EMC VIPR SRM: VAPP BACKUP AND RESTORE USING SYMANTEC NETBACKUP^{TM}

ABSTRACT

This white paper provides a working example of how to back up and restore an EMC ViPR SRM vApp using Symantec NetBackup.

October, 2015

WHITE PAPER

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Purpose and Goals

This white paper describes a working example of how to back up EMC ViPR SRM vApp-based deployments using the Symantec NetBackup^{TM} 7.6.0.1. While this document specifically covers ViPR SRM 1-VM and 4-VM vApp deployments, the guidelines apply to larger deployments as well.

Prerequisites

- Symantec NetBackup is installed. NetBackup Master and Media Servers should be reachable from the SRM vApp appliances.
- Reverse DNS lookup should work between all hosts participating in backup and restore.
- The Media Server should have enough space to hold backup images. Space can be allocated based on backup frequency and the type of backup policy configured.
- The NetBackup Client and SYMCquiesce utilities should be installed on the target backup hosts. Refer to the *Symantec NetBackup™ for VMware Administrator's Guide Release 7.6*.
- Make sure the NetBackup daemon processes are running on all associated hosts.
- Firewalls should be turned off to avoid connection errors. All firewall ports between the NetBackup processes on backup client/server should be configured to ensure connectivity. If you experience problems configuring the firewalls, turn them off. Refer to NetBackup documentation for more information: https://support.symantec.com/en_US/article.TECH136090.html.

ViPR SRM Pre-Backup Checks

Do the following:

- Verify and document the current environment before starting the backup process.
- Refer to EMC documentation on managing ViPR SRM system health for details about verifying the health of your system.
- Look for blank reports and graphs. Determine if there are any blank reports caused by collection errors. Resolve any issues or document them for later follow up.
- Look for broken links. Resolve any issues or document them for later follow up.
- Validate that the end-to-end topology is working. Resolve any issues found.

Add vCenter Details

Add vCenter credentials to NetBackup to allow discovery of the VMs. Proper privileges are required for performing backup and restore using vCenter.

Adding vCenter Details

1. From the NetBackup admin console, navigate to **Media and Device Management → Credentials → Virtual Machine Server**.
2. Right click and select **New**. Fill in the required details. Select **Virtual Machine Serve**r type as **VMware Virtual Center Server**.

Refer to the following Symantec article for more information:
http://www.symantec.com/business/support/index?page=content&id=TECH130493

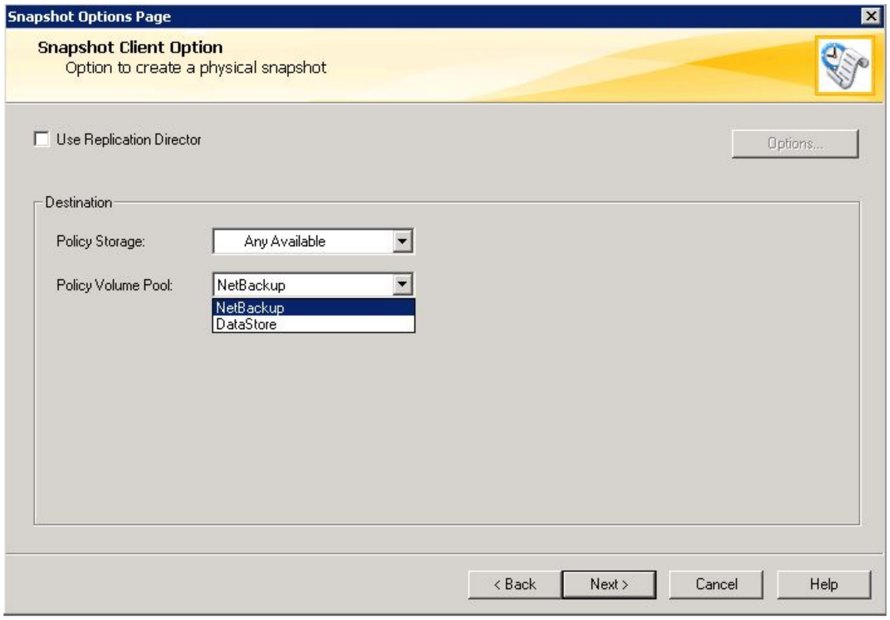
SRM vApp Image Backup

1-VM vApp Image Backup

Create Backup Policies

Follow these instructions to create image backup policies for the ViPR SRM 1-VM vApp.

1. In the NetBackup Administration Console, in the left pane, click **NetBackup Management**.
2. In the right pane, right-click **Policies** and select **New Policy**. Provide a name for the policy, and select **Use Policy Configuration Wizard**.
3. On the Create a Backup Policy for window, select **VMWare and Hyper-V**.
4. On the Select Client window, select Virtual Machine type as **VMware**.
5. From Snapshot options page, select the **Policy Storage** and **Policy Volume Pool**.

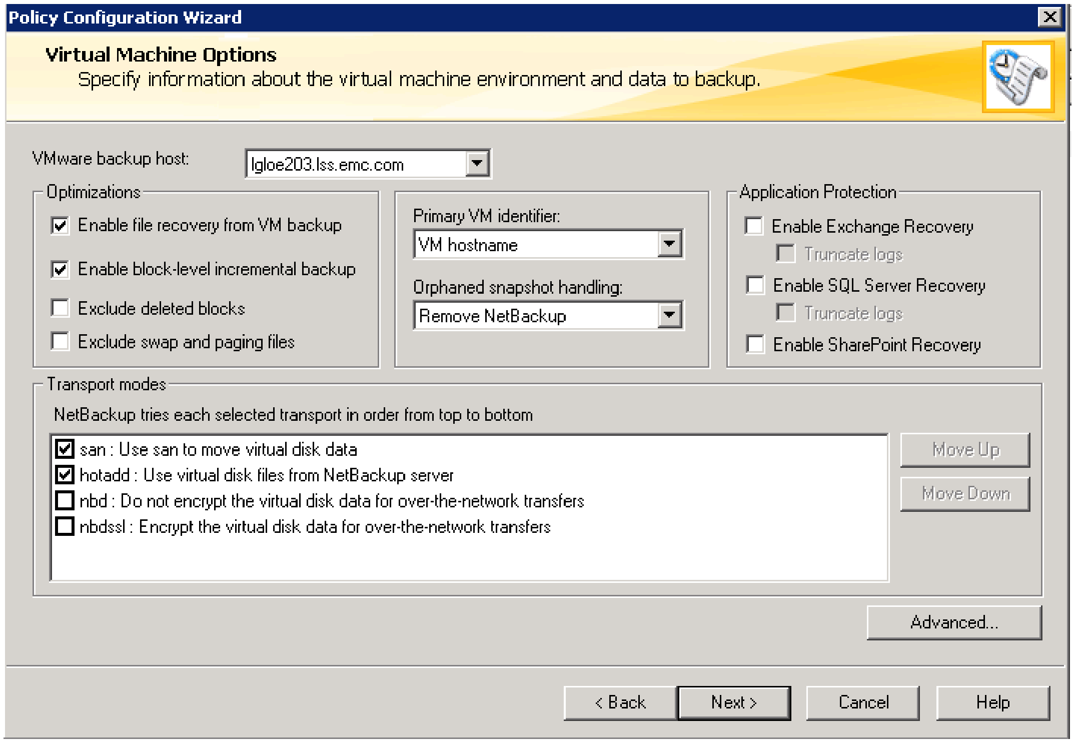


□ Use Replication Director

Policy Storage: Any Available

Policy Volume Pool: NetBackup

6. Supply the options for the policy shown in the following screen.



Policy Configuration Wizard

Virtual Machine Options

Specify information about the virtual machine environment and data to backup.

VMware backup host: lgloe203.lss.emc.com

Optimizations
- ☑ Enable file recovery from VM backup
- ☑ Enable block-level incremental backup
- □ Exclude deleted blocks
- □ Exclude swap and paging files

Primary VM identifier: VM hostname

Orphaned snapshot handling: Remove NetBackup

Application Protection
- □ Enable Exchange Recovery
  - □ Truncate logs
- □ Enable SQL Server Recovery
  - □ Truncate logs
- □ Enable SharePoint Recovery

Transport modes

NetBackup tries each selected transport in order from top to bottom
- ☑ san : Use san to move virtual disk data
- ☑ hotadd : Use virtual disk files from NetBackup server
- □ nbd : Do not encrypt the virtual disk data for over-the-network transfers
- □ nbdssl : Encrypt the virtual disk data for over-the-network transfers

- Select the **VMware backup host** based on the current system configuration.

- Uncheck **Exclude deleted blocks** if checked. VMware backups with the **Exclude unused and deleted blocks** option enabled may be slow, especially if the virtual machine being backed up has fragmented free space or a large number of very small files. Restores of these backups may also be very slow. Although enabling this option has no impact on the successful backup and restore of ViPR SRM vApps, avoid it due to performance constraints.

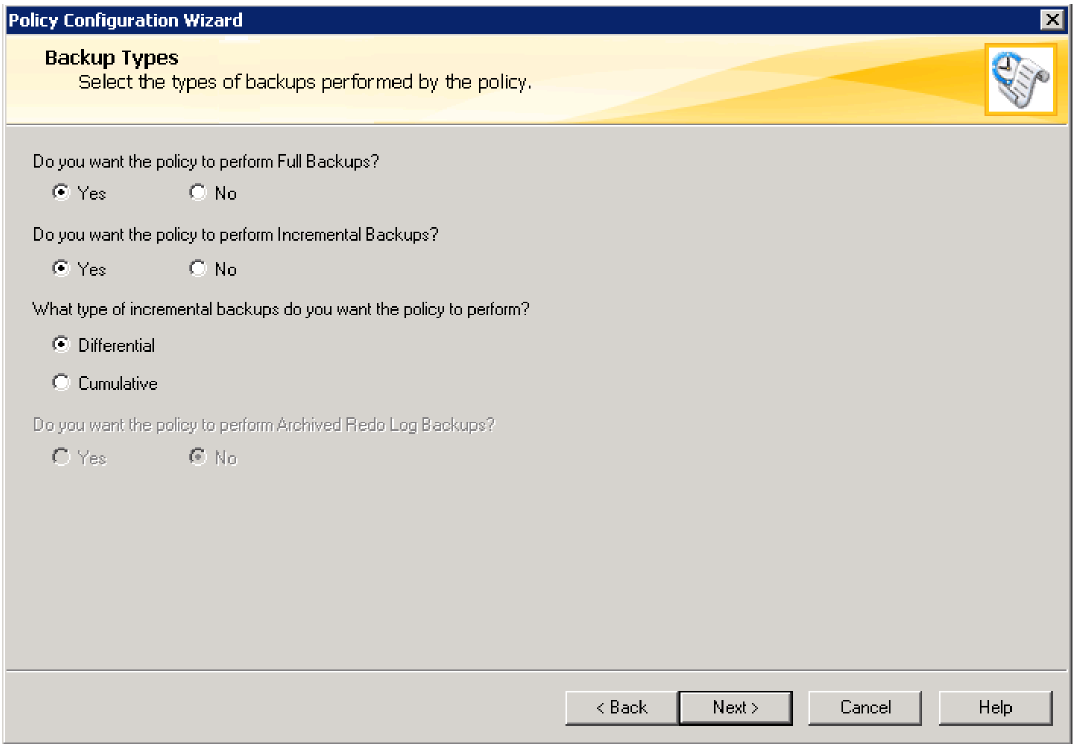
- **Exclude swap and paging files**. While backup and restore with paging files works properly on ViPR SRM vApps, avoid this option due to performance constraints.

- Select the **Transport Modes** depending upon the current configuration. ViPR SRM vApps backup/restore works with both the **SAN** and **HOTADD** modes. You can select both; NetBackup tries the second mode if fails to connect with the first.

- Keep the rest of the options as shown in the above screen shot.

You can discover and add the vApps manually or through a query. If it is a small-scale environment or the location of VMs is well known, then selection can be done manually. Otherwise create a query to find the VMs and select them from the search results.

7. Select the type of backup to be performed. All types of backup are supported for SRM VMs. EMC recommends weekly full backups combined with daily incremental differential backups. The type of incremental backup should be based upon your requirements. The advantage of an incremental differential backup is that it takes less time to restore.



Backup Types
Select the types of backups performed by the policy.

