDrive</nbmaster>	401]	
Drive 2 Drive02 <nbmaster> [CRSTLINKFirestmrDrive</nbmaster>	401]	
🛛 🕞 Drive 3 Drive03 <nbmaster> [CRSTLINKFirestmrDrive</nbmaster>	401]	
	401]	
Drive 5 Drive05 <nbmaster> [CRSTLINKFirestmrDrive</nbmaster>	401]	
	•	
Changed disc 01 schematics (Cha)Ma (Mith a) Tana	v4.2]	
	V4.2]	
	v4.2]	-

18. Commit the changes.

Device Configuration Wizard
Drag and Drop Configuration Verify the drive configuration is correct.
If you need to make any changes, simply drag a drive to its proper location. Drives in robotic libraries should appear under their robotic library. Drives not in libraries should appear under "Standalone Drives". Make sure drives are ordered according to how they appear in the library.
Devices Device Configuration Wizard
After this point, the device configuration changes will be committed. The original configuration cannot be restored once these change have been made. Do you want to continue?
To continue, click Next.
To continue, circk wext.
< Back Next > Cancel Help

vice Configuration Wizard		X
Updating Device Configuration Please wait while NetBackup up	dates the device configuration.	
Update complete.		
eration	Host	Stat
Committing device configuration changes.		Done.
Restarting the NetBackup Device Mana	nbmaster	Done.
		•
To continue, click Next.		
< Bac	k Next > Close	Help

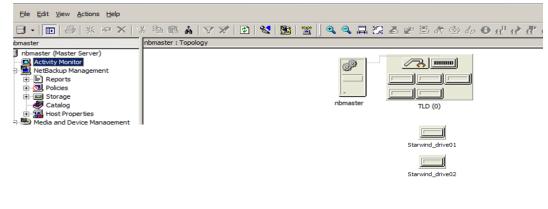
19. The configured devices must be added to a storage unit and click next.

Device Configuration Wizard Configure Storage Units You can make the devices available to NetBackup by configuring storage units.	×
A storage unit is a logical grouping of one or more storage devices attached to a server. In order for NetBackup to write to the devices attached to the NetBackup server, a storage unit must be configured for these devices.	
Check devices that you want configured as NetBackup storage units on Master Server "hbmaster". Properties ✓ nbmaster-dit-robot-tid-0 ✓ nbmaster-dit	
< Back Next > Close Hel	Note: nbmaster-dlt-robot-tld-0> Firestreamer Tape Library nbmaster-dlt>Starwind Tape Library

20. Click on finish to complete the config.

Device Configuration Wizard		×
	Finished! You have successfully completed the NetBackup Device Configuration Wizard.	
	You may view or change current configuration settings within Device Management or Storage Unit Management.	
	To exit the wizard, click Finish.	
	< Back Finish Close Help	

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





Tape Configuration:

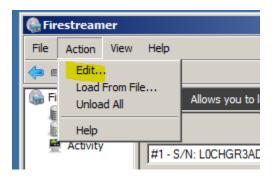
1. Look out for the Fire streamer icon in the desktop.



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

Rirestreamer	
File Action View Help	
🗢 🔿 🔁 🛛	
Media Allows you to load media into Firestreamer tape libraries. Media Current State Library: #1 - S/N: L0CHGR3AD51ADE8639E31190A2000C2 Initial media layout: Image drives: 5 Storage slots: 200 Initial media layout: Image drives: Element Element type number type	F
	▶

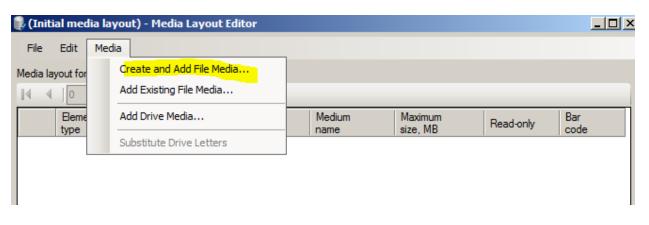
3. Click on Action \rightarrow Edit.



4. The initial media layout appears as shown below:

🔋 (Init	ial media layout	:) - Media Layout I	Editor				_ 🗆 🗵
File	Edit Media						
Media la	ayout for Library 1:						
	0 of 0		<				
	Element type	Element number	Medium type	Medium name	Maximum size, MB	Read-only	Bar code
					Load	Media	Cancel

5. Navigate to Media→Create and Add File Media



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

🔋 (Initia	al media layo	ut) - Media Layou	ıt Editor				
File	Edit Media						
Media lay	out for Library 1	1:					
14 4	0 of	fo 🕨 🕅 🕂	×				
	Element type	Element number	Medium type	Medium name	Maximum size, MB	Read-only	Bar code
		Create File Med Number of file r Create in: C:\Firestreame Bar code prefix Z1BHQF7J5HV	nedia to create: r_tapes :		Brows		

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

) (Initi	ial media layou	t)* - Media Layout	Editor			
	File	Edit Media					
1	Media la	yout for Library 1:					
	14 4	1 of	10 🕨 🕨 🕂 🕻	×			
		Element type	Element number	Medium type	Medium name		
	•	Storage slot		File medium	C:\Firestreamer_tapes	Z1BHQF7J5HW	
		Storage slot	Create File Media	for Library 1			× 0000002
		Storage slot	Number of file med	lia to create: 10			0000003
		Storage slot					0000004
		Storage slot	Create File Media	for Library 1		<u>×</u>	0000005
		Storage slot				Browse	0000006
		Storage slot		wing file media ha treamer tapes]:	ve been created in		0000007
		Storage slot	<u> </u>	7J5HW 1000000	001 from		800000
		Storage slot	Z 1BHQF	7J5HW_1000000	002.fsrm	Cancel	0000009
		Storage slot	Z 1BHQF	7J5HW_1000000	003.fsrm		000000A
			(Total: 1	0)			
						_	
					ОК	1	
						-	

8. This appears in the media layout.

Element type	Element	Medium type	Medium name	Maximu size, Mi
 Storage slot	Hamber	File medium	C:\Firestreamer_tapes\Z1BHQF7J5HW_1000000001.fsm	3120, 141
Storage slot		File medium	C:\Firestreamer_tapes\Z1BHQF7J5HW_1000000002.fsm	
Storage slot		File medium	C:\Firestreamer_tapes\Z1BHQF7J5HW_1000000003.fsm	
Storage slot		File medium	C:\Firestreamer_tapes\Z1BHQF7J5HW_1000000004.fsm	
Storage slot		File medium	C:\Firestreamer_tapes\Z1BHQF7J5HW_1000000005.fsrm	
Storage slot		File medium	C:\Firestreamer_tapes\Z1BHQF7J5HW_1000000006.fsrm	
Storage slot		File medium	C:\Firestreamer_tapes\Z1BHQF7J5HW_1000000007.fsm	
Storage slot		File medium	C:\Firestreamer_tapes\Z1BHQF7J5HW_1000000008.fsm	
Storage slot		File medium	C:\Firestreamer_tapes\Z1BHQF7J5HW_1000000009.fsm	
Storage slot		File medium	C:\Firestreamer_tapes\Z1BHQF7J5HW_100000000A.fsm	

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.

