Technical Whitepaper

NetBackup PureDisk Technical Product Management

PureDisk Remote Office Protection

Export to NetBackup Feature

09 May 2007

Document Information

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Revision History

Version	Date	Changes
1.0	May 9, 2007	Initial version.

Related Documents

Related documents		
		***Veritas NetBackup PureDisk™ Remote Office Edition Administrator's Guide*, version 6.1.3** ***Exporting PureDisk Data to NetBackup* guide dated February 9, 2007**

It is written for NetBackup PureDisk 6.1 MP1A and NetBackup 6.0 MP4 with engineering binaries on Solaris or Windows servers only.

The requirement for engineering binaries drops with NetBackup 6.0 MP5 and will be supported on all NBU platforms.

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1 SUMMARY

PureDisk 6.1 MP1A introduces the Export to NetBackup feature. This paper explains how to use this feature.

I will give a detailed description on how to demonstrate this feature using a VMware environment. The download locations for everything you need are given so you can try this same demonstration in your own VMware environment.

The information here was compiled from the *Veritas NetBackup PureDisk™ Remote Office Edition Administrator's Guide*, version 6.1.3 and the *Exporting PureDisk Data to NetBackup* guide dated February 9, 2007.

2 INTRODUCTION

If you want to move your PureDisk backed up files to NetBackup tape or disk the PureDisk Export to NetBackup feature is your ticket. When you export a backed-up Files and Folders data selection from a PureDisk storage pool to NetBackup, NetBackup catalogs the data and writes it to tape or disk in NetBackup's file format. You can use these files for long-term data protection, and if you ever delete the files from the original client or from PureDisk storage, you can restore them from NetBackup.

After you export the PureDisk files to NetBackup, you can log into a NetBackup administration console and treat these files as if they were native NetBackup files. From the administration console, you can generate NetBackup reports, browse the files, and manage the files.

To restore the data that you exported to NetBackup, use the NetBackup restore methods for restoring files.

Note: The PureDisk NetBackup export engine lets you export backed-up PureDisk Files and Folders data selections to NetBackup. The NetBackup export engine does not export other PureDisk data selection types (i.e. database backups).

Note: The NetBackup engineering binaries for NetBackup will not be necessary in NetBackup 6.0 MP5. This document will be updated at that time.

3 PREREQUISITES

The following sections describe the software, configuration, and licenses you need to have in order to export data from PureDisk to NetBackup and to restore data from NetBackup to PureDisk.

3.1Export prerequisites

3.1.1 PureDisk environment

To export data selections from the PureDisk environment, the following is required:

- PureDisk 6.1 MP1A on one or more nodes. This version contains the NetBackup export engine (nbu service). See the *Veritas NetBackup PureDisk Remote Office Edition Getting Started Guide*, version 6.1.3, for complete information on PureDisk hardware and software requirements.
    - PDOS 6.1 (PDOS 6.0 only if running in a VMware 32-bit guest)
    - PureDisk 6.1
    - PureDisk 6.1 MP1A
- NetBackup Enterprise 6.0 MP4 client software
    - NBU 6.0 for Unix Client (RedHat Linux version)
    - NBU 6.0 MP4 for Unix Client
- NBU_60_M_4_PDERedHatClient.tar (Linux RedHat 2.4) on each node that hosts the PureDisk NetBackup export engine service.

3.1.2 NetBackup environment

The NetBackup master and media server(s) where the PureDisk data is to be exported must contain the following:

- NetBackup Enterprise 6.0 MP4
    - NBU 6.0 Server (Windows 32-bit or Solaris Sun SPARC)
    - NBU 6.0 MP4 for Server (Windows or Solaris)

- The appropriate NetBackup server engineering binary:
    - On Windows NetBackup servers, install NBU_60_M_4_PDEWinServer.tar.
    - On Solaris NetBackup servers, install NBU_60_M_4_PDESolServer.tar.
    - The initial engineering binaries support Windows 32-bit and Solaris Sun SPARC only. However, data can be exported from all supported PureDisk agents.
- A NBU DataStore license. When you export PureDisk data to NetBackup, you use a NetBackup DataStore policy.

3.2Restore prerequisites

To restore files and folders type data selections from NetBackup, the following software is required:

- NBU Enterprise 6.0 MP4 client software
    - NBU 6.0 Client (Windows or Solaris)
    - NBU 6.0 MP4 for Clients (Windows or Solaris)
- The appropriate NetBackup client engineering binary:
    - Since NBU_60_M_4_PDERedHatClient.tar must be installed on each node that hosts the PureDisk NetBackup export engine service, these nodes can perform restores as well without additional NetBackup client software.
    - On Windows NetBackup clients, install NBU_60_M_4_PDEWinClient.tar.
    - On Solaris NetBackup clients, install NBU_60_M_4_PDESolClient.tar.

When you restore this PureDisk data, you perform the restore from NetBackup, and you restore to NetBackup. If necessary, you can use a network transfer method to move the data to the correct PureDisk client. If you want to put the files back under PureDisk control again, use PureDisk to back them up (from the original PureDisk client or an alternate).

4 CONFIGURING PUREDISK AND NETBACKUP

To enable the PureDisk export capability, you need to configure both of the following on the same PureDisk node:

- The PureDisk NetBackup export engine. To configure this, install the PureDisk nbu service on this node. When you install the nbu service, you enable this node to export data from this PureDisk storage pool to a NetBackup environment.

- The NetBackup client software. This is distributed with NetBackup.

You can configure the preceding software on its own, dedicated node, or you can configure this software on a node with other PureDisk components. In a multi-node environment it is possible to configure a node with only the NetBackup client and PureDisk NetBackup export engine. This node can be a low-end machine because it only serves to transfer data. If you have an all-in-one PureDisk environment, you would have to install the NetBackup client on that node along with the PureDisk NetBackup export engine.

To increase export performance in a multi-node PureDisk environment, it is possible to install multiple export engine services on multiple PureDisk nodes. This will allow you to export multiple data selections in parallel.

4.1 Configuring PureDisk

4.1.1 Create PureDisk Storage Pool

1. Install PDOS
2. Install PD 6.1
3. Apply PD 6.1 MP1A

4.1.2 Configure the PureDisk NetBackup export engine

- Use `edit_topology.sh`
- Choose 5 to edit a node
- Choose 2 to edit the services
- Re-enter all the necessary services + nbu service
- Save the new topology

4.1.3 Install the PureDisk NetBackup export engine

Run add_NBU_onNode.sh to add the new NetBackup export engine:

linux:/opt/pdinstall # ./add_NBU_onNode.sh <IP>

Where <IP> is the IP address of the node. See "Configuring the PureDisk node" in the *Veritas NetBackup PureDisk™ Remote Office Edition Administrator's Guide*, version 6.1.3.

4.1.4 Activate the PureDisk NetBackup export engine

Enable the export engine by selecting **Activate NetBackup export engine** in the **Topology** tab. See "Activating a new component or service" in the *Veritas NetBackup PureDisk™ Remote Office Edition Administrator's Guide*, version 6.1.3.

4.2Configuring NetBackup

4.2.1 Pre-Install

- Make sure the NBU master and media servers are reachable by their hostnames from the PureDisk NetBackup export engine node(s) and vice versa
- If DNS is not configured, edit:
    - /etc/hosts on the PureDisk NetBackup export engine node(s) and add the hostname and IP of the NBU master and media servers
    - C:\WINDOWS\system32\drivers\etc\hosts on the NBU master and media servers and add the hostname and IP of the PureDisk NetBackup export engine node(s) and the NBU master and media servers

4.2.2 Install NetBackup Server

1. Install NBU 6.0 master and media server(s) on Windows 2003 or Solaris. For more information about how to install the NetBackup server, see the *NetBackup Installation Guide* for your platform.
2. Apply NBU 6.0 MP4 to the NBU 6.0 master and media server(s).

3. Install the appropriate NetBackup server engineering binary on each master and media server.

    a. On Windows NetBackup servers, install NBU_60_M_4_PDEWinClient.tar.

    b. On Solaris NetBackup servers, install NBU_60_M_4_PDESolServer.tar.

4.2.3 Install NetBackup Client

1. Install the NetBackup Linux RedHat 2.4 client on each node that hosts the PureDisk NetBackup export engine service.

   Both the PureDisk NetBackup export engine service and the NetBackup client need to be running together on the same node or nodes.

   Note: We recommend the use of multiple export engine nodes. You increase your scalability and allow multiple exports of different data selections in parallel.

   When you install the NetBackup Linux RedHat 2.4 client, you might see the following message:

   ```
   No [x]inetd process found.
   ```

   You can ignore this message. The next step in this procedure starts the `xinetd` daemon.

   For more information about how to install the NetBackup client, see the *NetBackup Installation Guide for UNIX and Linux*.

2. On the PureDisk node(s) you want to configure, make sure that the `xinetd` daemon is running.

   Enter the following command to determine if `xinetd` is running:

   ```
   # ps –aef | grep xinetd
   ```

   If it is not running, enter the following command:

   ```
   # /etc/init.d/xinetd start
   ```

   To ensure that the `xinetd` daemon starts after you reboot the system, type the following command:

   ```
   # chkconfig xinetd on
   ```

3. Apply NBU 6.0 MP4 on each node that hosts the PureDisk NetBackup export engine service.

4. Install NBU_60_M_4_PDERedHatClient.tar (Linux RedHat 2.4) on each node that hosts the PureDisk NetBackup export engine service.

5. To restore data selections from NetBackup you can:

    a. Perform the restore from a PureDisk NetBackup export engine node. Since this node has the NBU_60_M_4_PDERedHatClient.tar patch installed, it can perform restores as well without additional NetBackup client software.

    b. Restore from a Windows NetBackup client if you have the NBU_60_M_4_PDEWinClient.tar patch installed.

    c. Restore from a Solaris NetBackup client if you have the NBU_60_M_4_PDESolClient.tar patch installed.

5 EXPORTING PUREDISK DATA

After you have configured PureDisk and NetBackup to work together, you can begin to export PureDisk data. Make sure that PureDisk has backed up the data selections you want to export before you initiate the export. The export process copies the data selections to NetBackup, but it leaves the data on the content routers intact.

See the *Veritas NetBackup PureDisk™ Remote Office Edition Administrator's Guide*, version 6.1.3, for information on performing a point-in-time export to NetBackup. This is a one-time export of a backed up PureDisk data selection to NetBackup and every export will be a full export.