Do you want the policy to perform Full Backups?
● Yes ○ No

Do you want the policy to perform Incremental Backups?
● Yes ○ No

What type of incremental backups do you want the policy to perform?
● Differential
○ Cumulative

Do you want the policy to perform Archived Redo Log Backups?
○ Yes ● No

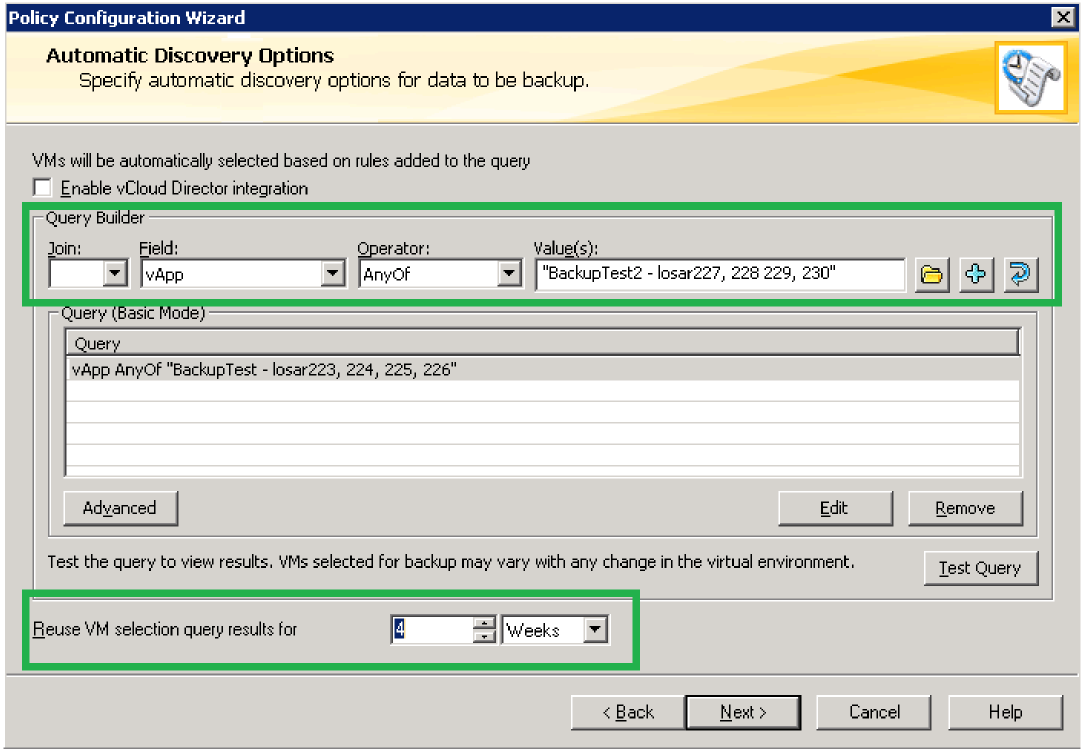
8. Next, schedule the frequency of backup. The frequency of backup and retention period depends on the business requirement and associated risk. Verify the policy terms, and a process is created to trigger the backup at the scheduled intervals.

4-VM vApp Image Backup

Create Backup Policies

Follow the instructions to create image backup policies for the ViPR SRM 4-VM vApps.

1. Complete steps 1 through 5 from the 1-vApp VM procedure.
2. Add all VMs in the vApp using a query. From the virtual machine selection dropdown, select **automatically through query**. Confirm the selection and in the next window select the **Master Server** for performing the VM selection.
3. A query selection window opens. Set the **Field** to **vApp** and fill in the other query building attributes appropriately.



Policy Configuration Wizard

Automatic Discovery Options

Specify automatic discovery options for data to be backup.

VMs will be automatically selected based on rules added to the query

□ Enable vCloud Director integration

Query Builder

Join: (blank) Field: vApp Operator: AnyOf Value(s): "BackupTest2 - losar227, 228 229, 230"

Query (Basic Mode)

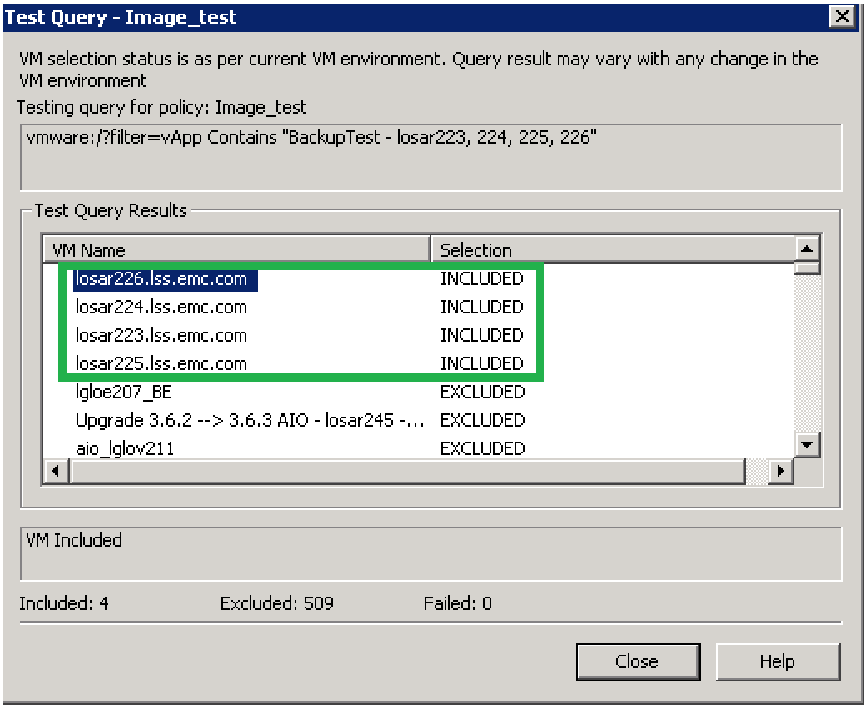
Query
vApp AnyOf "BackupTest - losar223, 224, 225, 226"

Test the query to view results. VMs selected for backup may vary with any change in the virtual environment.

Reuse VM selection query results for 4 Weeks

4. If you re-run the query at a future time, set the **Reuse VM selection query results for** field according to your requirements.

5. Test the query to verify that all VMs under the selected vApp have been included successfully.



Test Query - Image_test

VM selection status is as per current VM environment. Query result may vary with any change in the VM environment

Testing query for policy: Image_test

vmware:/?filter=vApp Contains "BackupTest - losar223, 224, 225, 226"

Test Query Results

VM Name	Selection
losar226.lss.emc.com	INCLUDED
losar224.lss.emc.com	INCLUDED
losar223.lss.emc.com	INCLUDED
losar225.lss.emc.com	INCLUDED
lgloe207_BE	EXCLUDED
Upgrade 3.6.2 --> 3.6.3 AIO - losar245 -...	EXCLUDED
aio_lglov211	EXCLUDED

VM Included

Included: 4 Excluded: 509 Failed: 0

You can discover and add the VMs in the vApp manually as well.

6. Next, schedule the frequency of backup. The frequency of backup and retention period depends on the business requirement and associated risk. Verify the policy terms, and a process is created to trigger the backup at the scheduled intervals.

SRM vApp File Backup

Prerequisite

The NetBackup client software must be installed on the hosts to be backed up. Refer to the appropriate version of the Symantec NetBackup Installation Guide for detailed instructions. For example, the *Symantec NetBackup 7.6 Installation Guide* can be downloaded from:

https://support.symantec.com/en_US/article.DOC6447.html

1 VM vApp File Backup

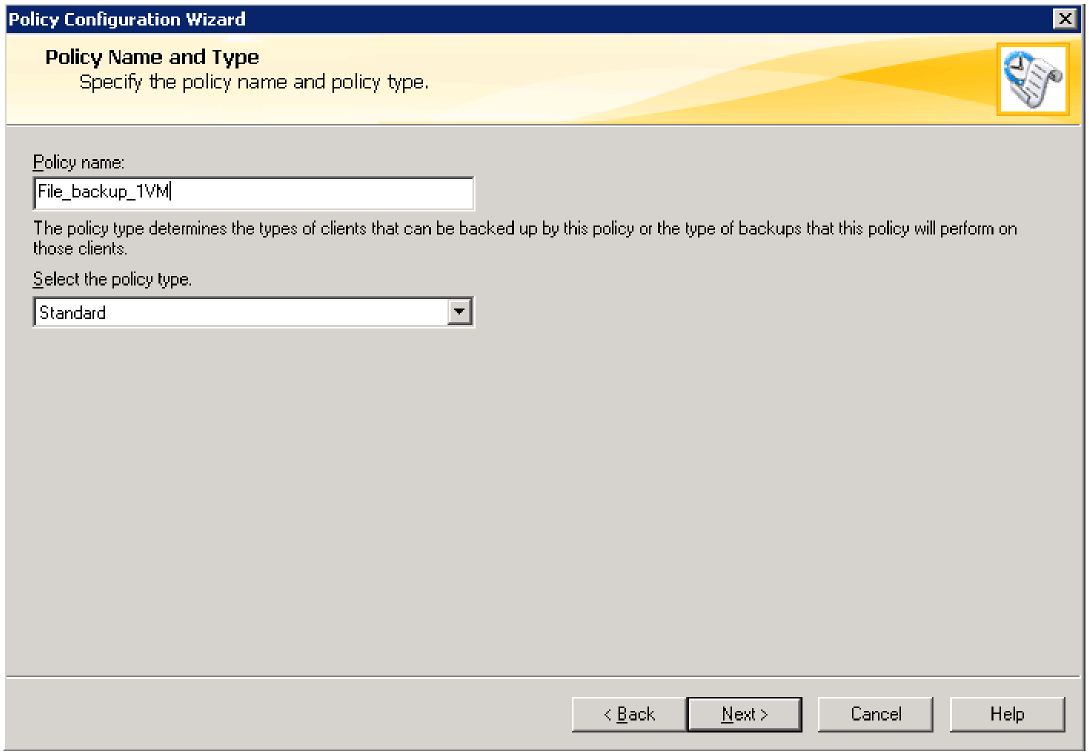
Create Backup Policies

Follow the instructions to create file backup policies for ViPR SRM single VM.

1. Launch **Policy Creation** from the NetBackup Administration Console and name the policy.

2. On the next window create a backup policy for **File system, database, and application**.

3. On the next window select the **Policy type** as **Standard** and click **Next**.



Policy Configuration Wizard

Policy Name and Type

Specify the policy name and policy type.

Policy name:

File_backup_1VM

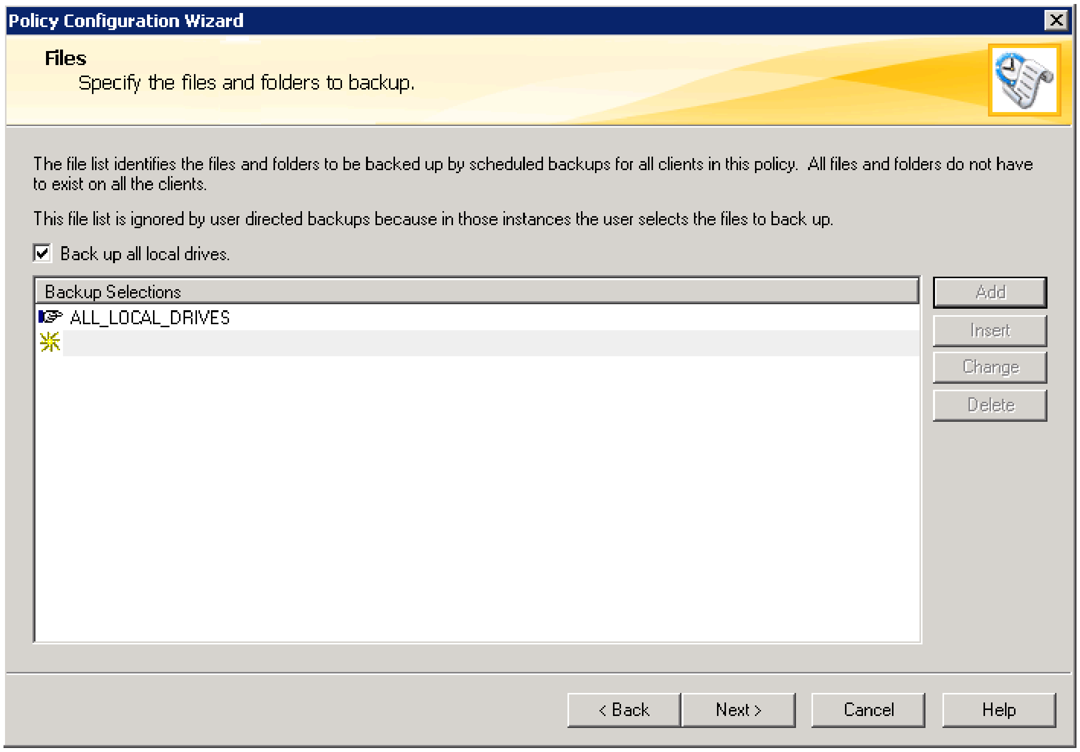
The policy type determines the types of clients that can be backed up by this policy or the type of backups that this policy will perform on those clients.

Select the policy type.

Standard

4. Add the name of the client and click **Next**. The OS type is determined automatically.

5. On the **Files** screen, add the specific directories/files for backup or select **Backup all local drives**, based on the requirement. For SRM VMs, back up all local drives.



Policy Configuration Wizard

Files

Specify the files and folders to backup.

