Contents

Module 5 – Lab 4: Creating Mappings with the Network Storage Router

Module 6 – Lab 1: Installing Data Protector 5.0 for Windows 2000

Module 7 – Lab 1: Designing an EBS

Module 7 – Lab 2: Using the HP StorageWorks Backup Sizing Tool to Design an EBS

Module 8 – Lab 1: Performance Assessment Tool

Module 9 – Lab 1: Installing and Using LT&T3.0

Appendix

The appendix contains alternate labs for Computer Associates ARCserve 2000, Legato NetWorker 6.0.1, VERITAS Backup Exec 8.5, and Veritas NetBackup Datacenter 3.4, Tivoli Storage Manager 4.1.1, to be used in place of Lab 1 in Module 6.

Appendix A – Module 6 – Lab 1: Installing VERITAS Backup Exec 8.5 for Windows NT

Appendix B – Module 6 – Lab 2: Configuring Backup Exec for the SAN

Appendix C – Module 6 – Lab 3: Running a Simple Backup Job with Backup Exec

Appendix D – Module 6 – Lab 1: Installing CA ARCserve 2000 for Windows NT

Appendix E – Module 6 – Lab 2: Running a Simple Backup Job with ARCserve 2000

Appendix F – Module 6 – Lab 3: Performing a Serverless Backup with ARCserve 2000 Advanced Edition

Appendix G – Module 6 – Lab 1: Installing Legato NetWorker 6.0.1 for Windows NT

Appendix H – Module 6 – Lab 2: Running a Simple Backup Job with NetWorker

Appendix I – Module 6 – Lab 1: Installing VERITAS Backup Exec 8.5 for NetWare 5

Appendix J– Module 6 – Lab 1: Veritas NetBackup Datacenter 3.4 Installation and Configuration

Appendix K – Module 6 – Lab 1: Tivoli Storage Manager 4.1.1 Installation

Appendix L – Module 6 – Lab 2: Tivoli Storage Manager 4.1.1 Configuration and Backup

Appendix M – Module 6 – Lab 1: Installing and Configuring Legato NetWorker 6.0.1 on Tru64 5.1

Appendix N – Module 6 – Lab 1: Installing and Configuring VERITAS NetBackup Datacenter 3.4 on Tru64 5.1

Appendix O – Module 6 – Lab 1: Installing and Configuring Legato NetWorker 6.0.1 on Sun Solaris 7

Appendix P – Module 6 – Lab 1: Installing and Configuring VERITAS NetBackup 3.4 on Sun Solaris 7

Appendix Q – Module 6 – Lab 1: Installing and Configuring Tivoli Storage Manager 4.1.3 on Sun Solaris 7

Configuring the Fibre Channel Components

Module 3 — Lab 1

Objective

After completing this lab, you will be able to configure all Fibre Channel components together to support a multiserver backup solution.

Requirements

To perform this lab exercise, you will need the following:

- Minimum of two servers, with Pentium processors or later
- Minimum of 32MB RAM (64MB is recommend)
- 25MB of hard drive space
- Two KGPSA host bus adapters (HBA) (switched fabric labs) or two PCI Fibre Channel Host Adapters (arbitrated loop labs or for Novell NetWare in a switched fabric environment)
- Four GBIC-SW modules (switched fabric labs) or six GBIC-SW modules (arbitrated loop/NetWare labs)
- Three multimode Fibre Channel cables
- One Fibre Channel SAN Switch 8 or 16 (switched fabric labs) or one Storage Hub 12 (arbitrated loop labs)
- One Modular Data Router
- One 4-port keyboard/monitor switchbox
- One monitor
- One keyboard
- Torx screwdriver

Procedure

Installing the Fibre Channel Host Bus Adapter

1. Make sure the server is powered down.
2. Remove the cover to reveal the PCI slots.
3. Install the host adapter into an empty PCI slot in the server.
4. Replace the cover.
5. Repeat steps 1 through 4 for the other server.

Installing the GBIC-SW Modules

A Gigabit Interface Converter Shortwave (GBIC-SW) module can be inserted into any available port on the SAN Switch or Fibre Channel Storage Hub 12.

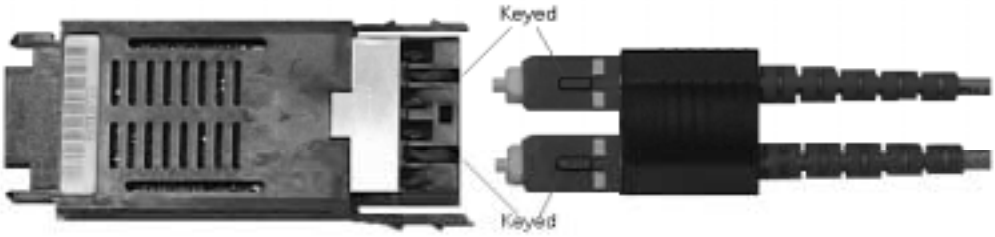
1. Gently push one GBIC module into an available port on the SAN Switch or Storage Hub 12. The module will click into place. It has a built-in guide key that prevents you from inserting it incorrectly.

> **!** **Important**
> To reduce the risk of damage to the equipment, do not use excessive force when inserting the GBIC-SW module.

2. If you are performing this exercise for an arbitrated loop environment or for a NetWare server, insert one GBIC module into the receptacle on the Fibre Channel Host Adapter.
3. Repeat steps 1 and 2 for the second server.
4. Install a GBIC module into the port on the Modular Data Router.

> ▲ **Note**
> If you need to remove a GBIC-SW module from a component, press the tabs on either side of the module and gently pull it out of the component's port. If a multimode Fibre Channel cable is attached to the GBIC-SW, disconnect the cable before removing the module from the port on the component.

Attaching a Fibre Channel Cable



1. Plug one end of a multimode Fibre Channel cable into the HBA in the server.

> **Note**
> Provide support for the installed Fibre Channel cable so that you do not create a bend radius of less than 3 inches. Support and route the Fibre Channel cables to prevent damage from sharp edges or from being crushed by nearby equipment.

2. Attach the other end of the Fibre Channel cable to a module in the SAN Switch or Storage Hub 12.
3. Repeat steps 1 and 2 for the other server. Unused ports or improperly seated GBIC-SWs will not affect the operation of the fabric or loop. The amber LED will remain illuminated for all “bypassed” ports that have GBIC-SWs present.

> **Note**
> The amber LED will stay illuminated until the HBA driver is loaded during startup.

4. Install another GBIC in the SAN Switch or Storage Hub 12.
5. Attach a Fibre Channel cable from the GBIC in the SAN Switch or Storage Hub 12 to a GBIC in the Modular Data Router. This completes the lab exercise.

Installing the Fibre Channel Host Adapter Drivers

Module 3 – Lab 2

Objective

After completing this lab, you will be able to install the Fibre Channel drivers for the Fibre Channel host bus adapter.

Requirements

To perform this lab exercise, you will need:

- Hardware from previous exercise
- Solution Kit CD for Windows 2000 driver for KGPSA HBA
- SSD diskette for Netware

Procedure for Windows 2000 on a Switched Fabric

1. Power on the server and log in.
2. Insert the Solution Kit CD and allow it to auto-run.
3. Click on *Solution Software*.
4. Select *Perform KGPSA Driver Update*.
5. Click *Next*.
6. Click *Fibre Channel Software Setup*.
7. Click *Multi-Bus FC Switch Software*.
8. Click *Next*.
9. Click *Large LUN Utility*.
10. Click *Next*.
11. Select *Yes* to restart the server and click *Finish*.

Procedure for NetWare (Switched Fabric or Arbitrated Loop)

1. Power on the server.
2. Read the message about new hardware being found and press *Enter*.
3. Select HP Fibre Channel Host Adapter Module (HAM) and press Enter.
4. Select Save parameters and load driver and press Enter.
5. From the console prompt, down the server.
6. Check the nwserver directory to see if the nwaspi.cdm file is located in the directory. If the file is not in the directory, copy it there from the NetWare Operating System CD.

> ▲ Note
>
> Since boot order is important, you need to shut the server down at this point. When booting an Enterprise Backup Solution, you should always start at the library and work your way back to the server.

7. Repeat the above procedure for the second server.

Installing a TL891 DLT Mini-Library

Module 3 – Lab 3

Objective

After completing this module, you will be able to install a TL891 DLT Mini-Library.

Requirements

To perform this lab exercise, you will need the following:

- One TL891 DLT Mini-Library with two drives
- One VHDCI to 68HD SCSI cable
- Two 10-inch daisy-chain cables
- One Differential SCSI terminator
- Two or more DLT IV tapes
- One DLT Cleaning tape

Procedure

1. Connect the power cord.

> **Warning**
> Do not power up the unit until all SCSI cables are connected.

2. Connect one end of a SCSI cable to the SCSI port labeled Library, and connect the other end to bus A on the Modular Data Router.
3. Daisy chain the next four SCSI ports on the library using the short SCSI cables supplied.
4. Place a terminator in the last SCSI port on the library to terminate the second DLT drive. Once you have completed this step, your cabling should look like the picture, below.

Proper SCSI Cabling for a TL891 with Two DLT Drives

5. Power on the library and wait for it to finish initializing.
6. Press the *Unlock/Open* button and wait for the Locked light to turn off.
7. Remove the tape magazine and place one or more tapes in the magazine.
8. Repeat Step 6 to replace the magazine.

Initial Setup and Configuration – MSL5000 Tape Library

Module 3 – Lab 4

Objective

After completing this module, you will be able to perform an initial setup of the MSL5000 tape library.

Requirements

- MSL5000 tape library
- SCSI cables

Procedure

Physical Setup of the Tape Library

1. Verify that the tape library is powered off.
2. Cable the tape library as follows:

   If you are using the MSL5026 or MSL5030 tape libray, use the below diagram.

   For the host cable, connect the cable to the Network Storage Router if using a SAN configuration or to the host if using a direct attach configuration.

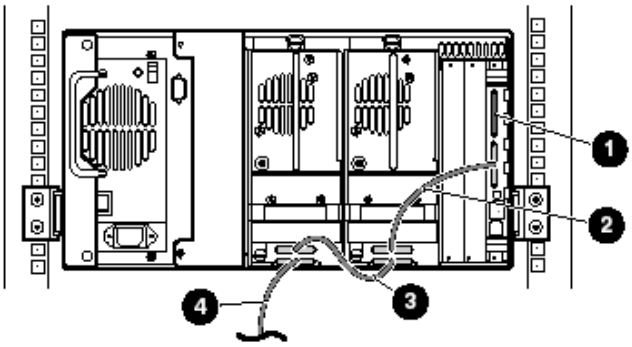


Figure E–2: Single MSL5026, 1 host/2 drives

1. SCSI Terminator
2. 0.5M cable
3. 0.25M cable
4. Host cable (Bus 0, to host system)

If you are using the MSL5052 or MSL5060 tape library, use the below diagram.

For the host cables, connect the cables to the Network Storage Router if using a SAN configuration or to the host if using a direct attach configuration.

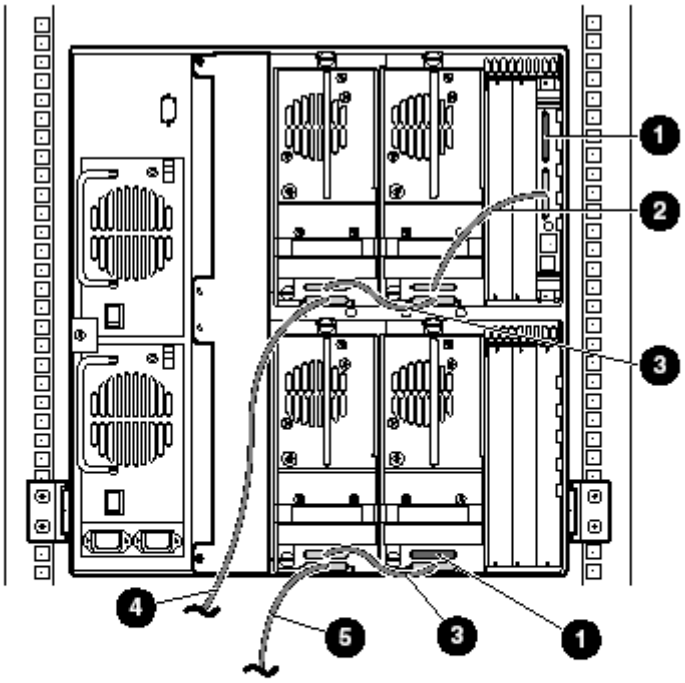


Figure E–10: MSL5052, 2 hosts/4 drives

1. SCSI Terminator
2. 0.5M cable
3. 0.25M cable
4. Host cable (Bus 0, to host system)
5. Host cable (Bus 1, to host system)

3. Verify that the power cables to the library are connected.
4. Press the switch on the power supply to the I position.
5. To turn on the tape library, touch the control panel in the front of the library.
6. Wait for the POST process to complete. POST is complete when the LED under the control panel turns solid green.

Control Panel Menu Navigation

> **!** **Important**
> If prompted for a password while navigating through the control panel, the default library password is *5566* .

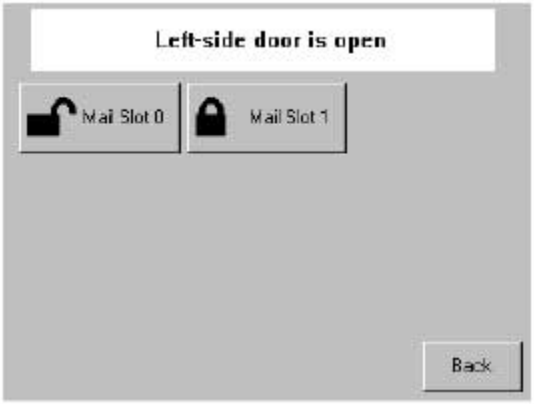
Library Status Screen

1. After the POST , the library status screen displays.

2. Selecting the *hp* logo causes the screen to display technical support contact information.

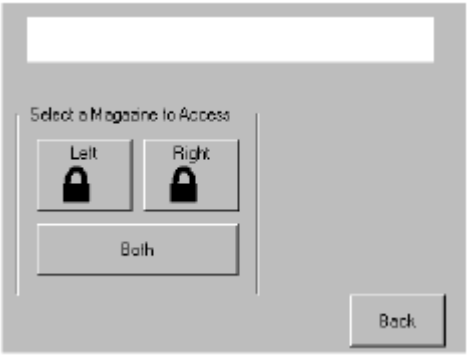
3. Select Back to return to the library status screen.

4. Select the Mail Slot Access option. This option allows you to gain access to a mail slot without powering down the library.



5. Press the *Mail Slot* icon for access. If prompted for a password, type the default of 5566.
6. Press *Back* to return to the library status screen.

7. Select the *Magazine Access* option.

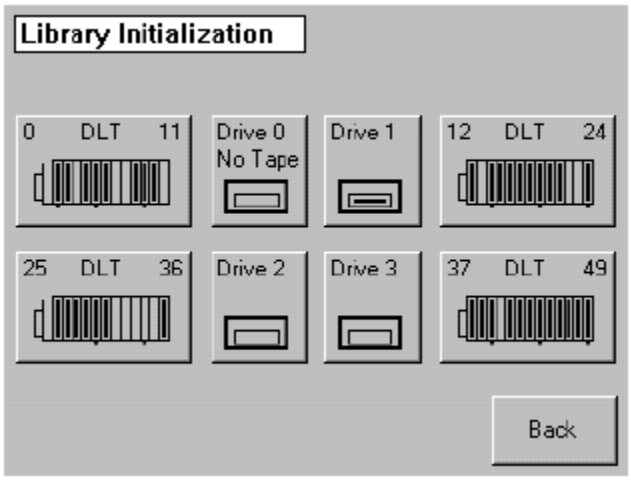


8. Select the icon for the right magazine to gain access that magazine.
9. Remove the magazine. Then reinsert the magazine and close the magazine door.
10. What happens to the library after you close the magazine door?

    .....

11. Press *Back* to return to the library status menu.

12. Select the *Status* option.

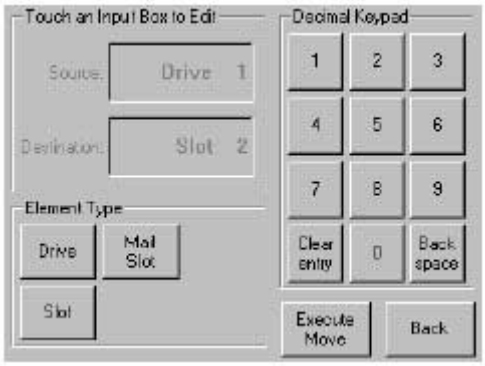


13. Record a few slots with tapes as well as the tape drives numbers. We will need this information later when we try to move cartridges.

    .....

14. Click *Back* to the return to the library status screen.

15. Select the *Move Media* option.



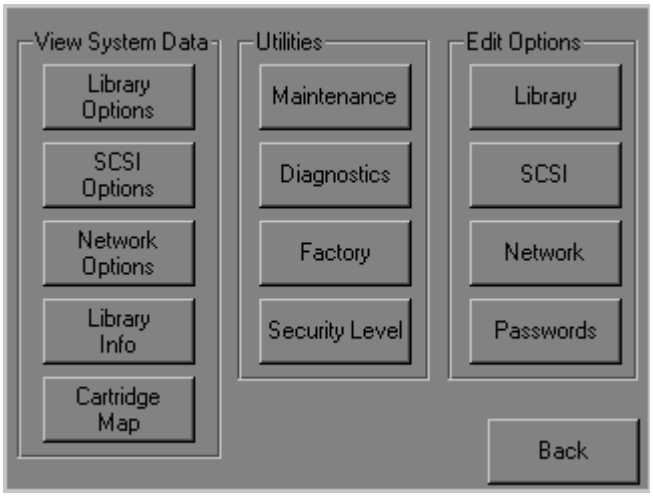
16. Touch the *Source* field.
17. Touch *Slot* under Element Type.
18. Touch the slot number with a tape, which you recorded in step 13.
19. Touch the *Destination* field.
20. Touch one of the entries under Element Type.
21. Touch the number corresponding to the selection you made in the previous step.
22. Touch *Execute Move*.
23. After the movement of the cartridge completes, select *Back* to return to the library status screen.

24. Select the Online option. This option allows to set the library online or offline.
25. Return to the library status screen.

26. Select the Power option.

27. Do not power down the library at this time.
28. Return to the library status screen.

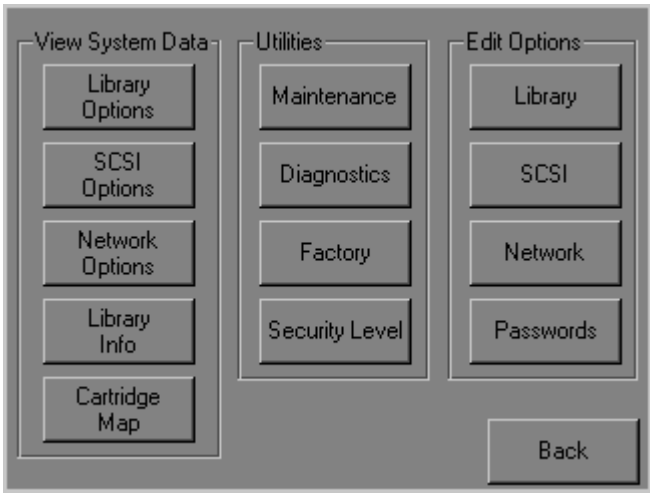
29. Select the LCD Contrast Controls by pressing either the up or down arrows.
30. Select the Menu button. This is one of most important options. For purposes of this lab, we will navigate through the options but make no changes.



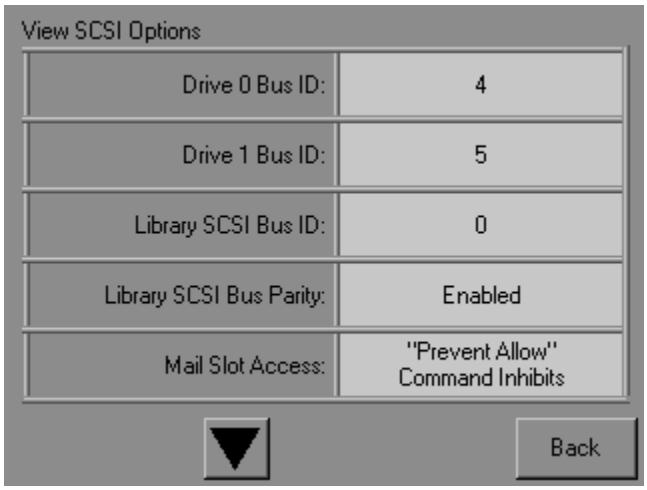
31. Select *Library Options*.

32. Select the down arrow to view further options.

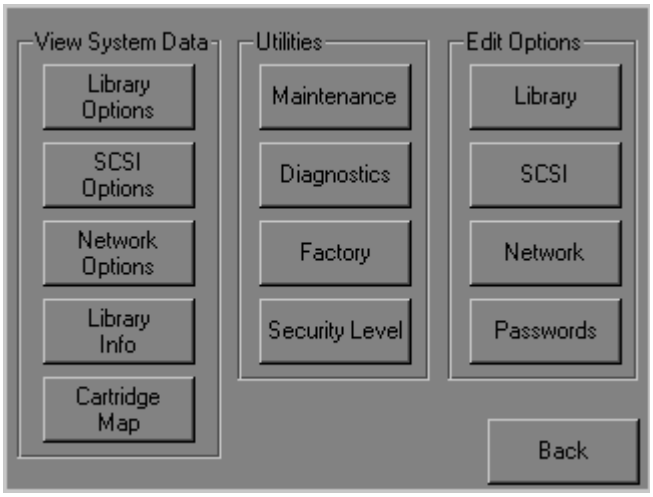
33. Select Back to return to the Menu screen.



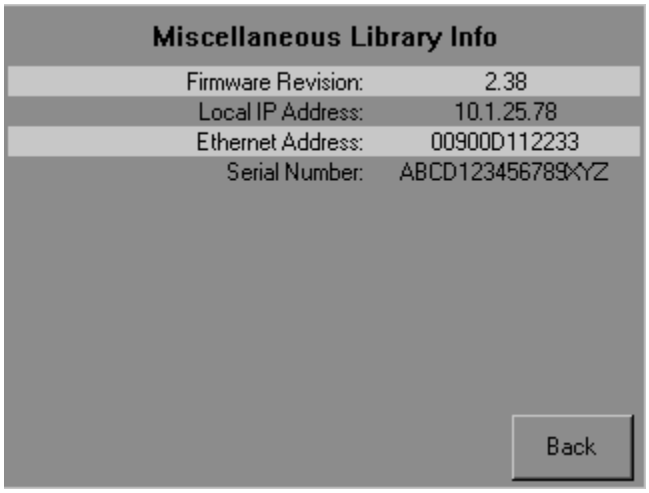
34. Select SCSI Options.



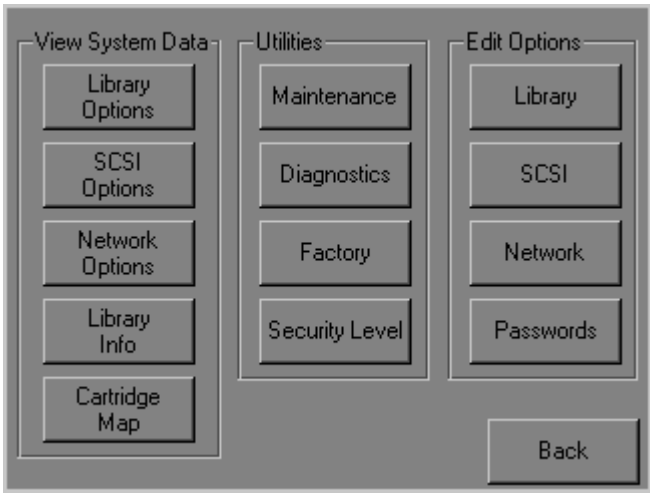
35. Select the down arrow to view further options.
36. Select Back to return to the Menu screen.