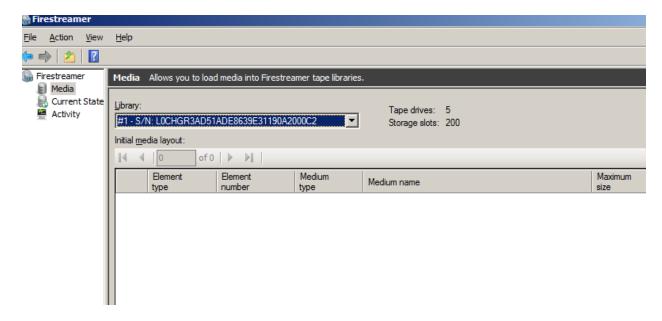
Note: Firestreamer has been designed exclusively for Microsoft System Center Data protection protection Manager, however the test results are successful with Netbackup.

number type inedutin faile size. bt File medium C:\Firestreamer_tapes\Z1BHQF7J5HW_1000000001fam size. lot File medium C:\Firestreamer_tapes\Z1BHQF7J5HW_10000000001fam size. lot File medium C:\Firestreamer_tapes\Z1BHQF7J5HW_10000000003fam size. lot File medium C:\Firestreamer_tapes\Z1BHQF7J5HW_10000000003fam size. lot File medium C:\Firestreamer_tapes\Z1BHQF7J5HW_10000000004fam size. lot File medium C:\Firestreamer_tapes\Z1BHQF7J5HW_100000000004fam size. lot File medium C:\Firestreamer_tapes\Z1BHQF7J5HW_1000000000000000ffam size. lot File medium C:\Firestreamer_tapes\Z1BHQF7J5HW_1000000000000000ffam size.
International of the medium C:\Firestreamer_tapes\Z1BHQF7J5HW_1000000021sm International of the medium C:\Firestreamer_tapes\Z1BHQF7J5HW_10000000031sm International of the medium C:\Firestreamer_tapes\Z1BHQF7J5HW_100000000041sm International of the medium C:\Firestreamer_tapes\Z1BHQF7J5HW_1000000000000000000000000000000000000
Intermedium C:\Firestreamer_tapee\Z1BHQF7J5HW_10000000001fsm Intermedium C:\Firestreamer_tapee\Z1BHQF7J5HW_100000000004fsm Intermedium C:\Firestreamer_tapee\Z1BHQF7J5HW_1000000000fsm
ot File medium C.\Firestreamer_tapes\21BHQF7J5HW_1000000004fsm ot File medium C.\Firestreamer_tapes\21BHQF7J5HW_10000000006fsm
ot File medium C:\Firestreamer tapes\Z1BHQF7J5HW 1000000005fsm
ad Media
HW_10000006.tsm
This will load media into Library 1, continue?
W_100000008.fsm
Microsoft DPM: In DPM Administrator Console, unlock the library door before proceeding, and then lock the library door when
finished. iHW_100000000A.fsm

10. 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.

Firestrea		Media	Allov	vs you	to loa
Med	Luitin				
Activ	Load F				
-	Unload			CHGR:	3AD51
	Help			yout:	
			0		of 0

11. The media has been unloaded.



Barcode before:

💭 🗢 🍌 🗸 Compute	er → Local Disk (C:) → Firestreamer_tapes	 ✓ 	Search Firestream	er_tapes
ganize 🔻 Include in lib	orary 🔻 Share with 👻 New folder			:= •
Favorites	Name ^	Date modified	Туре	Size
📃 Desktop	Z1BHQF7J5HW_100000000A.fsrm	10/21/2013 1:16 AM	FSRM File	0 KE
Downloads	Z1BHQF7J5HW_1000000001.fsrm	10/21/2013 1:16 AM	FSRM File	0 KE
	Z1BHQF735HW_1000000002.fsrm	10/21/2013 1:16 AM	FSRM File	0 K
	Z1BHQF735HW_1000000003.fsrm	10/21/2013 1:16 AM	FSRM File	0 KE
Libraries	Z 1BHQF7J5HW_1000000004.fsrm	10/21/2013 1:16 AM	FSRM File	0 KE
Documents Music	Z1BHQF7J5HW_1000000005.fsrm	10/21/2013 1:16 AM	FSRM File	0 KE
Pictures	Z1BHQF7J5HW_1000000006.fsrm	10/21/2013 1:16 AM	FSRM File	0 KE
Videos	Z1BHQF7J5HW_1000000007.fsrm	10/21/2013 1:16 AM	FSRM File	0 KE
	Z1BHQF7J5HW_1000000008.fsrm	10/21/2013 1:16 AM	FSRM File	0 KE
Computer	Z1BHQF7J5HW_1000000009.fsrm	10/21/2013 1:16 AM	FSRM File	0 K

After Barcode Change:

✓ Share with ▼ New folder			III 👻 🗔
Name *	Date modified	Туре	Size
Z1BHQF7J5HW_101000000A.fsrm	10/21/2013 1:16 AM	FSRM File	0 KB
Z1BHQF7J5HW_1011000000J.fsrm	10/21/2013 1:16 AM	FSRM File	0 KB
Z1BHQF7J5HW_102000000B.fsrm	10/21/2013 1:16 AM	FSRM File	0 KB
Z1BHQF7J5HW_103000000C.fsrm	10/21/2013 1:16 AM	FSRM File	0 KB
Z1BHQF7J5HW_104000000D.fsrm	10/21/2013 1:16 AM	FSRM File	0 KB
Z1BHQF7J5HW_105000000E.fsrm	10/21/2013 1:16 AM	FSRM File	0 KB
Z1BHQF7J5HW_106000000F.fsrm	10/21/2013 1:16 AM	FSRM File	0 KB
Z1BHQF7J5HW_107000000G.fsrm	10/21/2013 1:16 AM	FSRM File	0 KB
Z1BHQF7J5HW_108000000H.fsrm	10/21/2013 1:16 AM	FSRM File	0 KB
Z1BHQF7J5HW_1090000001.fsrm	10/21/2013 1:16 AM	FSRM File	0 KB

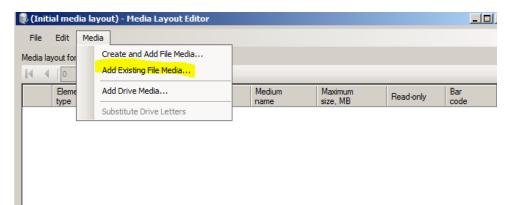
Note:

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

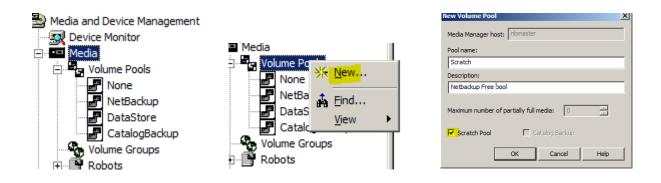
12. Perform Step 5-8 to load the newly changed Barcode.