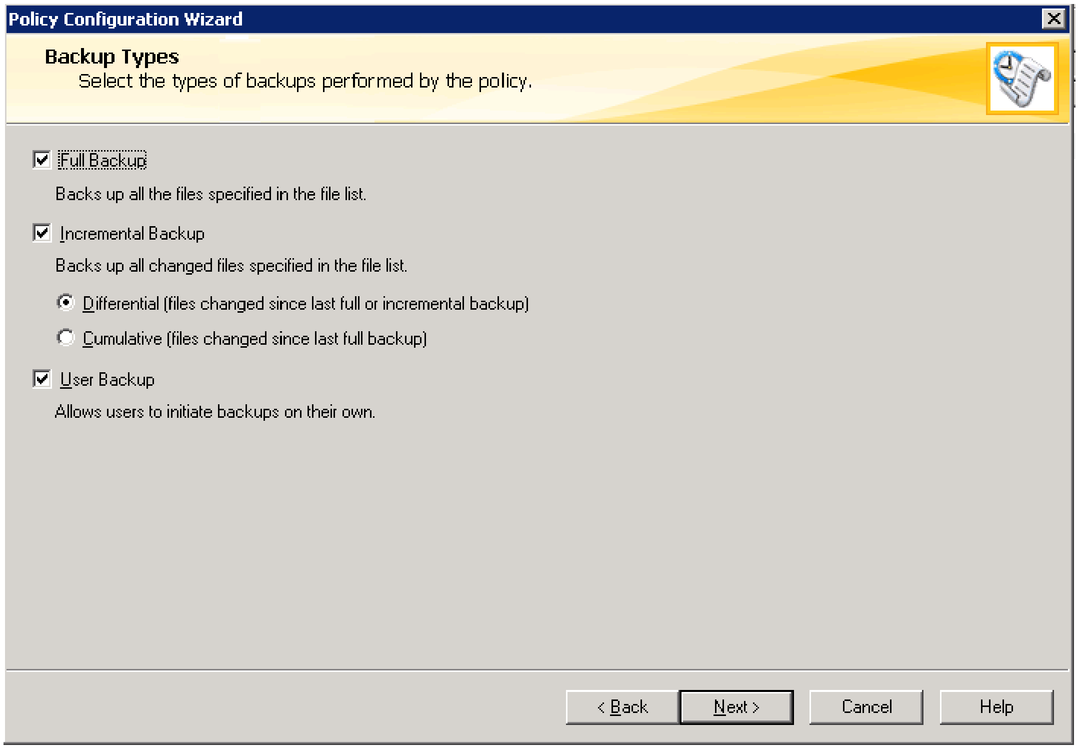
The file list identifies the files and folders to be backed up by scheduled backups for all clients in this policy. All files and folders do not have to exist on all the clients.

This file list is ignored by user directed backups because in those instances the user selects the files to back up.

☑ Back up all local drives.

Backup Selections
ALL_LOCAL_DRIVES

6. On the **Backup Types** dialog, select **Full Backup**, **Incremental Backup**, and **Differential**. The user has an option to initiate the backup by selecting the **User Backup** option.



Policy Configuration Wizard

Backup Types

Select the types of backups performed by the policy.

☑ 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)

○ Cumulative (files changed since last full backup)

☑ User Backup

Allows users to initiate backups on their own.

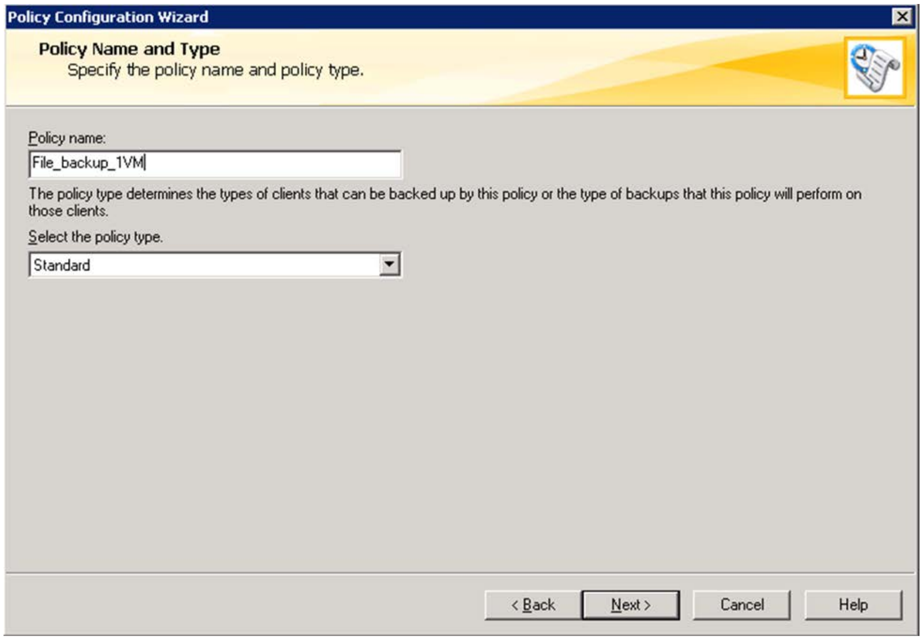
7. Next, schedule the frequency of backups based on your business requirements. Verify the policy terms, and a process is created to trigger the backup at scheduled intervals.

4-VM vApp File Backup

Create Backup Policies

Follow the instructions to create file backup policies for ViPR SRM 4-VM vApp.

1. Launch **Policy Creation** from the NetBackup Administration Console and name the policy.
2. On the next window create a backup policy for **File system, database, and application**.
3. On the next window select the **Policy type** as **Standard** and click **Next**.


Policy Configuration Wizard

Policy Name and Type

Specify the policy name and policy type.

Policy name:

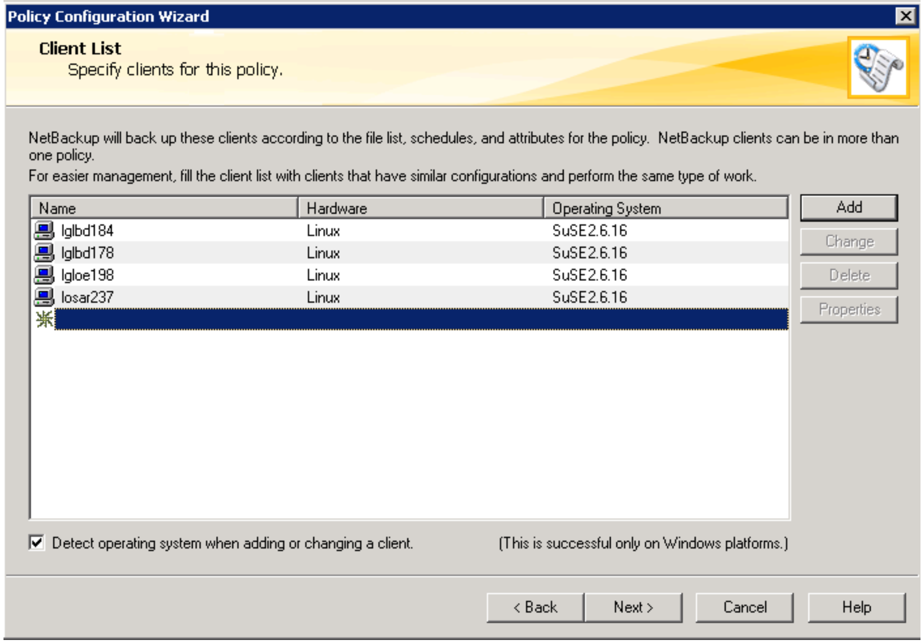
File_backup_1VM

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.

Standard

4. You can add multiple clients on the **Client List** dialog and all backup drives added in are included for these clients.


Policy Configuration Wizard

Client List

Specify clients for this policy.

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

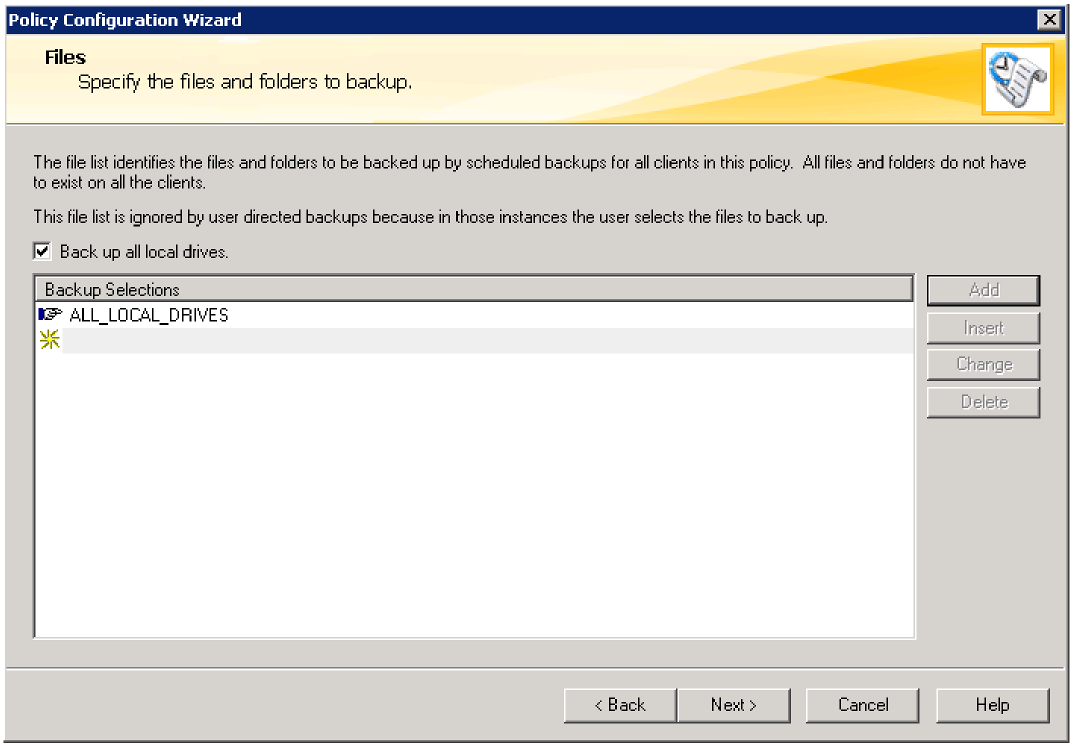
For easier management, fill the client list with clients that have similar configurations and perform the same type of work.

Name	Hardware	Operating System
lglbd184	Linux	SuSE2.6.16
lglbd178	Linux	SuSE2.6.16
lgloe198	Linux	SuSE2.6.16
losar237	Linux	SuSE2.6.16

☑ Detect operating system when adding or changing a client.

(This is successful only on Windows platforms.)

5. On the **Files** screen, add the specific directories/files for backup or select **Backup all local drives**, based on the requirement. For SRM VMs, back up all local drives.



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 backups for all clients in this policy. All files and folders do not have to exist on all the clients.

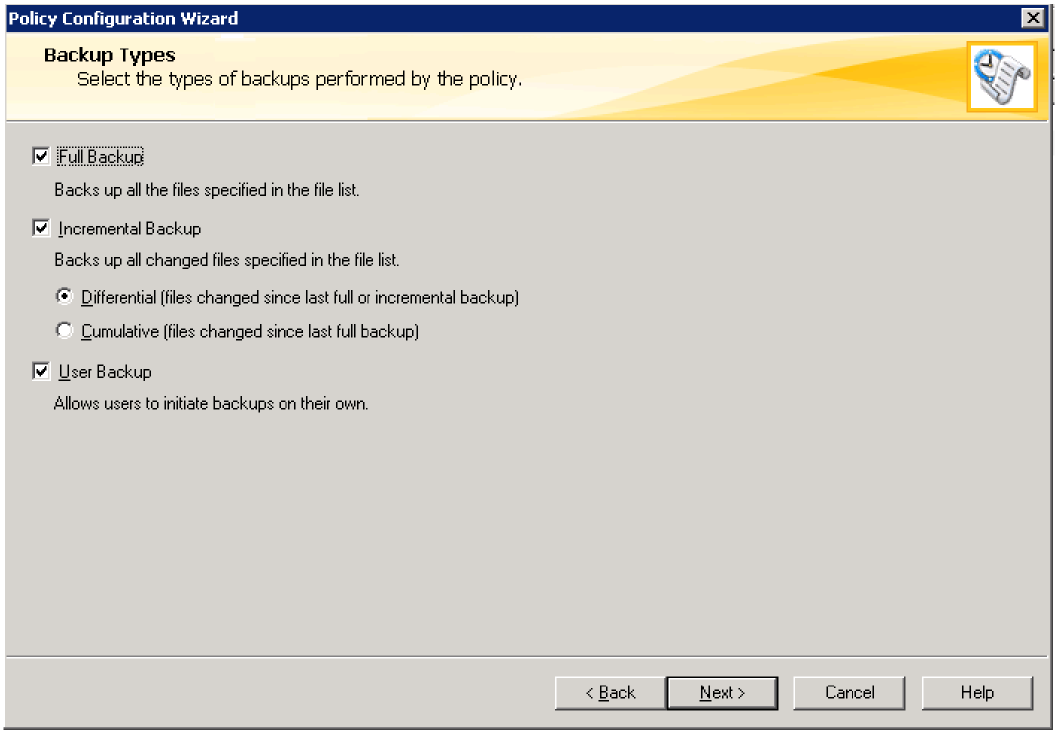
This file list is ignored by user directed backups because in those instances the user selects the files to back up.