5.1Create a NetBackup DataStore type policy

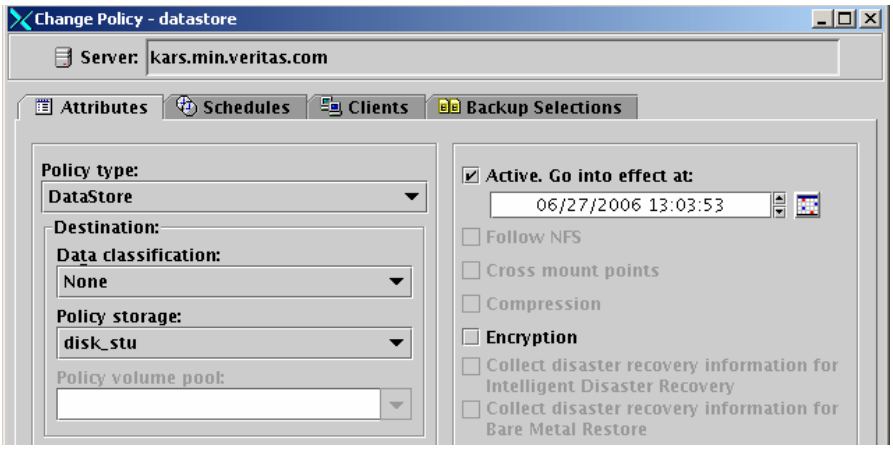
1. Open the NetBackup Administration Console. Select the master server that controls the media server that will perform the export.

2. Select the Policies wizard, then **Actions > New > New Policy**. The Add a New Policy dialog appears.

3. Enter a name for the policy. This name is entered in the Parameters tab in the PureDisk export policy.

4. Complete the tabs in the Add New Policy dialog.

    a. Attributes tab

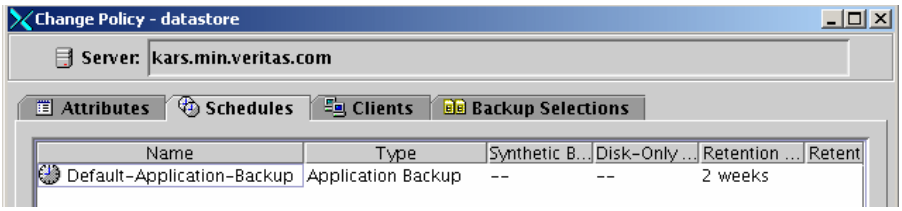


Select DataStore as the policy type. (The DataStore policy type selection appears if the DataStore license key is installed.) The compression and multiple data streams attributes are not supported for export because they are not supported upon restore. In order to

run multiple streams, multiple export engines are required.

The policy must be active for the export to work.

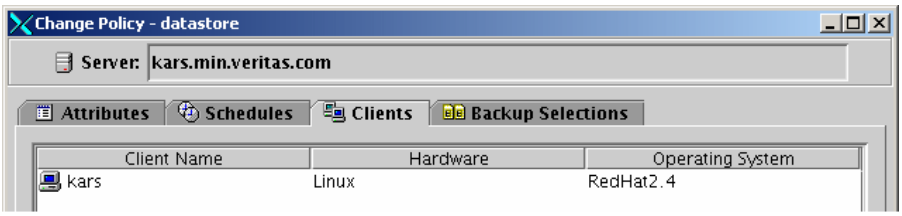
b. Schedules tab



By default, a DataStore policy type uses an Application Backup schedule. The start window for an Application Backup type is open every day for 24 hours.

Note: The default schedule can be adjusted or a new schedule can be created, but the start window must coincide with the PureDisk export policy start window.

c. Clients tab



In the Clients tab, add the name of the PureDisk export engine node(s). (Multiple PureDisk export engine nodes can indicate the same NetBackup DataStore policy. Add the export engine nodes in the Clients tab as needed.)

Do not include the name of the originating PureDisk clients.

d. Backup Selections tab

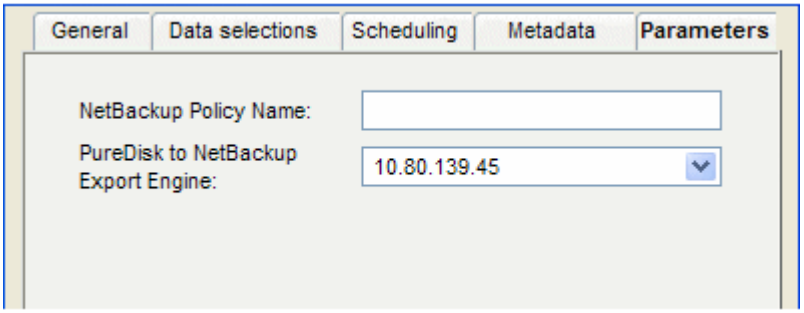
No entries are required on the Backup Selections tab.

5. Save and close the policy.

5.2Create a PureDisk export policy

See the *Veritas NetBackup PureDisk™ Remote Office Edition Administrator's Guide*, version 6.1.3, for information on creating an export policy.

As part of the policy creation, note that a NetBackup policy name is entered on the Parameters tab in the export policy. This is the NetBackup DataStore type policy configured for the PureDisk export. See "Create a NetBackup DataStore type policy" above.



Enter the name of the DataStore policy in the NetBackup Policy Name box (See step 3 of "Create a NetBackup DataStore type policy"). Select the PureDisk to NetBackup Export Engine.

If no NetBackup policy name is entered, NetBackup tries to determine which policy to use.

The PureDisk policy determines when the export runs. The NetBackup policy must be set up for the export to work.

Additional comments on exports:

- Exports are single-streamed
- One Storage Pool can have multiple PureDisk NetBackup export engines
- Only one export job at a time can run per export engine
- Simultaneous export jobs can run over multiple export engines
- Multiple exports can export to the same NBU DataStore policy

6 RESTORING PUREDISK DATA

Use the NetBackup client interface, Backup, Archive, and Restore, to restore the PureDisk export data to a PureDisk engine node, a Windows NBU client, or a Solaris NBU client. The system to which the data selections are restored must contain the NetBackup 6.0 MP4 client software and the NetBackup engineering binary to support the export engine.

After the data is restored to the NetBackup client or PureDisk engine node, use a network transfer method to move the files to individual PureDisk clients.

See the *Veritas NetBackup PureDisk™ Remote Office Edition Administrator's Guide*, version 6.1.3, for more information on restoring from NetBackup.

6.1 Restore PureDisk export data

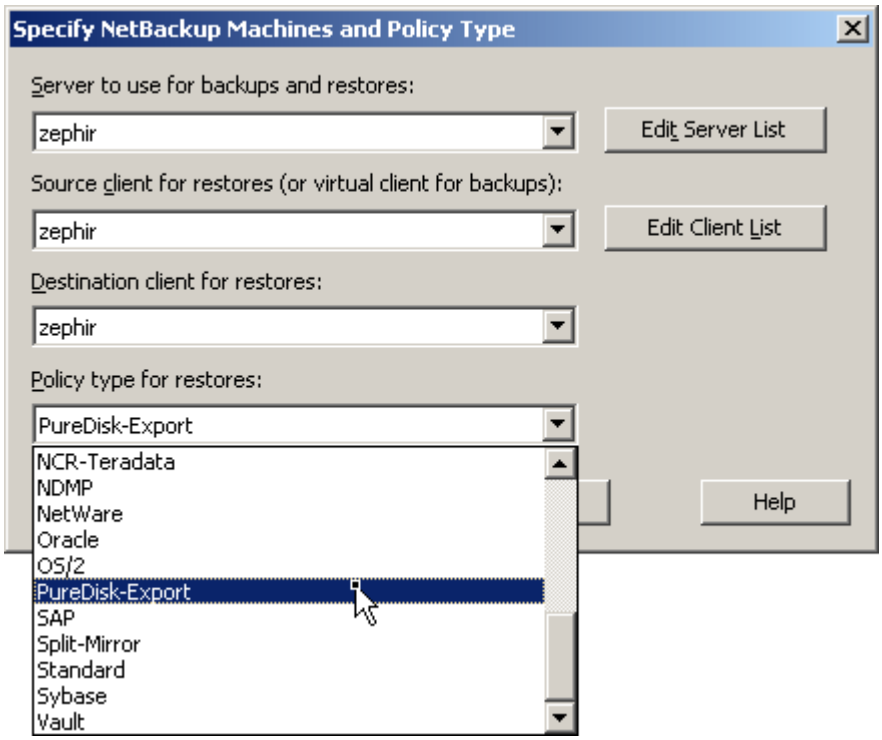
1. Open the NetBackup Backup, Archive, and Restore interface on the restore client.

2. Select **File > Specify NetBackup Machines and Policy Types**.

3. In the Specify NetBackup Machines and Policy Types dialog, select the PureDisk-Export policy type to display the export data available for restore.

   Note: In this release, the PureDisk-Export policy type selection appears only in the Windows restore dialog. The Java version does not display the PureDisk-Export selection.

   Although the NetBackup job runs as a DataStore policy type, the job is cataloged as a PureDisk-Export policy type under the name of the PureDisk client.



   In the "Server to use for backups and restores" box, select the NetBackup server where the PureDisk backup data was exported to.

   In the "Source client for restores (or virtual client for backups)" box, add the original PureDisk client name the data was originally backed up from.

   In the "Destination client for restores" box, select the NetBackup client to restore the data to. Here you can choose any NetBackup client that has the necessary patches installed.

   In the "Policy type for restores" box, select *PureDisk-Export* as the policy type. This selection appears only in the Windows restore dialog.

4. Select a backup to restore from the NetBackup History.

5. Restore the files to the selected client as you would restore from a user-directed backup.

6.2Restore support

NetBackup can restore only what PureDisk supports as part of its backups. For example, PureDisk does not provide access control list (ACL) support beyond UNIX file or directory permissions, so NetBackup cannot restore ACLs. See the PureDisk documentation for complete details.

Additional comments on restores:

- While Windows and UNIX security information can be restored, one limitation exists regarding restores to an alternate client for UNIX files: NetBackup backs up both the user ID and user name, but PureDisk backs up only the user ID. In non-PureDisk export backups, during a restore to an alternate client, a user name can map to a different user ID. NetBackup performs a search for the user name and changes the user ID appropriately. For PureDisk export backups this ability is lost, since the user name is not available. Files that are restored could belong to a different user.

- Windows files can be restored to UNIX systems and UNIX files can be restored to Windows systems. However, security information is lost when restoring Windows files to UNIX.

7 EXAMPLE USING VMWARE

My example VMware environment consists of three virtual machines:

- `pdos60` – running PDOS 6.0.2.4 (6.0 GA) + PureDisk 6.1.1.24 (PD 6.1 MP1A) – this is the all-in-one PureDisk server and PureDisk NetBackup export engine node

- `nbu60` – running Windows 2003 SP2 + NetBackup 6.0 MP4 – this is the NetBackup master/media server and restore client

- `winXPpd` – running Windows XP Professional SP2 – this is the PureDisk client

7.1 Set Up Windows XP PureDisk Client on winXPpd

If you don't have a Windows XP virtual machine, you can optionally download this Windows 2003 virtual machine and use it as a client.