🗿 (Initia	Add Existing I	ile Media		× _ D ×
File	Look in:	Firestreamer_tapes	- 🚱 🤌 📂 🛄 -	
Media lay	Recent Places Desktop Libraries Computer	Name	▼ Date modified ▼ Type 10/21/2013 1:16 FSRM File 10/21/2013 1:16 FSRM File	
		File name: File media Files of type: File media Open as read-only	▼ Ope Can Load Media	
		III		

	Element	10 🕨 🔰 🕂 Element	Medium	Medium name	Max
-	type	number	type File medium		size
_	Storage slot Storage slot		File medium	C:\Firestreamer_tapes\Z1BHQF7J5HW_1010000000A.fsm	
	Storage slot		File medium	C:\Firestreamer_tapes\Z1BHQF7J5HW_1011000000J.fsm C:\Firestreamer_tapes\Z1BHQF7J5HW_102000000B.fsm	
_	Storage slot		File medium	C:\Firestreamer_tapes\Z1BHQF7J5HW_103000000Cfsm	
	Storage slot		File medium	C:\Firestreamer_tapes\Z1BHQF7J5HW_104000000D.fsm	
	Storage slot		File medium	C:\Firestreamer_tapes\Z1BHQF7J5HW_105000000E.fsm	
	Storage slot		File medium	C:\Firestreamer_tapes\Z1BHQF7J5HW_106000000F.fsm	
	Storage slot		File medium	C:\Firestreamer_tapes\Z1BHQF7J5HW_107000000G.fsm	
	Storage slot		File medium	C:\Firestreamer_tapes\Z1BHQF7J5HW_108000000H.fsm	
	Storage slot		File medium	C:\Firestreamer_tapes\Z1BHQF7J5HW_1090000001.fsm	

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..

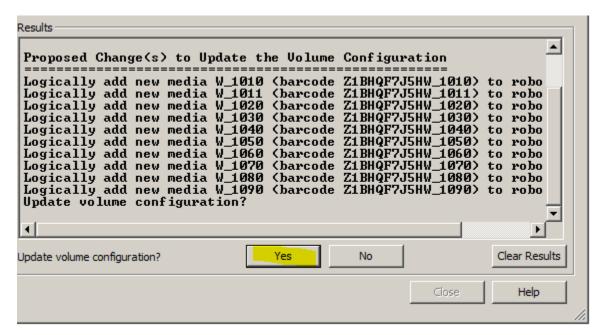
Volume Pool	Number	Max Partially Filled Media	Description	Scratch	Catalog Backup
🖥 CatalogBackup	3	0	NetBackup Catal	No	Yes
DataStore	2	0	the DataStore pool	No	No
NetBackup	1	0	the NetBackup pool	No	No
None None	0	0	the None pool	No	No
Scratch	4	0	Netbackup Free	Yes	No

15. Perform an inventory.

		New Window from Here New Volumes New Volume Pool Inventory Robot Eind View				
ľ	nbi	master - Robot Inver	ntory		×	L
	Dev nb	ct robot vice Host: master pot: D(0) - nbmaster	-	Inventory operation C Show contents C Compare contents with volume configuration C Update volume configuration		e

ILD(0) - nbmaster	Advanced Options
Start Stop	×

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.

W_1050 W_1060	Z1BHQF7J5 Z1BHQF7J5		-	DLT DLT	TLD TLD		
W_1070	Z1BHQF7J5	iHW_	_1070	DLT	TLD		
W_1080	Z1BHQF7J5	iHW_	_1080	DLT	TLD		
W_1090	Z1BHQF7JS	Ж	<u>N</u> ew			Ins	
		æ1	Change		Er	ter	
		+	<u>M</u> ove				
		×	<u>D</u> elete			Del	
		@	Change Vol	lume Grou	JD		

Change Volum	es					×	
Media ID W_1050 W_1060 W 1070	Media DLT DLT DLT	Descri Added Added	Max M 0 0	Volum	Volum NetBac NetBac	Cleani - -	
⊠W_1080 ⊠W_1090	DLT DLT	Added Added	0		NetBac NetBac	-	
Do not de O Unlimited O Number Media descrip							
Volume pool O not change New pool Number of cleanings remaining NetBackup DataStore DataStore O not change New count OK Cancel							

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.

📑 nbmaster - Robot Inventory		×	L
Select robot Device Host: nbmaster Robot: TLD(0) - nbmaster	Inventory operation Show contents Compare contents with volume configuration Update volume configuration Advanced Options Preview changes Empty media access port prior to update		e
Start Stop		1	

19. Make sure that Barcode rules are selected.

🖹 nbmaster - Robot Inventory	×
Advanced Robot Inventory Options	×
Media Settings Barcode Rules Media ID Generation Media Type Mappings	1
Existing media	
Media which have been removed from the robot should be assigned to the volume group:	
Media which have been moved into or within the robot should be assigned to the volume group:	
DEFAULT	
- New media	
Use the following Media ID prefix:	
DEFAULT Vise barcode rules	
⊢ If set, the following options will override any barcode rules	
Media type: Volume pool:	
DEFAULT DEFAULT	
Reset to D	efaults
ОК	Help

20. Perform the steps as shown below:

New Barcode Rule		×	X New Barcode Rule		×
Barcode tag: W_101b Media type: DLT cartridge tape Volume pool: NetBackup Description:	Max mounts:	OK Cancel Help	Barcode tag: W_1070 Media type: DLT cartridge tape Volume pool: Scratch Description:	Max mounts:	OK Cancel Help

	on Media Manager hos			D
Barcode Tag W_1010	Media Type	Volume Pool	Max Mounts/Cle	Description
W_1010	dit	NetBackup 1	0	
W 1020	dit	1	0	
W 1030	dit	1	0	
W 1040	dit	1	0	
₩ 1050	dlt	4	0	
W 1060	dlt	4	0	
₩_1070	dlt	4	0	
🖾 W_1080	dlt	4	0	
🖾 W_1090	dlt	4	0	
			New Change	e Delete

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

E nomaster - Robot Inventory							
Advanced Robot Inventory Options							
Media Settings Barcode Rules Media ID Generation Media Type Mappings							
Media ID generation rules allow you to override the default media ID naming method. The default method generates a media ID using the last six characters of the barcode.							
Media ID generation rules on Media Manager host nbmaster:							
Robot Number New Media ID Generation Rule							
A rule consists of a maximum of six fields delimited by colons. Numbers in the fields of the rule define the positions of the characters in the barcode that are to be extracted. For example, 2 extracts the second character from the barcode (numbering from the left). Characters prefixed by # in a field result in that character being inserted in that position in the generated media ID. For example, #N:2:3:4:5 Robot number: Barcode length: Media ID generation rule: 0							
New Change Delete							
OK Help							