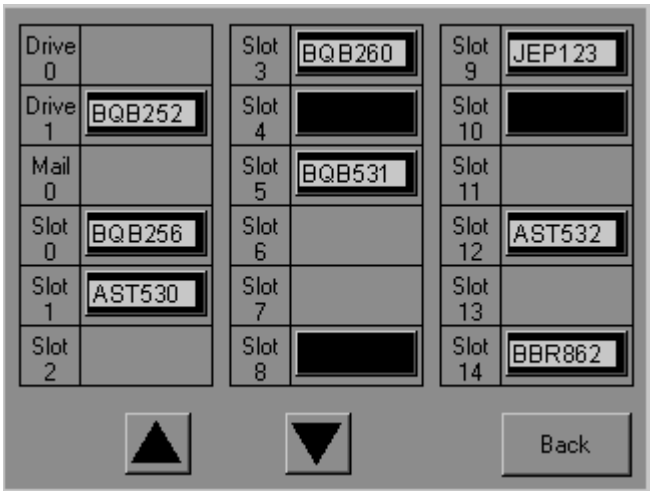
37. Select Library Info.



38. Select Back to return to the Menu screen.



39. Select Cartridge Map.



40. Select Back to return to the Menu screen.
41. For lab purposes, we will not explore the other options unless time permits.

This concludes the lab for the MSL5000 Initial Setup and Configuration.

Configuring the Modular Data Router

Module 5 – Lab 1

Objective

After completing this lab, you should be able to complete the Fibre Channel setup to enable the servers to communicate with the tape library.

Requirements

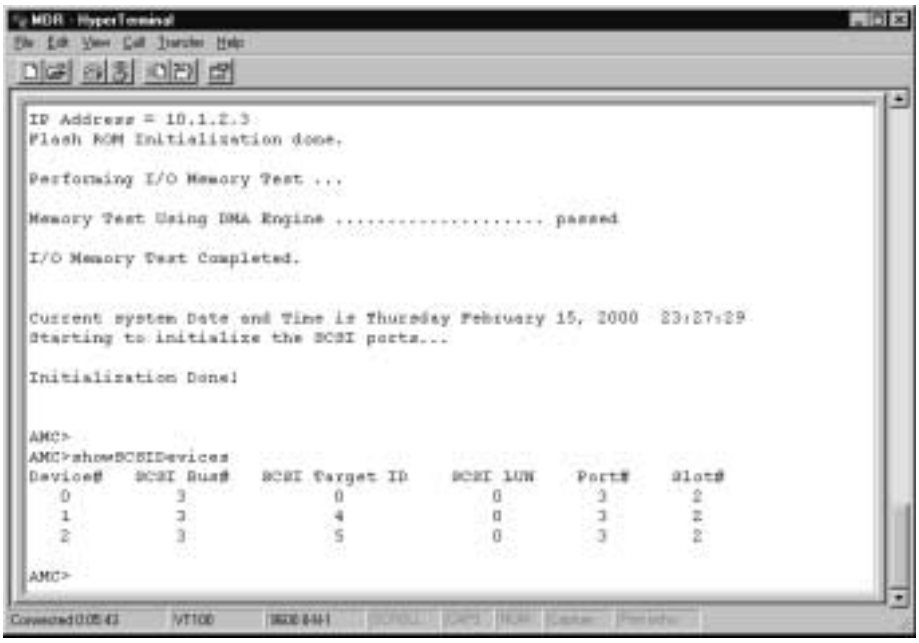
To perform this lab exercise, you will need:

- One serial cable
- Modular Data Router

Procedure

1. Connect one of your servers to the Modular Data Router by attaching the provided serial cable to the serial port on the rear panel of the tape controller and a serial port on the server.
2. Power on the server and log in.
3. Select *Start* → *Programs* → *Accessories* → *Hyperterminal* → *Hyperterminal* and enter a name for your hyperterminal session in the New Connection dialog box.
4. Select an *icon* to represent the tape controller and click *OK*.
5. The Phone Number dialog box displays. From the *Connect using*: pull-down menu, select the communications port assigned to your serial port; then click *OK*. (You might have to enter an area code.)
6. Enter the following information in the Properties dialog box; then select *OK*.
   a. Bits per second (baud rate) **9600**
   b. Data bits **8**
   c. Parity **None**
   d. Stop bits **1**
   e. Flow control **None**
7. Select *File* → *Properties* → *Settings* and from the Emulation pull-down menu, select *VT100* → *OK*. The Power-On menu should display.
8. Power on the tape controller.
9. Press *Enter* if the Power-On menu does not display on its own.
10. Wait for the Power-On Self Test to complete.
11. Enter `showSCSIDevices` and press *Enter*.

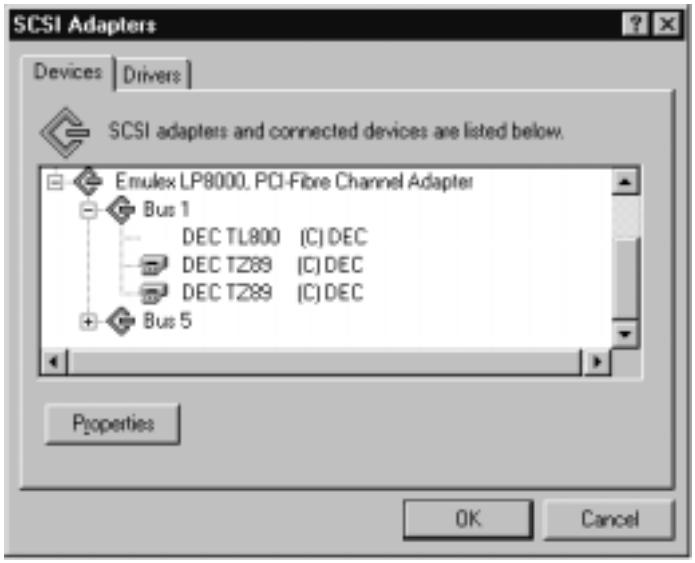
12. Make sure the three devices for your library display.



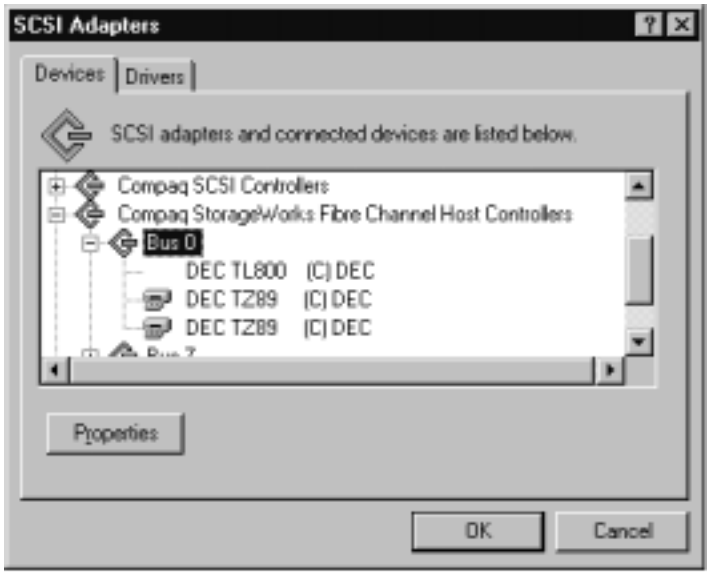
13. Exit Hyperterminal.
14. Power up the SAN Switch or Storage Hub 12.
15. Restart the server and log in.

Perform Step 16 for a switched fabric environment; perform Step 17 for an arbitrated loop environment.

16. When the server has restarted, click *Start* → *Settings* → *Control Panel* → *SCSI Adapters.* To verify that the drivers were installed correctly, double-click *Emulex LP8000, PCI-Fibre Channel Adapter* → *Bus 1*. The drives should display as in the following graphic.



17. When the server has restarted, click *Start* → *Settings* → *Control Panel* → *SCSI Adapters.* To verify that the drivers were installed correctly, double-click *Compaq StorageWorks Fibre Channel Host Controllers* → *Bus 0.* The drives should display as in the following graphic.



Configuring Selective Storage Presentation with the Modular Data Router

Module 5 – Lab 2

Objective

After completing this lab, you will be able to configure the Modular Data Router for Selective Storage Presentation.

Requirements

To perform this lab exercise, you will need:

- One serial cable
- Dual-port Fibre Channel Module installed in Modular Data Router
- The other equipment as already installed in previous labs

Procedure

1. Connect a Fibre Channel cable from the switch or hub to each of the two ports of the Modular Data Router.
2. Connect one of your servers to the Modular Data Router by attaching the provided serial cable to the serial port on the rear panel of the tape controller and a serial port on the server.
3. Power on the server and log in.
4. Select *Start* → *Programs* → *Accessories* → *Hyperterminal* → *Hyperterminal* and enter a name for your hyperterminal session in the New Connection dialog box.
5. Select an *icon* to represent the tape controller and click *OK*.
6. The Phone Number dialog box displays. From the *Connect using*: pull-down menu, select the communications port assigned to your serial port; then click *OK*. (You might have to enter an area code.)
7. Enter the following information in the Properties dialog box; then select *OK*.
   a. Bits per second (baud rate) **9600**
   b. Data bits **8**
   c. Parity **None**
   d. Stop bits **1**
   e. Flow control **None**
8. Select *File* → *Properties* → *Settings* and from the Emulation pull-down menu, select *VT100* → *OK*. The Power-On menu should display.
9. Power on the tape controller.
10. Press *Enter* if the Power-On menu does not display on its own.
11. Wait for the Power-On Self Test to complete.
12. At the prompt, type *deleteconfig* to clear previous settings from the MDR.

```
AMC>deleteconfig
```

13. Type *y* when asked to return settings to factory defaults.

```
Are You Sure you Want to Remove All System Configurations
and return to the Factory Default Settings? y

THIS WILL ERASE ALL MAPS AND CONFIGURATIONS AND RETURN
THIS UNIT TO THE FACTORY DEFAULTS.

ARE YOU SURE? y
```

14. In order for the default settings to be restored, you must reboot the MDR after getting the following message:

```
FACTORY DEFAULTS RESTORED.

YOU MUST REBOOT THE SYSTEM IN ORDER FOR THE CHANGES TO
TAKE EFFECT.
```

15. At the prompt, type *showscsidevices* to display the SCSI devices the MDR recognizes.

```
AMC>showscsidevices
Device#   SCSI Bus#   SCSI Target ID    SCSI LUN    Port#    Slot#   Type
   0          0              0              0         0        0     0x0C
   1          5              1              0         5        2     0x08
   2          5              2              0         5        2     0x01
   3          5              3              0         5        2     0x01
```

16. At the prompt, type *showfcscsimap*.

```
AMC>showfcscsimap

The Default Map is:
FC LUN        SCSI Bus      SCSI Target ID      SCSI LUN     Device Type
   0              0                0                0           0x0C
   1              5                1                0           0x08
   2              5                2                0           0x01
   3              5                3                0           0x01
```

17. To show the port World Wide ID's corresponding to the HBAs that the Modular Data Router can communicate with, type *showhosts*. The output will display the port names that are recognized by Port 1 and Port 2 of the Fibre Channel module of the MDR.

```
AMC>showhosts
Port Number    : 1
World Wide Name -
   Node Name   : 50:05:08:B3:00:10:0D:10
   Port Name   : 50:05:08:B3:00:10:0D:11
Source ID      : 0x011500
Status         : Enabled
Operation Mode : Fibre Channel Target

    Host World Wide Name -
      Host Node Name : 20:00:00:00:C9:22:DC:16
      Host Port Name : 10:00:00:00:C9:22:DC:16
```

```
    AliasName : <not defined>
    Is Currently Logged In : Yes
    Source ID      = 0x011701
    Operation Mode = Fibre Channel Initiator

Port Number    : 2
World Wide Name -
   Node Name   : 50:05:08:B3:00:10:0D:10
   Port Name   : 50:05:08:B3:00:10:0D:12
Source ID      : 0x011300
Status         : Enabled
Operation Mode : Fibre Channel Target

    Host World Wide Name -
      Host Node Name : 20:00:00:00:C9:22:DC:16
      Host Port Name : 10:00:00:00:C9:22:DC:16
    AliasName : <not defined>
    Is Currently Logged In : Yes
    Source ID      = 0x011701
    Operation Mode = Fibre Channel Initiator
```

18. Notice that in the previous output, *AliasName* is *<not defined>* . We will give the Host Port Name an AliasName to simplify commands.

    Type *setalias HostPortName servername*, as in the below example.

AMC>setalias 10:00:00:00:C9:22:DC:16 server1

The alias of port 10:00:00:00:c9:22:dc:16 is set to server1.

19. Having created an AliasName for a port corresponding to an HBA, we will create a Fibre Channel LUN to SCSI Bus-Target-LUN mapping for Port 1 and Port 2 of the Fibre Channel module of the MDR. At the command prompt, type *createmap AliasName (MDR)portnumber* for Port 1 and Port 2.

```
AMC>createmap server1 1
A host map is created for host server1 at port 1.

AMC>createmap server1 2
A host map is created for host server1 at port 2.
```

20. At the prompt, type `showfcscimap AliasName` for an HBA. By default, the FC-to-SCSI map for an HBA should show that Port 1 and Port 2 of the MDR can communicate with all tape drives.

```
AMC>showfcscsimap server1


The Host Map for Host server1 at Port 1:
FC LUN        SCSI Bus      SCSI Target ID      SCSI LUN
Device Type
   0              0                0                0
0x0C
   1              5                1                0
0x08
   2              5                2                0
0x01
   3              5                3                0
0x01


The Host Map for Host server1 at Port 2:
FC LUN        SCSI Bus      SCSI Target ID      SCSI LUN
Device Type
   0              0                0                0
0x0C
   1              5                1                0
0x08
   2              5                2                0
0x01
   3              5                3                0
0x01
```

21. Next, we will remove all mappings from server1 for port 2. Type *setfcscsimap server1 2*

```
AMC>setfcscsimap server1 2


(setFcSCSIMap Usage:
Change or add entries in FC-to-SCSI Map


setFcSCSIMap [Alias] [PortNumber] )


set new entry (Y), delete entry (D), show map (S), stop (N)? d
Fibre Channel LUN to be Deleted: 0
Entry with FC LUN 0, SCSI Bus 0, Target ID 0, SCSI LUN 0 was
removed!
Fibre Channel LUN to be Deleted: 1
Entry with FC LUN 1, SCSI Bus 5, Target ID 1, SCSI LUN 0 was
removed!
```

```
Fibre Channel LUN to be Deleted: 2

Entry with FC LUN 2, SCSI Bus 5, Target ID 2, SCSI LUN 0 was
removed!

Fibre Channel LUN to be Deleted: 3

Entry with FC LUN 3, SCSI Bus 5, Target ID 3, SCSI LUN 0 was
removed!

Fibre Channel LUN to be Deleted:

set new entry (Y), delete entry (D), show map (S), stop (N)? n
```

22. To verify that all mapping from server1 to port 2 have been removed, type *showfcscimap server1*

```
AMC>showfcscsimap server1


The Host Map for Host server1 at Port 1:

FC LUN        SCSI Bus      SCSI Target ID      SCSI LUN
Device Type

   0              0               0                0
0x0C

   1              5               1                0
0x08

   2              5               2                0
0x01

   3              5               3                0
0x01


The Host Map for Host server1 at Port 2:

FC LUN        SCSI Bus      SCSI Target ID      SCSI LUN
Device Type
```

23. You have just implemented selective storage presentation for server1. If you have other servers, simply repeat the process. For the purpose of the rest of our labs, we will use only one Fibre Channel port. Unplug one of the fibre cables. Type *deleteconfig*.

For load balancing the next server, server2 should have FC-to-SCSI mapping defined for Port 2 and none for Port 1.

Initial Configuration – Network Storage Router

Module 5 – Lab 3

Objective

After completing this module, you will be able to perform and initial setup of the Network Storage Router.

Requirements

- Network Storage Router
- Console Cable
- Management PC with terminal software

Procedure

1. Connect the supplied console cable from the Network Storage Router to your server.
2. Open a Terminal Session (such as HyperTerminal or PowerTerm)
3. Connect to the Network Storage Router using the following terminal settings:
    - Baud Rate: auto-detected by the Network Storage Router, can use 9600, 19200, 38400, 57600, or 115200. HP recommends setting the baud rate to 115200.
    - Data Bits 8
    - Stop Bits 1
    - Parity None
    - Flow Control None or XON/XOFF

```
Compaq StorageWorks Modular Router
Version X.X   XXXXXXX

1) Perform Configuration
2) System Utilities
3) Display Trace and Assertion History
4) Reboot
5) Download a New Revision of the Firmware

Command >
```

4. The main menu appears. Press 1 to enter the *Configuration Menu*.

```
Configuration Menu
Version X.X   XXXXXXX

1)Baud Rate Configuration
2)Ethernet and SNMP Configuration
3)World Wide Node Name Configuration
4)Modules Configuration
5)Trace and Event Settings Configuration
6)Real-Time Clock Configuration
7)Active Fabric Configuration
8)Power Supply Configuration

A) Save Configuration
B) Restore Last Saved Configuration
C) Reset and Save Configuration to Factory Defaults

X) Return to main menu
```

5. Press 2 to enter the *Ethernet and SNMP Configuration Menu*

```
Ethernet Configuration Menu
Version X.X   XXXXXXX

IP Address                    : 1.1.1.1
Subnet Mask                   : 255.255.255.0
IP Gateway                    : 0.0.0.0
Ethernet Physical Address     : 08:06:07:05:03:09
Ethernet Mode                 : 10/100Mbps (Auto-Neg)
Hostname                      :
DHCP Configuration            : Disabled

1) Change IP Address
2) Change IP Subnet Mask
3) Change IP Gateway
4) Change Ethernet Physical Address
5) Toggle Ethernet Mode
6) Change Hostname
7) Toggle DHCP Configuration
8) Change SNMP Settings
9) Change Security Settings

X) Return to previous menu
```

6. Set the *IP Address*, *Subnet Mask* and *Hostname* settings to those recommended by your instructor. When finished, press *X* to return to the *Configuration Menu*.
7. Verify that the library is physically connected to the Network Storage Router, and that the NSR is physically connected to the fabric.
8. For all servers that will share the tape library, perform the following steps:
9. Power on the server. The server will detect the Network Storage Router and prompt for a driver.
10. Choose *Search*, then choose *Specify a Location*. Insert the floppy disk provided by your instructor and type *a:\cpqnsr.inf*. The server will load the driver for the device.

NOTE: A driver is not necessary for the Network Storage Router to operate. The *cpqnsr.inf* file is a null driver provided primarily to allow the unit to display normally in Device Manager.

❖ This completes the initial configuration.

Creating Mappings with the Network Storage Router

Module 5 – Lab 4

Objective

After completing this module, you will be able to create mappings using the graphical user interface on the Network Storage Router.

Requirements

- Two servers with Fibre Channel HBAs
- Fibre Channel switch
- Tape library
- Network Storage Router with two or more FC ports

Procedure

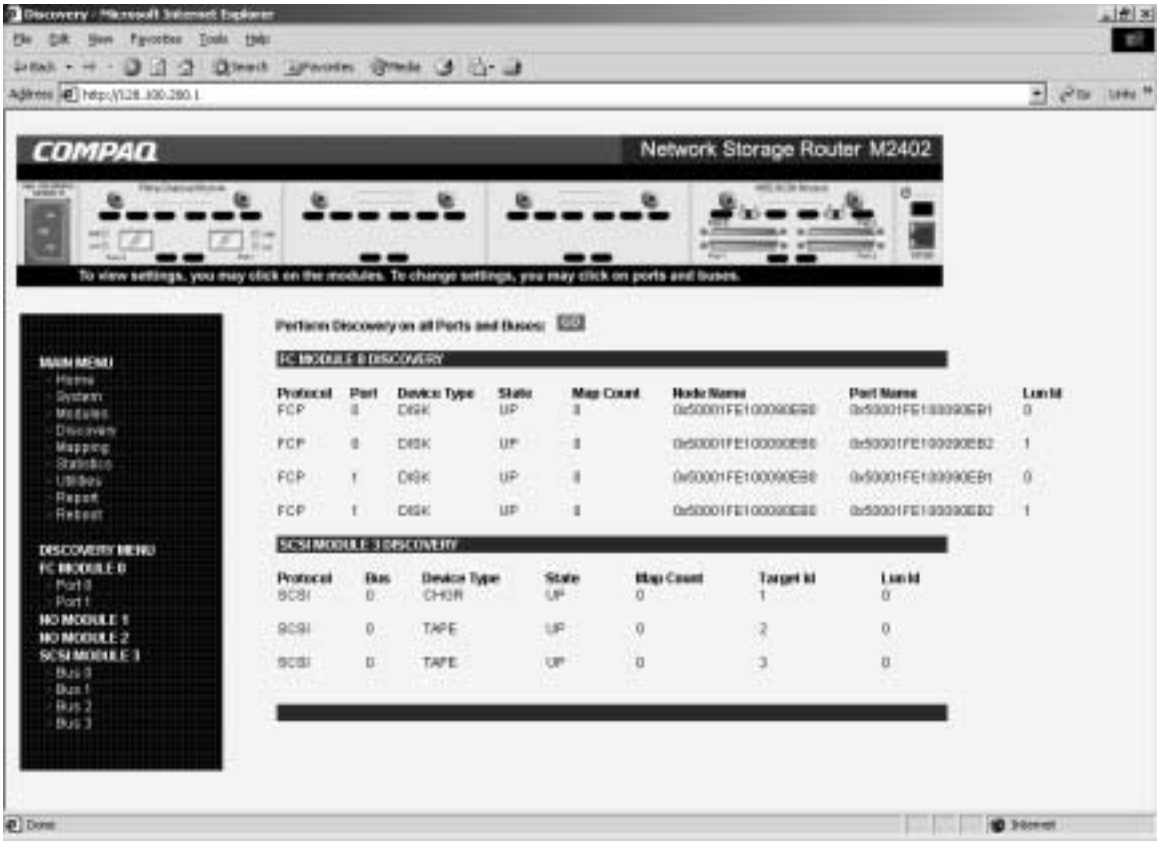
1. Verify that the tape library, Fibre Channel switch, Network Storage Router, and servers have been powered on in that order.

2. Ping the IP address you entered for the Network Storage Router in the previous lab for initial configuration of the NSR.

3. Browse to the embedded web agent on the Network Storage Router by typing http://routerIPaddress, using the IP address you entered in the previous lab.