☑ Back up all local drives.

Backup Selections
ALL_LOCAL_DRIVES

Add
Insert
Change
Delete
< Back
Next >
Cancel
Help

6. On the **Backup Types** dialog, select **Full Backup**, **Incremental Backup**, and **Differential**. The user has an option to initiate the backup by selecting the **User Backup** option.



Policy Configuration Wizard
Backup Types
Select the types of backups performed by the policy.

☑ 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)

○ Cumulative (files changed since last full backup)

☑ User Backup

Allows users to initiate backups on their own.

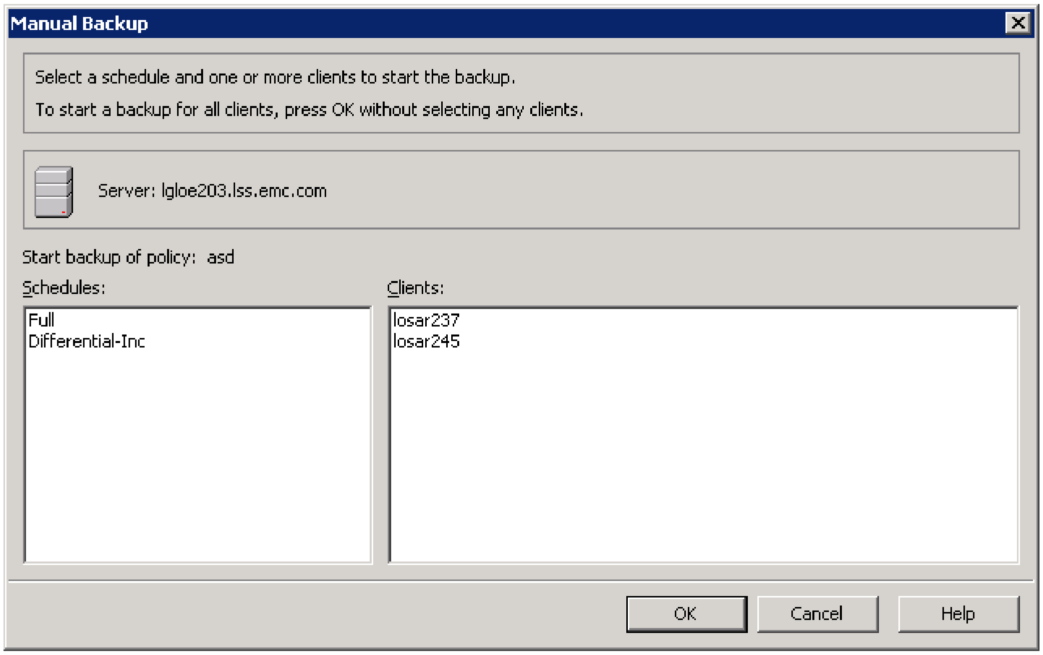
< Back
Next >
Cancel
Help

7. Next, schedule the frequency of backups based on your business requirements. Verify the policy terms, and a process is created to trigger the backup at scheduled intervals.

Initiate Manual Backup

You can initiate the backup manually, apart from the scheduled backup created during policy creation.

- Select the policy from the **Policies** tree in the NetBackup Administration Console, right click and select **manual backup**. Select the type of backup and VMs according to the policy setup and initiate the backup.



Select a schedule and one or more clients to start the backup.

To start a backup for all clients, press OK without selecting any clients.

Server: lgloe203.lss.emc.com

Start backup of policy: asd

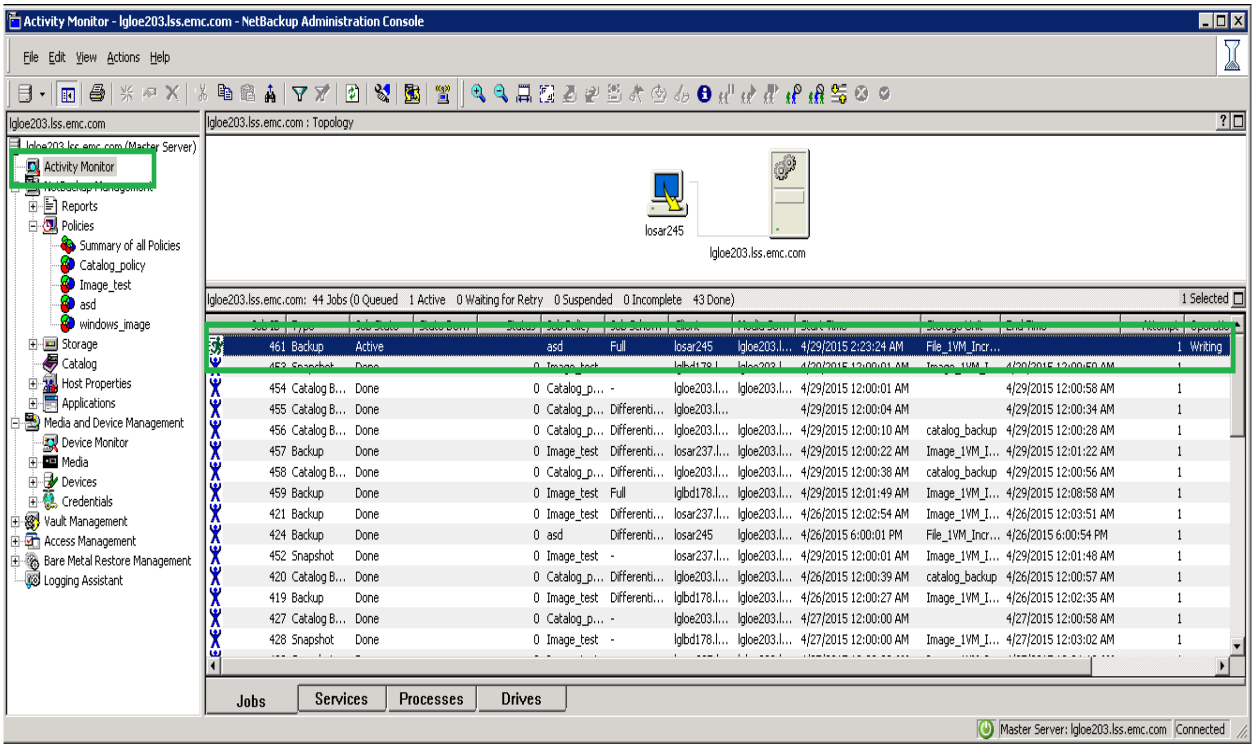
Schedules:

Full
Differential-Inc

Clients:

losar237
losar245

- Monitor the progress using the **Activity Monitor**. This displays the type of backup, start time, end time, how much data has been backed up, and so on.



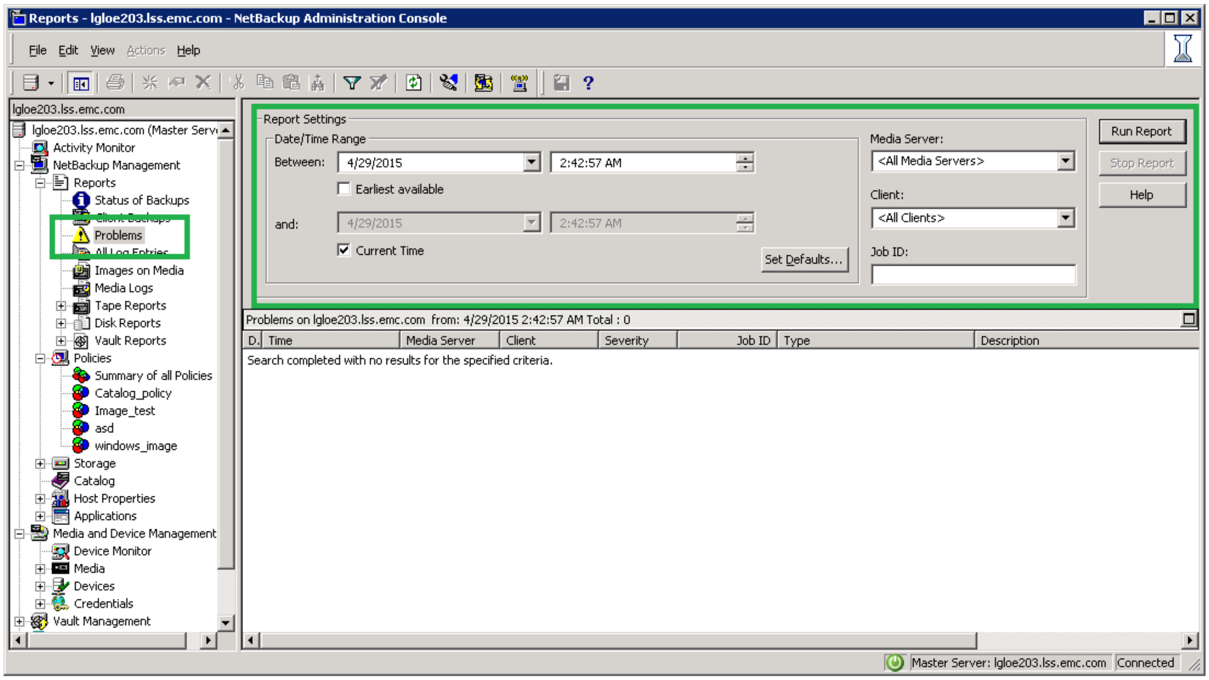
lgloe203.lss.emc.com: 44 Jobs (0 Queued 1 Active 0 Waiting for Retry 0 Suspended 0 Incomplete 43 Done)

1 Selected

Job ID	Type	Job State	State Details	Status	Job Policy	Job Schedule	Client	Media Server	Start Time	Storage Unit	End Time	Attempt	Operation
461	Backup	Active			asd	Full	losar245	lgloe203.l...	4/29/2015 2:23:24 AM	File_1VM_Incr...		1	Writing
453	Snapshot	Done		0	Image_test		lglbd178.l...	lgloe203.l...	4/29/2015 12:00:01 AM	Image_1VM_I...	4/29/2015 12:00:50 AM	1	
454	Catalog B...	Done		0	Catalog_p...	-	lgloe203.l...	lgloe203.l...	4/29/2015 12:00:01 AM		4/29/2015 12:00:58 AM	1	
455	Catalog B...	Done		0	Catalog_p...	Differenti...	lgloe203.l...		4/29/2015 12:00:04 AM		4/29/2015 12:00:34 AM	1	
456	Catalog B...	Done		0	Catalog_p...	Differenti...	lgloe203.l...	lgloe203.l...	4/29/2015 12:00:10 AM	catalog_backup	4/29/2015 12:00:28 AM	1	
457	Backup	Done		0	Image_test	Differenti...	losar237.l...	lgloe203.l...	4/29/2015 12:00:22 AM	Image_1VM_I...	4/29/2015 12:01:22 AM	1	
458	Catalog B...	Done		0	Catalog_p...	Differenti...	lgloe203.l...	lgloe203.l...	4/29/2015 12:00:38 AM	catalog_backup	4/29/2015 12:00:56 AM	1	
459	Backup	Done		0	Image_test	Full	lglbd178.l...	lgloe203.l...	4/29/2015 12:01:49 AM	Image_1VM_I...	4/29/2015 12:08:58 AM	1	
421	Backup	Done		0	Image_test	Differenti...	losar237.l...	lgloe203.l...	4/26/2015 12:02:54 AM	Image_1VM_I...	4/26/2015 12:03:51 AM	1	
424	Backup	Done		0	asd	Differenti...	losar245	lgloe203.l...	4/26/2015 6:00:01 PM	File_1VM_Incr...	4/26/2015 6:00:54 PM	1	
452	Snapshot	Done		0	Image_test	-	losar237.l...	lgloe203.l...	4/29/2015 12:00:01 AM	Image_1VM_I...	4/29/2015 12:01:48 AM	1	
420	Catalog B...	Done		0	Catalog_p...	Differenti...	lgloe203.l...	lgloe203.l...	4/26/2015 12:00:39 AM	catalog_backup	4/26/2015 12:00:57 AM	1	
419	Backup	Done		0	Image_test	Differenti...	lglbd178.l...	lgloe203.l...	4/26/2015 12:00:27 AM	Image_1VM_I...	4/26/2015 12:02:35 AM	1	
427	Catalog B...	Done		0	Catalog_p...	-	lgloe203.l...	lgloe203.l...	4/27/2015 12:00:00 AM		4/27/2015 12:00:58 AM	1	
428	Snapshot	Done		0	Image_test	-	lglbd178.l...	lgloe203.l...	4/27/2015 12:00:00 AM	Image_1VM_I...	4/27/2015 12:03:02 AM	1	

Master Server: lgloe203.lss.emc.com Connected

- Monitor any issues encountered during the backup using the **Problems** window, where you can generate reports based on a filter.