Once you have PureDisk configured, install an agent on winXPpd and configure it to be backed up. Back it up.

7.2Set Up NetBackup Server on nbu60

You can optionally download this Windows 2003 virtual machine.

1. Edit C:\WINDOWS\system32\drivers\etc\hosts on nbu60 and add the hostname and IP of pdos60 and nbu60

2. Mount NBU-6.0.iso to nbu60 and install a NBU 6.0 master and media server.

3. Copy NB_60_4_M.winnt.intel_285941.exe to nbu60 and install it:

    a. Extract NB_60_4_M.winnt.intel_285941.exe by double-clicking it

    b. Double-click setup.exe

4. Copy the engineering binary NBU_60_M_4_PDEWinServer.tar to nbu60 and install it:

    a. Bring the NBU services down

    ```
    <installpath>\NetBackup\bin\bpdown.exe
    ```

    b. Create a copy of the \bin and \share directories

    ```
    <installpath>\VERITAS\NetBackup>xcopy /s /i bin bin-save
    <installpath>\VERITAS\NetBackup>xcopy /s /i share share-save
    ```

    c. Unzip NBU_60_M_4_PDEWinServer.tar

    Copy the extracted \bin and \share directories to <installpath>\VERITAS\NetBackup\

    d. Bring the NBU services up

    ```
    <installpath>\NetBackup\bin\bpup.exe
    ```

5. I created a disk storage unit for my back up destination.

7.3Set Up PureDisk Server on pdos60

You can optionally download this PureDisk 6.1 MP1A virtual machine. This will allow you to skip steps 1-3.

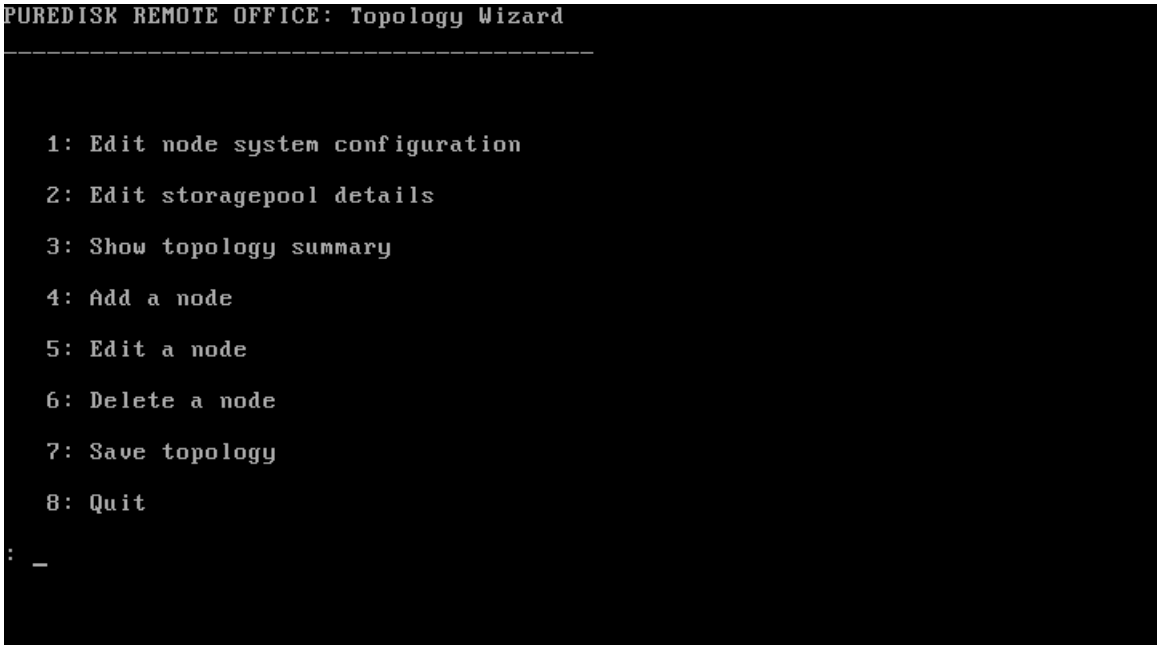
1. Mount PureDisk-6.0.iso to pdos60 and install PDOS 6.0.2.4.

2. Mount puredisk-6.1.0.35.iso to pdos60 and install PureDisk 6.1.0.35 (PureDisk 6.1 GA).

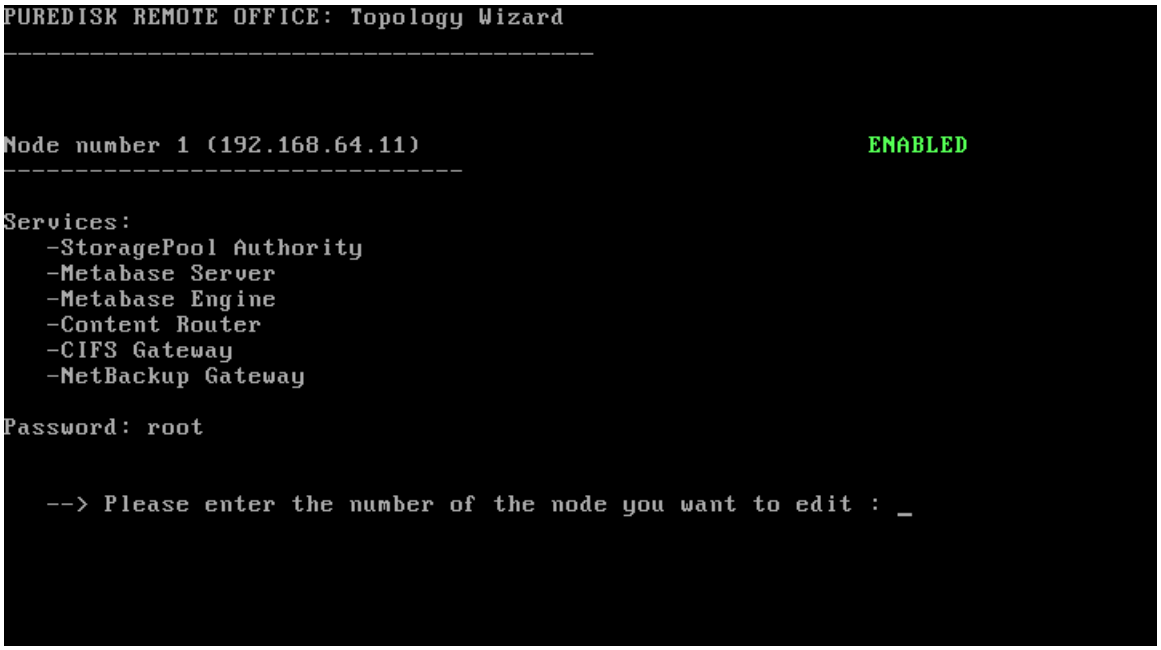
3. Mount NB_PDE_61_MP1A_287416.iso to pdos60 and install PureDisk 6.1 MP1A (PureDisk 6.1.1.24).

4. Configure the PureDisk NetBackup Export Engine

   ```
   pdos60:/opt/install # ./edit_topology.sh
   ```



   Choose 5 to Edit a node and press Enter



Enter the node number, 1 in our case, and press Enter

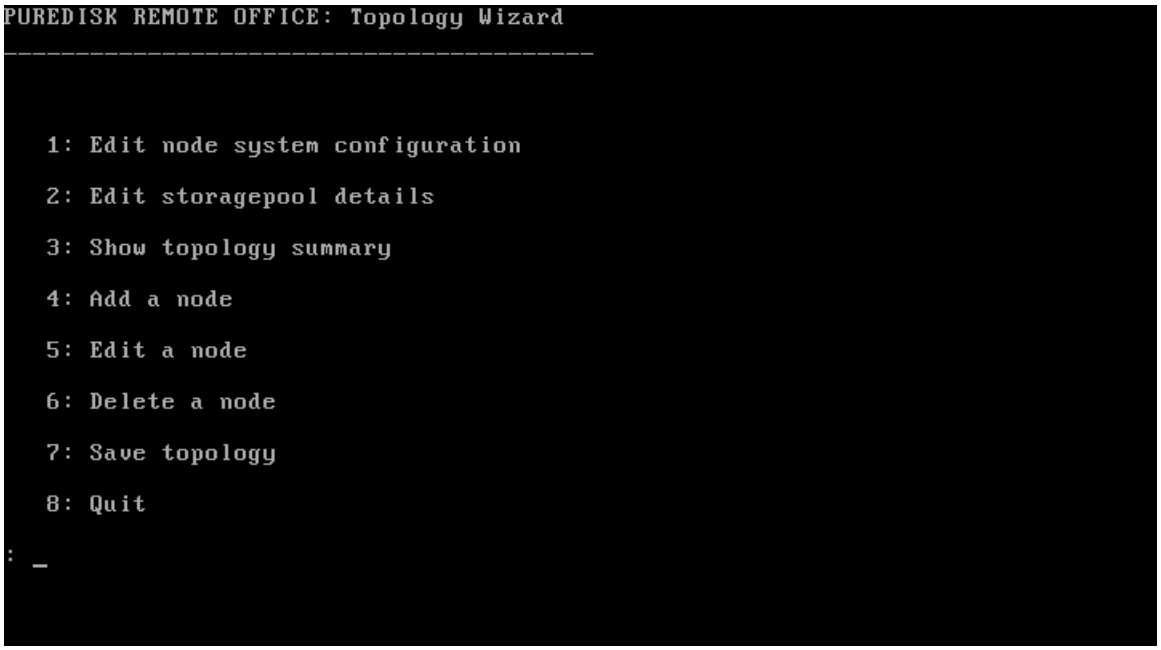
Choose 2 to Edit services and press Enter
Re-enter all the necessary services + nbu service

```
   -CIFS Gateway
   -NetBackup Gateway

Password: root



   1: Edit ip/hostname

   2: Edit services

   3: Edit password

   4: Enable node

   5: Disable node

   6: Back

: 2


   Current service(s): spa,mbs,mbe,cr,cifs,nbu
   --> Please enter the new service(s) for node 1 : spa,mbs,mbe,cr,cifs,nbu_
```