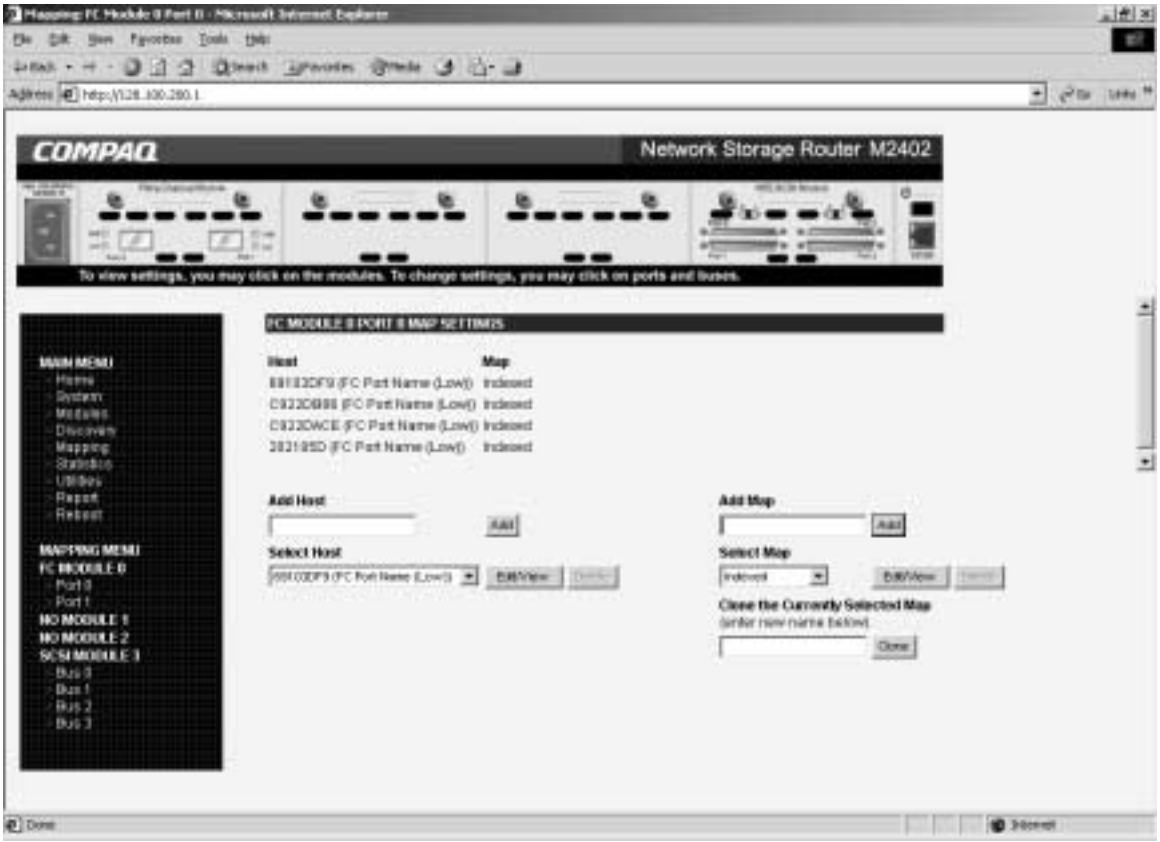
4. The Graphical User Interface for the NSR will appear. From the *Main Menu*, select the *Discovery* option.

5. The first time you make a selection from the main screen, you will be prompted to enter a username and password to determine access privileges. The default username is *root* and the default password is *password*. Enter these when prompted.



6. Click the *Go* button located after the Perform Discovery on all Ports and Buses field. Verify that the changer and correct number of tape drives are discovered.

7. Click the *Mapping* menu on the left MAIN MENU. The Mapping page displays.



8. The first entry under the **Host** column is the WWN of the Fibre Channel switch. The next entries correspond to the WWNs of the Fibre Channel HBAs in the hosts. The last entry corresponds to the WWN of the NSR port. We will perform the following custom mapping:

   FC Port 0: port0map: controller, changer, first tape drive

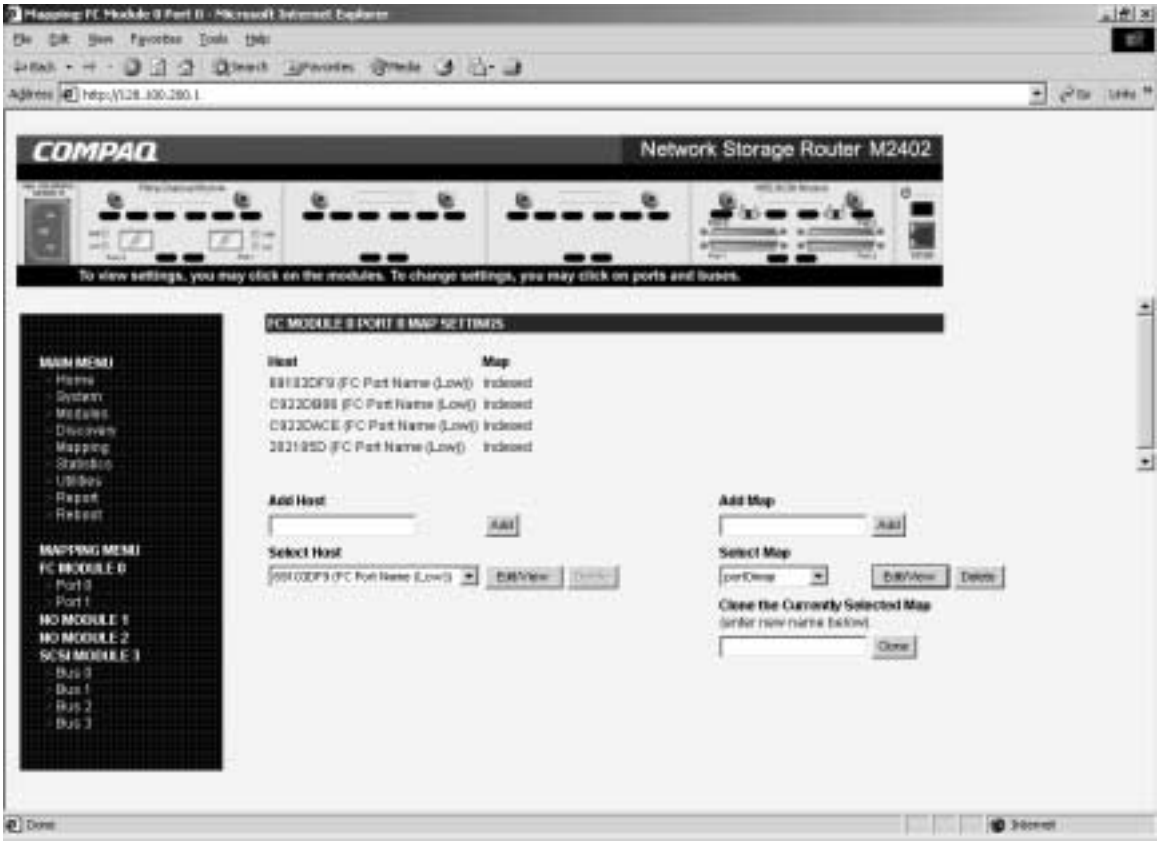
   FC Port 1: port1map: controller, second tape drive

   After the above maps are created, we then assign all host HBAs the port0map and the port1map. This allows all hosts to access both ports while restricting data to the first tape drive to port 0 and data to the second tape drive to port 1. This helps achieve load balancing.

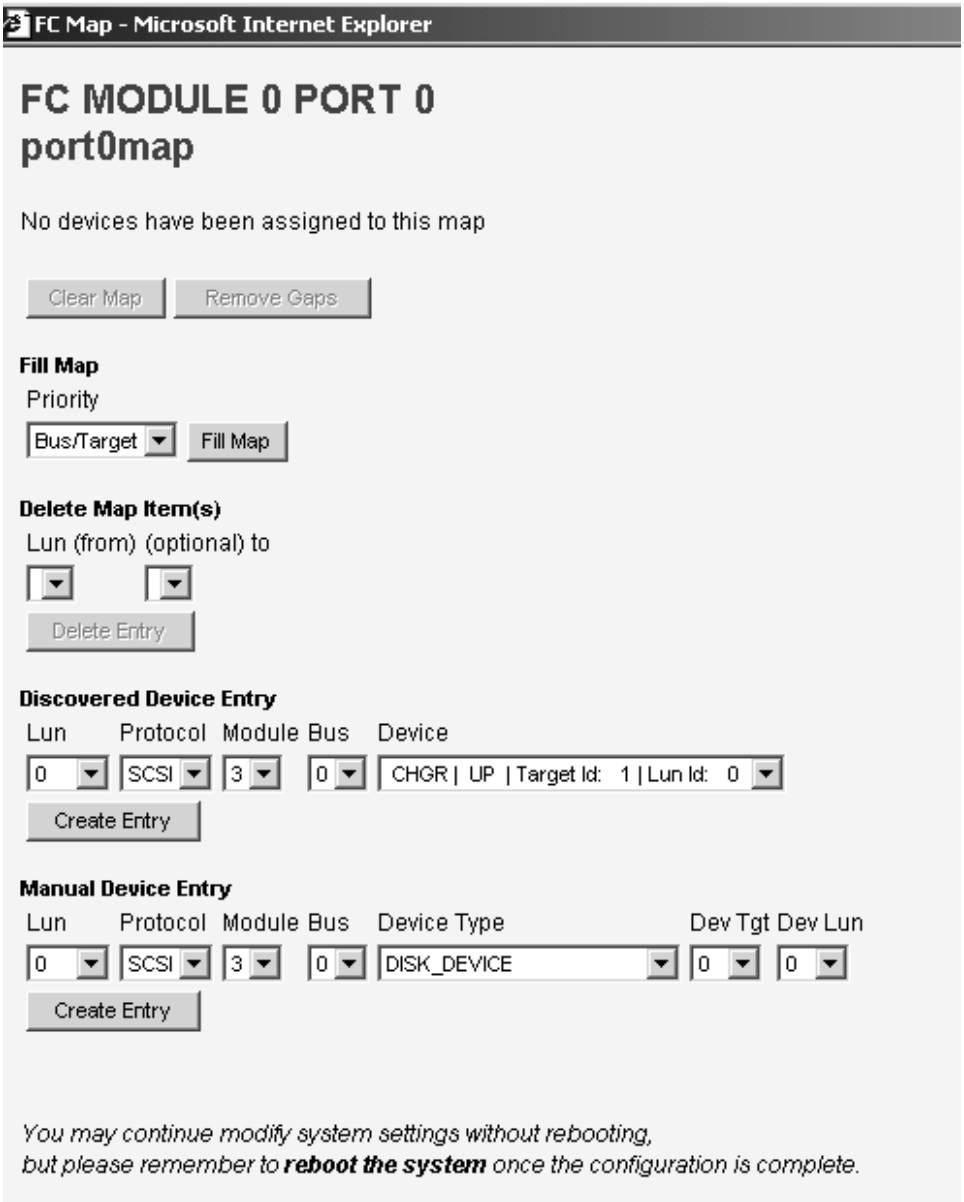
9. Verify that Port 0 is listed in the purple bar near the top of the page. We will first create a mapping which allows access to both hosts while limiting the devices seen to the changer and first tape drive. If it is not, click *port 0* in the left menu under the *FC Module*.

10. In the Add Map field, type *port0map* and click *Add*. A warning message displays.

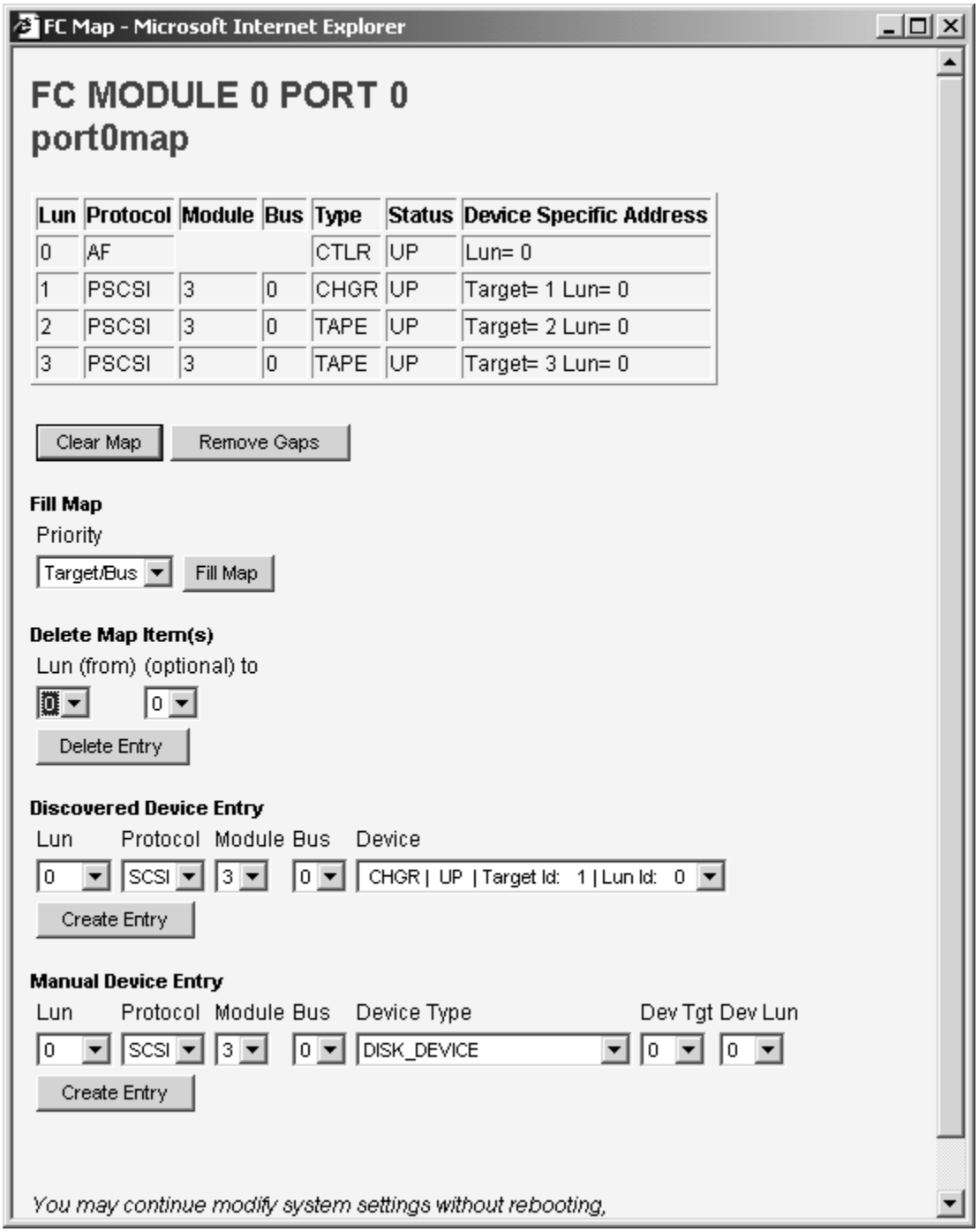
11. Click *OK* to the warning message. The new map now appears in the Select Map field.



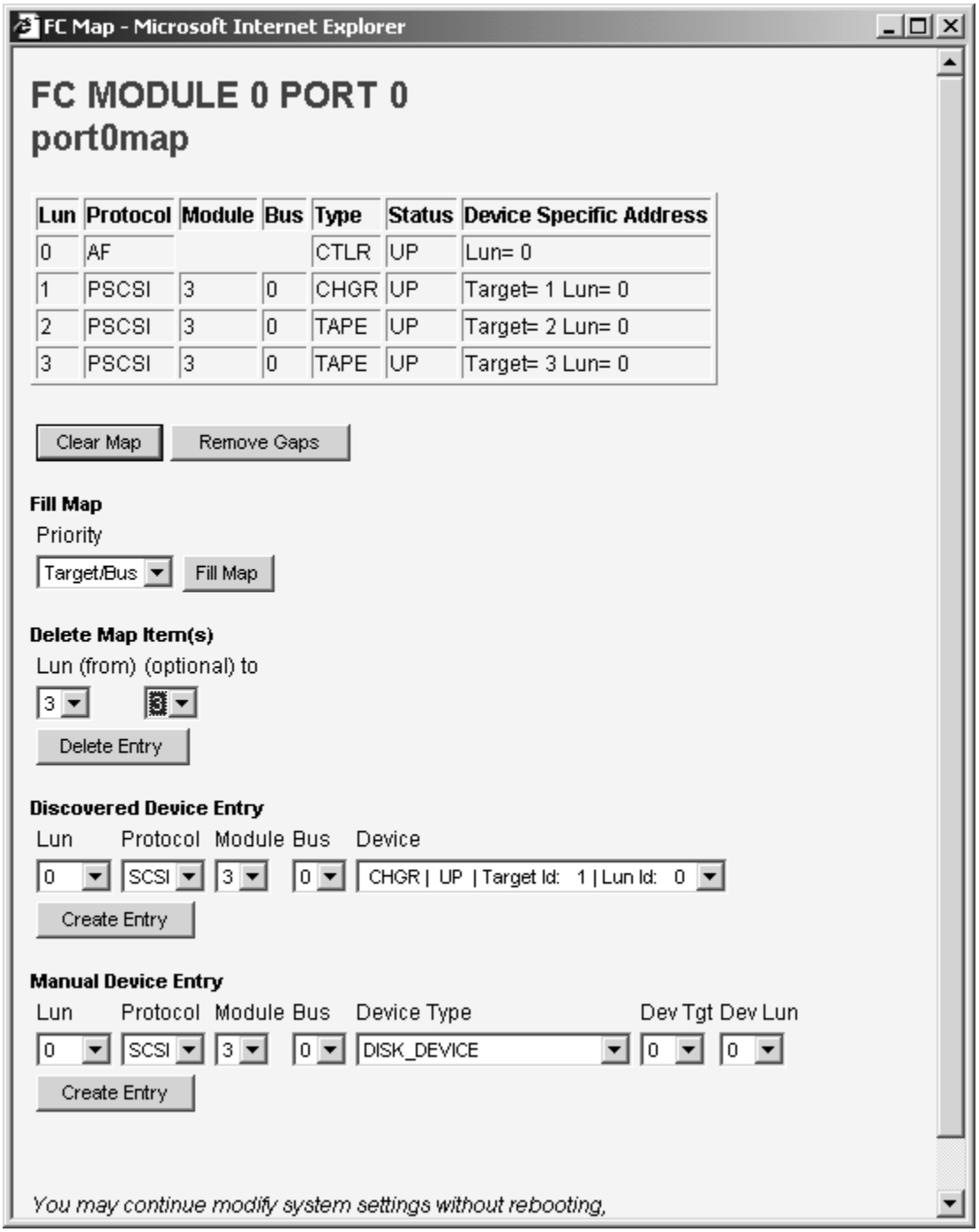
12. Click *Edit/View* under Select Map. The Edit /View window for the map appears.



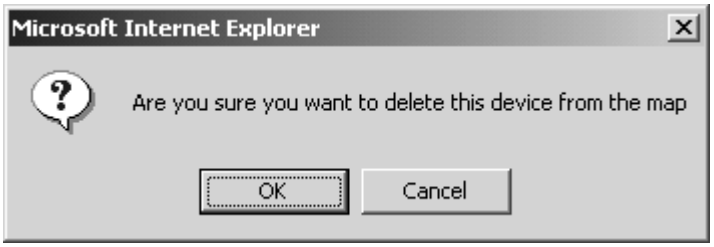
13. In the Fill Map section, change the setting to *Target/Bus* and then click *Fill Map*.



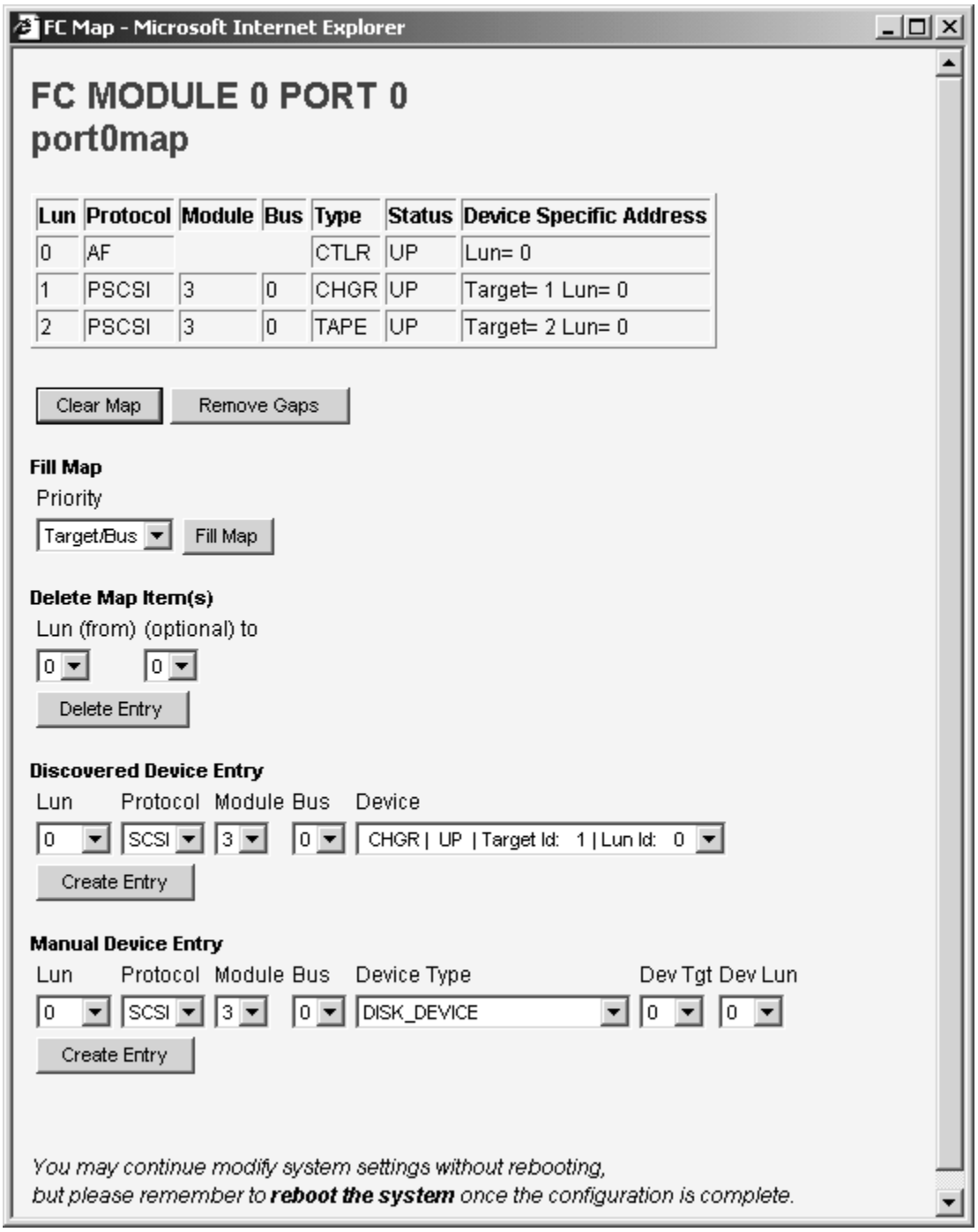
14. In the Delete Map Item(s) section, set the LUN to the LUN of the second tape drive.



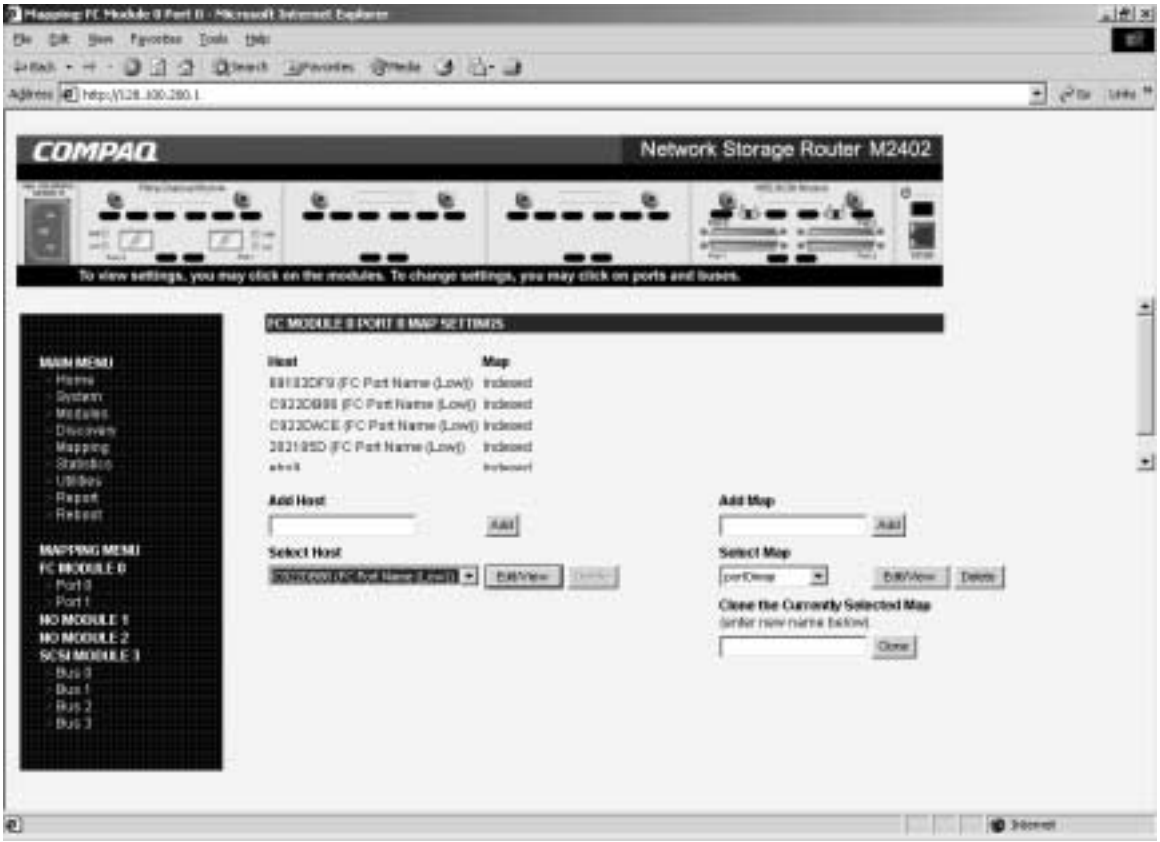
15. Click the *Delete* button. A warning message appears.