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

Adv	Advanced Robot Inventory Options									
N	Media Settings Barcode F	Rules Media ID Generation	Media Type Mappings							
	Media ID generation rules allow you to override the default media ID naming method. The default method generates a media ID using the last six characters of the barcode. Media ID generation rules on Media Manager host nbmaster:									
	Robot Number	Barcode Length	Media ID Generation Rule							
		6	1:2:3:4:5:6							
	0	8	1:2:3:4:5:6							
			New Change.	Delete						
			0	K Help						

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:

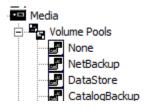
etBackup Catalog Backup Wizard			×
NetBackup Catalog Backup Po Create a policy to perform a			8
Existing catalog backup policies: Policy Name			
Existing policies can be m	odified from Policy Mana	igement.	
🔽 Create a new catalog backup poli	су		
< <u>B</u> ar	⊳k <u>N</u> ext≻	Cancel	Help

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

Backup Policy Configuration Wizard	X
Policy Name and Type Specify the policy name and policy type.	a a a a a a a a a a a a a a a a a a a
Policy name:	_
nbmaster_catalog	
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.	
NBU-Catalog	
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.	
< <u>B</u> ack <u>N</u> ext > Cancel Hel	p

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.

Change Policy - Catalog					
🔳 Attributes 🚯 Schedules 📢	Disaster Recovery				
Policy type:	NBU-Catalog				
Destination					
Data classification:	<no classification="" data=""></no>				
Policy storage:	Any Available				
P <mark>olicy volume poo</mark> l:	CatalogBackup				

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

Backup Policy Configuration Wizard	×
Backup Type Specify the types of backups.	C
Eull Backup Backs up all the files specified in the file list.	
 Incremental Backup Backs up all changed files specified in the file list. Differential (files changed since last full or incremental backup) Cumulative (files changed since last full backup) 	
Leser Backup Allows users to initiate backups on their own.	
< <u>B</u> ack <u>N</u> ext > Cancel	Help

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

Backup Policy Configuration Wizard	×
Rotation Select a rotation for backup and retention.	
Start a full backup every: Image: Constraint of the sector of the se	су
< <u>B</u> ack <u>N</u> ext > Cancel	Help

ackup Policy Configuration Wiza	rd			
Rotation Select a rotation for bac	kup and rete	ention.		< Contraction of the second se
Start a full backup every: 1 Weeks Start an incremental backup By frequency. Every: 1 Days After each backup session.		Retain full bac 1 month (leve Retain increm 1 month (leve	ental backups for	
To configure a calence from Policy Managem		log backup sch	nedule, modify this	policy
_	< <u>B</u> ack	<u>N</u> ext >	Cancel	Help

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

Backup Policy Configuration Start Window Specify the time win	Wizard dow during which backups	s are allowed to start.	
Sun Mon Tue Wed Thu Fri Sat	8 10 12 14	16 18 20 22	24
C <u>D</u> ff hours C <u>W</u> orking hours C <u>A</u> ll day C <u>C</u> ustom	C Off hours Working hours All day C Custom	Day All Start Dural 2 Cancel I	ion T

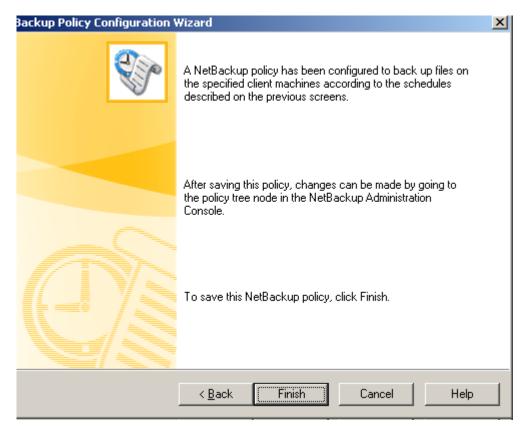
8. Setup a Catalog DR file and choose your directory, where you wish to save them.

Backup Policy Configuration Wizard	×
Catalog Disaster Recovery File Specify a file location to save the disaster recovery in	nformation
Path: C:\drecovery	Browse
Logon: Password: admin xxxxxxxxx	
The disaster recovery file generated for each catalog back needed to recover the NetBackup catalog. Record the location of this file so that the NetBackup cata necessary.	
< <u>B</u> ack <u>N</u> ext >	Cancel Help

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

Do you wish to have the disaster recovery file sent to an e-mail address? Yes (recommended) No E-mail address:	
♥ Yes (recommended) ♥ No	
-mail address:	
anupsreedharan@	_
The e-mail will contain catalog backup status information, disaster reco procedures, and an attached disaster recovery file.	very

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)

Backup Policy Configuration Wizard
Policy Name and Type Specify the policy name and policy type.
Policy name:
testbackup
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.
< <u>B</u> ack <u>N</u> ext > Cancel Help

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

Name 账	Hardware	Operating System	m I	Add Browse for computer
	ng system when adding or c ssful only on Windows platfo			Choose a computer.
	< Back	Next >	Cancel	
				OK Cancel
				✓ Auto-Select the current domain

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

Backup Policy Configuratio	n Wizard		×		
Client List Specify clients for	this policy.		S		
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	Add		
Inbmaster.anup.int	Windows-x64	Windows2008	Change		
			Delete		
			Properties		
 Detect operating system when adding or changing a client. (This is successful only on Windows platforms.) 					
	< Back	Next > Cance	I Help		

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)

Backup Policy Configuration Wizard	×
Files Specify the files and folders to backup.	< Contraction of the second se
The file list identifies the files and folders to be backed up by scheduled back clients in this policy. All files and folders do not have to exist on all the clients This file list is ignored by user directed backups because in those instances t the files to back up.	3.
Backup Selections	Add Insert Change
	 Delete
< <u>B</u> ack <u>N</u> ext > Cancel	Help

Backup Policy Configuration Wizard	×
Backup Type Specify the types of backups.	E.S.
 Full Backup Backs up all the files specified in the file list. Incremental Backup 	
Backs up all changed files specified in the file list. Differential (files changed since last full or incremental backup) C <u>C</u> umulative (files changed since last full backup)	
User Backup Allows users to initiate backups on their own.	
< <u>B</u> ack <u>N</u> ext > Cancel	Help