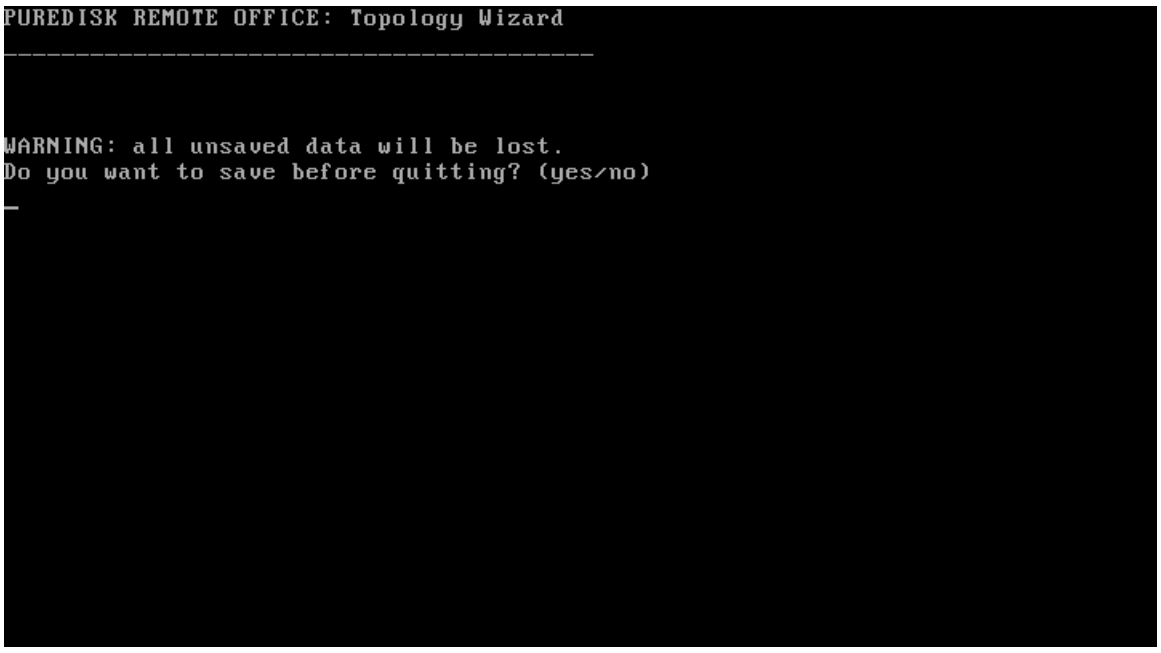
Press Enter

```
   -StoragePool Authority
   -Metabase Server
   -Metabase Engine
   -Content Router
   -CIFS Gateway
   -NetBackup Gateway

Password: root



   1: Edit ip/hostname

   2: Edit services

   3: Edit password

   4: Enable node

   5: Disable node

   6: Back

: _
```

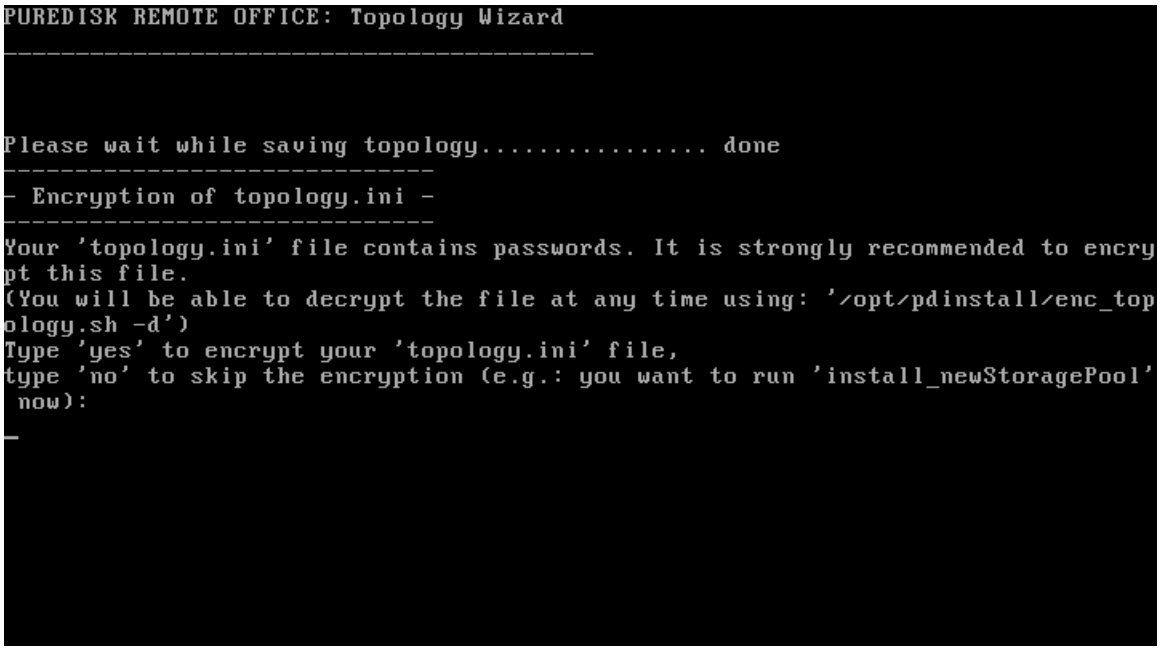
Choose 6 to go Back and press Enter



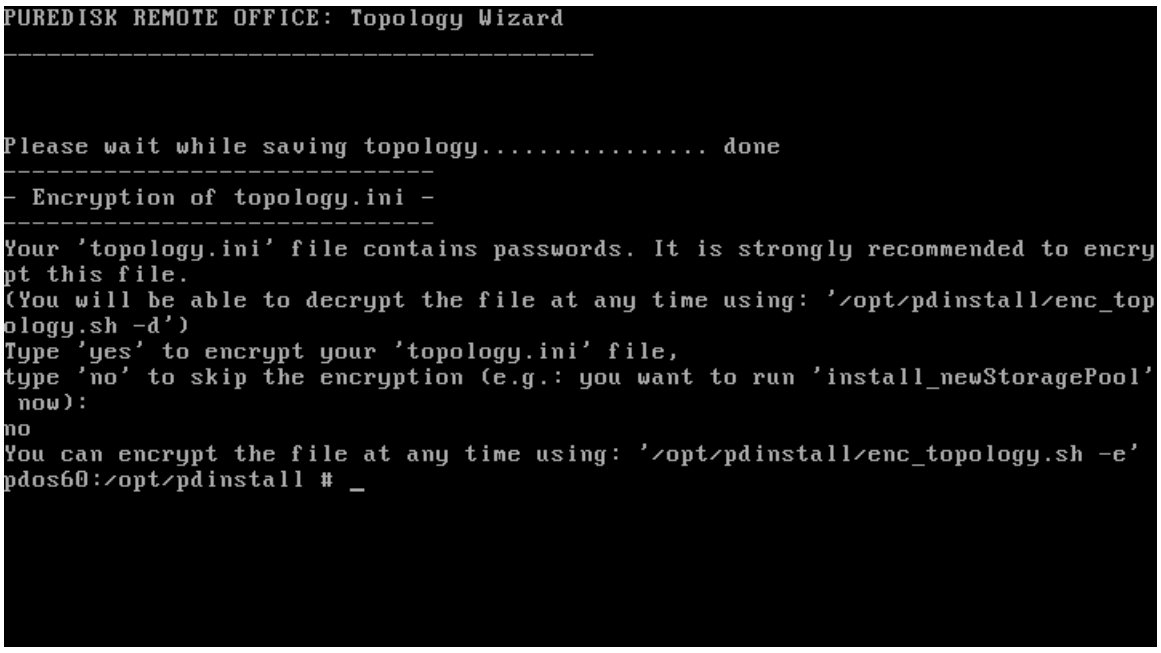
Choose 8 to Quit



Type yes and press Enter



Type no to skip the encryption and press Enter



5. Install the PureDisk NetBackup Export Engine

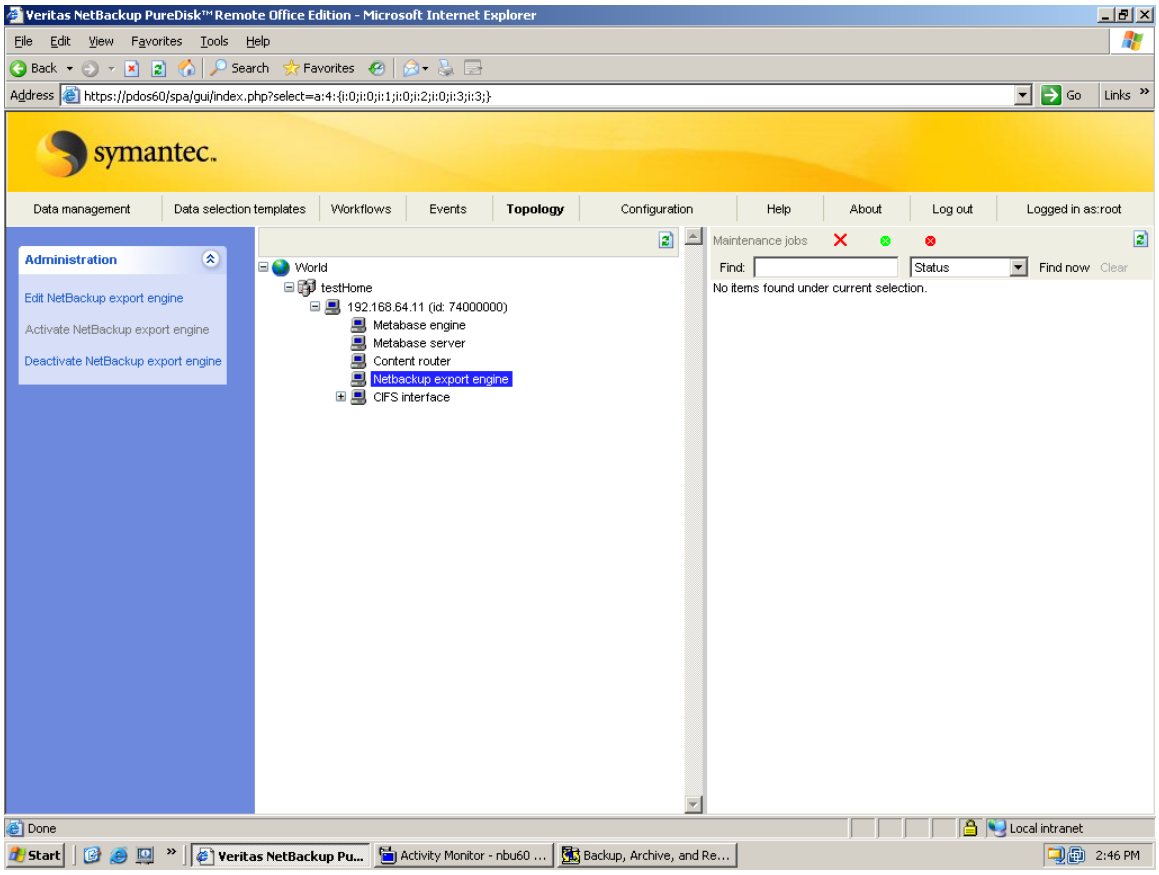
   `pdos60:/opt/pdinstall # ./add_NBU_onNode.sh <ip-addr-new-node1>`