16. Click OK. The map should now display without the second tape drive.

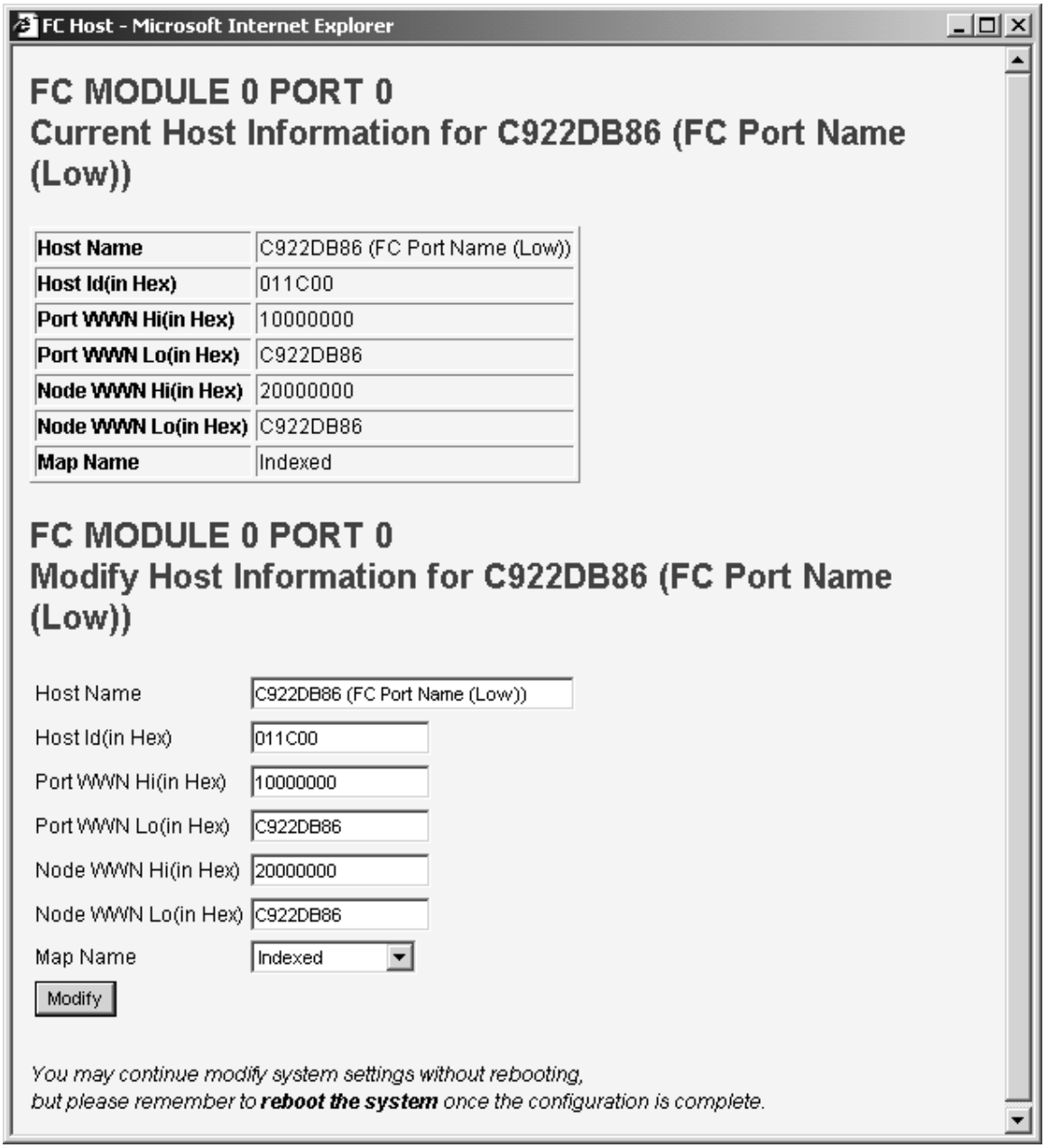


17. Exit the window by clicking the X in the top right corner.

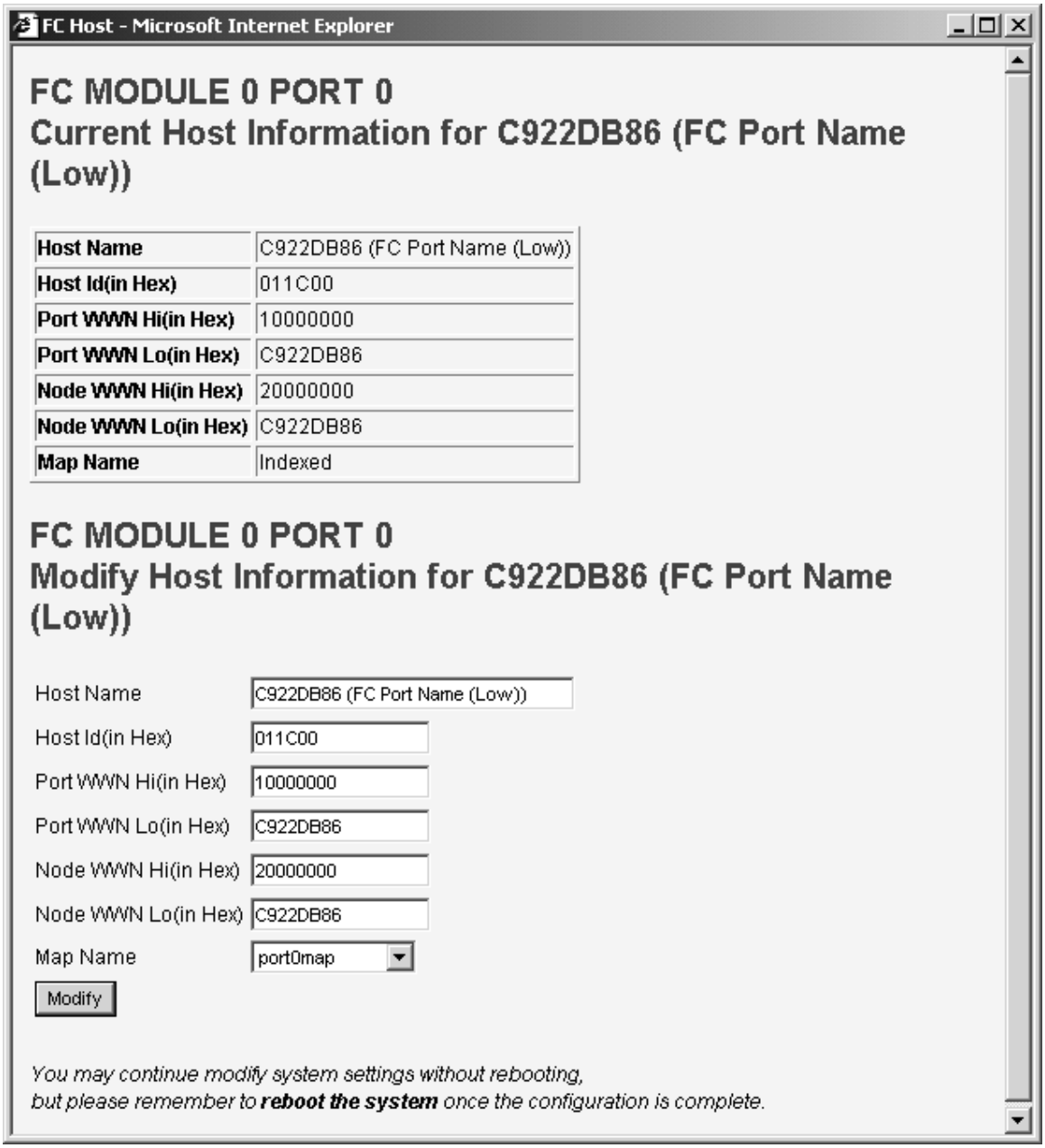


18. In the Select Host field, select the WWN of the HBA of the first host. A warning message appears.

19. Click *OK* to the warning. Then click *Edit/View* under the Select Host. The map for the host appears.

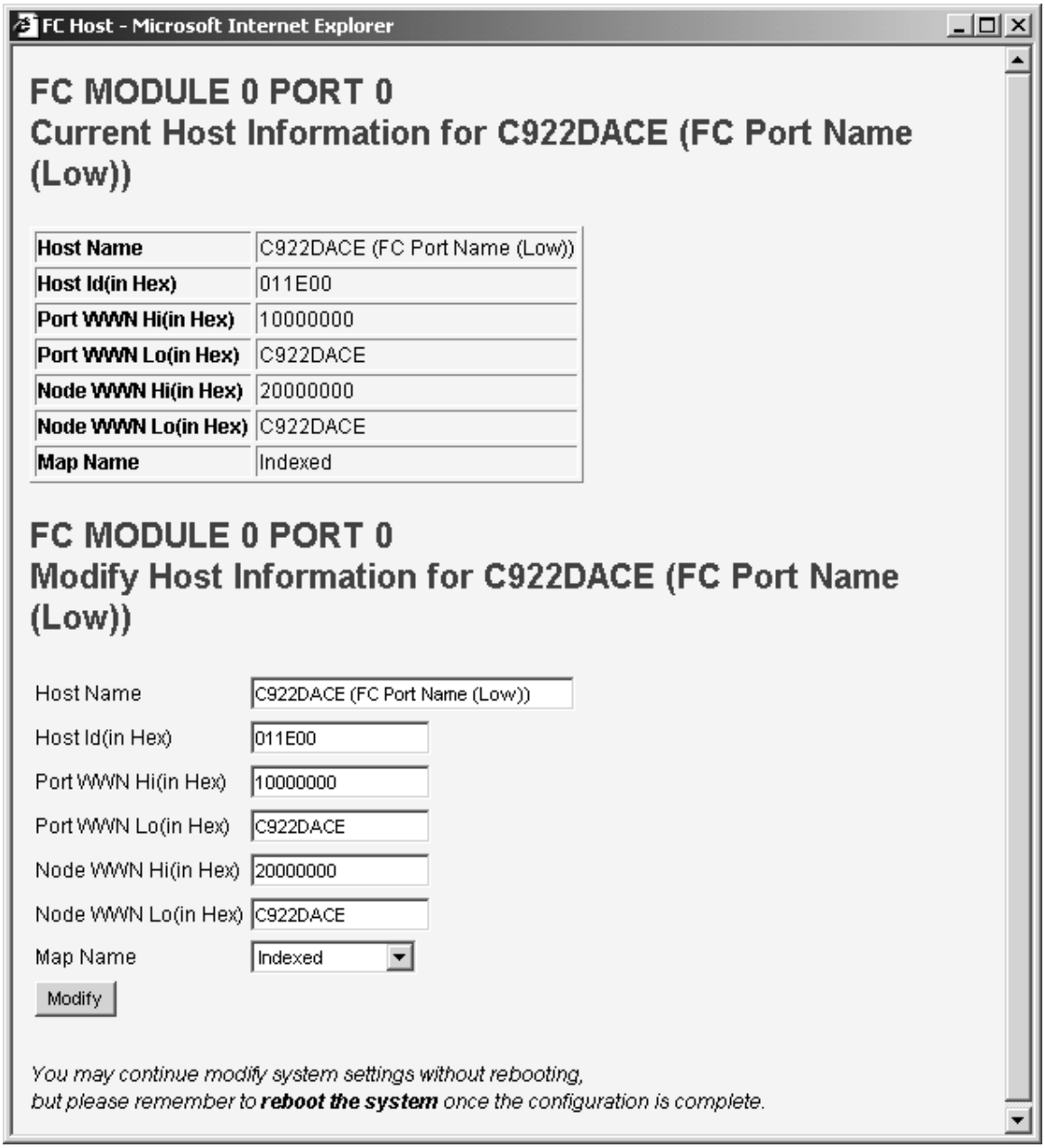


20. At the bottom of the window, change the map name to *port0map* using the drop-down.

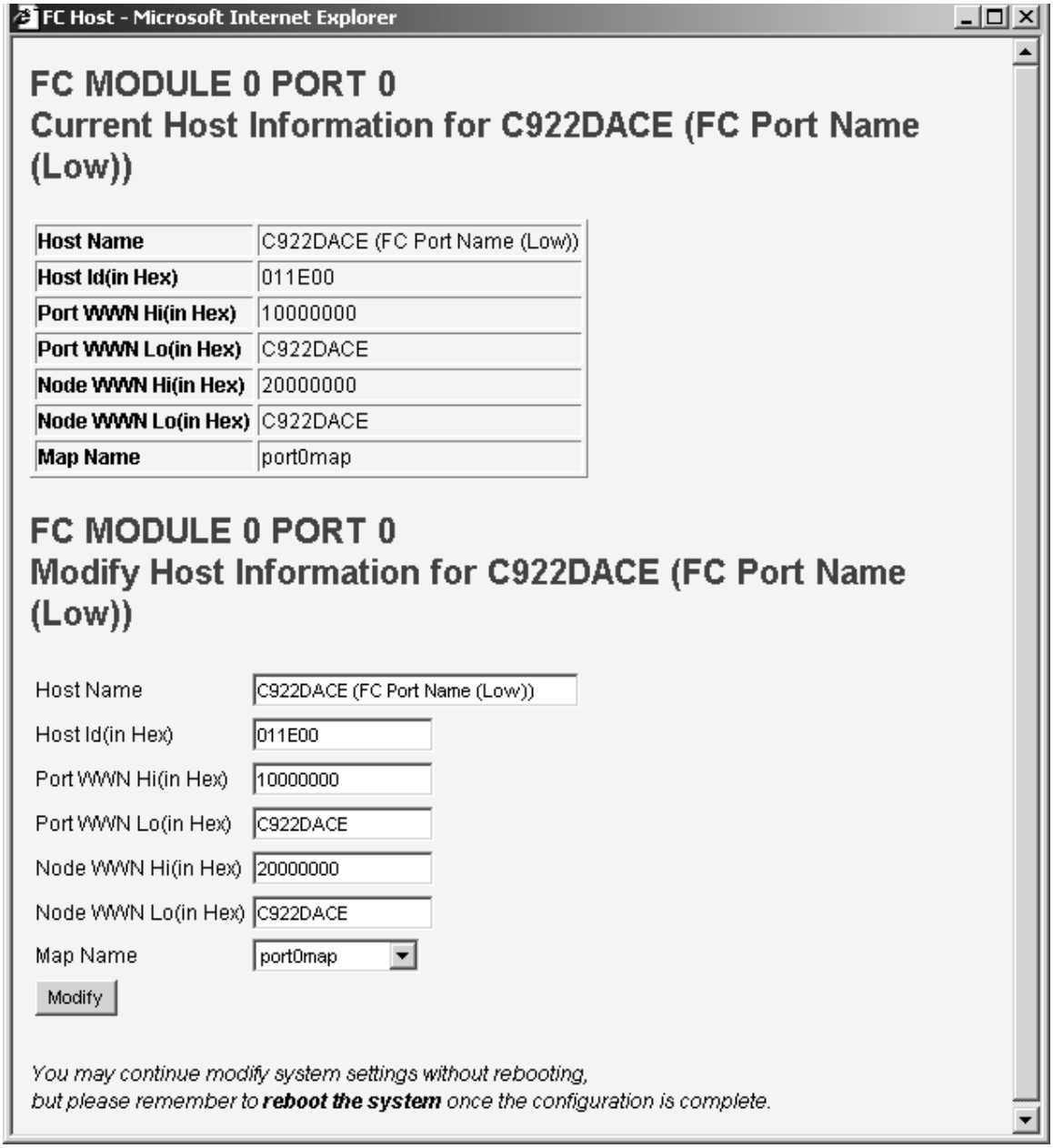


21. Click *Modify*. Close the window for the host by clicking the X in the top right corner.

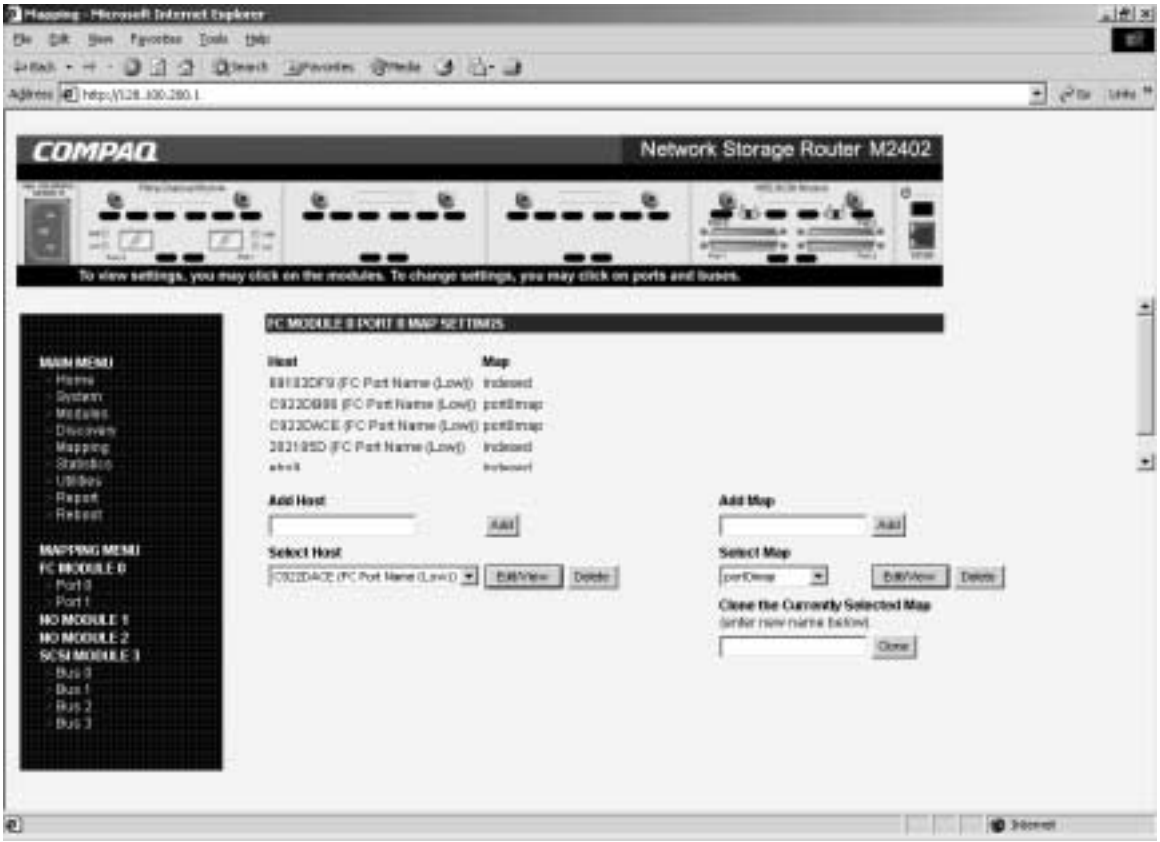
22. Under the Select Host field, select the WWN of the HBA of the other host. Then select *Edit/View*.



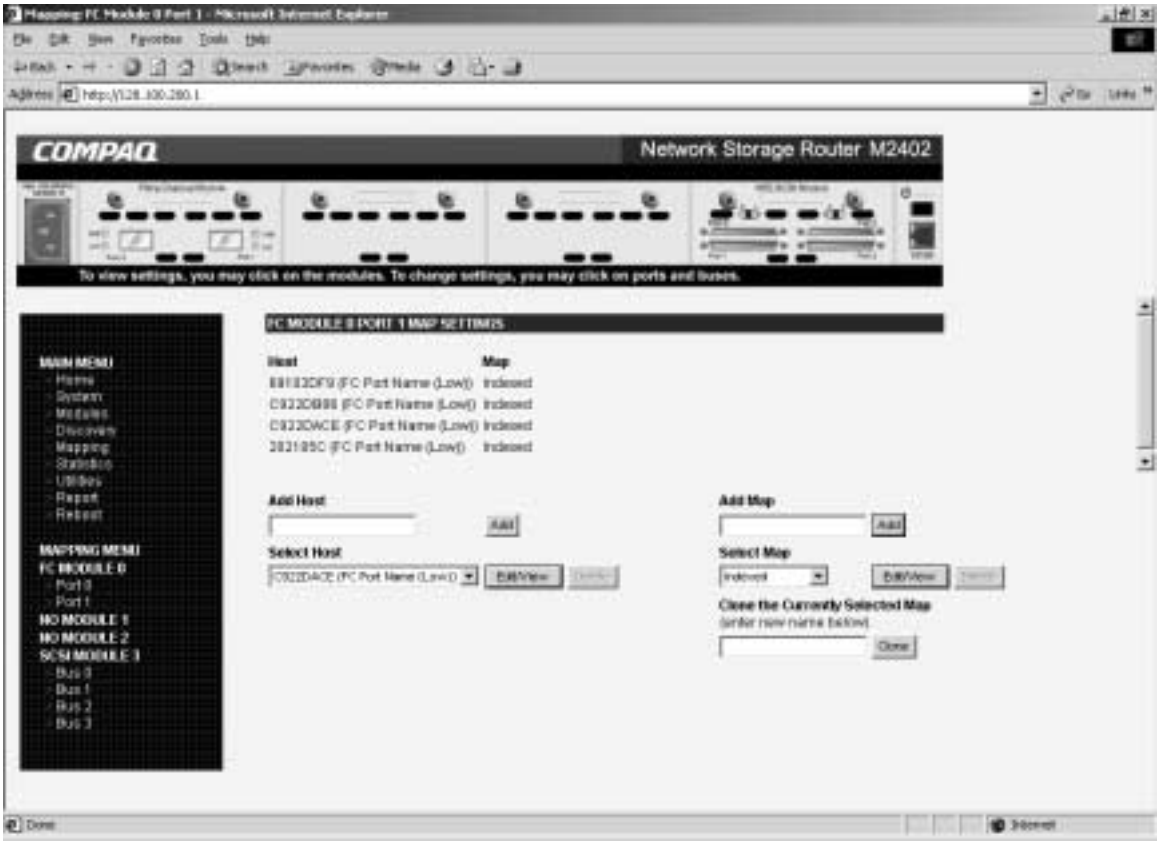
23. At the bottom of the window, change the Map Name entry to *port0map*.