Between: 4/29/2015 2:42:57 AM

☐ Earliest available

and: 4/29/2015 2:42:57 AM

☑ Current Time

Media Server: <All Media Servers>

Client: <All Clients>

Job ID:

Problems on lgloe203.lss.emc.com from: 4/29/2015 2:42:57 AM Total : 0

D.	Time	Media Server	Client	Severity	Job ID	Type	Description

Search completed with no results for the specified criteria.

Master Server: lgloe203.lss.emc.com Connected

SRM vApp Image Restore

The VM image restore procedure is essentially the same for 1-VM vApps and 4-VM vApps, differing only when you are restoring images to an alternate destination. Complete the procedure below to start the process of restoring images.

Image Restore for Both 1-VM and 4-VM vApps

1. Launch the NetBackup **Backup, Archive, and Restore** console from the Toolbar menu (it is also available via the **Administration** Console).

2. Navigate to **File → Specify NetBackup Machine and Policy Type**.

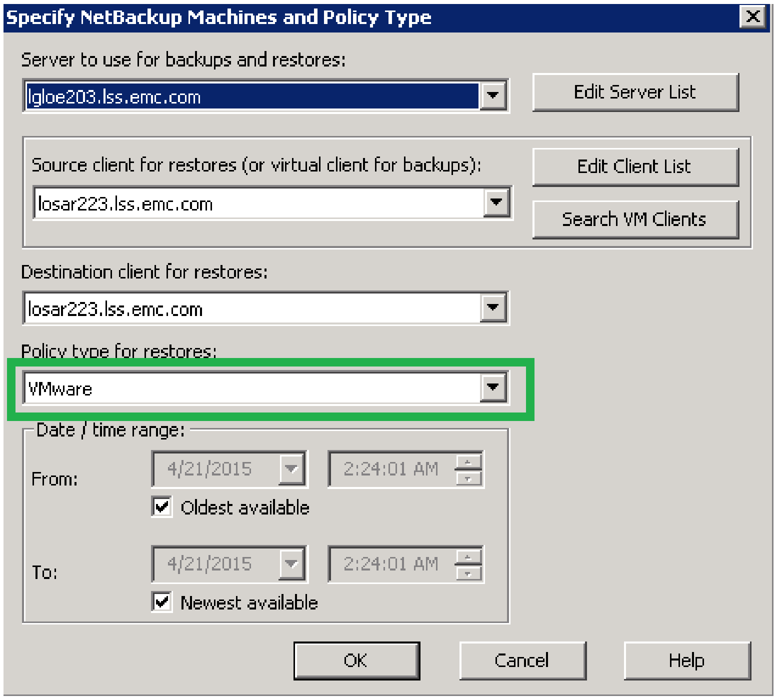
    a. In the **Policy** dialog, select the **Master Server** for **Server to use for backup and restores**.

    b. Search/add VM clients and set the targeted VM for the restore as **Source client for restores (or virtual client for backup)**.

    c. Make the destination client the same as the source client.

    d. Set the **Policy Type for restores** to **VMware**.

    e. Choose a date and time range to get the images from the image repository and click **OK**.



Specify NetBackup Machines and Policy Type

Server to use for backups and restores: lgloe203.lss.emc.com

Source client for restores (or virtual client for backups): losar223.lss.emc.com

Destination client for restores: losar223.lss.emc.com

Policy type for restores: VMware

Date / time range:

From: 4/21/2015 2:24:01 AM

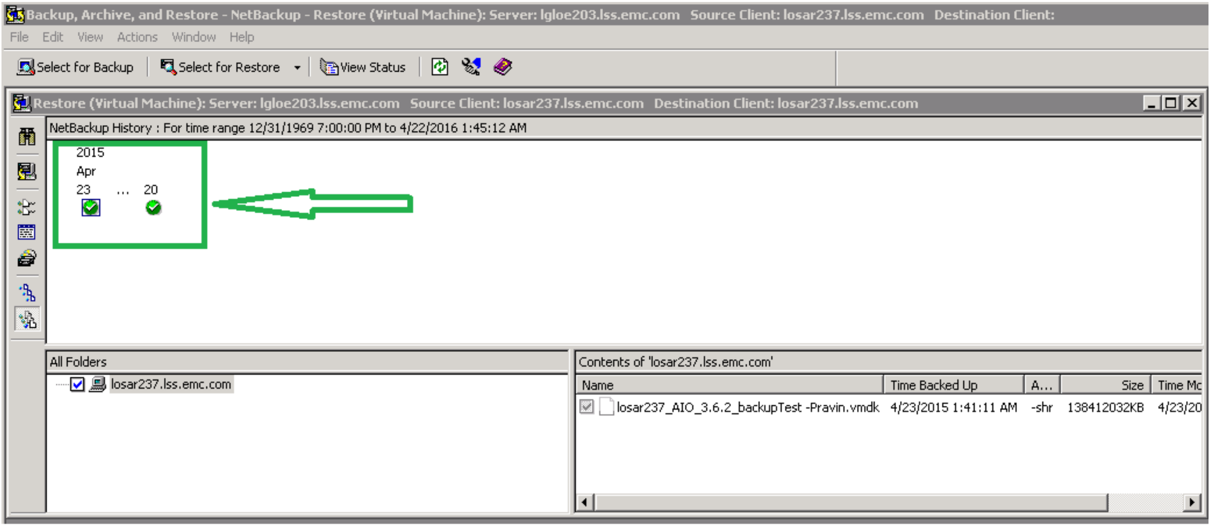
☑ Oldest available

To: 4/21/2015 2:24:01 AM

☑ Newest available

3. Navigate to **File → Select files and folders to Restore → from Virtual Machine Backup**.

4. Select the image to restore and select **Action → Restore…**



Backup, Archive, and Restore - NetBackup - Restore (Virtual Machine): Server: lgloe203.lss.emc.com Source Client: losar237.lss.emc.com Destination Client:

Restore (Virtual Machine): Server: lgloe203.lss.emc.com Source Client: losar237.lss.emc.com Destination Client: losar237.lss.emc.com

NetBackup History : For time range 12/31/1969 7:00:00 PM to 4/22/2016 1:45:12 AM

2015
Apr
23 … 20

All Folders

☑ losar237.lss.emc.com

Contents of 'losar237.lss.emc.com'

Name	Time Backed Up	A…	Size	Time Mc
☑ losar237_AIO_3.6.2_backupTest -Pravin.vmdk	4/23/2015 1:41:11 AM	-shr	138412032KB	4/23/20

You can restore the image to the same location or select an alternate location. The SRM vApp can be restored selecting any of the options. Continue with Recovery Destination.

Recovery Destination

You can restore to the original location or to an alternate location. The following list identifies the advantage and disadvantages of each method.

Original Location

- Advantages

- The recovery can be done without making any changes to the image properties.
- The restored SRM vApp image does not lose its IP configuration and along with APG services everything comes up smoothly. The data collection also works properly and no user intervention is required once restored.

- Disadvantages
  - The restored images delete the existing SRM vApp from vCenter.
  - Deleting the vApp from vCenter removes all associated snapshots.

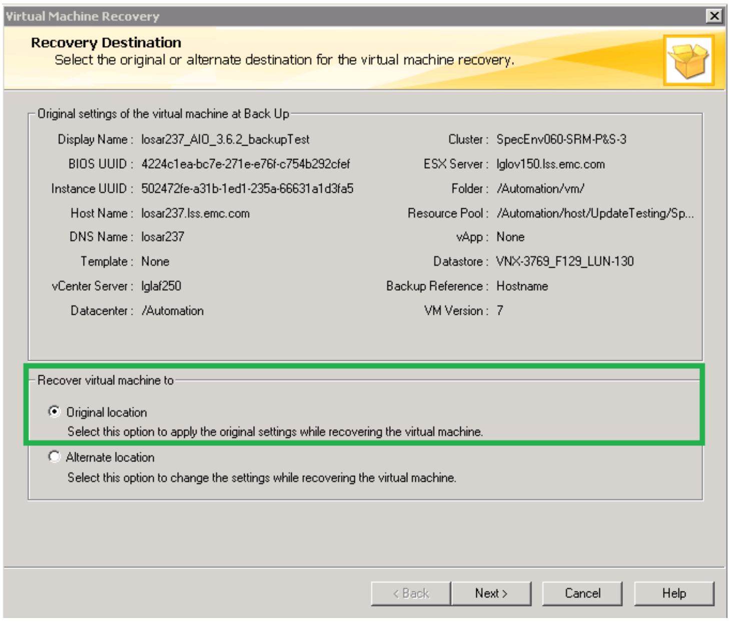
Alternate Location

- Advantages
  - Many customizations are allowed, including placing the VM in an entirely different environment.
  - You can change the ESX server, display name, resource pool, datastore, or folder name. Be careful while making changes here, The resources should be available and need to be under one umbrella (for example. you cannot assign an ESX server that has no connection to the specified datastore).
- Disadvantages
  - The IP configuration is lost.
  - Assigning a different IP address and host name is not allowed because the SolutionPacks were registered with the respective host names and IP address, and do not work with a different IP configuration.

Restore to Original Location

This procedure continues the Image Restore for both 1-VM and 4-VM vApps procedure. The procedure is the same for both 1-VM and 4-VM vApps.

1. On the **Recovery Destination** dialog, set **Recovery Virtual Machine to** to **Original location** and click **Next**.



Recovery Destination

Select the original or alternate destination for the virtual machine recovery.

Original settings of the virtual machine at Back Up

Display Name : losar237_AIO_3.6.2_backupTest
BIOS UUID : 4224c1ea-bc7e-271e-e76f-c754b292cfef
Instance UUID : 502472fe-a31b-1ed1-235a-66631a1d3fa5
Host Name : losar237.lss.emc.com
DNS Name : losar237
Template : None
vCenter Server : lglaf250
Datacenter : /Automation

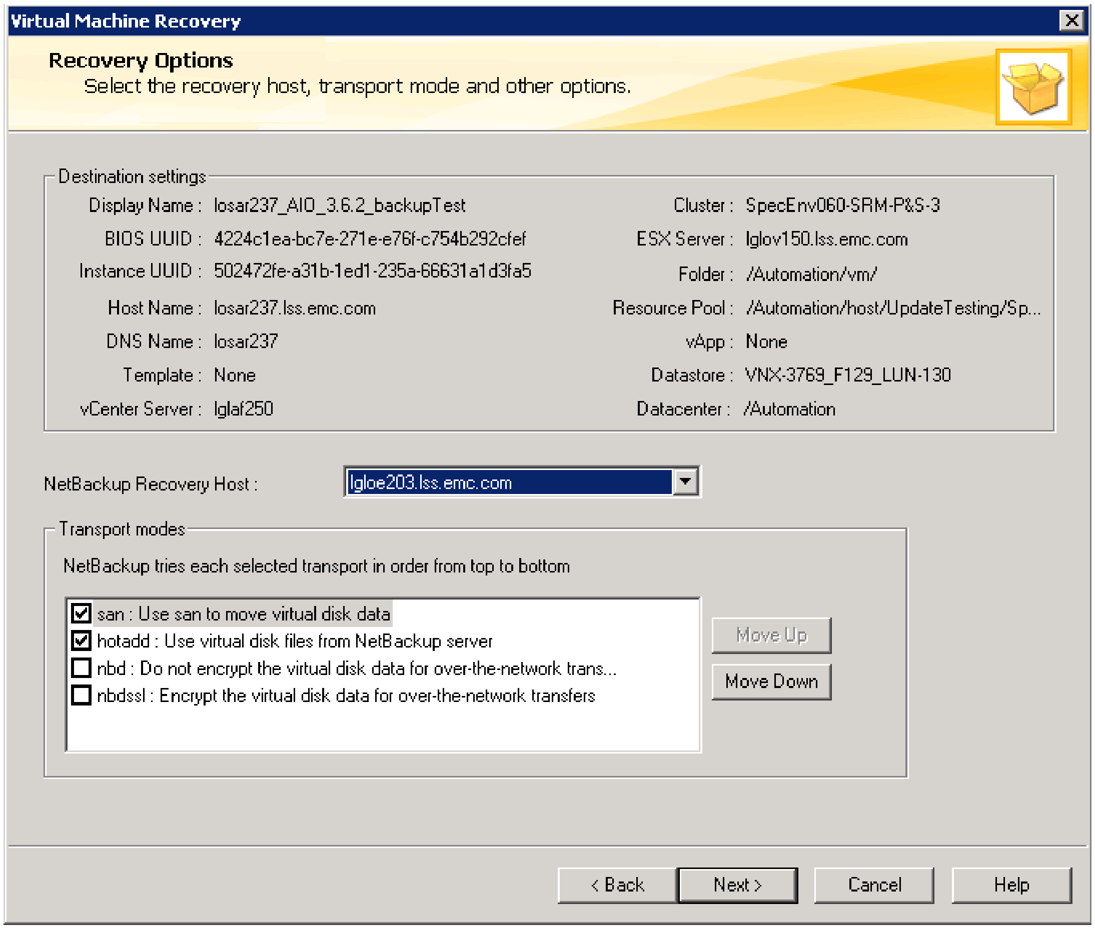
Cluster : SpecEnv060-SRM-P&S-3
ESX Server : lglov150.lss.emc.com
Folder : /Automation/vm/
Resource Pool : /Automation/host/UpdateTesting/Sp...
vApp : None
Datastore : VNX-3769_F129_LUN-130
Backup Reference : Hostname
VM Version : 7

Recover virtual machine to

● Original location
Select this option to apply the original settings while recovering the virtual machine.