   where

   `<ip-addr-new-node1>` is the IP address of your PureDisk server

6. Activate the PureDisk NetBackup Export Engine

   Go to “Topology” in the PureDisk UI and activate the export engine service



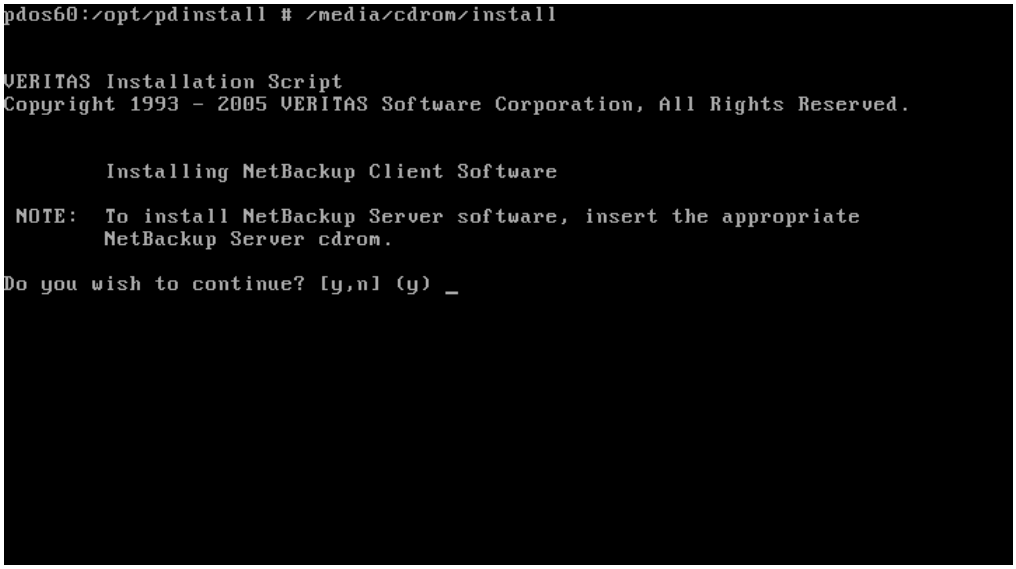
7. Install the NBU 6.0 client on `pdos60`

   a. Edit `/etc/hosts` on `pdos60` and add the hostname and IP of `nbu60`

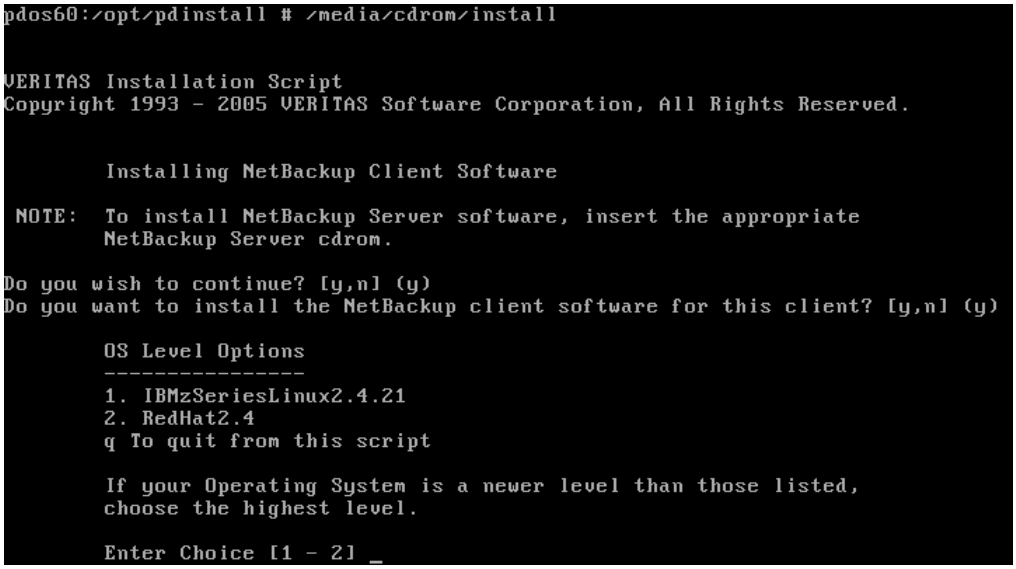
   b. Verify you can ping `nbu60` from `pdos60` and vice versa

   c. Mount NB_60_CLIENTS.iso to `pdos60`

d. Run the NBU Client installer



Press Enter to continue, press Enter to install the client



Select 2 for the RedHat2.4 client and press Enter

e. Copy NB_CLT_60_4_M_285952.tar to pdos60, untar, and install:

```
pdos60:~/mp4 # ./Vrts_pack.install
```

f. Copy NBU_60_M_4_PDERedHatClient.tar to pdos60, untar, and install:

```
pdos60:~ # mkdir /usr/openv/save
pdos60:~ # cp –rp /usr/openv/netbackup/bin /usr/openv/save/bin
pdos60:~ # cp –rp /usr/openv/lib /usr/openv/save/lib
pdos60:~ # cd /
```

g. Extract the files from NBU_60_M_4_PDERedHatClient.tar to /:

```
pdos60:/ # tar –xf NBU_60_M_$_PDERedHatClient.tar
```

7.4Configure the NetBackup DataStore policy

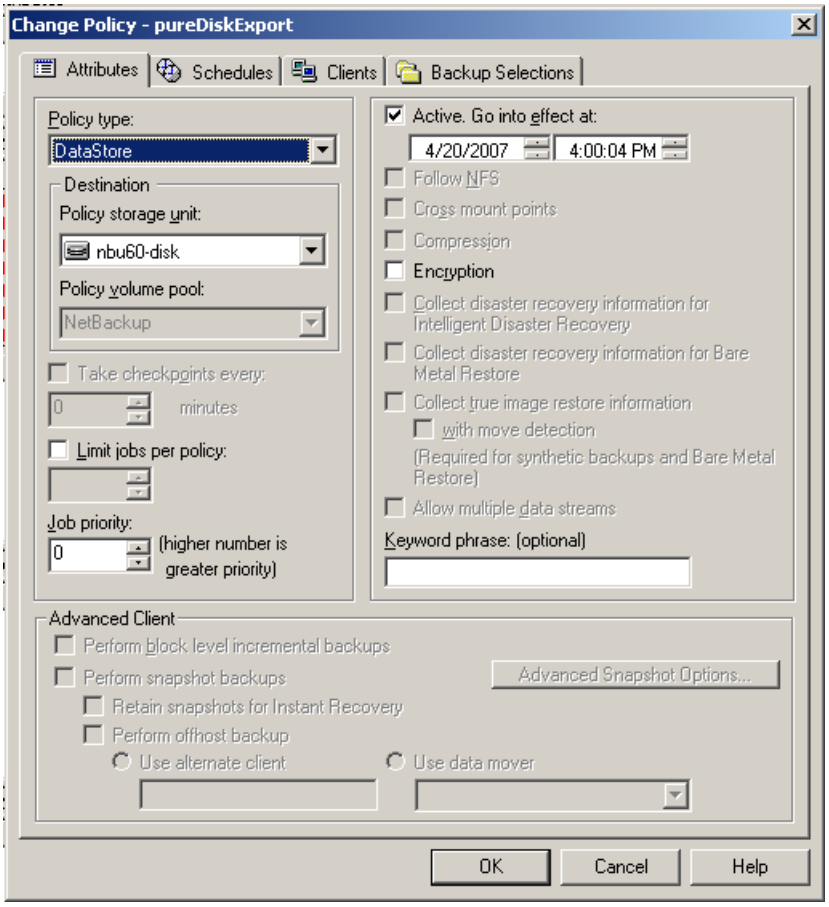
1. Open the NetBackup Administration Console on nbu60

2. Select the Policies wizard, then **Actions > New > New Policy**. The Add a New Policy dialog appears.

3. Enter pureDiskExport in the Policy name box. For this example I have unchecked the Use Backup Policy Configuration Wizard box. Click OK.

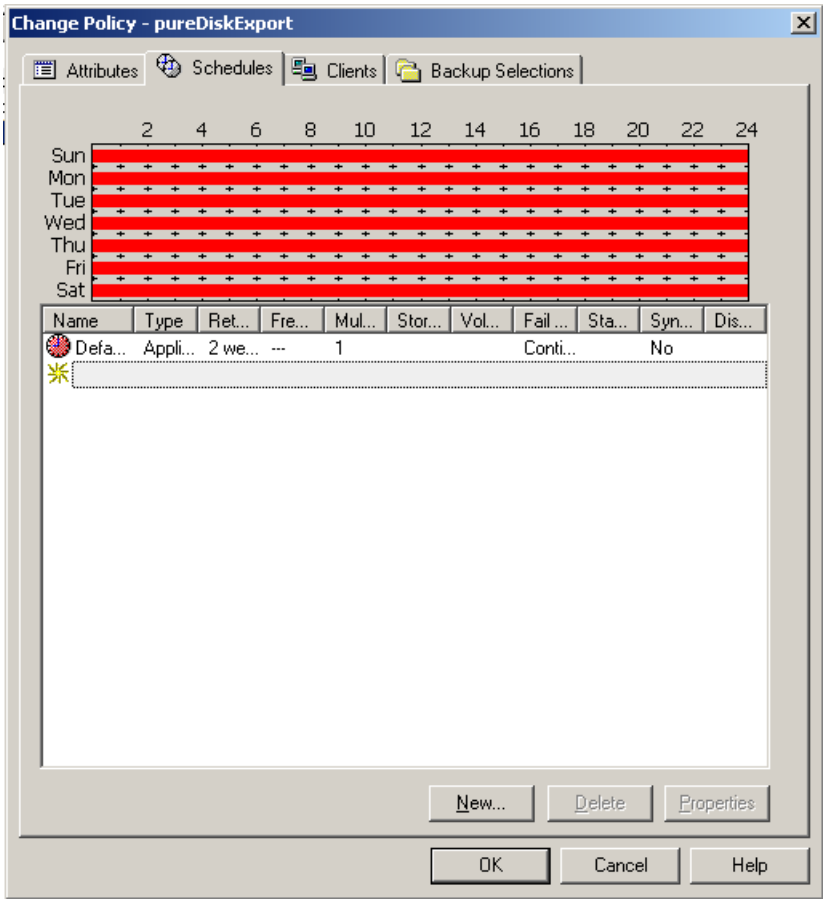
4. Complete the tabs in the Add New Policy dialog.

    a. Attributes tab



Select DataStore for the **Policy type**. Select the disk storage unit you created for the **Policy storage unit**. Insure the **Active** box is checked.