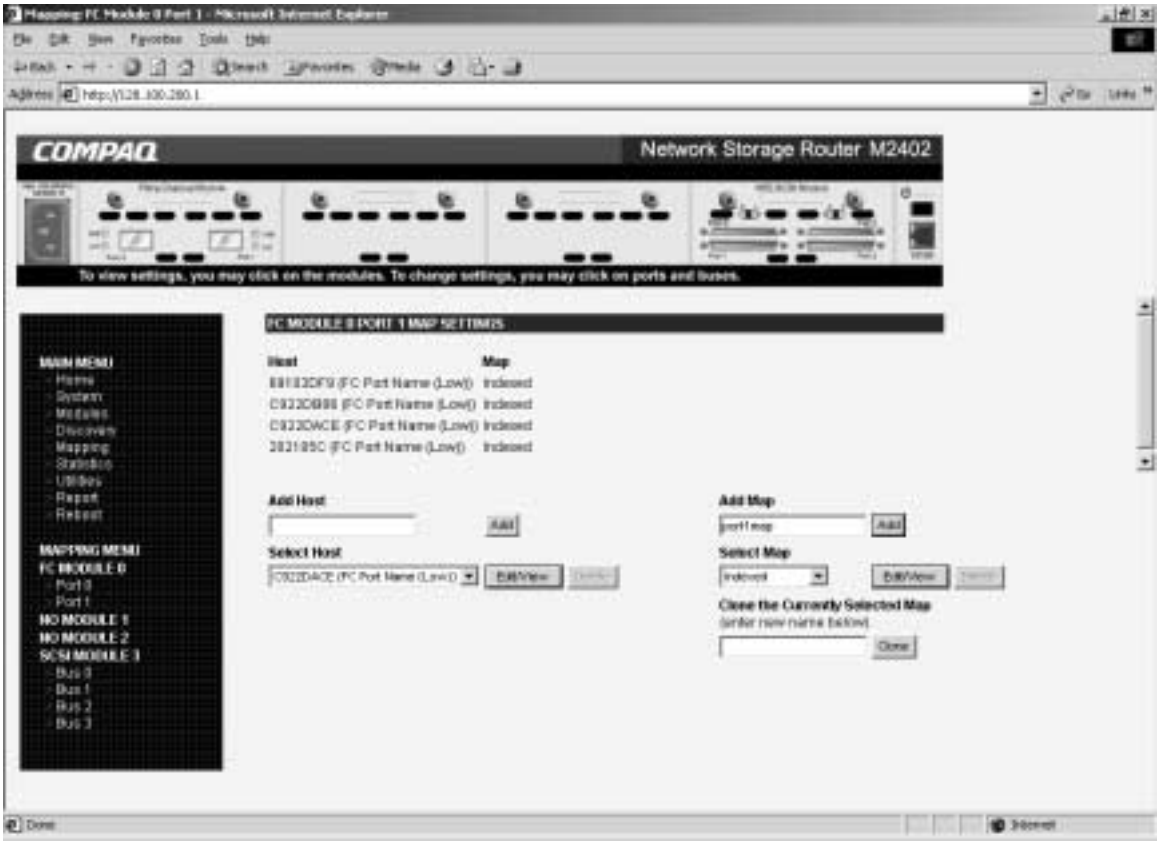
24. Click *Modify*. Close the window by clicking the X in the top right corner.



25. For port 0, you have now created a mapping which allows access to both hosts while limiting the devices seen to the changer and first tape drive. We will now creating a mapping for port 1, which allows access to both hosts while limiting the devices seen to the second tape drive. Under FC Module, click *port 1*.

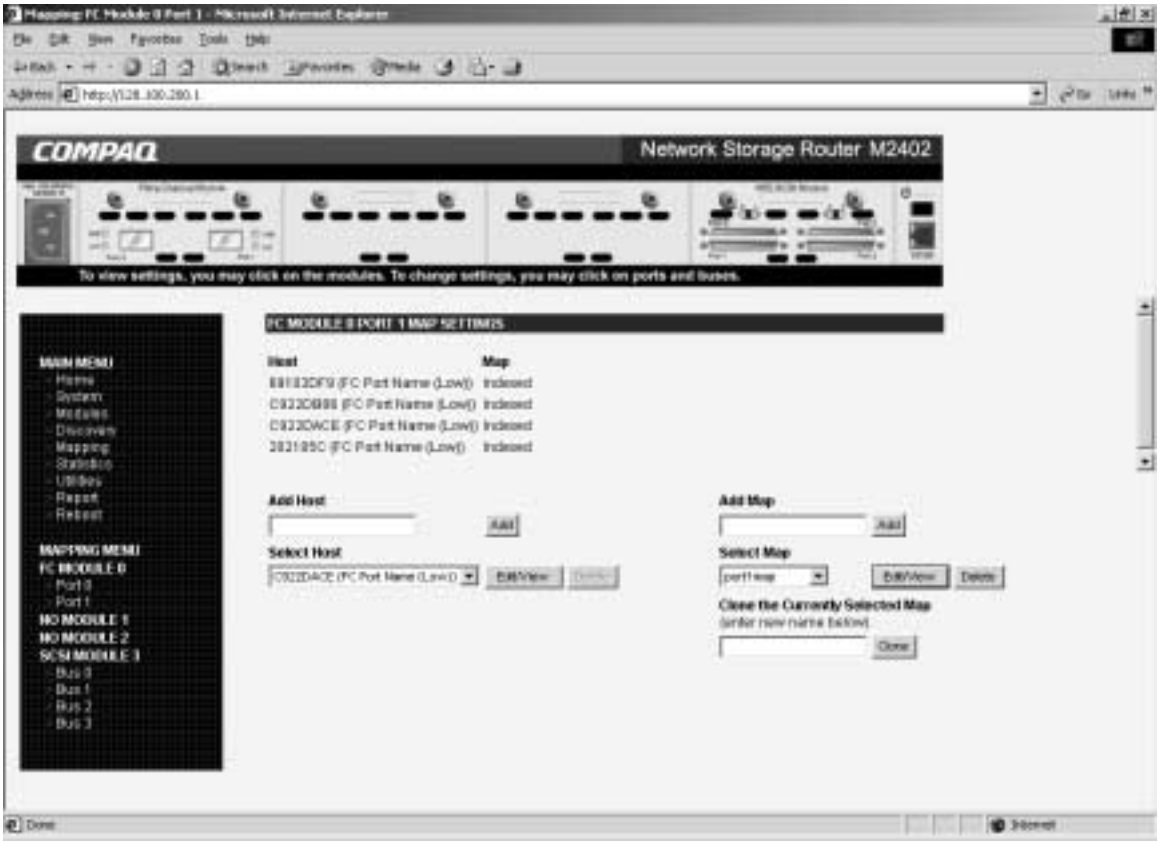


26. In the purple bar at the top, verify that Port 1 is listed. In the Add Map field, type *port1map*.

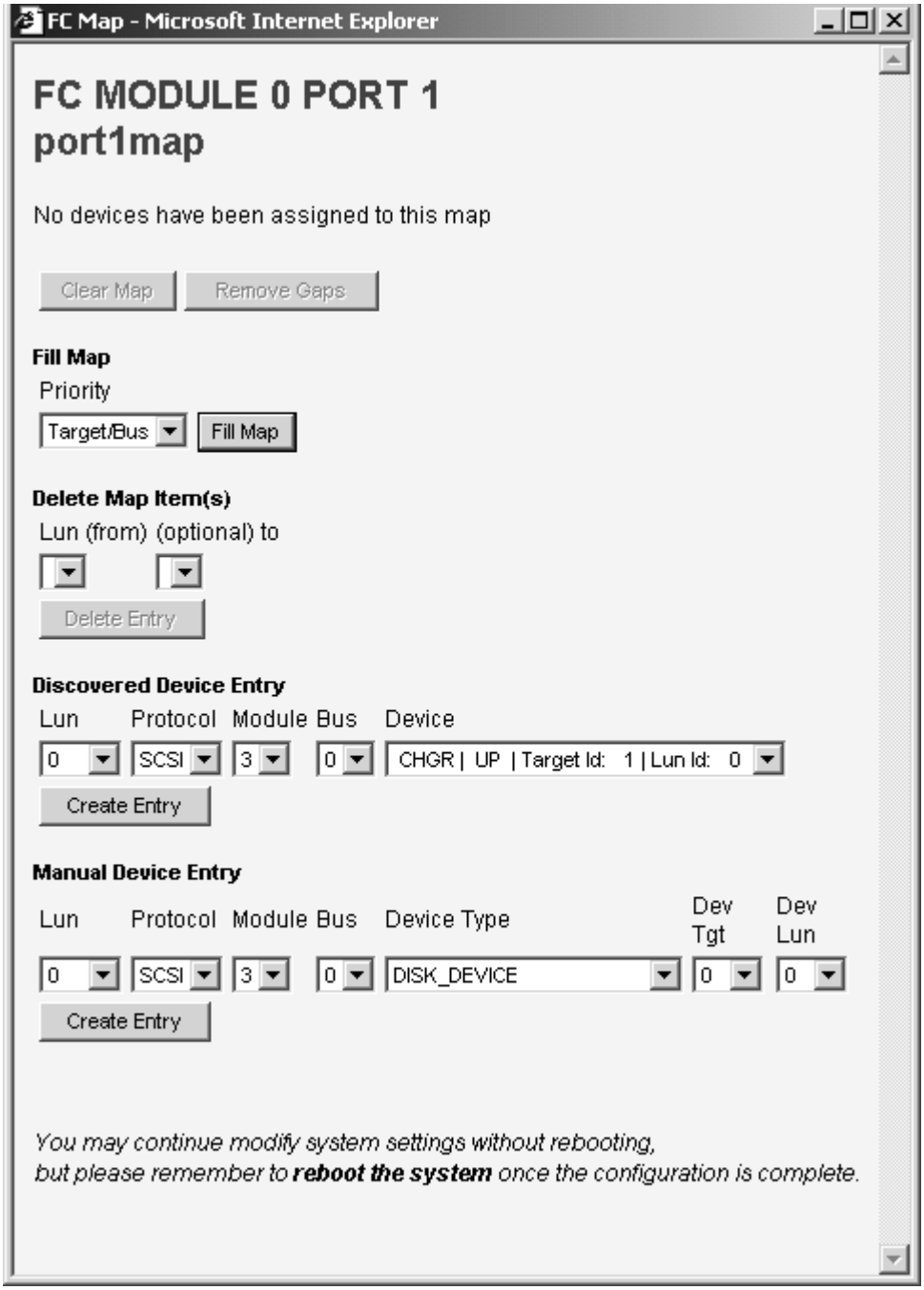


27. Click *Add*. A warning message appears.

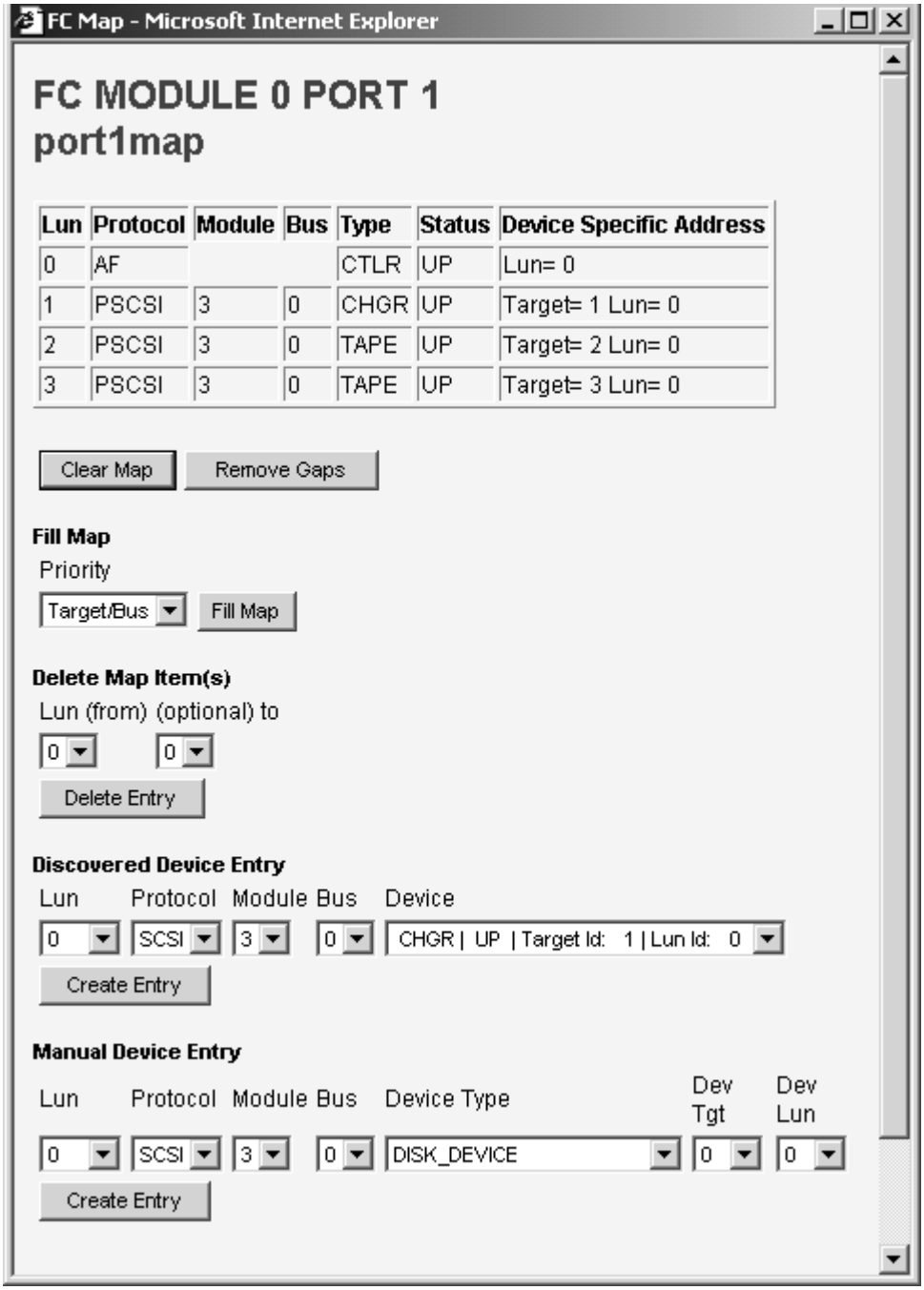
28. Click *OK* to the warning message. The map *port1map* appears under the Select Map field.



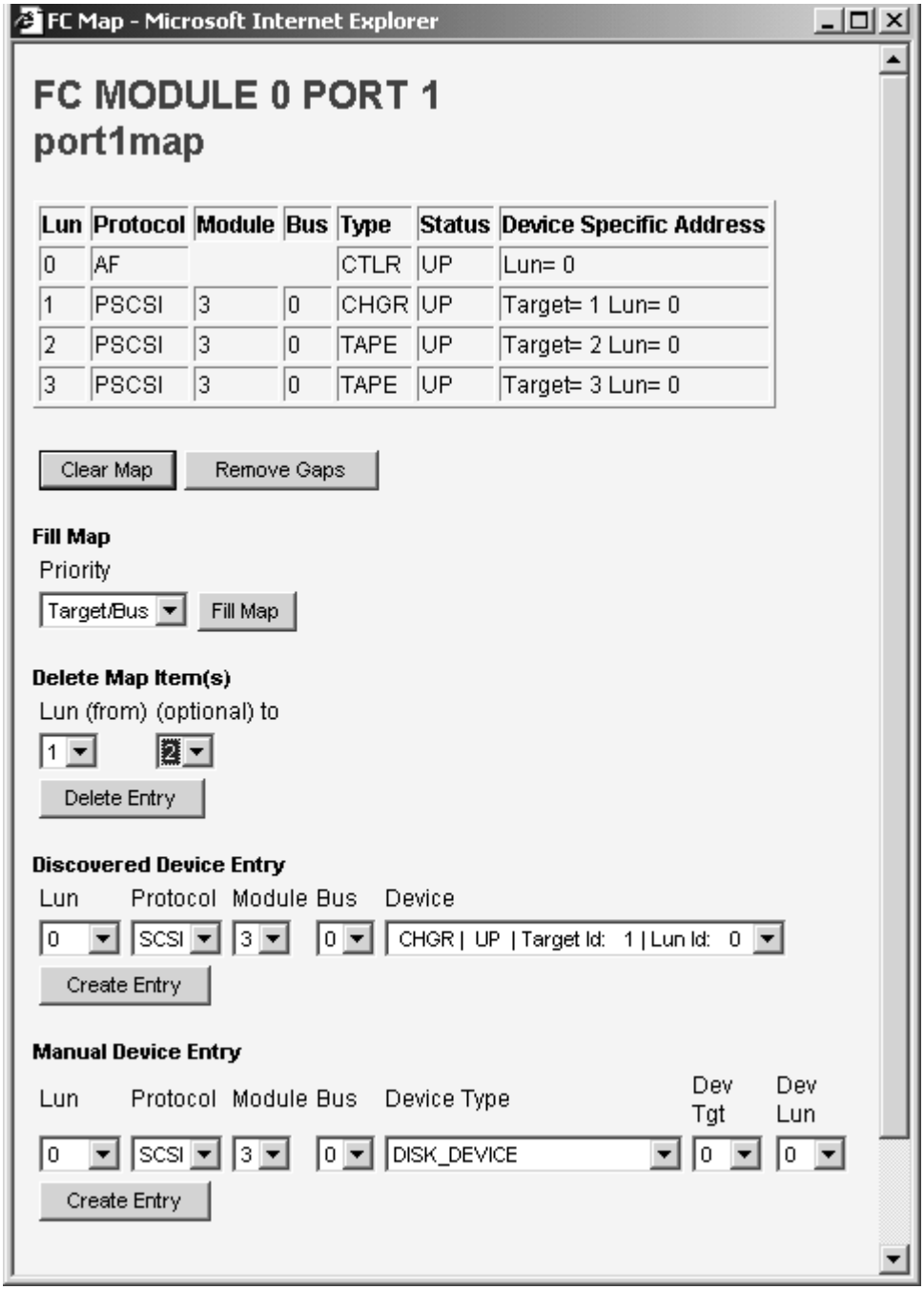
29. Click *Edit/View* under Select Map. The Edit/View window for the map appears.



30. Under the Fill Map section, change the setting to *Target/Bus* using the drop-down. Then click *Fill Map*.

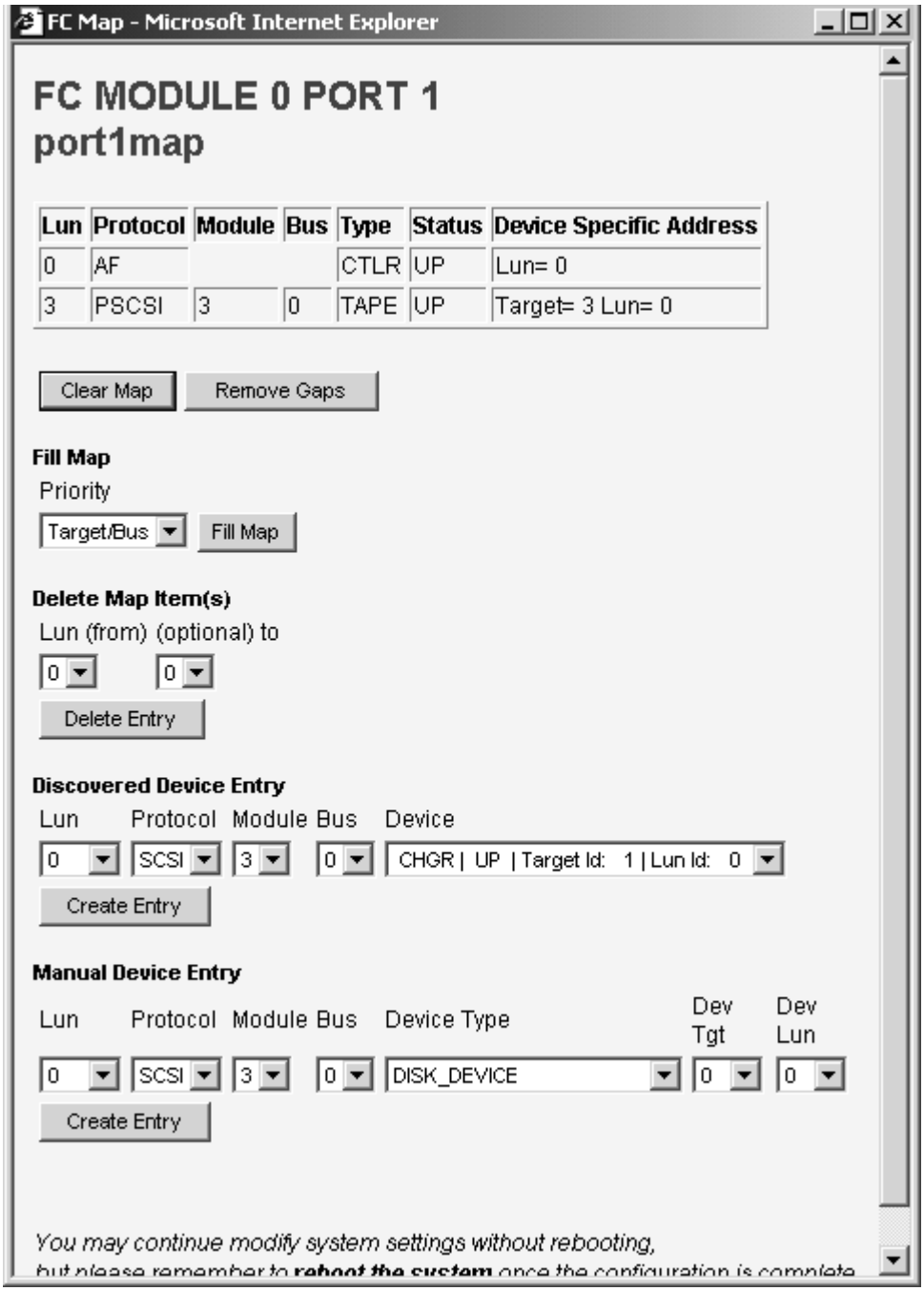


31. All devices attached to the NSR should be listed. We will delete entries so that only the NSR controller and second tape drive are seen for port 1. In the Delete Map Item(s) section, set the LUNs for deletion of the changer and first tape drive.



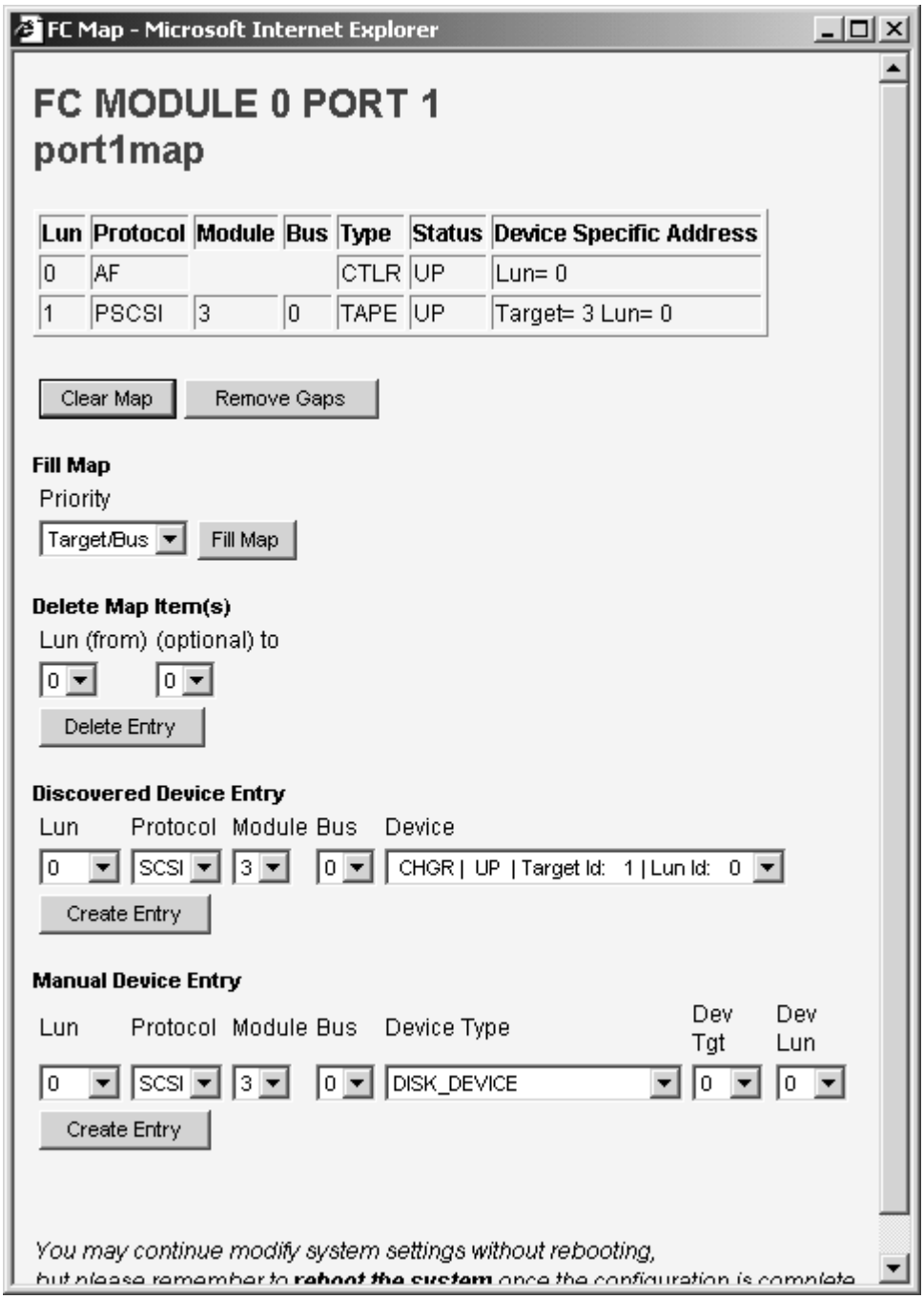
32. Click *Delete Entry*. A warning message appears.