17. Here another policy is created for Media server.

Getting Started	×
Step 4. Policy Configuration Start the Policy Configuration wizard.	V
You have completed configuration of a NetBackup policy.	
✓ 1. Configure Storage Devices	
✓ 2. Configure Volumes	
✓ 3. Configure the Catalog Backup	
4. Create a Backup Policy	
Create another NetBackup Policy	
To continue, click Next	
< <u>B</u> ack <u>N</u> ext > Close	Help

ackup Policy Co	nfiguration Wi	izard				>
Policy Name Specify t	e and Type ne policy nam	ne and policy	type.		Ŷ	P
Policy name:						
testbackup_r	bmedia					
	e determines the ps that this polic			acked up by this p	oolicy or the	
Select the pol			•			
🔰 🔁 Net		Colients, Use	the "MS-Window	3, Macintosh, targ vs" policy type for		
	[< <u>B</u> ack	<u>N</u> ext >	Cancel	Help	

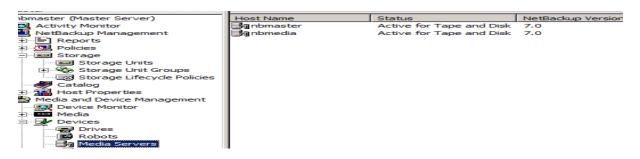
Ba	ackup Policy Configural	tion Wizard			×
	Client List Specify clients f	or this policy.			E.
		ip these clients accordin o clients can be in more (hedules, and	l attributes for
	For easier managemer perform the same type	it, fill the client list with cl of work.	lients that have sir	milar configura	ations and
:	Name	Hardware	Operating Sy:	stem	<u>A</u> dd
	🗐 nbmedia 🔆	Windows-x86	Windows200	3	<u>C</u> hange Delete
					Properties
		ystem when adding or c lonly on Windows platfo			
		< <u>B</u> ack	<u>N</u> ext >	Cancel	Help

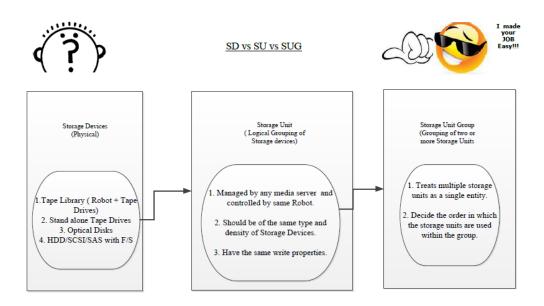
Backup Policy Configuration Wizard	×
Files Specify the files and folders to backup.	
The file list identifies the files and folders to be backed up by scheduled bac clients in this policy. All files and folders do not have to exist on all the clien This file list is ignored by user directed backups because in those instances the files to back up. Back up all local drives. Backup Selections C:\testbackup1	ts.
*	<u>C</u> hange Delete
< <u>B</u> ack <u>N</u> ext > Cancel	Help

 \rightarrow Master and media server connectivity status along with created policies

	Media Servers of	nbmaster				
Aaster Server)	Host	Operating System	OS Type	Host Type	Version	Status
Monitor	- nbmaster	Windows2008 (6)	Windows	Master Server	7.0	Connected
up Management	nbmedia	Windows2008 (6)	Windows	Media Server	7.0	Connected
orts						
ties						
age						
alog						
t Properties						
Master Servers						
Media Servers						
Clients						
nd Device Management						
ice Monitor						
lia						

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





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

ange Storage Unit	Change Storage Unit
torage unit name:	Storage unit name:
bmaster-dit.	nbmaster-dit-robot-tid-0
orage unit type:	Storage unit type:
edia Manager 🔄 🔽 On demand only	Media Manager
A type:	Disktype:
<u></u>	<u>*</u>
roperties	Properties
torage device:	Storage device:
Standalone - dt	tid(0) - dit
Robot type: NONE - Not Robotic	Robot type: TLD - Tape Library DLT
Density: dit - DLT Cartridge	Density: dlt - DLT Cartridge
Robot number:	Robot number: 0
feda server:	Media server:
ibnaster 🗾	nbmaster
Maximum concurrent write drives: TReduce fragment size to:	Maximum concurrent write drives: Reduce fragment size to:
2	5 1048576 Megabytes
Enable Multiplexing	
Maximum streams per drive:	Enable Multiplexing Maximum streams per drive:
1. 3	1 1
OK Cancel Help	OK Cancel Help
Uni Unico nep	UK Cancel Hep

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

Change Policy - backuptests	1	Attributes Schedules	🗐 Clients 🛛 🔁 Backup Selections 🗎
Policy type: MS-Windows Destination		Policy type: Destination Data classification: Policy storage: Policy volume pool:	MS-Windows <no classification="" data=""> Image: nbmaster-dit robot tid-0 Image: NetBackup</no>

 \rightarrow 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.

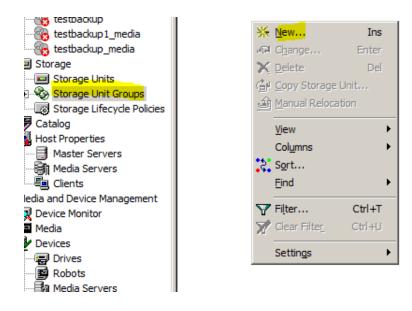
1 Olivery Contraction			
Summary of all Policies			
Reatalog	釆	<u>N</u> ew	Ins
🛞 backuptests	dial.	Change	Enter
🔞 testbackup	X	Delete	Del
🔞 testbackup1_media	Carl.	Copy Storage	Unit
🍓 testbackup_media		Manual Reloca	
Storage	2	Manual Reloca	uon
Storage Units		View	•
Storage Unit Groups		Columns	
Storage Lifecycle Policies		-	
Catalog	. ç.	S <u>o</u> rt	
Host Properties		Find	•
dia and Device Management			01.1.T
Device Monitor	-	Filter	Ctrl+T
Media	X	Clear Filter	Ctrl+U
Devices		Catting	
Driver.		Settings	•

→ 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.

lew Storage Unit	×
Storage unit name:	
S <mark>torage unit type:</mark>	
Media Manager On demand only Disk	
Media Manager	
BasicDisk	
Properties Storage device:	
tid(0) - dit	
Robot type: TLD - Tape Library DLT Density: dlt - DLT Cartridge	
Robot number: 0	
Media server:	
<any available=""></any>	
Maximum concurrent write drives: 🔲 Reduce fragment size to:	
5 1048576 Megabytes	
Enable Multiplexing	
Maximum streams per drive:	
1	
OK Cancel Help	

STORAGE UNIT GROUP

 \rightarrow 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.