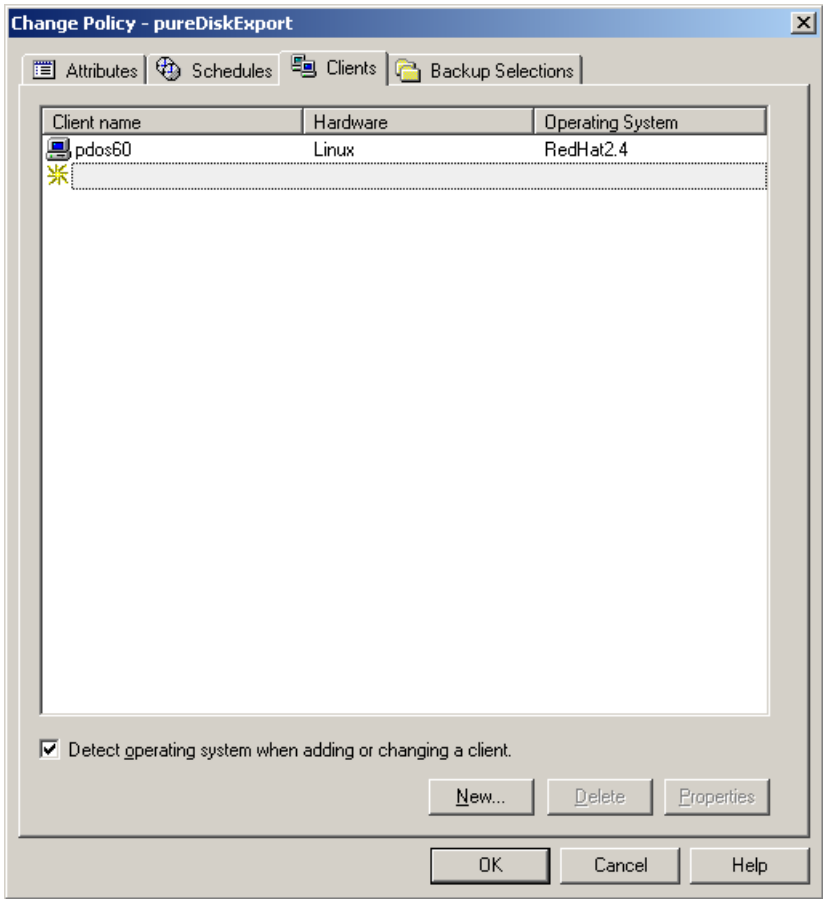
b. Schedules tab



This is how it looks by default.

Note: The default schedule can be adjusted or a new schedule can be created, but the start window must coincide with the PureDisk export policy start window.

c. Clients tab



In the Clients tab add `pdos60`

d. Backup Selections tab

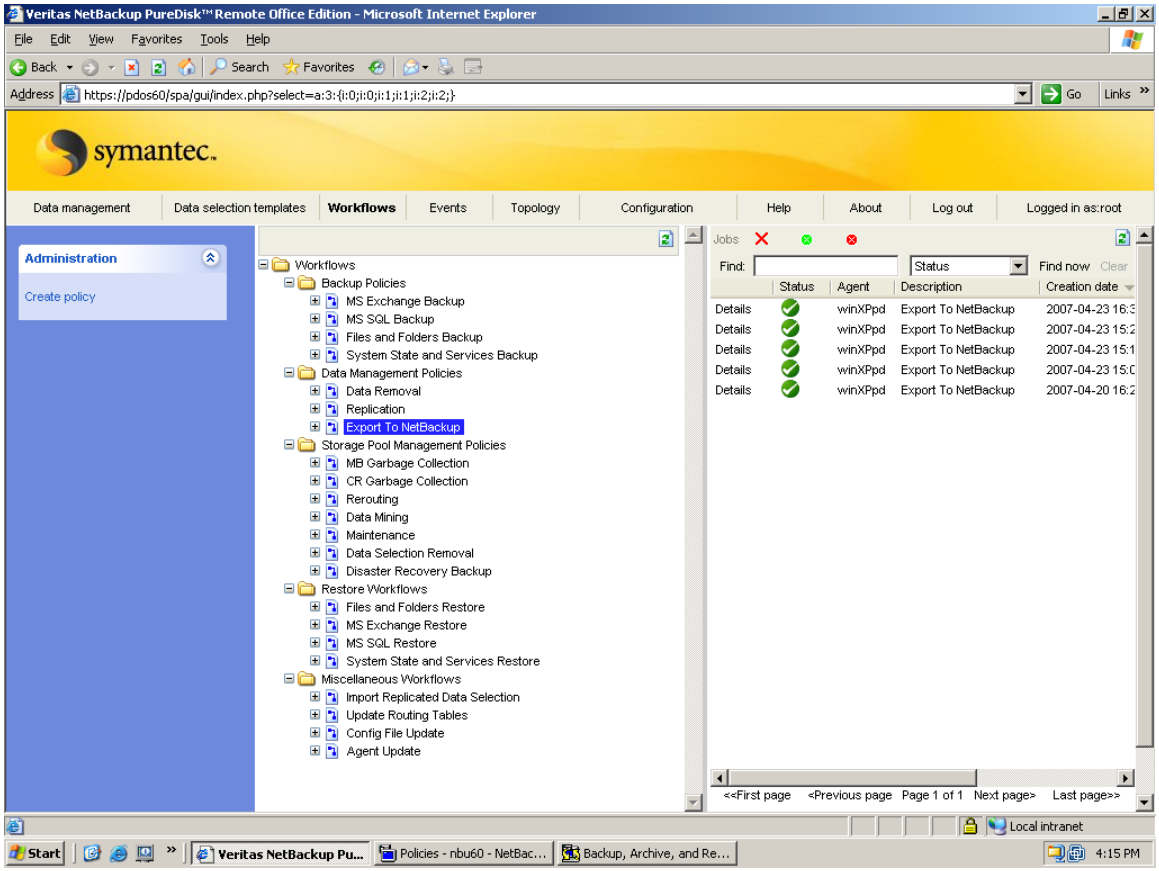
Nothing is required in this tab.

e. Click **OK**.

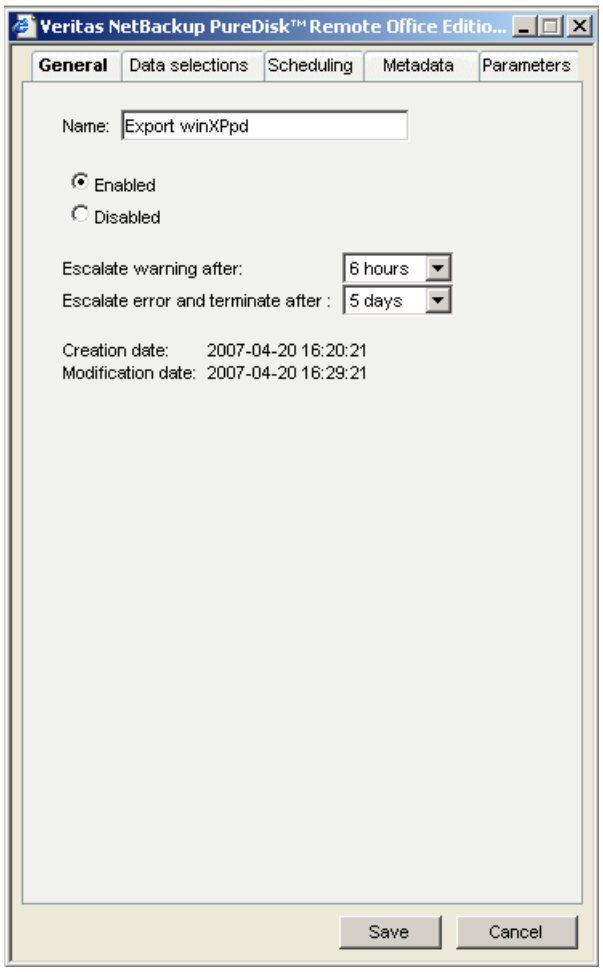
7.5 Configure the PureDisk Export to NetBackup policy

1. I assume you have installed a PureDisk agent on `winXPpd` by this point and have backed it up.

2. Through the PureDisk UI click the **Workflows** tab, click **Data Management Policies**, and click **Export To NetBackup**. Under Administration, click **Create policy**.