33. Click *OK* to the warning message. The changer and first tape drive should no longer be listed.



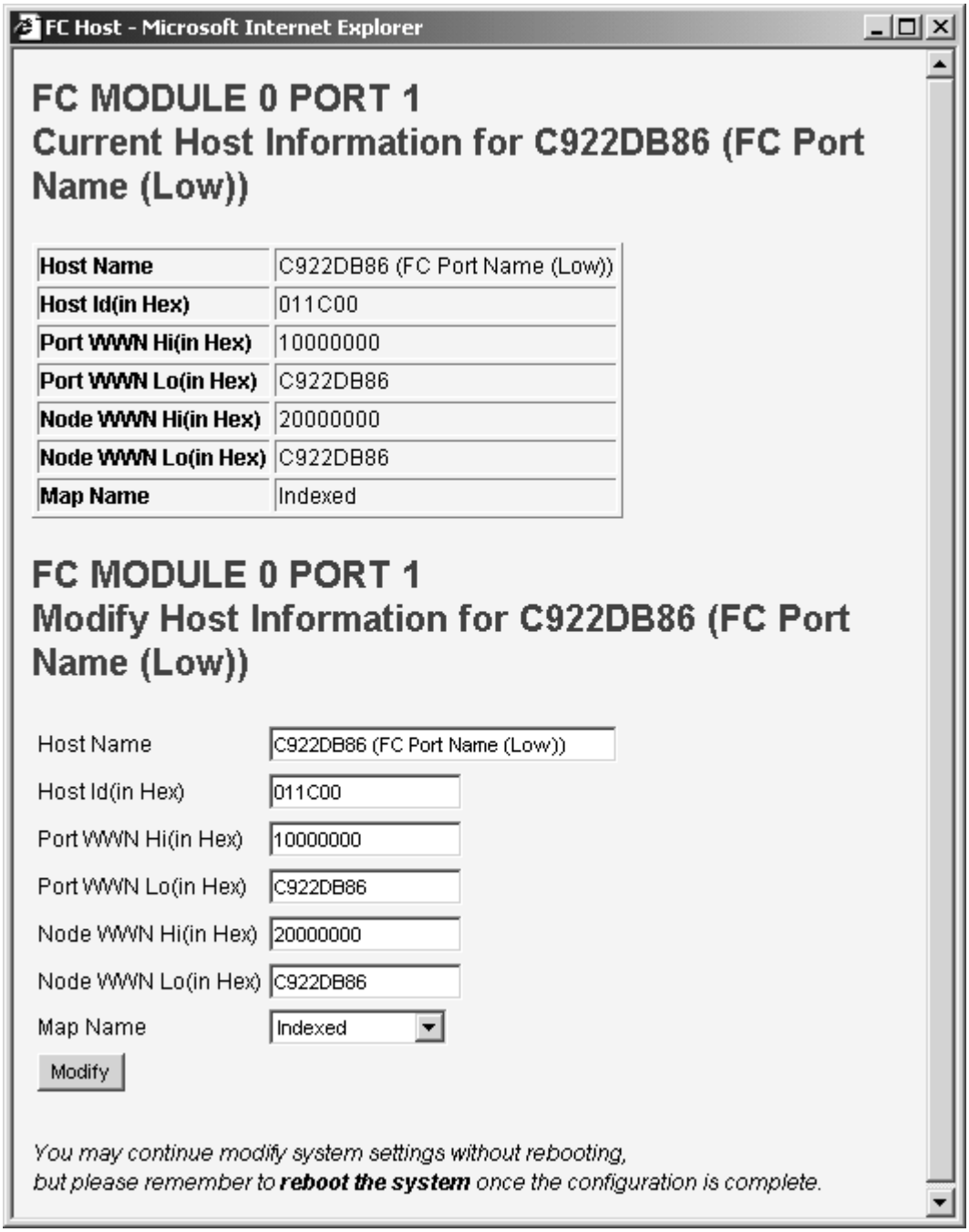
34. Click *Remove Gaps* near the top of the window to reassign the LUNs in order for port 1. A warning message appears.

35. Click OK to the warning message. The LUNs for port 1 should now be listed in numerical order.

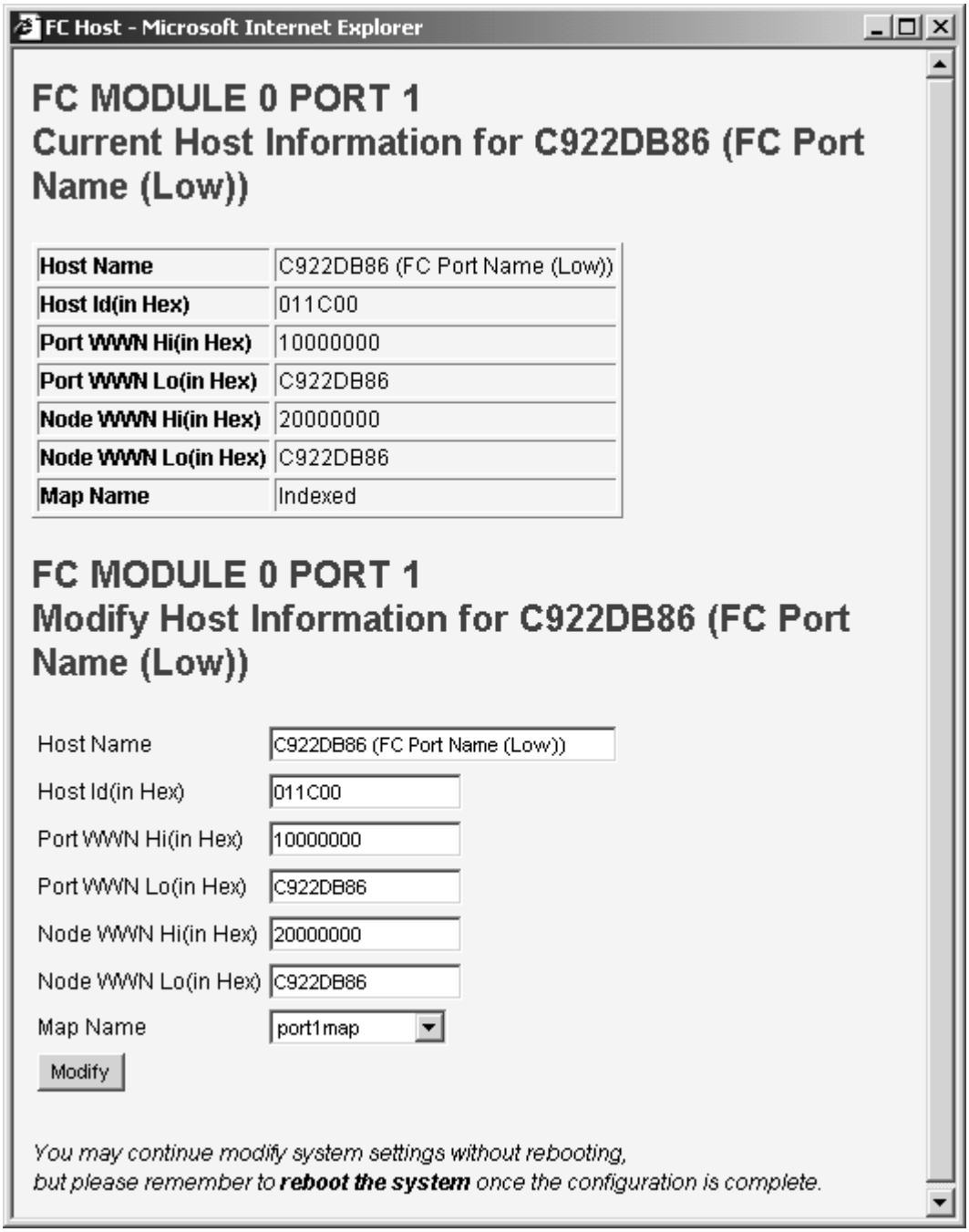


36. Close the *Edit/View* window by clicking the X in the top corner.

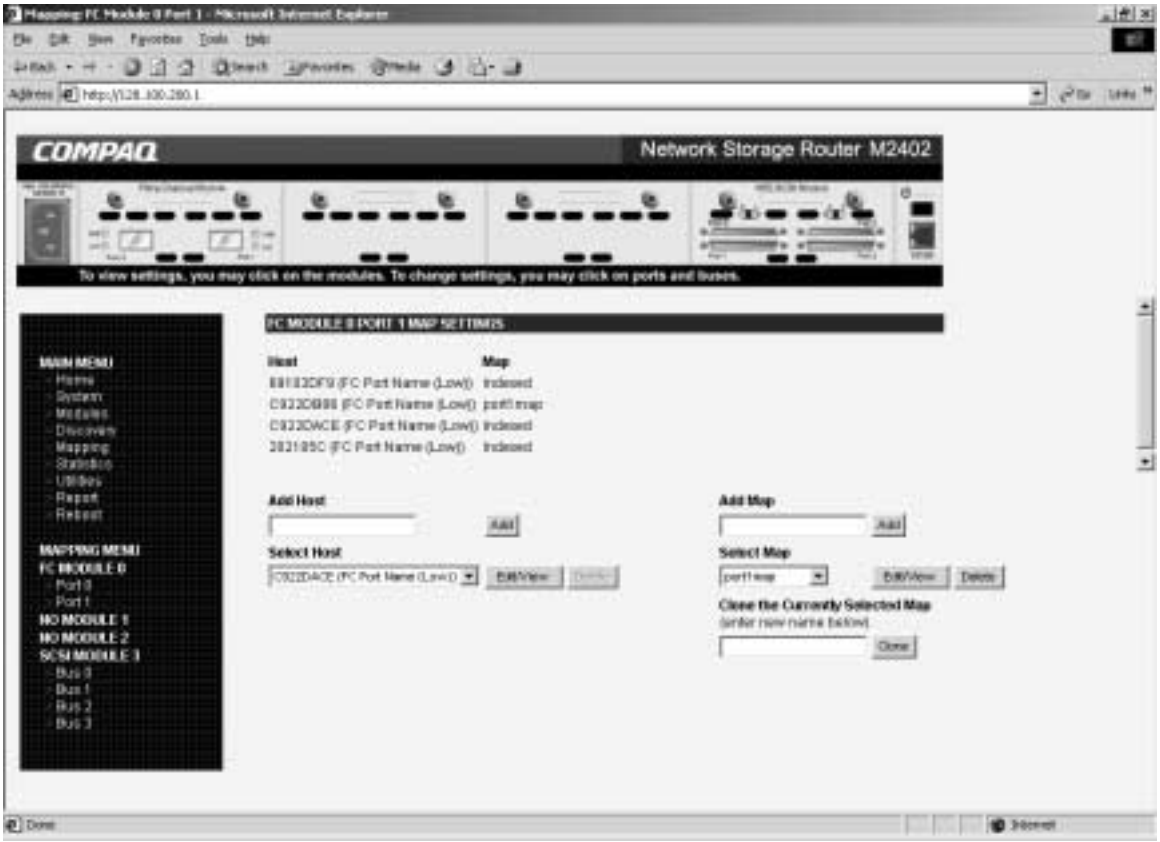
37. Under the Select Host field, select the HBA of the first host. Then click *Edit/View*. The Edit/View window appears.



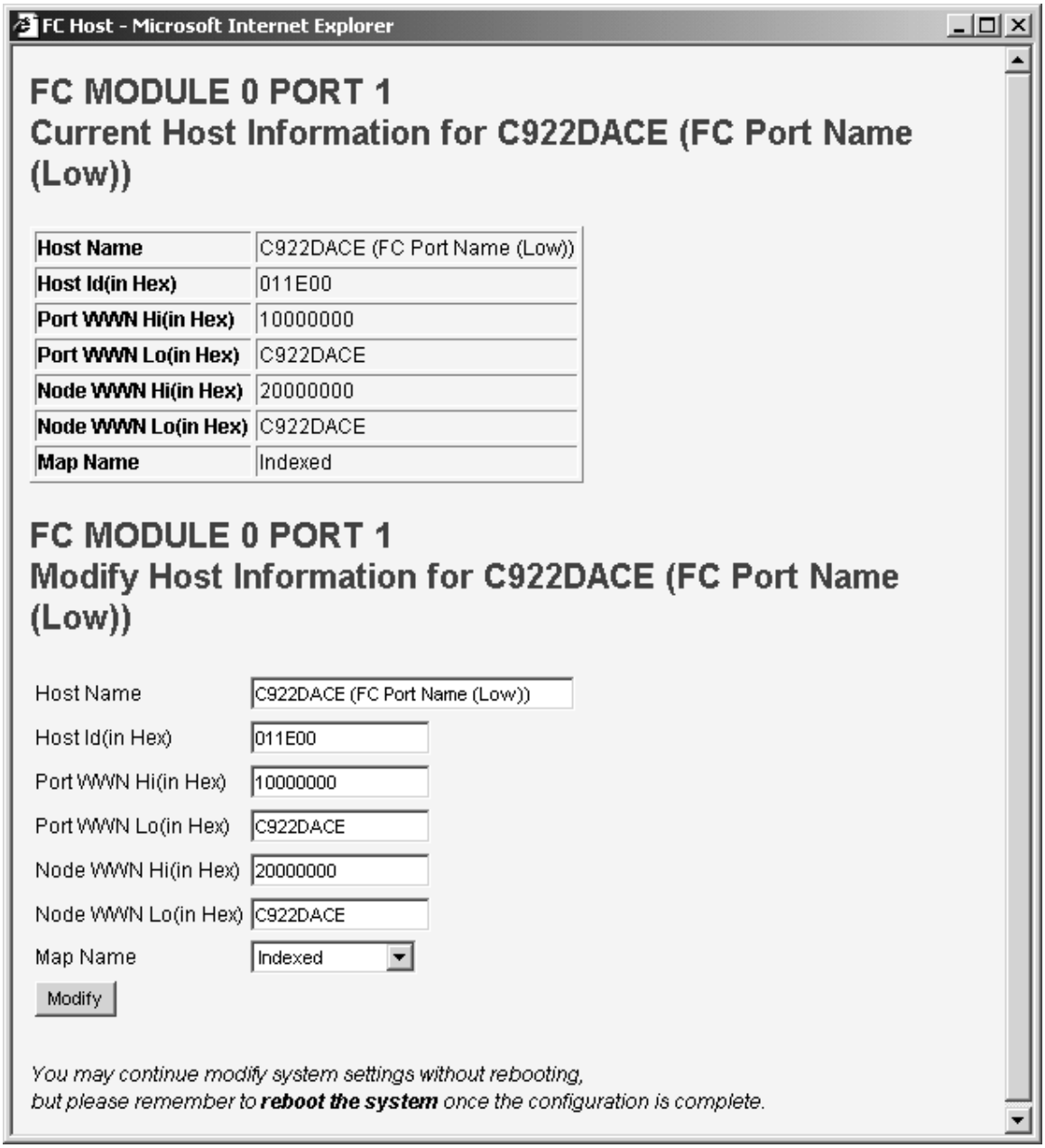
38. At the bottom of the window, change the Map Name entry to *port1map* using the drop-down.



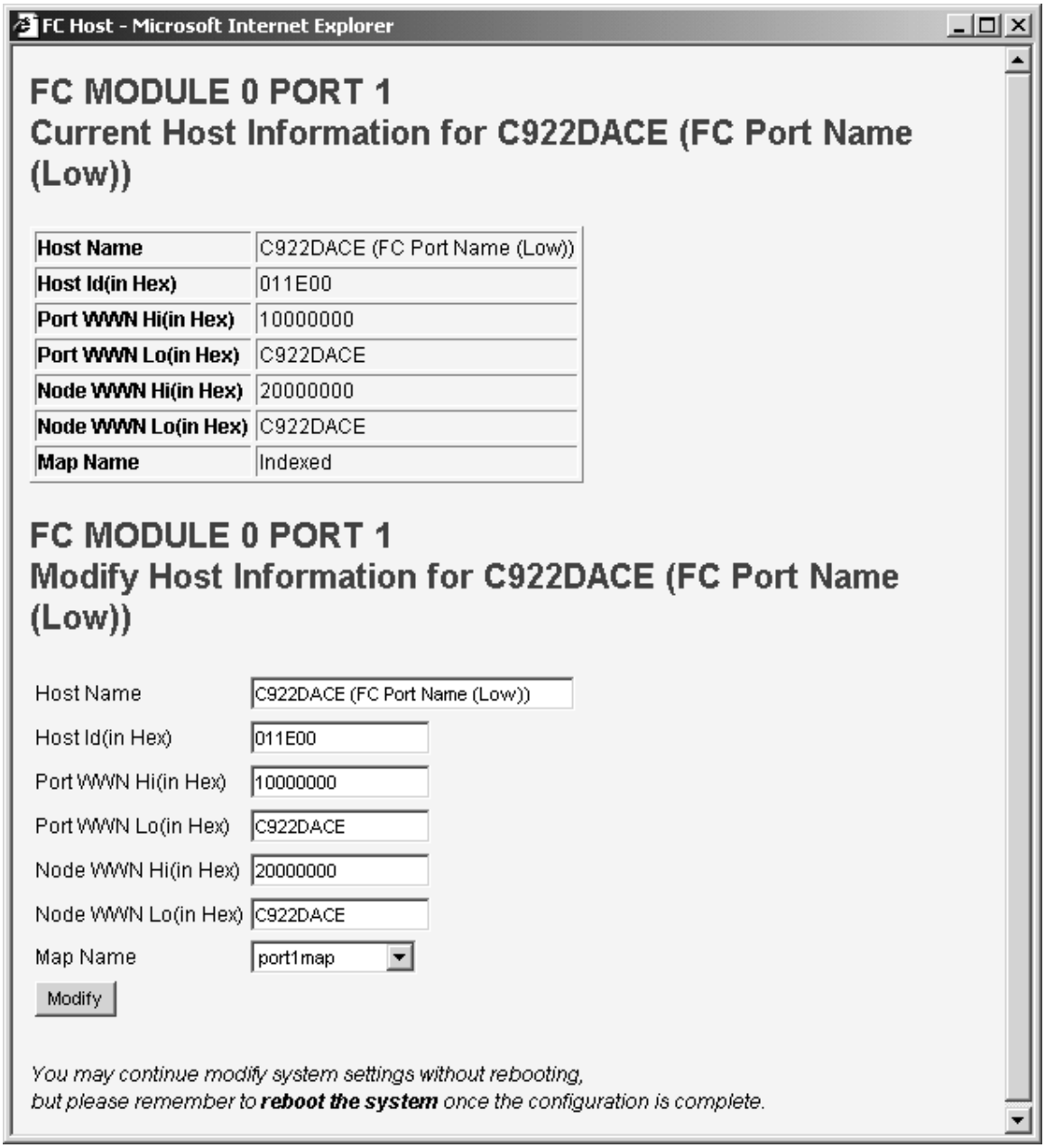
39. Click *Modify*. Then close the window by clicking the X in the top right corner.



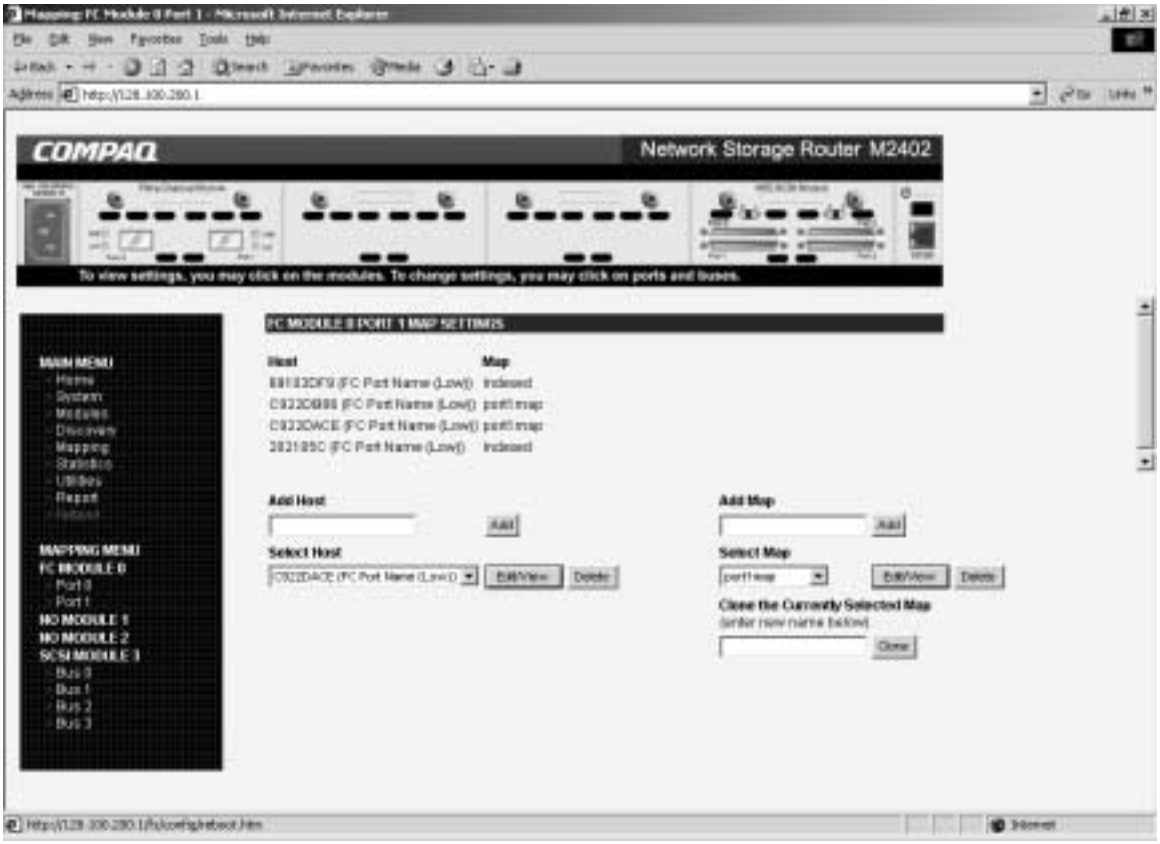
40. Under the Select Host entry, select the WWN of the HBA of the second host. Then click *Edit/View*. The Edit/View window appears.