SUG1 Change priority: Change priority: Move Up Move Down monbmaster-dlt-robot-tid-0 monbmaster-dlt Storage units not in group: Add v Remove	Storage units in group: Move Up Move Down Image nbmaster-dlt-robot-tid-0 Image nbmaster-dlt Storage units not in group: ^ Add v Remove	SUG1 Change priority: Change priority: Move Up Move Down Indianater -dlt-robot-tld-0 Indianater -dlt			-
Storage units in group: Move Up Move Down Image not in group: ^ Add v Remove	Storage units in group: Move Up Move Down Image nbmaster-dlt-robot-tid-0 Image nbmaster-dlt Storage units not in group: ^ Add v Remove	Storage units in group: Move Up Move Down Image not in group: ^ Add v. Remove	Storage unit group name:		
Storage units in group: Move Up Move Down Implementation Implementation Implementation Implementation Implementation Implementation Storage units not in group: ^ Add v Remove	Storage units in group: Move Up Move Down Image: Image and the storage units not in group:	Storage units in group: Move Up Move Down Impmaster-dlt-robot-tld-0 Impmaster-dlt Storage units not in group: ^ Add v. Remove	SUG1		
	Image units in group:	Indiage units in group: Add v Remove		Change priori	ty:
	mbmaster-dlt Storage units not in group:	Storage units not in group: Add V. Remove	Storage units in group:	Move Up	Move Down
Storage units not in group: ^ Add v Remove	Storage units not in group: ^ Add v Remove	Storage units not in group: ^ Add v. Remove	Imperator - dit-robot - tid-0		
			🔤 nbmaster -dlt		
				∧ Add	v Remove
Representation of the second s	Impredia-dlt-robot-tld-1	📟 nbmedia-dlt-robot-tld-1	Storage units not in group:		Y NOMOYO
Indifiedra-dit-robot-ud-1		_	nbmedia-dlt-robot-tld-1		
Storage unit selection	-	-			
O Prioritized (Choose the first storage unit in the list that is not	O Prioritized (Choose the first storage unit in the list that is not	O Prioritized (Choose the first storage unit in the list that is not	C Prioritized (Choose the first stora	age unit in the list t	hat is not
C Prioritized (Choose the first storage unit in the list that is not busy, down, or out of media.)	C Prioritized (Choose the first storage unit in the list that is not busy, down, or out of media.)	C Prioritized (Choose the first storage unit in the list that is not busy, down, or out of media.)	O Prioritized (Choose the first stora busy, down, or out of media.)	-	
 Prioritized (Choose the first storage unit in the list that is not busy, down, or out of media.) C Failover (Choose the first storage unit in the list that is not 	 Prioritized (Choose the first storage unit in the list that is not busy, down, or out of media.) C Failover (Choose the first storage unit in the list that is not 	 Prioritized (Choose the first storage unit in the list that is not busy, down, or out of media.) C Failover (Choose the first storage unit in the list that is not 	 Prioritized (Choose the first stora busy, down, or out of media.) Failover (Choose the first storage) 	-	
 Prioritized (Choose the first storage unit in the list that is not busy, down, or out of media.) Failover (Choose the first storage unit in the list that is not down or out of media.) 	 Prioritized (Choose the first storage unit in the list that is not busy, down, or out of media.) Failover (Choose the first storage unit in the list that is not down or out of media.) 	 Prioritized (Choose the first storage unit in the list that is not busy, down, or out of media.) Failover (Choose the first storage unit in the list that is not down or out of media.) 	 Prioritized (Choose the first stora busy, down, or out of media.) Failover (Choose the first storag down or out of media.) 	e unit in the list tha	it is not
 Prioritized (Choose the first storage unit in the list that is not busy, down, or out of media.) C Failover (Choose the first storage unit in the list that is not 	 Prioritized (Choose the first storage unit in the list that is not busy, down, or out of media.) Failover (Choose the first storage unit in the list that is not down or out of media.) Round Robin (Choose the least recently selected storage unit in 	 Prioritized (Choose the first storage unit in the list that is not busy, down, or out of media.) Failover (Choose the first storage unit in the list that is not down or out of media.) Round Robin (Choose the least recently selected storage unit in 	 Prioritized (Choose the first stora busy, down, or out of media.) Failover (Choose the first storag down or out of media.) Round Robin (Choose the least r 	e unit in the list tha	t is not
 Prioritized (Choose the first storage unit in the list that is not busy, down, or out of media.) Failover (Choose the first storage unit in the list that is not down or out of media.) Round Robin (Choose the least recently selected storage unit in 	 Prioritized (Choose the first storage unit in the list that is not busy, down, or out of media.) Failover (Choose the first storage unit in the list that is not down or out of media.) Round Robin (Choose the least recently selected storage unit in the list.) 	 Prioritized (Choose the first storage unit in the list that is not busy, down, or out of media.) Failover (Choose the first storage unit in the list that is not down or out of media.) Round Robin (Choose the least recently selected storage unit in the list.) 	 Prioritized (Choose the first storage busy, down, or out of media.) Failover (Choose the first storage down or out of media.) Round Robin (Choose the least return the list.) 	e unit in the list tha	t is not
 Prioritized (Choose the first storage unit in the list that is not busy, down, or out of media.) Failover (Choose the first storage unit in the list that is not down or out of media.) Round Robin (Choose the least recently selected storage unit in the list.) 	 Prioritized (Choose the first storage unit in the list that is not busy, down, or out of media.) Failover (Choose the first storage unit in the list that is not down or out of media.) Round Robin (Choose the least recently selected storage unit in the list.) Media server load balancing 	 Prioritized (Choose the first storage unit in the list that is not busy, down, or out of media.) Failover (Choose the first storage unit in the list that is not down or out of media.) Round Robin (Choose the least recently selected storage unit in the list.) Media server load balancing 	 Prioritized (Choose the first storage busy, down, or out of media.) Failover (Choose the first storage down or out of media.) Round Robin (Choose the least reference to the list.) Media server load balancing 	e unit in the list that ecently selected st	it is not orage unit in

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

All Storage Unit Gro	pups: 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><mark>bpdown -v -f</mark>
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 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 Key Management Service -- STOPPED
> NetBackup Vault Manager
> NetBackup Vault Manager -- STOPPED
C:\Program Files\Veritas\NetBackup\bin><mark>bpup /v /f</mark>
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

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

ledia 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
Trive05	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
🕂 Drive 10	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

 \rightarrow 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.