○ Alternate location
Select this option to change the settings while recovering the virtual machine.

2. Click **Next** on the **Recovery Options** dialog. Recovering to the original location keeps all VM settings intact and maintains the default settings.



Destination settings

Display Name :	losar237_AIO_3.6.2_backupTest	Cluster :	SpecEnv060-SRM-P&S-3
BIOS UUID :	4224c1ea-bc7e-271e-e76f-c754b292cfef	ESX Server :	lglov150.lss.emc.com
Instance UUID :	502472fe-a31b-1ed1-235a-66631a1d3fa5	Folder :	/Automation/vm/
Host Name :	losar237.lss.emc.com	Resource Pool :	/Automation/host/UpdateTesting/Sp...
DNS Name :	losar237	vApp :	None
Template :	None	Datastore :	VNX-3769_F129_LUN-130
vCenter Server :	lglaf250	Datacenter :	/Automation

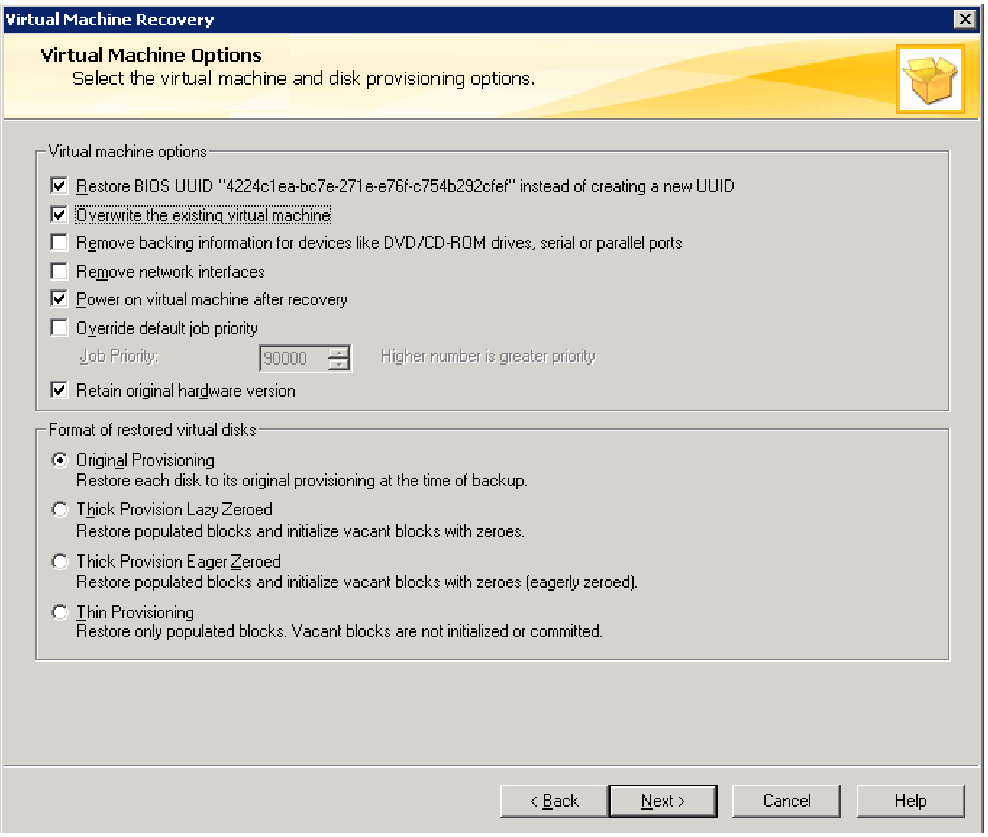
NetBackup Recovery Host : lgloe203.lss.emc.com

Transport modes

NetBackup tries each selected transport in order from top to bottom

- ☑ san : Use san to move virtual disk data
- ☑ hotadd : Use virtual disk files from NetBackup server
- ☐ nbd : Do not encrypt the virtual disk data for over-the-network trans...
- ☐ nbdssl : Encrypt the virtual disk data for over-the-network transfers

3. Set the **Virtual Machine Options** according to the screen below. Keep the original provisioning choice and retain the original hardware version and BIOS UUID. **Overwrite the existing virtual machine** must be enabled in case the VM is already in place because creating two VMs with the same name in same vCenter is not allowed. Check **Power on the virtual machine after recovery**. Click **Next**.



Virtual Machine Recovery

Virtual Machine Options

Select the virtual machine and disk provisioning options.

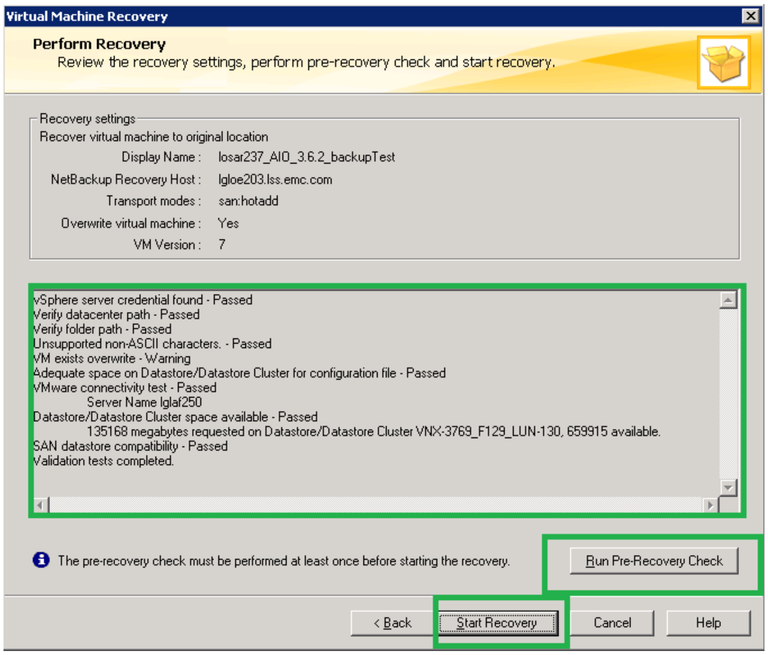
Virtual machine options

☑ Restore BIOS UUID "4224c1ea-bc7e-271e-e76f-c754b292cfef" instead of creating a new UUID
☑ Overwrite the existing virtual machine
☐ Remove backing information for devices like DVD/CD-ROM drives, serial or parallel ports
☐ Remove network interfaces
☑ Power on virtual machine after recovery
☐ Override default job priority
Job Priority: 90000 Higher number is greater priority
☑ Retain original hardware version

Format of restored virtual disks

● Original Provisioning
Restore each disk to its original provisioning at the time of backup.
○ Thick Provision Lazy Zeroed
Restore populated blocks and initialize vacant blocks with zeroes.
○ Thick Provision Eager Zeroed
Restore populated blocks and initialize vacant blocks with zeroes (eagerly zeroed).
○ Thin Provisioning
Restore only populated blocks. Vacant blocks are not initialized or committed.

4. On the **Perform Recovery** dialog, select **Run Pre-recovery Check**. When the pre-recovery check completes successfully, select **Start Recovery**.



Virtual Machine Recovery

Perform Recovery

Review the recovery settings, perform pre-recovery check and start recovery.

Recovery settings

Recover virtual machine to original location

Display Name :	losar237_AIO_3.6.2_backupTest
NetBackup Recovery Host :	lgloe203.lss.emc.com
Transport modes :	san:hotadd
Overwrite virtual machine :	Yes
VM Version :	7

```
vSphere server credential found - Passed
Verify datacenter path - Passed
Verify folder path - Passed
Unsupported non-ASCII characters. - Passed
VM exists overwrite - Warning
Adequate space on Datastore/Datastore Cluster for configuration file - Passed
VMware connectivity test - Passed
        Server Name lglaf250
Datastore/Datastore Cluster space available - Passed
        135168 megabytes requested on Datastore/Datastore Cluster VNX-3769_F129_LUN-130, 659915 available.
SAN datastore compatibility - Passed
Validation tests completed.
```

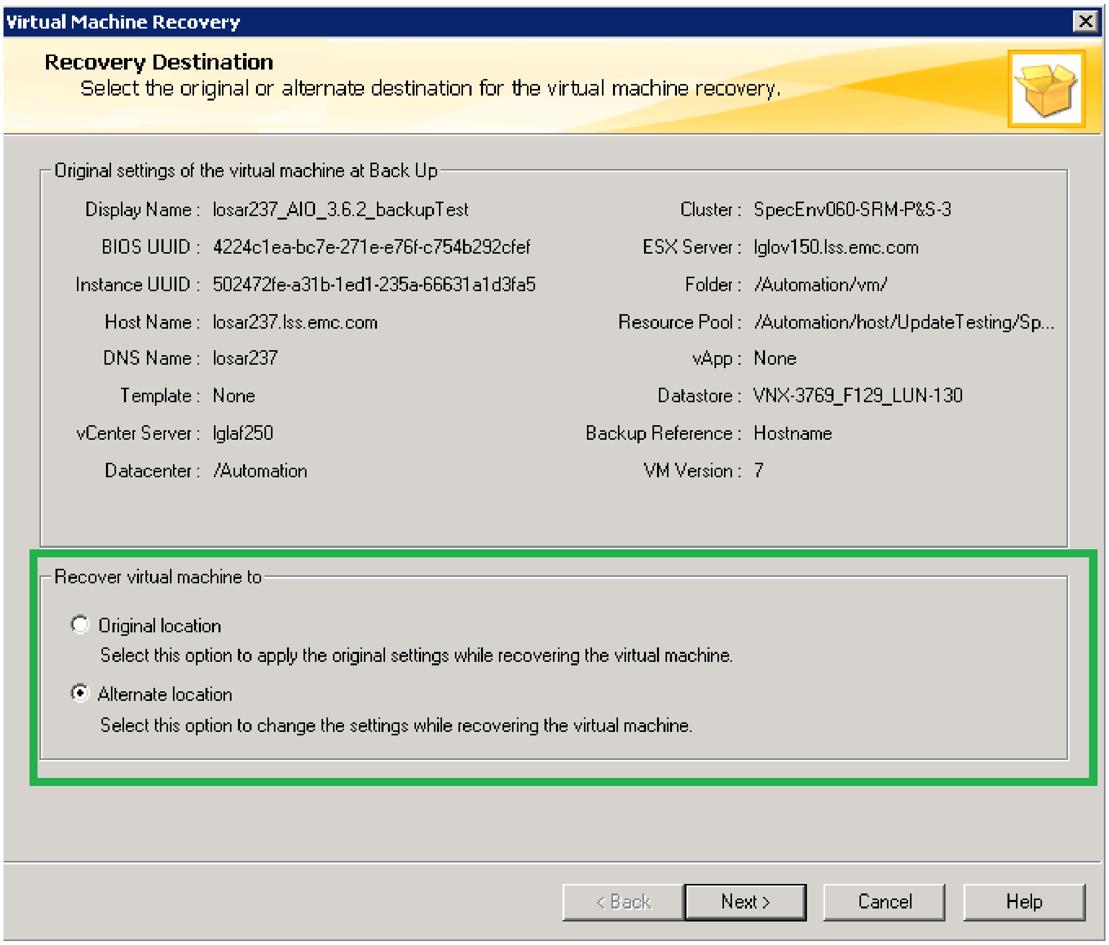
The pre-recovery check must be performed at least once before starting the recovery.

5. After starting the restore, a pop-up appears offering to view the progress. Alternately you may select **View Status** from the Restore Console to watch the restore progress.

Restore to an Alternate Location

This procedure continues the Image Restore for both 1-VM and 4-VM vApps procedure. While this procedure applies to both 1-VM and 4-VM vApps, note the differences in step 2.

1. On the **Recovery Destination** dialog, set **Recovery Virtual Machine to** to **Alternate location** and click **Next**.



Virtual Machine Recovery

Recovery Destination

Select the original or alternate destination for the virtual machine recovery.

Original settings of the virtual machine at Back Up

Display Name :	losar237_AIO_3.6.2_backupTest	Cluster :	SpecEnv060-SRM-P&S-3
BIOS UUID :	4224c1ea-bc7e-271e-e76f-c754b292cfef	ESX Server :	lglov150.lss.emc.com
Instance UUID :	502472fe-a31b-1ed1-235a-66631a1d3fa5	Folder :	/Automation/vm/
Host Name :	losar237.lss.emc.com	Resource Pool :	/Automation/host/UpdateTesting/Sp...
DNS Name :	losar237	vApp :	None
Template :	None	Datastore :	VNX-3769_F129_LUN-130
vCenter Server :	lglaf250	Backup Reference :	Hostname
Datacenter :	/Automation	VM Version :	7

Recover virtual machine to

○ Original location

Select this option to apply the original settings while recovering the virtual machine.