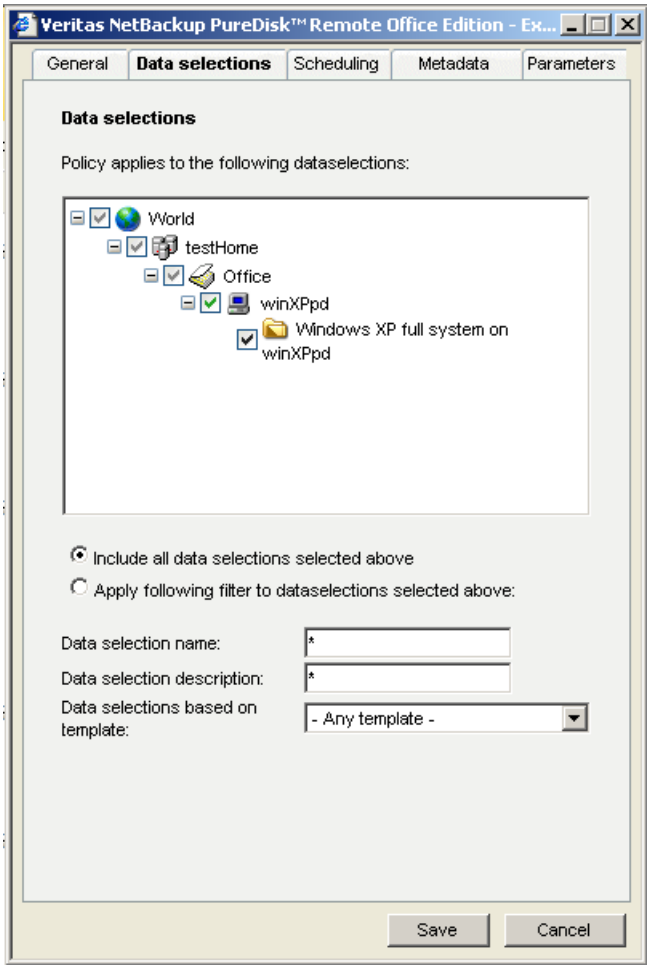


3. General tab



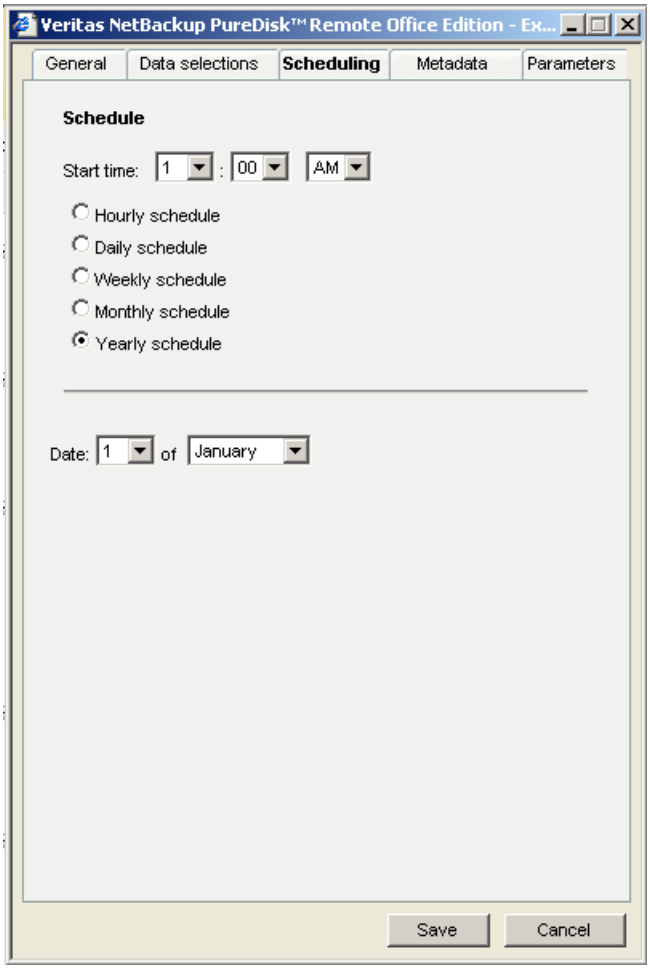
Enter the name for the policy in the Name box. Remember to Enable it.

4. Data selections tab



Choose your data selection(s)

5. Scheduling tab

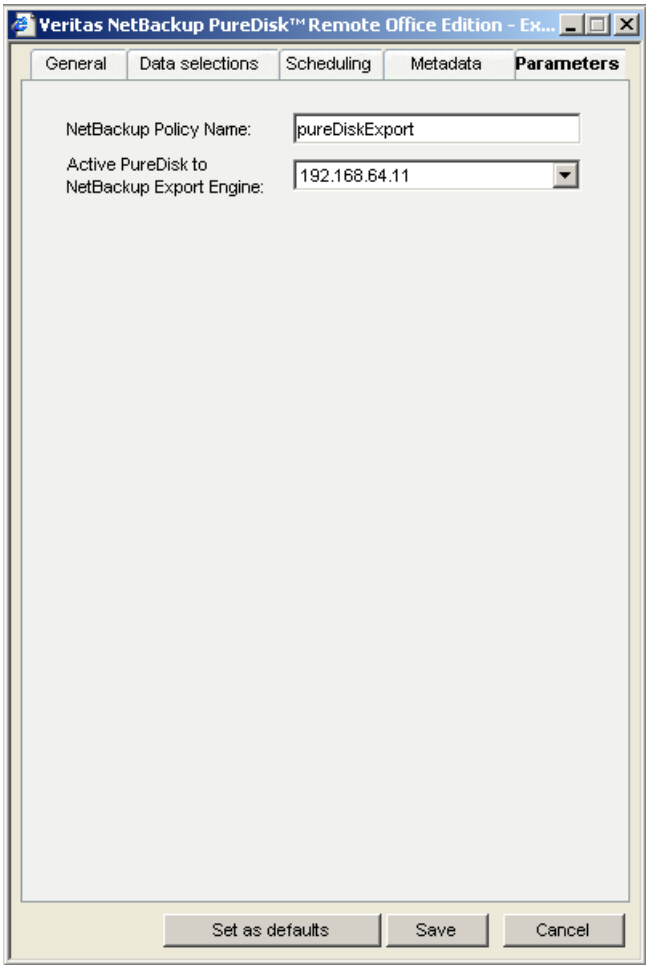


Choose your schedule. Since you will most likely be manually running this policy, a yearly schedule is fine.

6. Metadata tab

You can optionally apply filters to the policy. I haven't.

7. Parameters tab



Enter `pureDiskExport` in the NetBackup Policy Name box. This is the policy name for the NetBackup DataStore policy created in step 3 of "Configure the NetBackup DataStore policy."

Enter the IP address for `pdos60` in the Active PureDisk to NetBackup Export Engine box.

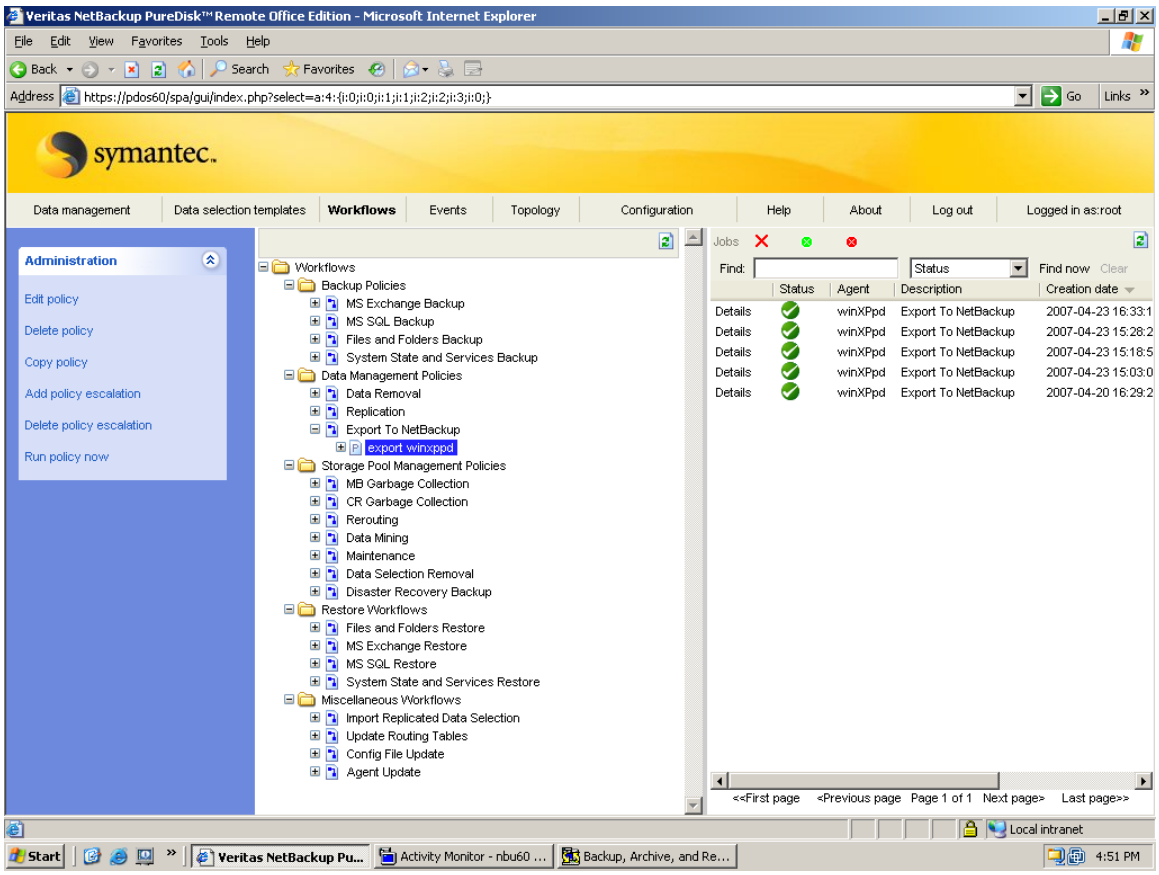
Click on Save.

7.6 Run the Export to NetBackup policy

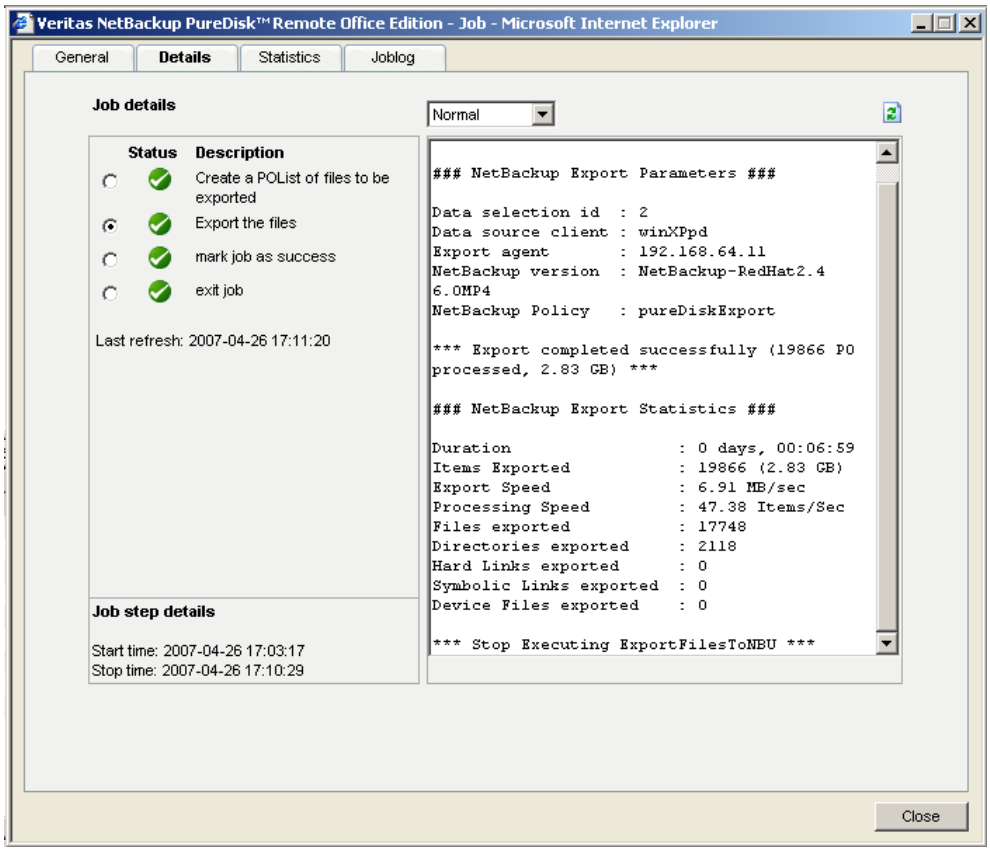
1. In the PureDisk click the **Workflows** tab
2. In the middle pane, expand **Export to NetBackup**