	Program Files\Verita				
[d	DriveName SCSI coordinates	Type Path	Residenc	e	Status
K-H-)	***************	AAAAAAA	алалалала	*******************	************
3	Drive01	dlt	TLD(0)	DRIVE=1	
	<pre>{35,0,1,0} Drive02</pre>	dlt	TLD(0)	DRIUE=2	UP
	{35,0,1,1}	arc	I LD(0)	DRIVE-2	UP
2	Drive03	dlt	TLD(Ø)	DRIUE=3	01
	(35,0,1,2)				UP
3	Drive04	dlt	TLD<0>	DRIUE=4	
	(35,0,1,3)		TTD		UP
ł	Drive05 {35,0,1,4}	dlt	TLD(0)	DRIVE=5	UP
5	Starwind_drive01	dlt	Standal	one	01
	(34,0,0,0)	di 10	ocunati		UP
5	Starwind_drive02	dlt	Standal	one	
	{34,0,1,0}				UP
	rently defined robo			(0)	
T	LD(0) SCSI coord	linates	= {35,0,2	,0>	

C:>	Program Files\Ver	itas\Volmg	r\bin>tpc	onfig -d	
[d	DriveName SCSI coordinat	Туре	Residenc		Status
к ж »]	DriveØ6	dlt	TLD(1)	DRIVE=1	*********
	(35,0,1,0)	374	TIDAN	DDIUE-0	UP
	Drive07 (35,0,1,1)	dlt	TLD(1)	DRIVE=2	UP
2	Drive08	dlt	TLD(1)	DRIVE=3	
2	<pre>{35,0,1,2} Drive09</pre>	dlt	TLD(1)	DRIUE=4	UP
	(35,0,1,3)				UP
1	Drive10 {35,0,1,4}	dlt	TLD(1)	DRIVE=5	UP
Cur	rently defined ro		: = <35,0,2		

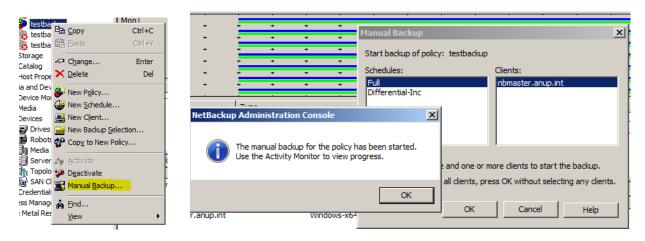
Note:

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

EMM= Enterprise Media Manager

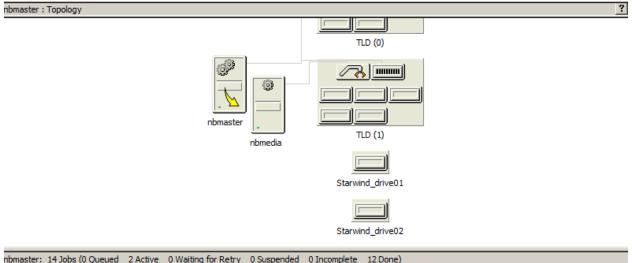
Firing backups:

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



nbmas	ster: 14 Jobs (0 Queued	2 Active 0	Waiting for Retry	/ 0 Sus	spended 0 In	complete 12 Done)				
	Job ID Type		Job	Sta	Status	Policy	Schedule	Client	Media Server	Start Time
3	18 Backup		Active			testbackup	Full	nbmaster	nbmaster	10/21/201
3	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.

 \rightarrow 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
X	8 Backup	Done		0	testbackup	-	nbmaster	nbmaster	10/21/201	nbmaster-dlt-robot-tld-0
Ŷ	5 Backup	Done		0	testbackup	Full	nbmaster	nbmaster	10/21/201	nbmaster-dlt-robot-tld-0
X	4 Backup	Done		0	testbackup	-	nbmaster	nbmaster	10/21/201	nbmaster-dlt-robot-tld-0
X	9 Backup	Done		0	testbackup	Full	nbmaster	nbmaster	10/21/201	nbmaster-dlt-robot-tld-0

	Job ID	Туре	Job	Sta	Status	Policy	Schedule	Client	Media Server	Start Time
X	16	Backup	Done		0	testbackup1_media	Full	nbmedia	nbmaster	10/21/201
X	15	Backup	Done		0	testbackup1_media	-	nbmedia	nbmaster	10/21/201
<u> </u>	14	Image Cleanup	Done		1					10/21/201
X	13	Backup	Done		0	testbackup_media	Full	nbmedia	nbmedia	10/21/201
×	12	Backup	Done		0	testbackup_media	-	nbmedia	nbmedia	10/21/201
Ϋ́	11	Backup	Done		0	backuptests	Full	nbmaster	nbmaster	10/21/201
ж	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
<u> </u>	7	Image Cleanup	Done		1					10/21/201
×	5	Backup	Done		0	testbackup	Full	nbmaster	nbmaster	10/21/201
Ŷ	4	Backup	Done		0	testbackup	-	nbmaster	nbmaster	10/21/201

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

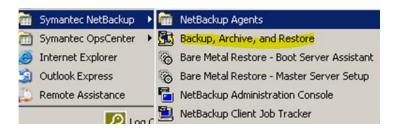
		1702	500 111 010
3	18	Backup	Active
3	17	Backup	Active

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

1	23 Backup	Done		0	testba
(B)	22 Backup	Queued	Limit has been reached for requested resour		testba
5	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:



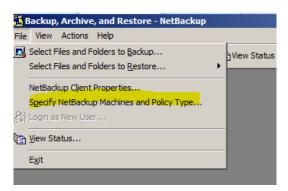
One can also run **nbwin** from the run prompt to launch the same console.

📼 Run	
	Type the name of a program, folder, document, or Internet resource, and Windows will open it for you.
<u>O</u> pen:	nbwin 👻
	OK Cancel <u>B</u> rowse

2. The Console looks as shown below:

🚺 Backı	ıp, Archive	e, and Rest	ore - NetBack	up				
File Viev	v Actions	Help						
🔜 Selec	t for Backu	p 🛛 💐 Sele	ect for Restore	🗸 🛛 🎦 View	Status	2 😪	<i>.</i>	

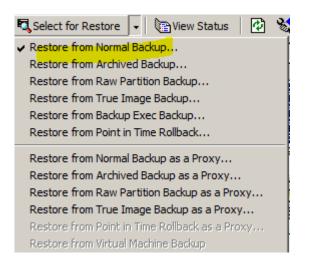
3. Specify the netbackup machine and type: Here the source and destionation of restore is nbmedia, hence the corresponding server needs to be added.



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

Specify NetBackup Machines and Policy Type	X
Server to use for backups and restores:	
nbmaster Edit Server List	
Source client for restores (or virtual client for backups):	
nbmaster Edit Client List	
Destination client for restores:	
nbmaster	
Policy type for restores:	
MS-Windows	
OK Cancel Help	
Edit Client List	
Enter names to add to list (separated by commas):	
nbmedia	
Add Name(s)	
Client list:	
Name	

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



Select for Backup	t for Restore 🔫	View Status	🚯 😵	۸							
NetBackup History									1		
Time Backed Up	Time Expires	Files	Size	Compressed	Schedule Type	Polic	y Nar	ne		Keyword	Phrase
10/21/2013 11:06:34 AM	11/21/2013	3	9	N	Full Backup	test	backu	p_me	edia		
2 10/21/2013 11:05:59 AM	11/21/2013	3	9	N	Full Backup	test	backu	p_me	edia		
10/21/2013 11:05:17 AM	11/21/2013	3	9	N	Full Backup	test	backu	p_me	edia		
10/21/2013 3:34:45 AM	12/22/2013	14	4455	N	Full Backup	test	backuj	p1_n	nedia		
2 10/21/2013 3:29:48 AM	11/21/2013	3	9	Ν	Full Backup	test	backu	p_m	edia		
All Folders		Conten	ts of 'C:\b	ackups1'							
⊡… 🗖 🚚 nbmedia		Name			Time Backed Up		A	s	Time Modified		
backups1				Document (2).t Document.txt	xt 10/21/2013 11:06: 10/21/2013 11:06:			36 36	10/21/2013 3 10/21/2013 3		