● Alternate location

Select this option to change the settings while recovering the virtual machine.

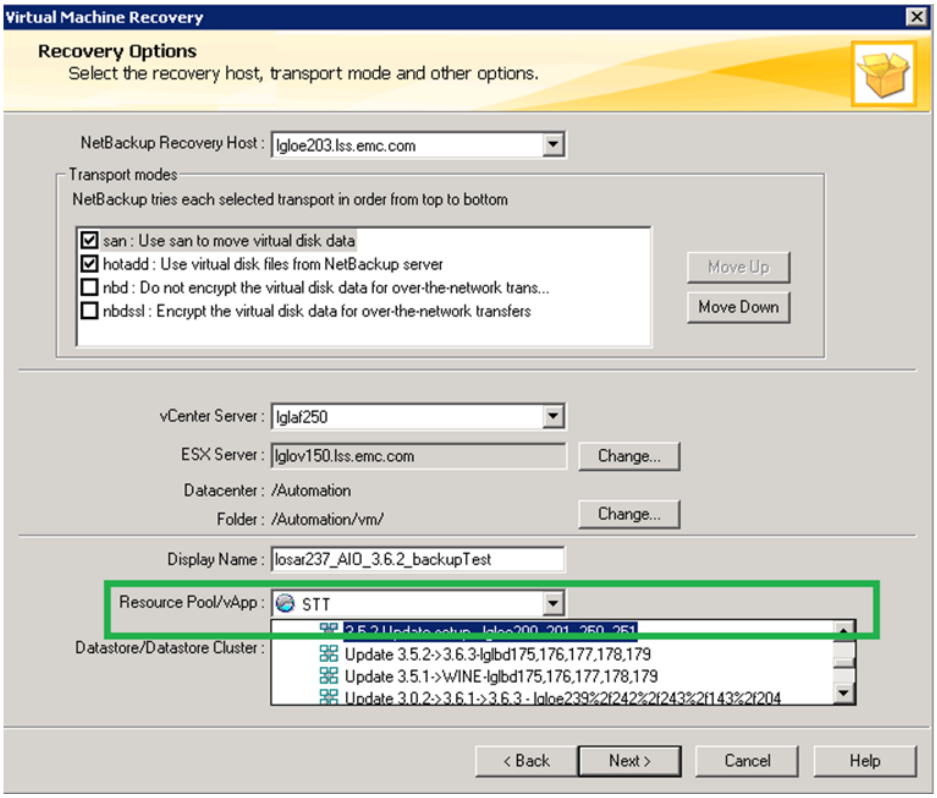
2. On the **Recovery Options** dialog, set the **Transport mode**s to **san** or **hotadd** (or select both).

   - Do not use **nbd** and **nbdssl** to avoid the performance overhead for data manipulation.

   - Change the display name of the VM if the restore will be placed in the same location as the original VM.

   - You can change the datastore and other fields as well.

The restore procedure for a 4-VM vApp is the same the procedures for a 1-VM vApp. Simply choose the **Resource pool / vApp** for the respective VM. The snapshot below shows how to specify the VM to restore under a specific vApp.



Virtual Machine Recovery

Recovery Options

Select the recovery host, transport mode and other options.

NetBackup Recovery Host : lgloe203.lss.emc.com

Transport modes

NetBackup tries each selected transport in order from top to bottom

- ☑ san : Use san to move virtual disk data
- ☑ hotadd : Use virtual disk files from NetBackup server
- ☐ nbd : Do not encrypt the virtual disk data for over-the-network trans...
- ☐ nbdssl : Encrypt the virtual disk data for over-the-network transfers

vCenter Server : lglaf250

ESX Server : lglov150.lss.emc.com

Datacenter : /Automation

Folder : /Automation/vm/

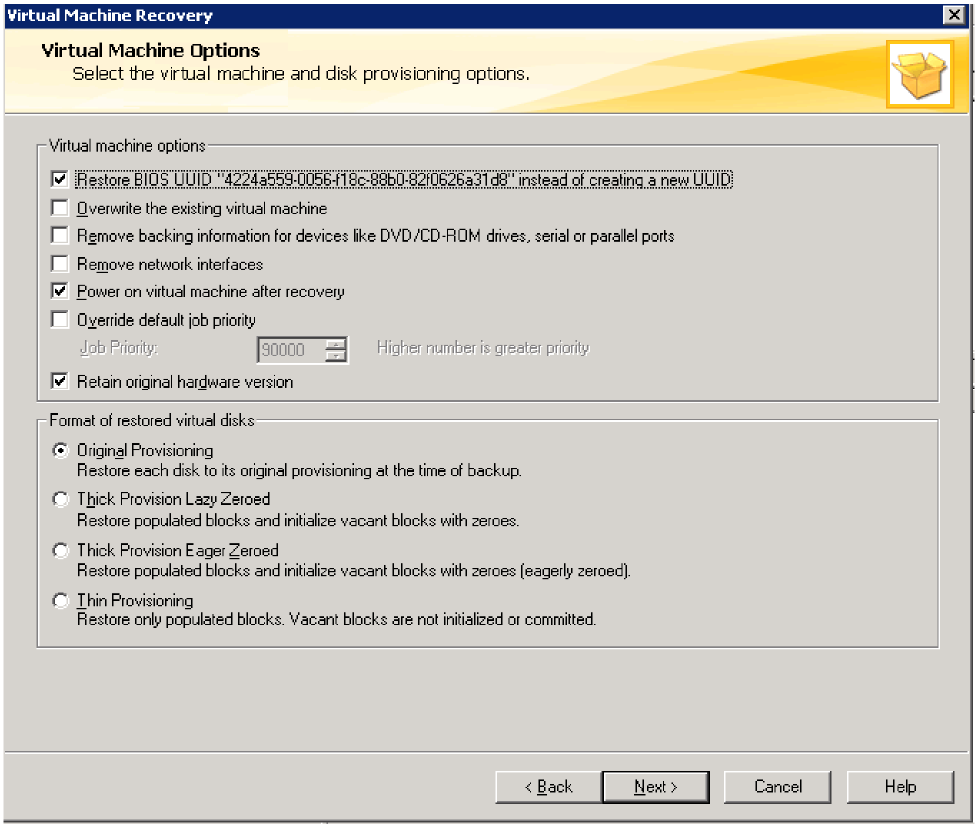
Display Name : losar237_AIO_3.6.2_backupTest

Resource Pool/vApp : STT

Datastore/Datastore Cluster :

- 3.5.2 Update setup - lgloe200, 201, 250, 251
- Update 3.5.2->3.6.3-lglbd175,176,177,178,179
- Update 3.5.1->WINE-lglbd175,176,177,178,179
- Update 3.0.2->3.6.1->3.6.3 - lgloe239%2f242%2f243%2f143%2f204

3. On the **Virtual Machine Options** dialog, select **Restore BIOS UUID**, **Power on VM after recovery**, **Retain original hardware**, and **Original provisioning**. Keep the other options unselected.



Virtual Machine Recovery

Virtual Machine Options

Select the virtual machine and disk provisioning options.

Virtual machine options

- ☑ Restore BIOS UUID "4224a559-0056-f18c-88b0-82f0626a31d8" instead of creating a new UUID
- ☐ Overwrite the existing virtual machine
- ☐ Remove backing information for devices like DVD/CD-ROM drives, serial or parallel ports
- ☐ Remove network interfaces
- ☑ Power on virtual machine after recovery
- ☐ Override default job priority

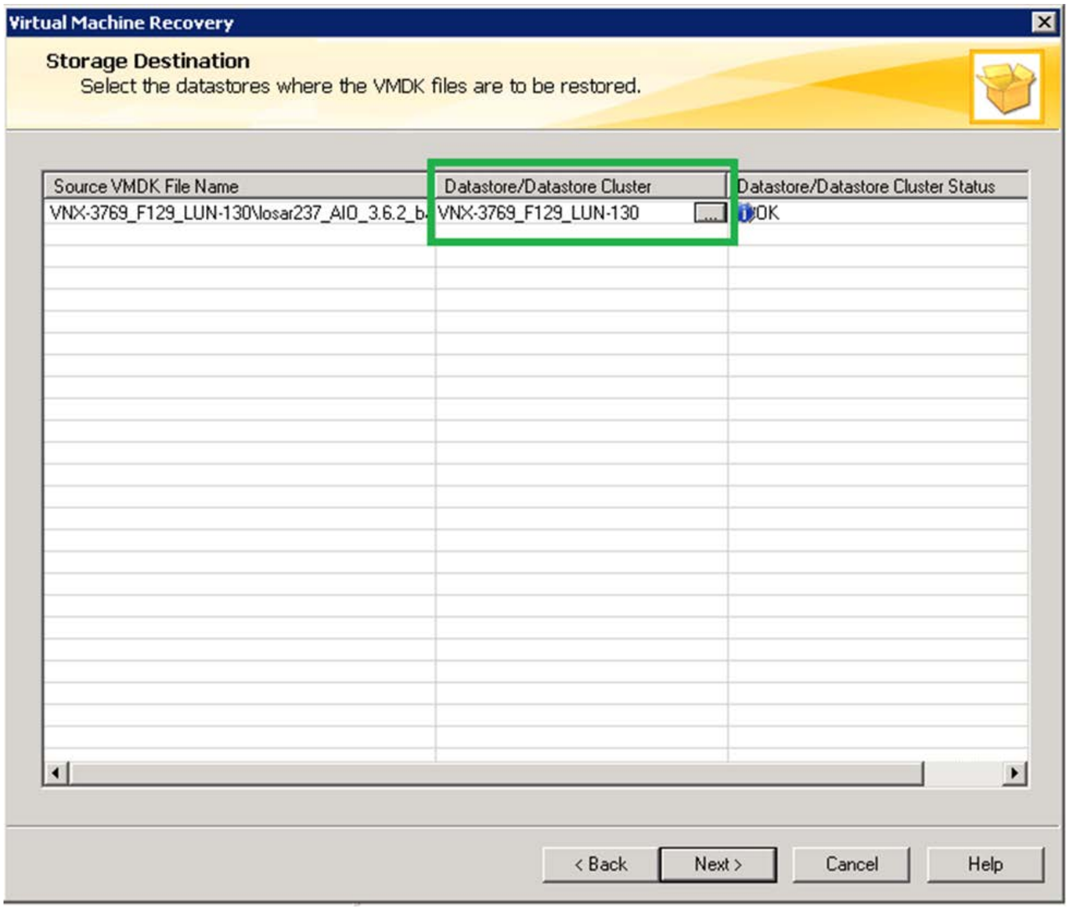
Job Priority: 90000 Higher number is greater priority

- ☑ Retain original hardware version

Format of restored virtual disks

- ● Original Provisioning
  Restore each disk to its original provisioning at the time of backup.
- ○ Thick Provision Lazy Zeroed
  Restore populated blocks and initialize vacant blocks with zeroes.
- ○ Thick Provision Eager Zeroed
  Restore populated blocks and initialize vacant blocks with zeroes (eagerly zeroed).
- ○ Thin Provisioning
  Restore only populated blocks. Vacant blocks are not initialized or committed.