3. Select the policy you want to run. For this example it will be **export winxppd**.

4. In the left pane, click **Run policy now**.



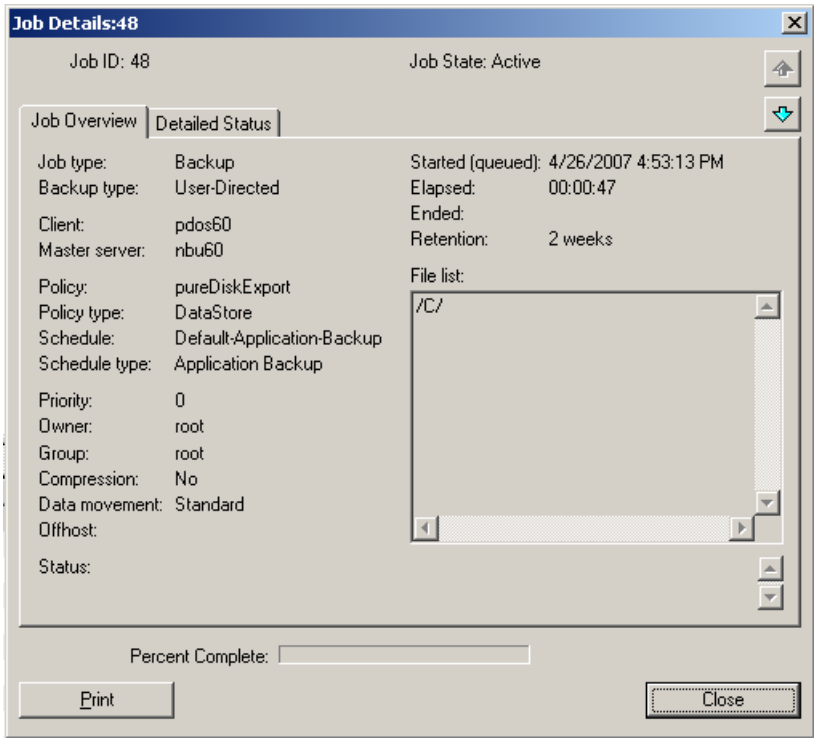
5. This is how the export job looked in PureDisk:

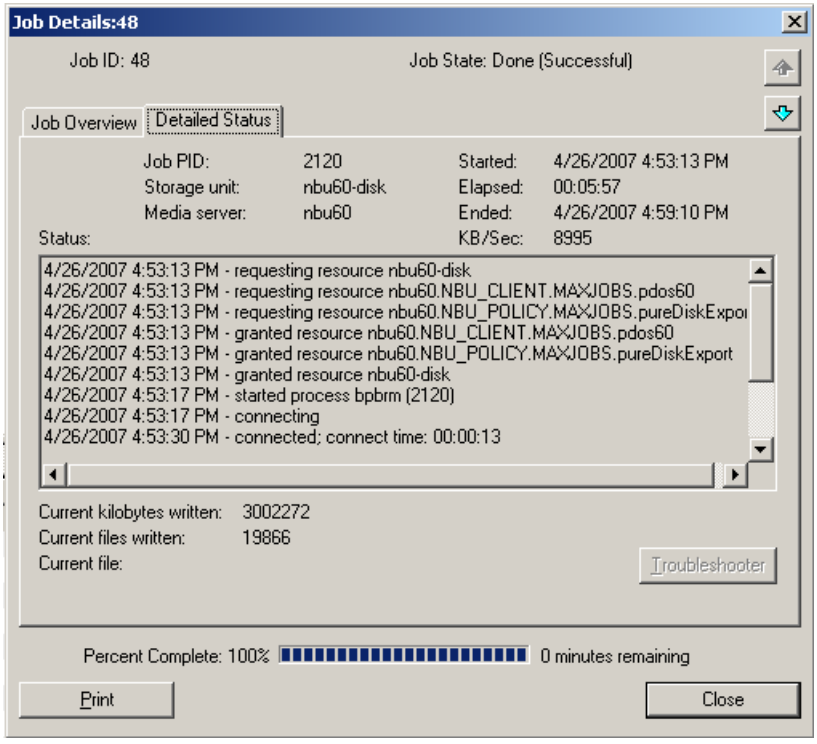


2.83 GB was exported to NBU at 6.91 MB/sec.

The PureDisk VM is on one external eSATA drive, and the NetBackup VM is on a separate external eSATA drive. They are connected to my ThinkPad T60P via an Express/54 card.

6. This is how the NBU job looked like from NBU:

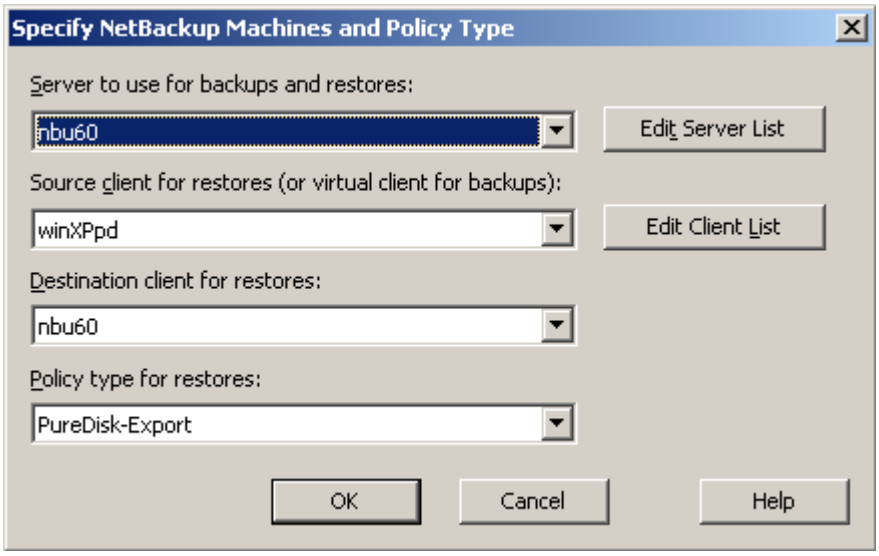


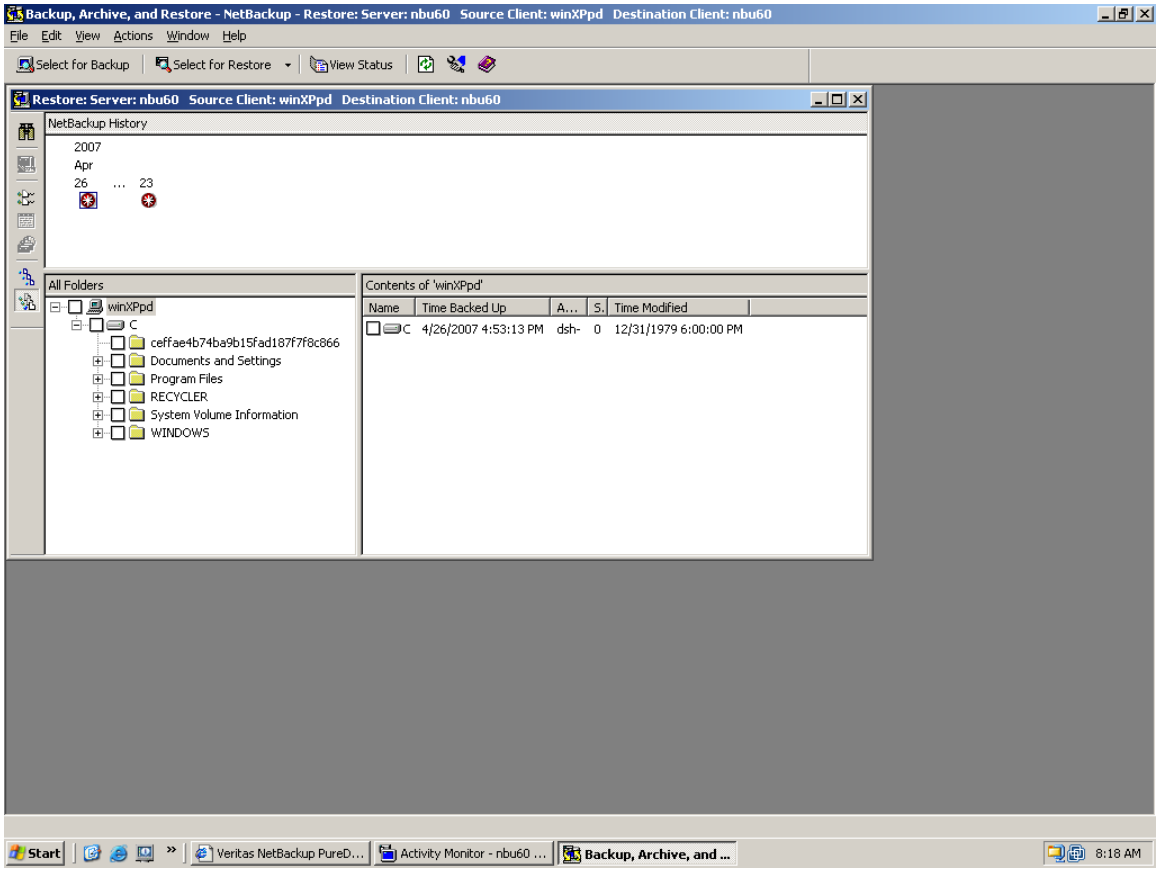


The NBU job wrote 3,002,272 KB in 5m 57s for a throughput of 8,995 KB/sec.

7.7Restoring from NetBackup

1. Open the NetBackup Backup, Archive, and Restore interface on `nbu60`.
2. Select **File > Specify NetBackup Machines and Policy Types**.
3. In the Specify NetBackup Machines and Policy Types dialog:



   a. Select `nbu60` for Server to use for backups and restores.
   b. Select `winXPpd` as the Source client for restores.
   c. Select `nbu60` as the Destination client for restores.
   d. Select **PureDisk-Export** as the Policy type for restores.
   e. Click **OK**.

4. Pick what you want to restore.