All Folders	Contents of 'C: \back	ups2'			
🖃 🗖 💭 nbmedia	Name	Time Backed Up	Α	Size	Time Modified
	🔲 🗟 cygwin 1.dll	10/21/2013 3:34:45 AM		1872884	11/17/2012 4:20:43 PM
backups1	🔲 💷 dig.exe	10/21/2013 3:34:45 AM		73728	11/17/2012 4:20:43 PM
Diackups2	host.exe	10/21/2013 3:34:45 AM		61440	11/17/2012 4:20:43 PM
	🔲 🚳 libbind9.dll	10/21/2013 3:34:45 AM		21504	11/17/2012 4:20:43 PM
	🔲 🚳 libdns.dll	10/21/2013 3:34:45 AM		1007616	11/17/2012 4:20:43 PM
	🔲 🕙 libeay32.dll	10/21/2013 3:34:45 AM		737280	11/17/2012 4:20:43 PM
	🔲 🙆 libisc.dll	10/21/2013 3:34:45 AM		217088	11/17/2012 4:20:43 PM
	🔲 🕙 libisccfg.dll	10/21/2013 3:34:45 AM		53248	11/17/2012 4:20:43 PM
	🔲 🙆 liblwres.dll	10/21/2013 3:34:45 AM		35328	11/17/2012 4:20:43 PM
	🔲 🙆 msvcr 70.dll	10/21/2013 3:34:45 AM		344064	11/17/2012 4:20:43 PM
	resolv.conf	10/21/2013 3:34:45 AM		0	11/17/2012 4:20:43 PM
	sha 1sum.exe	10/21/2013 3:34:45 AM		19968	11/17/2012 4:20:43 PM
	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:

ll Folders	Contents of 'C: \backups1'
∃ [2]	Name New Text Document (2).txt New Text Document.txt

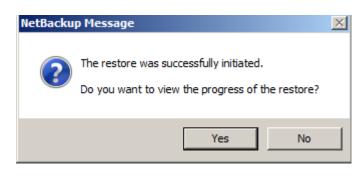
7. Two way for restoration:

55	Back	cup, A	(rchive	, and	l Re	store	: - Ne	tBack	cup -	[Rest	ore: 9	Serve	er: nbm
			View	_		Wine		Help					
			Backup					s				us	1
AR.	Ne	tBack	up Histo	2	<u>P</u> rev	iew M	1edia						
Ħ	Ti	me Ba	cked Up	2	<u>R</u> est	tore	•						S
			2/2013		Sele	ct Re	store	Type			•		
م ۲۰۰۰	1		1/2013										
8-		-	1/2013							ates	. 🔸	L.,	
			1/2013								_	3	
		10/2	1/2013	3:34:	:45 A	М	12/2	2/201	3		1	.4	4
2		10/2	1/2013	3:29:	:48 A	М	11/2	1/201	3			3	
ъ.	All	Folde	rs									Cont	tents of
· PA		- 🖊 🚊	🗐 nbme	dia								Nam	ne
		ė	/ 💷 🔿	:									New 1
		-	· 🗹 尾	🖥 ba	ackup	s1						- N	New 1

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

sto	re Marked Files
Gene	eral
⊢ Re	estore Destination Choices
0	Restore everything to its original location
~	Restore everything to a different location (maintaining existing structure)
1.	Destination:
	C:\Data restore Browse
0	Restore individual folders and files to different locations (double-click to modify)
	Source Destination Time Backed Up
	C:\backups1\ 10/21/2013 11:06:34 AM 10/21/2013 11:06:34 AM
	4 F
0	Create and restore to a new virtual bard disk file
	Destination for virtual hard disk file:
	Properties
- Re	estore Options
	Restore without access-control attributes (Windows clients only)
	Overwrite existing files
	Restore the file using a temporary filename
۲	Do not restore the file
	Override default job priority
	Job priority 90000 🚊 (Higher number is greater priority)
	(Higher number is greater priority)
	Start Restore Cancel Help

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



View Status (A	dministrator)		
Operation Type Restore	Time Requested 10/21/2013 11:17:25 AM	Operation Status In Progress	Close Delete Help
- Selected Operatio Refresh Rate (;			Refresh
Verbose Progress:			Print
_	1) INF - If Media id J_1000 is i	not in a robotic library admini	strative interact 🔺

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

View Status (Administrator)	
Operation Type Time Requested Operation Status Restore 10/21/2013 11:17:25 AM Successful	<u>Q</u> lose <u>D</u> elete <u>H</u> elp
Selected Operation: Refresh Rate (seconds): 5	<u>R</u> efresh <u>P</u> rint
11:17:41 (26.001) INF - If Media id J_1000 is not in a robotic library administra 11:17:41 (26.001) INF - Waiting for mount of media id J_1000 on server norm 11:18:11 (26.001) INF - Waiting for positioning of media id J_1000 on server 11:18:13 (26.001) INF - Beginning restore from server normedia to client norm 11:18:17 (26.001) (26.001) INF - TAR EXITING WITH STATUS = 0 11:18:18 (26.001) (26.001) INF - TAR RESTORED 3 OF 3 FILES SUCCESS 11:18:18 (26.001) (26.001) INF - TAR RESTORED 3 OF 3 FILES SUCCESS 11:18:18 (26.001) (26.001) INF - TAR PARTIALLY RESTORED 0 FILES 11:18:18 (26.001) (26.001) INF - TAR PARTIALLY RESTORED 0 FILES 11:18:18 (26.001) (26.001) INF - TAR PARTIALLY RESTORED 0 FILES 11:18:18 (26.001) INF - Status = the requested operation was successfully of	edia for read nbmedia for edia. SFULLY

nbmast	ter: 22 Jobs (0 Queued () Active	0 Wai	ting	for Retry 0 Suspend	ed 0 Inco	mplete 22 Done)								1 Selected
	Job ID Type	Job	S., 1	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.

C:\Users\ nbmedia	Administrator>hostname	nii riynts res	eroeu.		
ata_restore					_ 🗆
🕞 🗸 🕨 🗸 Computer	✓ Local Disk (C:) ✓ Data_restore	- 🐼	Search Data_restore		
janize 🔻 Include in libra	ary 🔻 Share with 🔻 New folder				- 🗖 🤅
7 Favorites	Name ^	Date modified	Туре	Size	
🧫 Desktop	New Text Document (2)	10/20/2013 2:57 PM	Text Document		1 KB
🚺 Downloads 🗐 Recent Places	New Text Document	10/20/2013 2:57 PM	Text Document		1 KB

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