4. On the **Storage Destination** dialog, change the datastore if required and click **Next**.



Virtual Machine Recovery

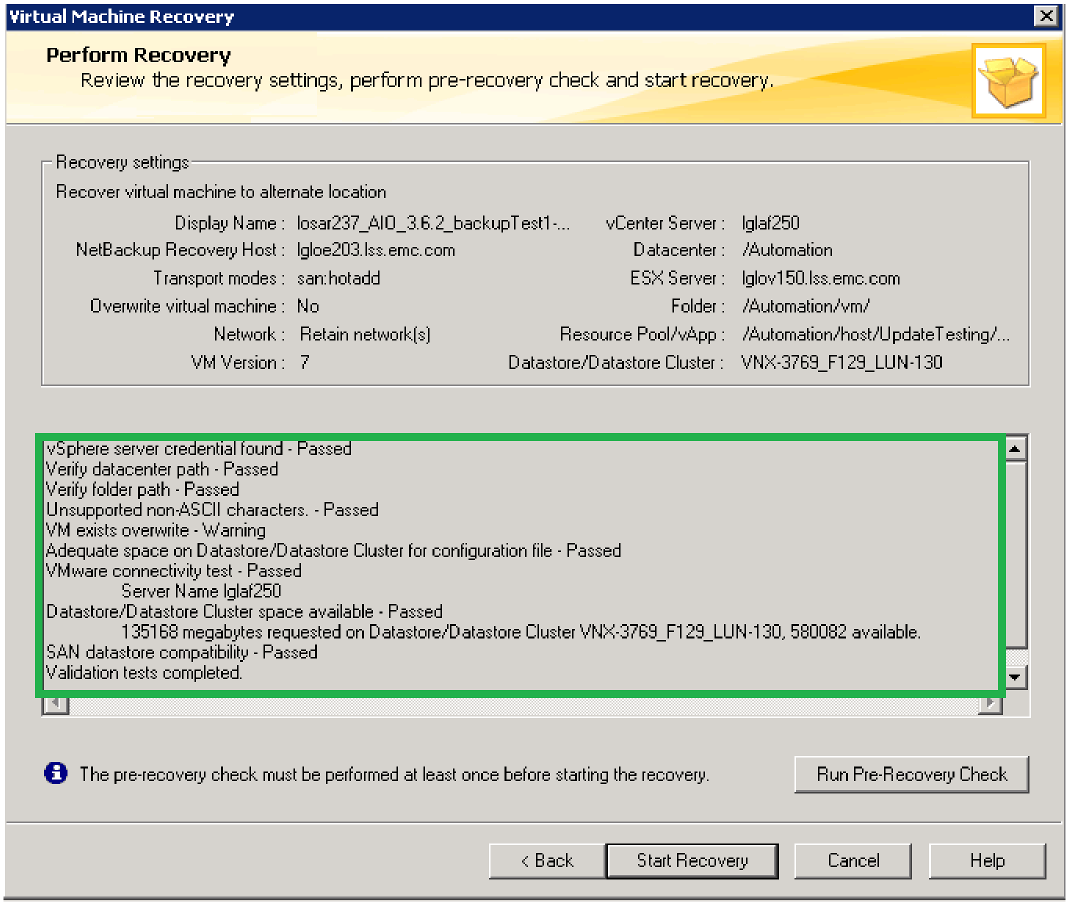
Storage Destination

Select the datastores where the VMDK files are to be restored.

Source VMDK File Name	Datastore/Datastore Cluster	Datastore/Datastore Cluster Status
VNX-3769_F129_LUN-130\losar237_AIO_3.6.2_b	VNX-3769_F129_LUN-130	OK

5. Make sure that **Retain the original Network configuration** is selected on the **Network Connections** dialog and click **Next**.

6. On the **Perform Recovery** dialog, select **Run Pre-recovery Check**. When the pre-recovery check completes successfully, select **Start Recovery**.



Recover virtual machine to alternate location

Display Name : losar237_AIO_3.6.2_backupTest1-...
NetBackup Recovery Host : lgloe203.lss.emc.com
Transport modes : san:hotadd
Overwrite virtual machine : No
Network : Retain network(s)
VM Version : 7
vCenter Server : lglaf250
Datacenter : /Automation
ESX Server : lglov150.lss.emc.com
Folder : /Automation/vm/
Resource Pool/vApp : /Automation/host/UpdateTesting/...
Datastore/Datastore Cluster : VNX-3769_F129_LUN-130

```
vSphere server credential found - Passed
Verify datacenter path - Passed
Verify folder path - Passed
Unsupported non-ASCII characters. - Passed
VM exists overwrite - Warning
Adequate space on Datastore/Datastore Cluster for configuration file - Passed
VMware connectivity test - Passed
            Server Name lglaf250
Datastore/Datastore Cluster space available - Passed
            135168 megabytes requested on Datastore/Datastore Cluster VNX-3769_F129_LUN-130, 580082 available.
SAN datastore compatibility - Passed
Validation tests completed.
```

The pre-recovery check must be performed at least once before starting the recovery.

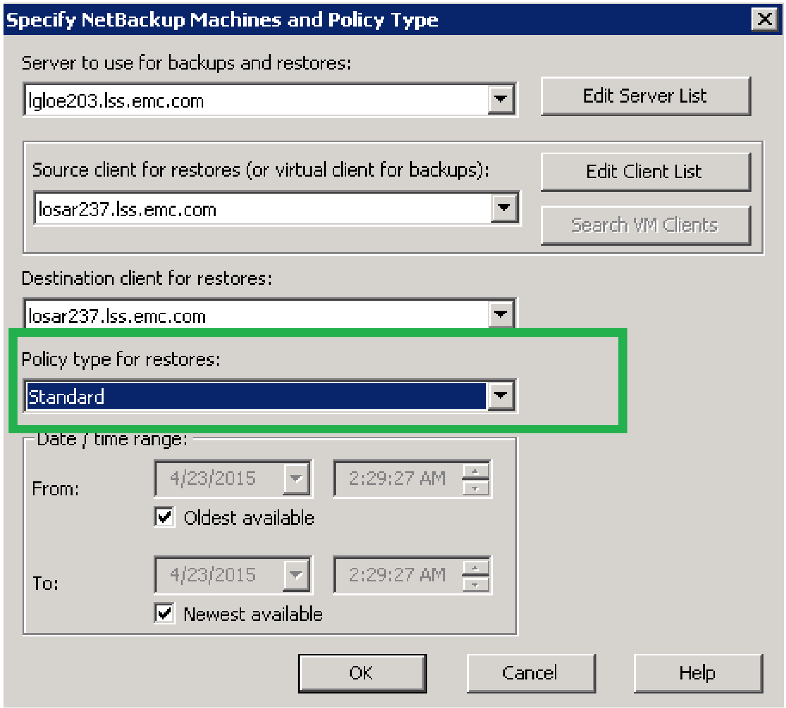
7. After starting the restore, a pop-up appears offering to show the progress. Alternately you can select **View Status** from the Restore Console to watch the restore progress.

SRM vApp File Restore

1-VM vApp File Restore

1. Launch the NetBackup **Backup, Archive, and Restore** console. You can also launch this from the **Toolbar** menu of the Administration Console.
2. Navigate to **File → Specify NetBackup Machine and Policy Type**.
3. In the **Policy** dialog, select the **Master Server** for **Server to use for backup and restores**.
4. Search/add the VM clients and set the targeted VM to restore as **Source client for restores (or virtual client for backup)**.
5. Make the destination client the same as the source client.
6. Set **Policy Type for restores** to **Standard**.

7. Choose a date and time range to see the available images in the image repository and click **OK**.



Specify NetBackup Machines and Policy Type

Server to use for backups and restores: lgloe203.lss.emc.com

Source client for restores (or virtual client for backups): losar237.lss.emc.com

Destination client for restores: losar237.lss.emc.com

Policy type for restores: Standard

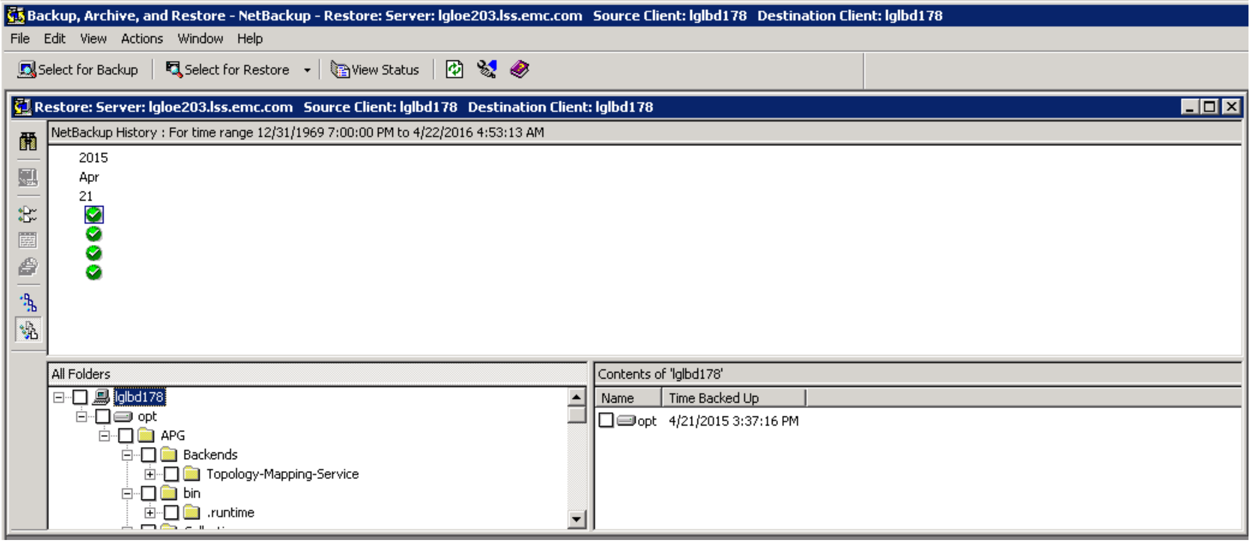
Date / time range:

From: 4/23/2015 2:29:27 AM ☑ Oldest available

To: 4/23/2015 2:29:27 AM ☑ Newest available

8. Navigate to **File → Select files and folders to Restore →** from **Normal Backup**.

9. Select the files to restore. Directories are listed with the date and time of the backup. Select **Action → Restore**…



Backup, Archive, and Restore - NetBackup - Restore: Server: lgloe203.lss.emc.com Source Client: lglbd178 Destination Client: lglbd178

Restore: Server: lgloe203.lss.emc.com Source Client: lglbd178 Destination Client: lglbd178

NetBackup History : For time range 12/31/1969 7:00:00 PM to 4/22/2016 4:53:13 AM

2015
Apr
21

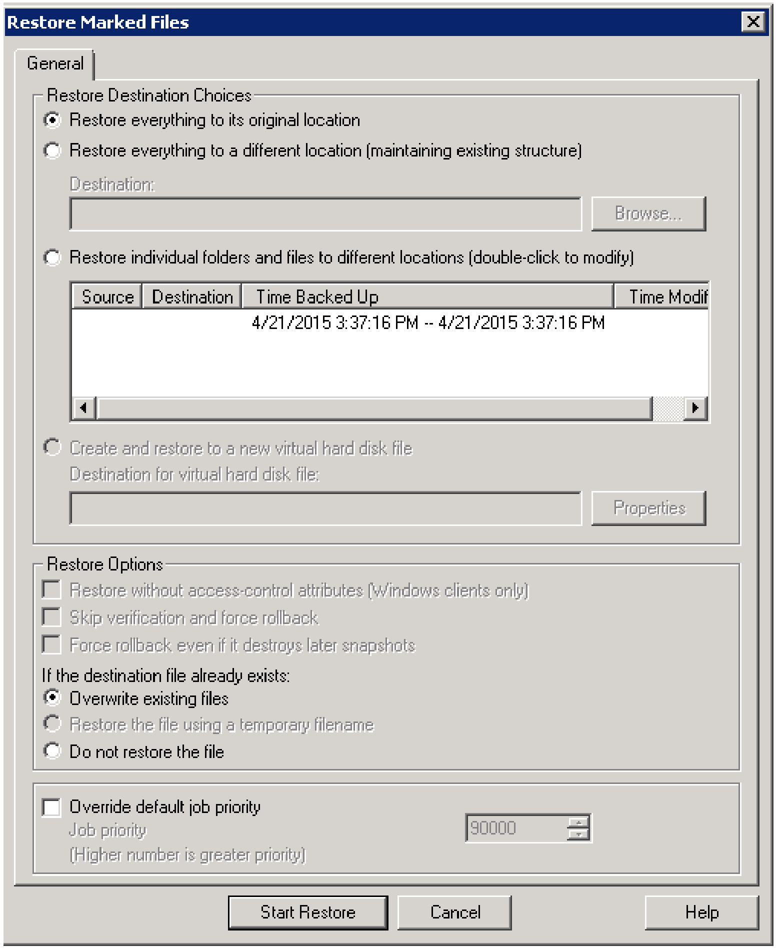
All Folders

- ☐ lglbd178
  - ☐ opt
    - ☐ APG
      - ☐ Backends
        - ☐ Topology-Mapping-Service
      - ☐ bin
        - ☐ .runtime

Contents of 'lglbd178'

Name	Time Backed Up
☐ opt	4/21/2015 3:37:16 PM

10. Maintain the settings on the **Restore Marked Files** dialog, and click **Start Restore** to initiate restore.



Restore Destination Choices

● Restore everything to its original location

○ Restore everything to a different location (maintaining existing structure)

Destination:

○ Restore individual folders and files to different locations (double-click to modify)

Source	Destination	Time Backed Up	Time Modif
		4/21/2015 3:37:16 PM -- 4/21/2015 3:37:16 PM	

○ Create and restore to a new virtual hard disk file

Destination for virtual hard disk file:

Restore Options

□ Restore without access-control attributes (Windows clients only)

□ Skip verification and force rollback

□ Force rollback even if it destroys later snapshots

If the destination file already exists:

● Overwrite existing files

○ Restore the file using a temporary filename

○ Do not restore the file

□ Override default job priority

Job priority 90000

(Higher number is greater priority)

4-VM vApp File Restore

The 4-VM vApp file restore procedure is the same as the 1-VM vApp procedure. Restore each VM individually.

Verify Operational Status

Do the following:

- Ensure that the VIPR SRM VM launches successfully with all of the APG services in a running state.
- Look for broken links. Resolve issues or document them for later follow up.
- Validate that the end-to-end topology is working. Resolve any issues.