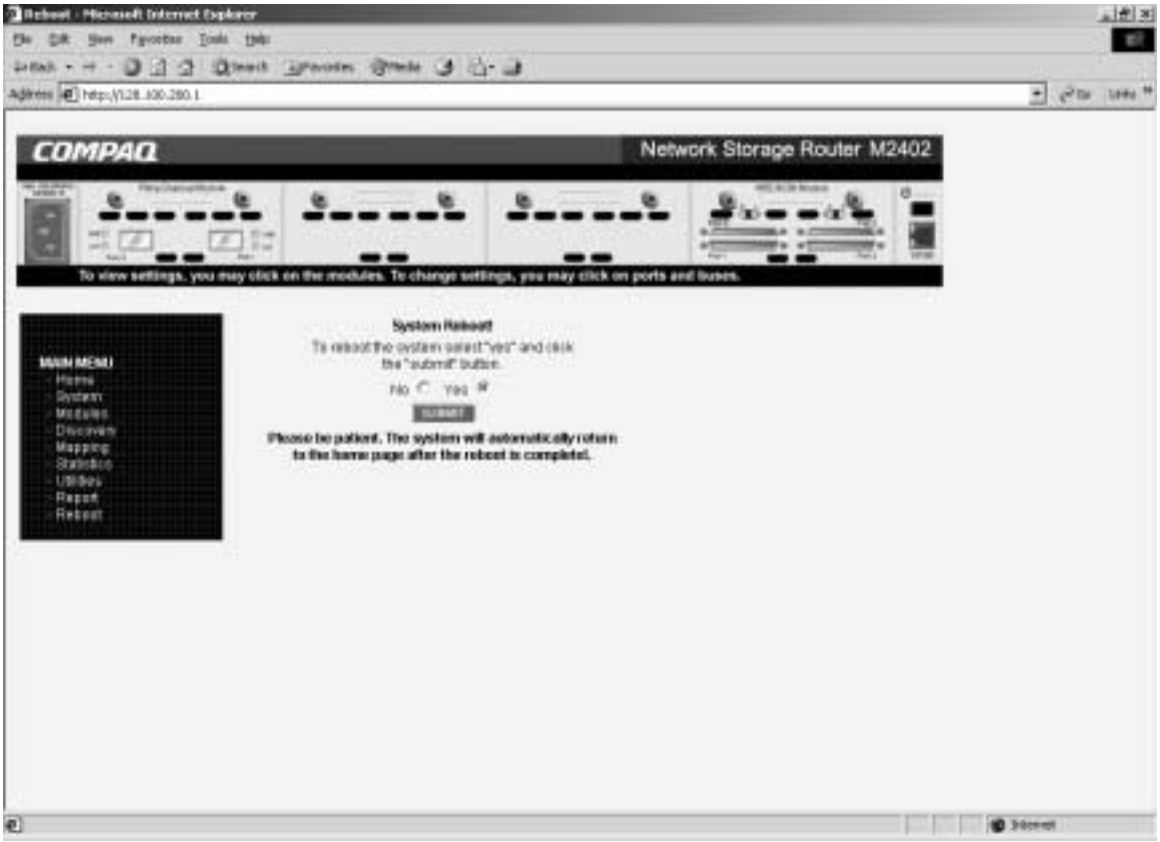
41. At the bottom of the window, change the Map Name entry to *port1map*.



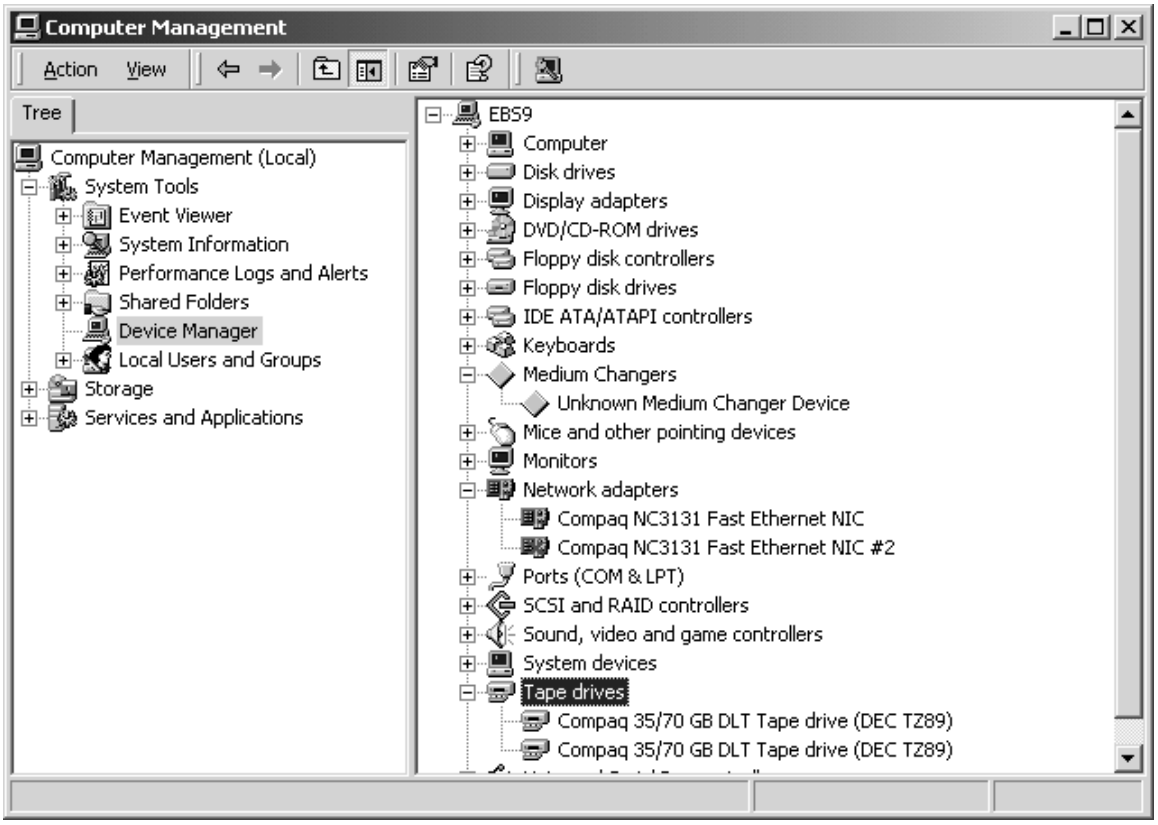
42. Click *Modify*. Then close the window by clicking the X near the top right corner.



43. You have created mappings for both port 0 and port 1. In order for the mappings to take effect, you must reboot the NSR. Under the MAIN MENU in the left side of the page, click *Reboot*.



44. Click the *Yes* button and then *Submit* to reboot the NSR. The NSR should complete its reboot in a few minutes.



45. After the NSR has rebooted, verify that the operating system detects both tape drives. If using Windows 2000, right-click *My Computer* > *Manage* > *Device Manager*.

Installing Data Protector 5.0 for Windows 2000

Module 6 – Lab 1

Objective

After completing this module, you will be able to install and configure Data Protector to run a backup and perform a restore of files.

Requirements

- Windows 2000 with Service Pack 2 or higher.
- Fibre Channel switch
- Network Storage Router
- SCSI tape library
- Two Intel-based servers with appropriate Fibre Channel host bus adapters

Before You Install

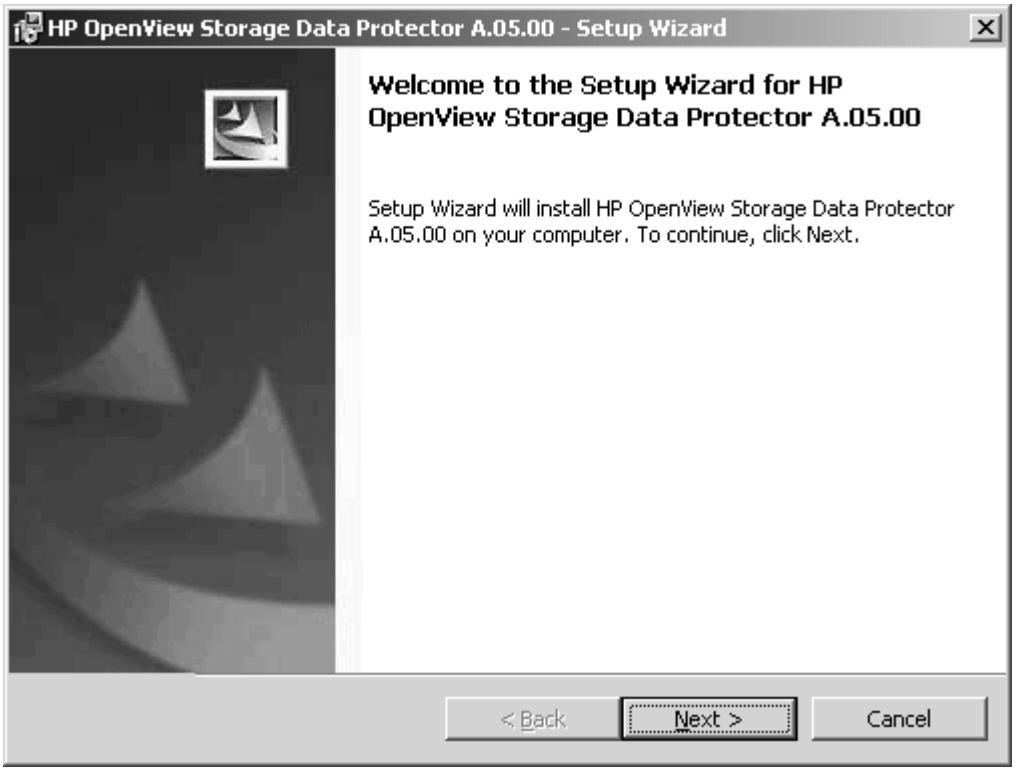
- Connect and configure the Fibre Channel Switch, Network Storage Router, and SCSI tape library.
- Power up the tape library.
- Power up the Fibre Channel switch.
- Power up the Network Storage Router.
- Power up the servers.
- Install the appropriate driver for the Fibre Channel host bus adapters.

Procedure

Installation

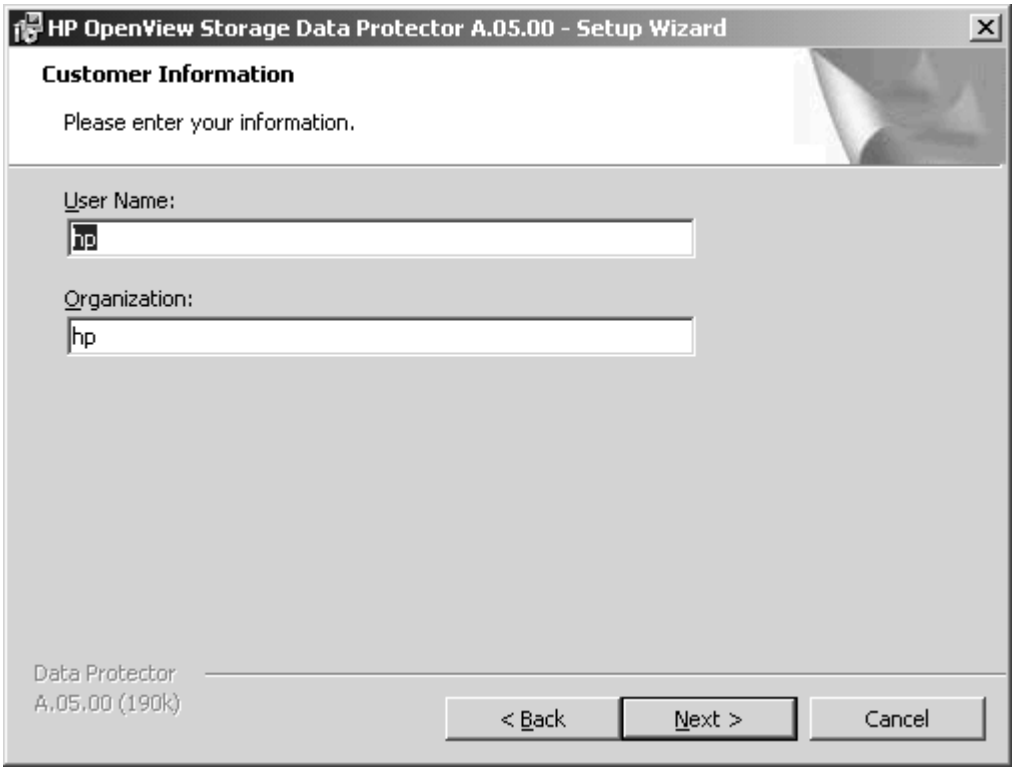
1. Insert the CD into the CD-ROM drive and wait for the autorun option to display the menu.

2. Select *install data protector 5.0*. The Welcome screen displays.



3. Click *Next*. The License Agreement screen displays.

4. Click *I accept* and then *Next*. The Customer Information screen appears.

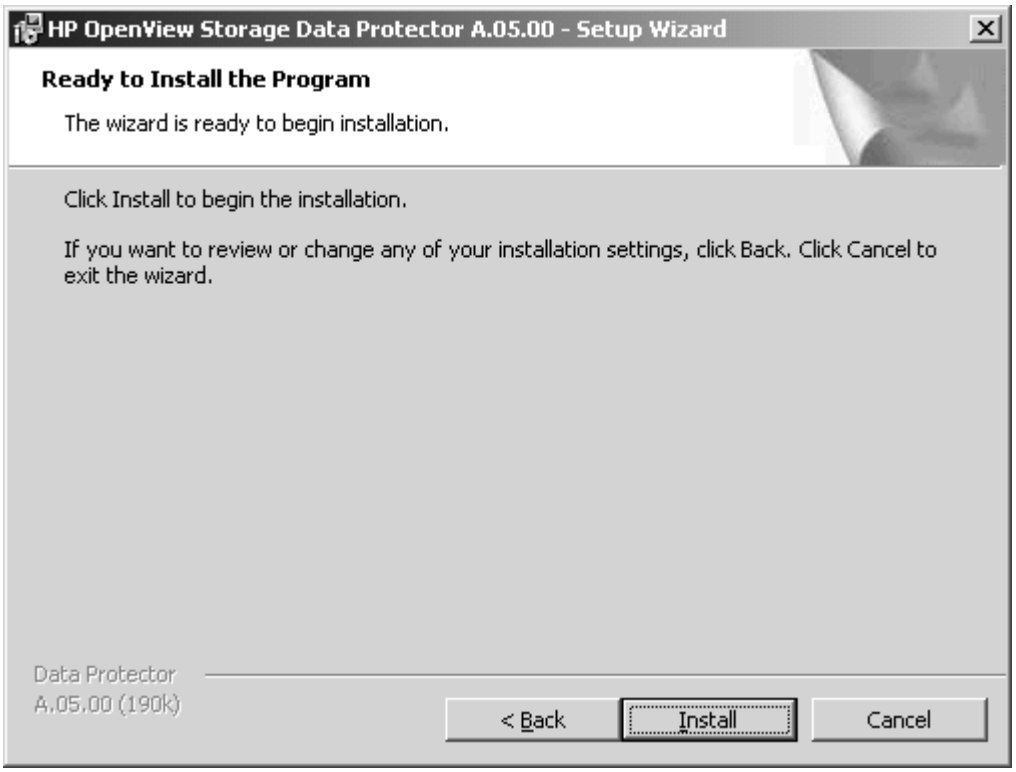


5. Click *Next*. The Installation type screen appears.

6. Select *Cell Manager* and click *Next*. The User Account Information screen displays.

7. Type in the appropriate account and password. Click *Next*. The Component selection screen appears.

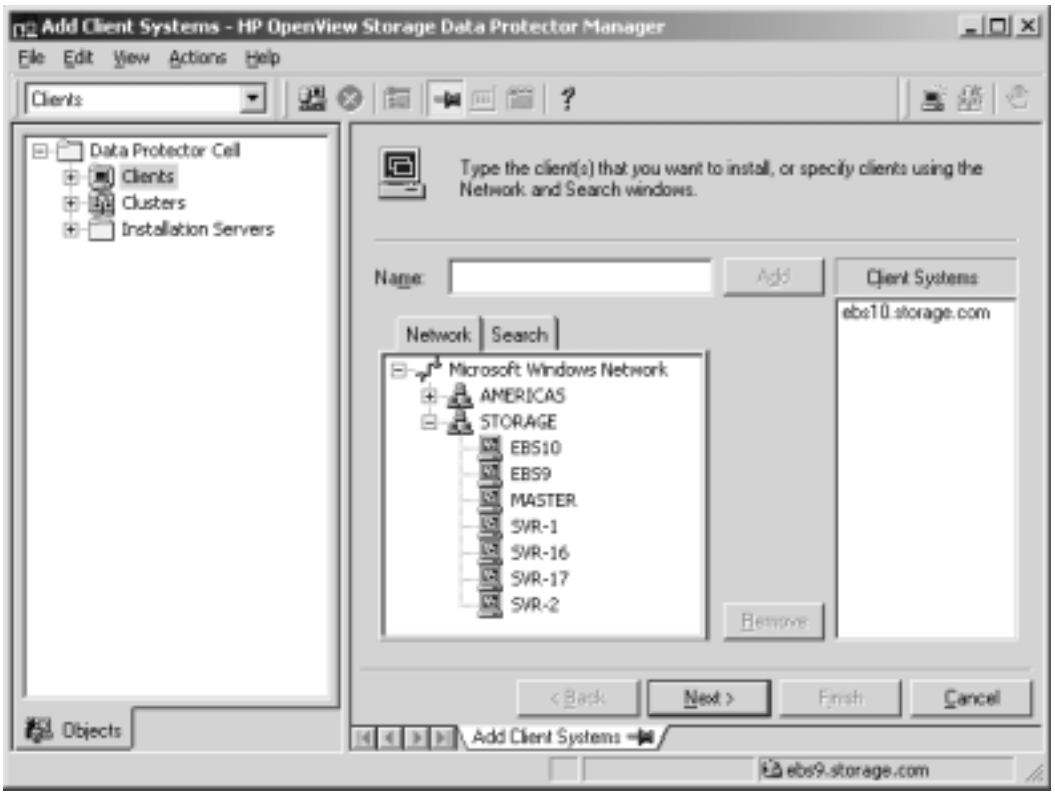
8. Click *Next*. The Ready to Install screen displays.



9. Click *Install*. The Wizard Completed screen appears.

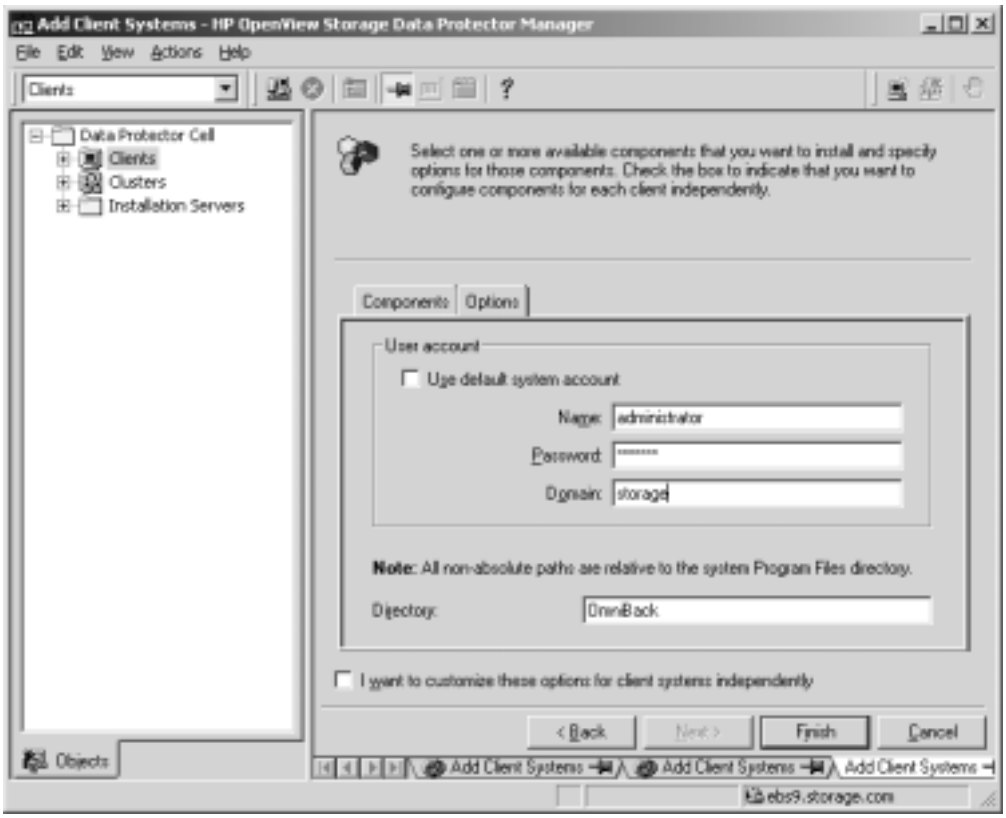
10. Check *Start the Data Protector Manager GUI* and click *Finish*. The Next Step Wizard displays.

11. Click *Add New Clients*. The Add Client Systems window displays.



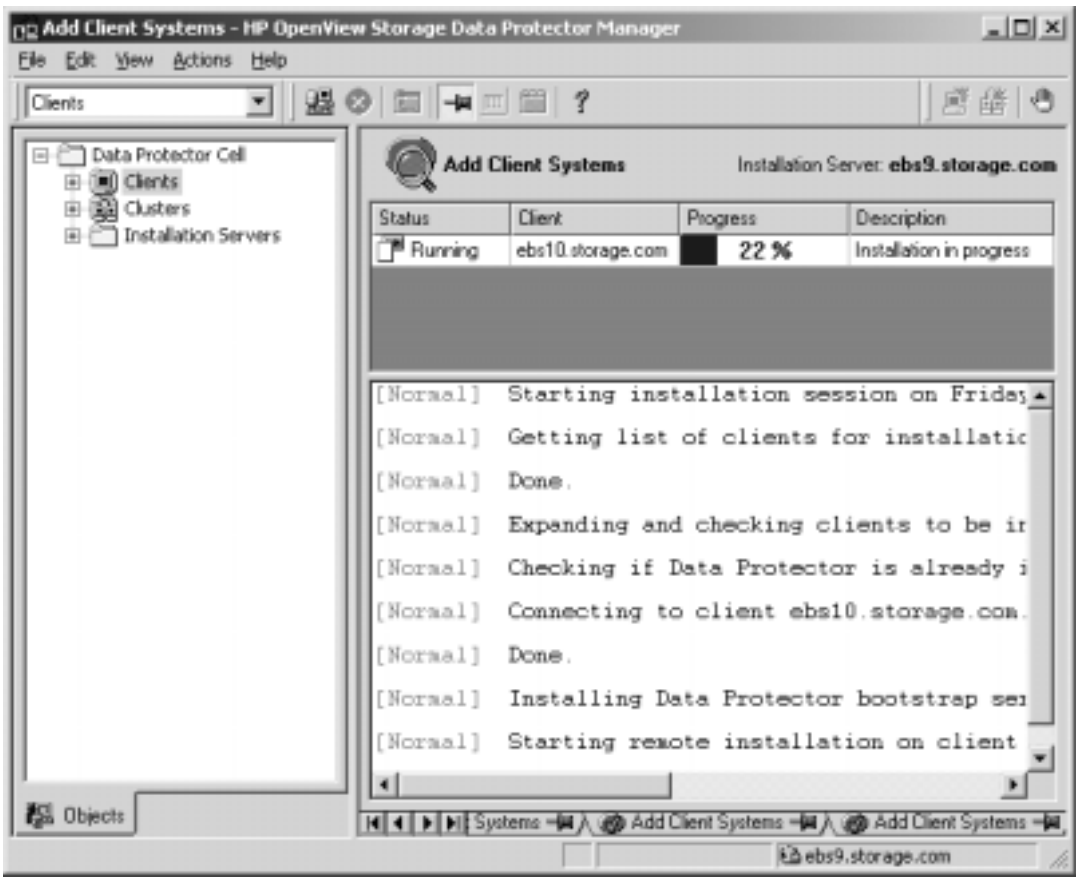
12. In the Network tab, select the other server(s) and click *Add*. The Components and Options tabs display.

13. Select *Disk Agent, Media Agent, User Interface, and Manager-of-Managers User Interface*. Click the *Options* tab.

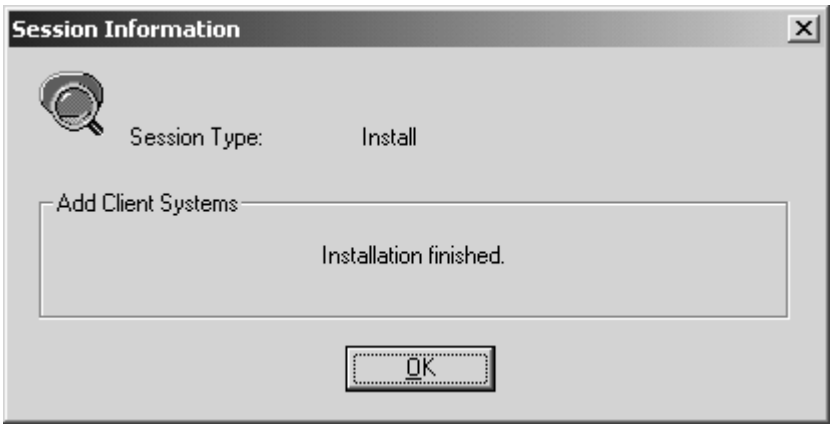


14. Enter the appropriate account and password information. Do not use a blank password. The installation begins on the client(s).

WARNING
The account must not have a blank password.



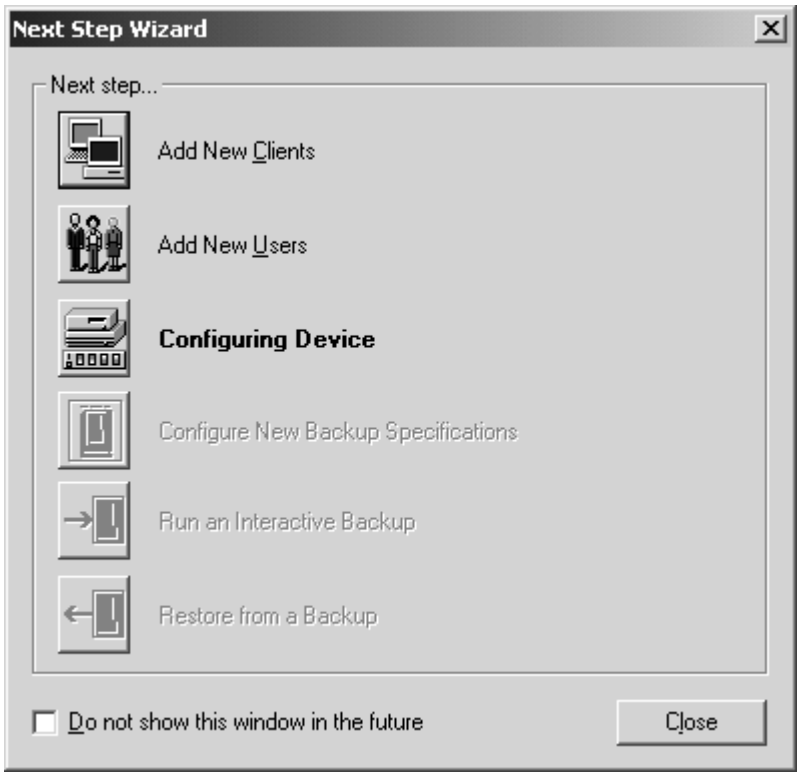
15. When the installation on the other client(s) finish, the following screen displays.



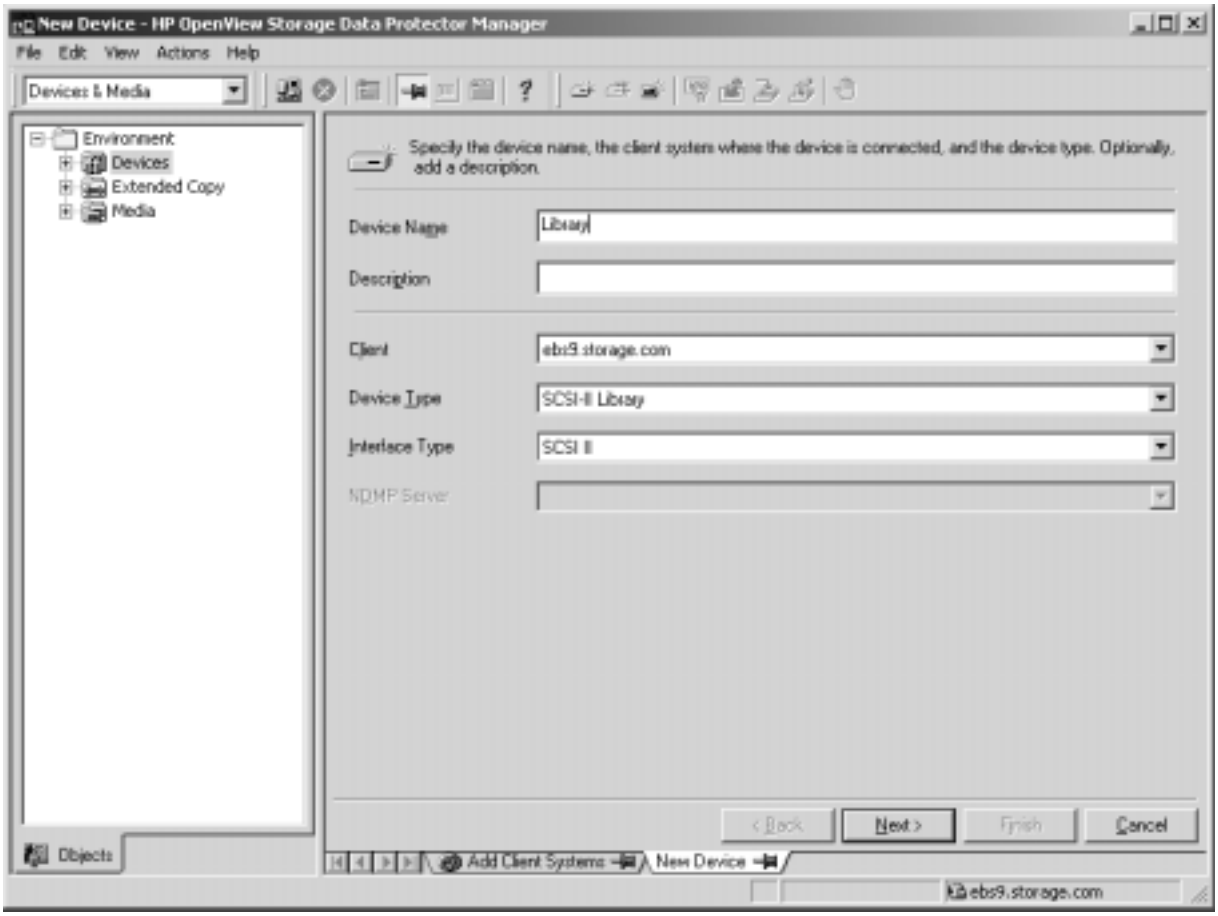
16. Click *OK*. The Next Step Wizard displays.

Configuration

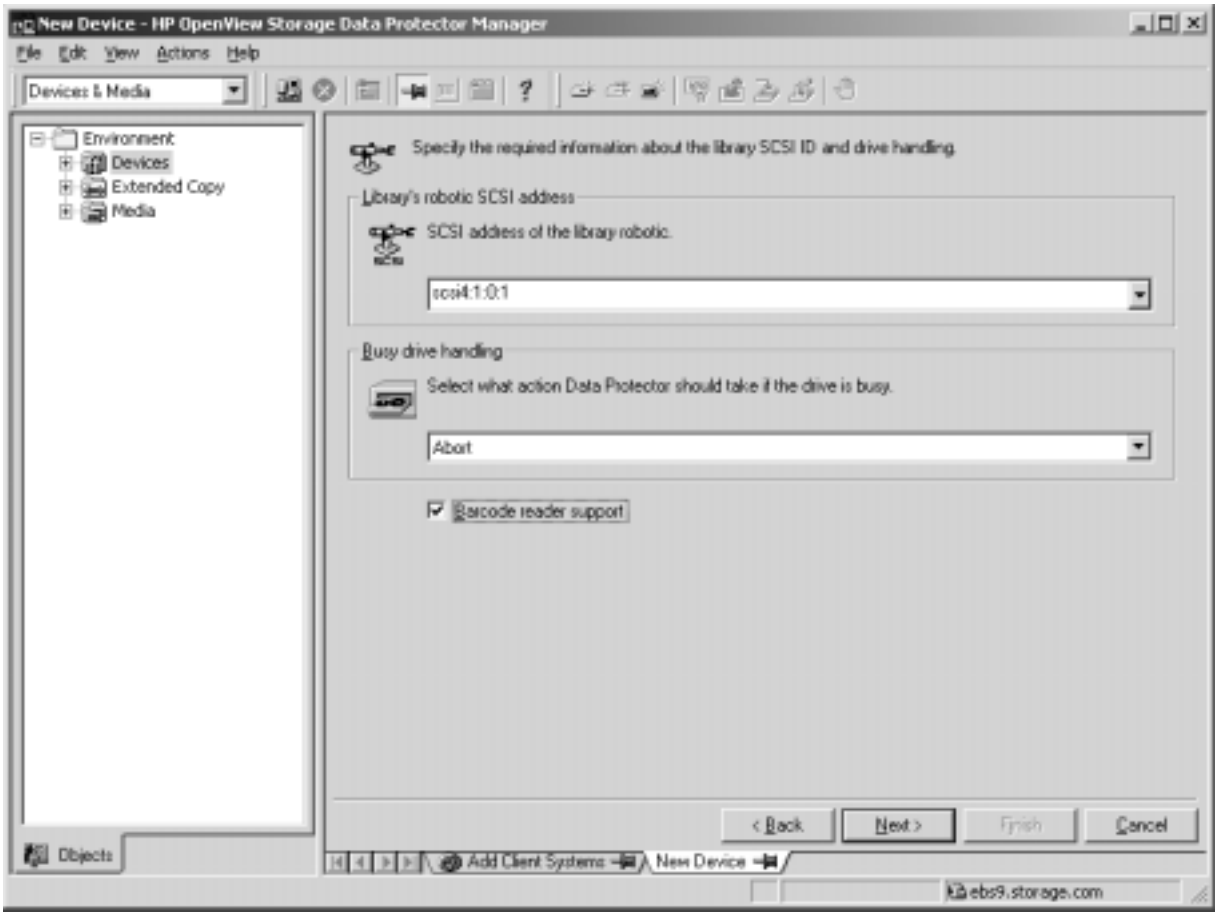
1. The Next Step Wizard should display. If not, select *View > Next Step Wizard.*



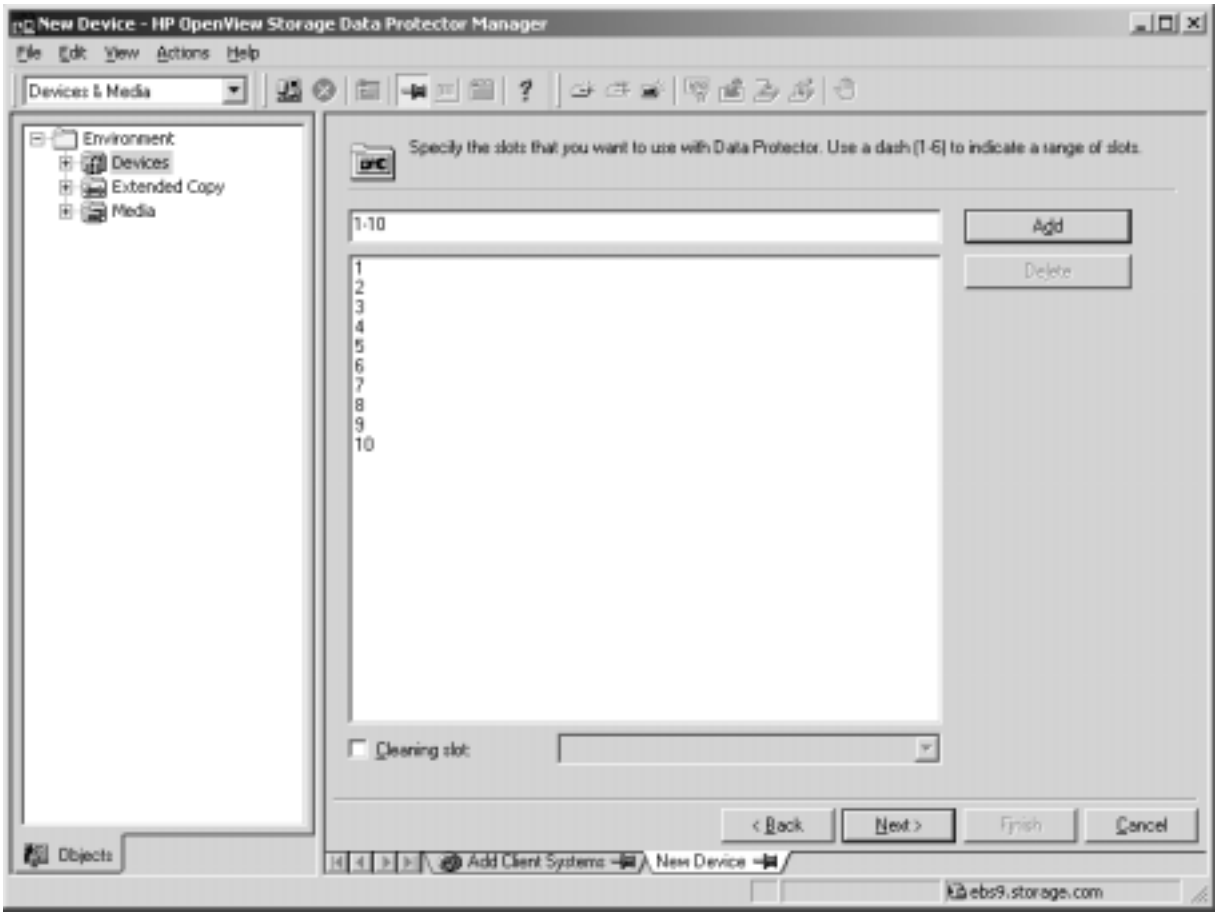
2. Click Configuring Device. The Specify the device window displays.



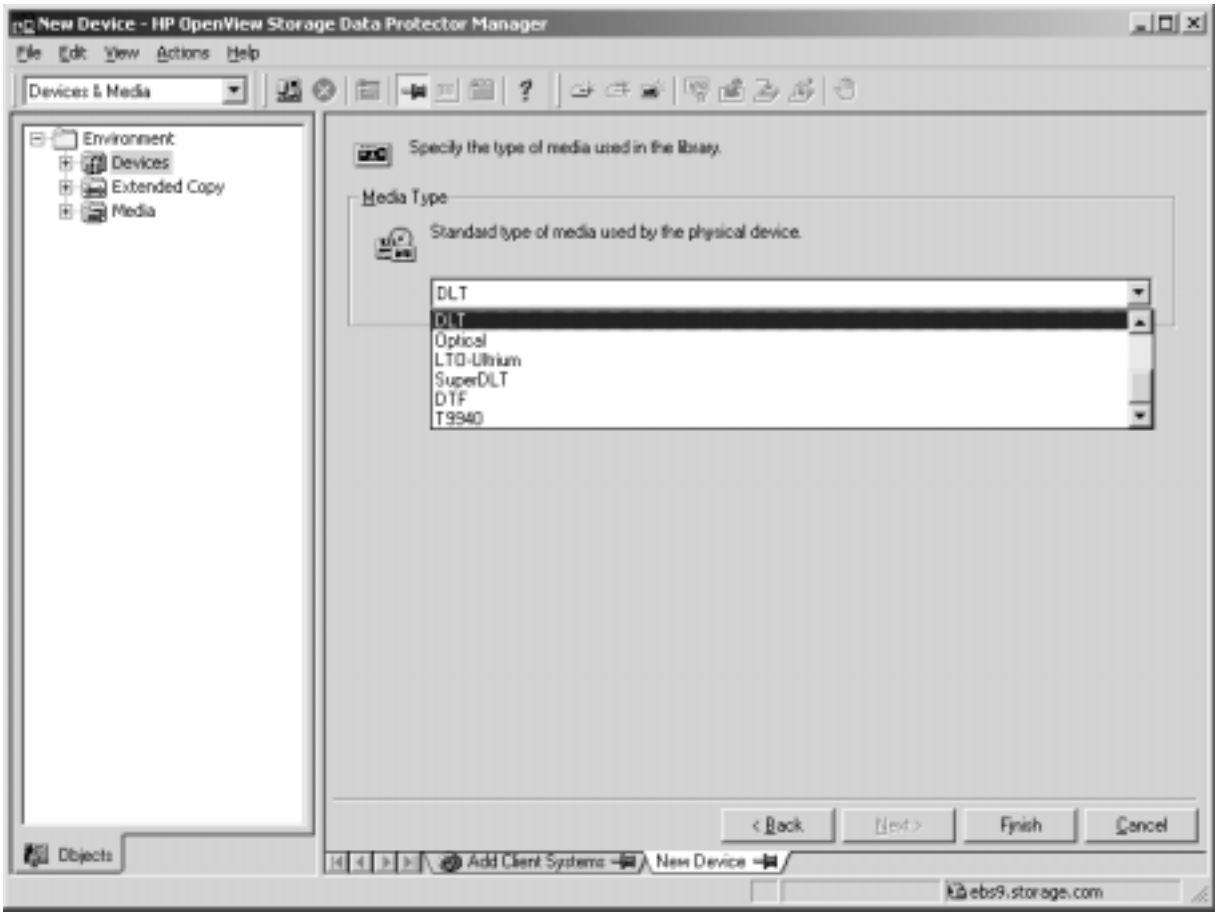
3. At the *Device Type* field, click the drop down menu and select *SCSI-II Library*. At the *Device Name* field, type in a name for the tape library. Click *Next*. The specify information for the robotic window displays.



4. At the *SCSI address of the library robotic* field, select the drop down menu and choose the appropriate library robotic. Check *Barcode reader support*. Click *Next*. The Specify the slots window displays.



5. Type the range of slots in the library and click *Add*. Click *Next*. The Specify the media window displays.



6. In the Media Type field, click the drop down menu and select the appropriate media type for the drives in the library. Click *Finish*.

7. Click *Yes.* You will need to configure the following number of drives for the library. Number of drives = (number of servers) * (number drives in library)

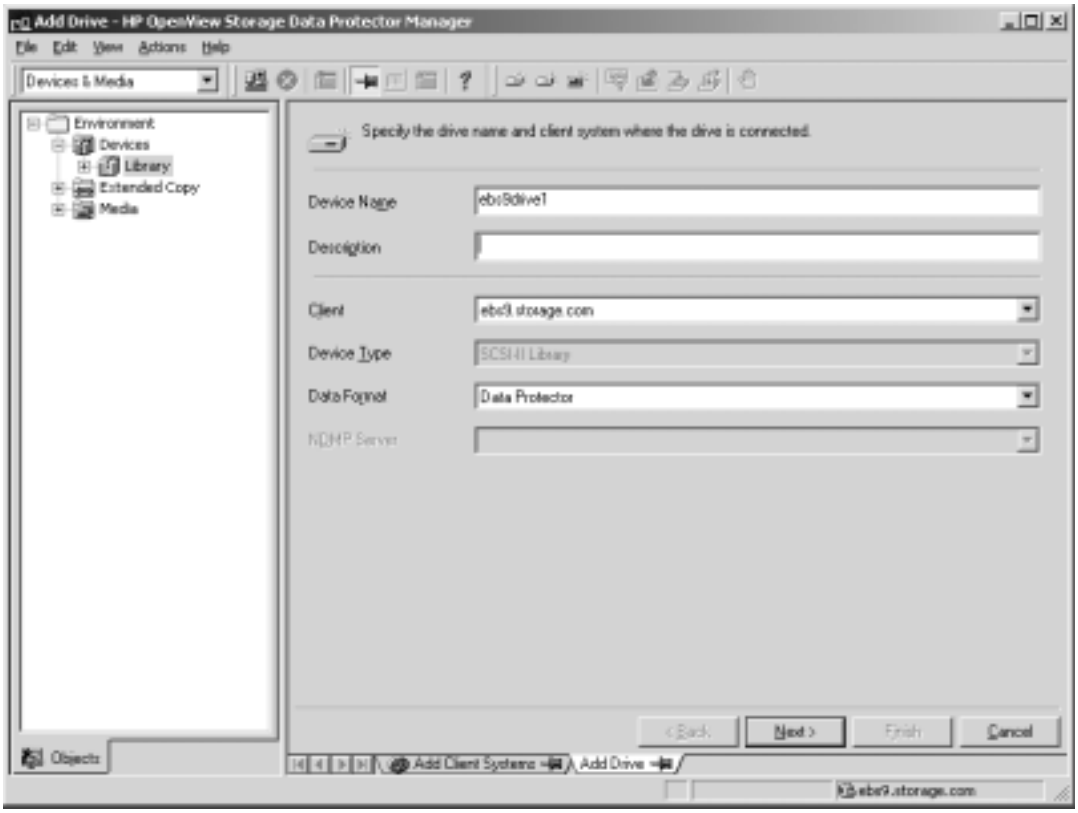
   For this lab, we will use at least the following:

   Device name = ServerAdrive1, Drive index = 1, Lock name = drive1

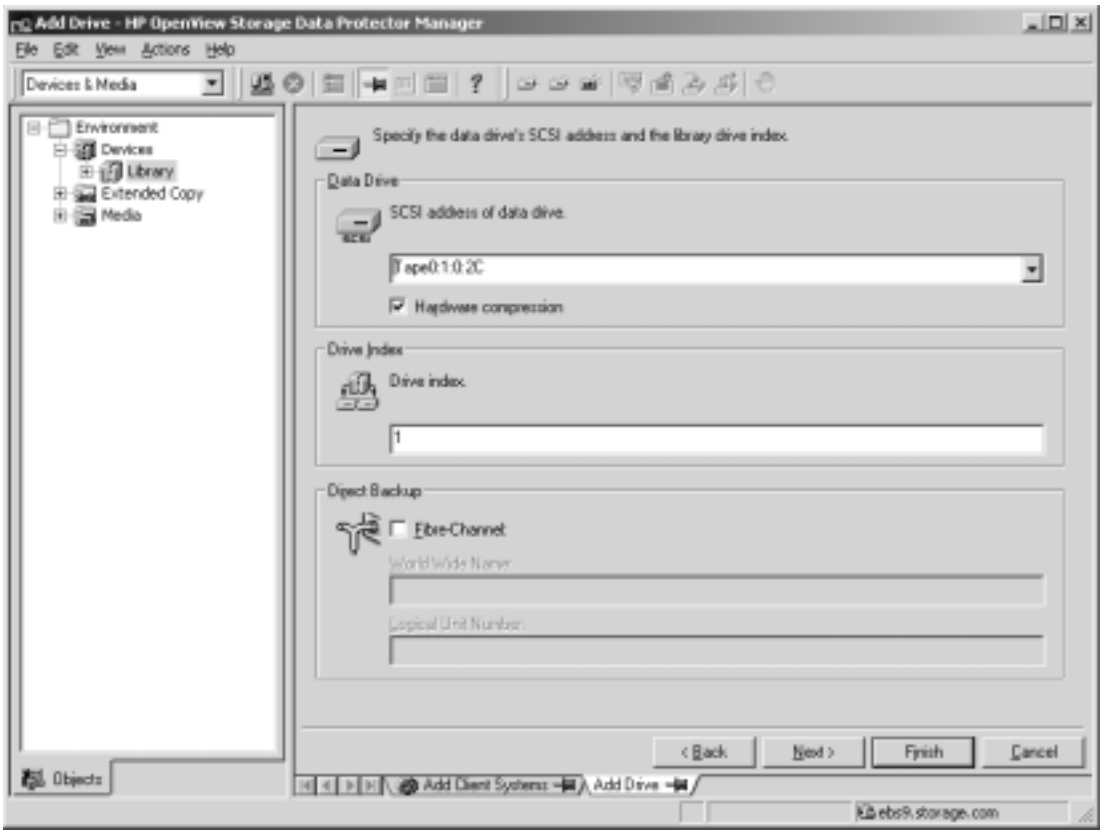
   Device name = ServerAdrive2, Drive index = 2, lock name = drive2

   Device name = ServerBdrive1, Drive index = 1, lock name = drive1

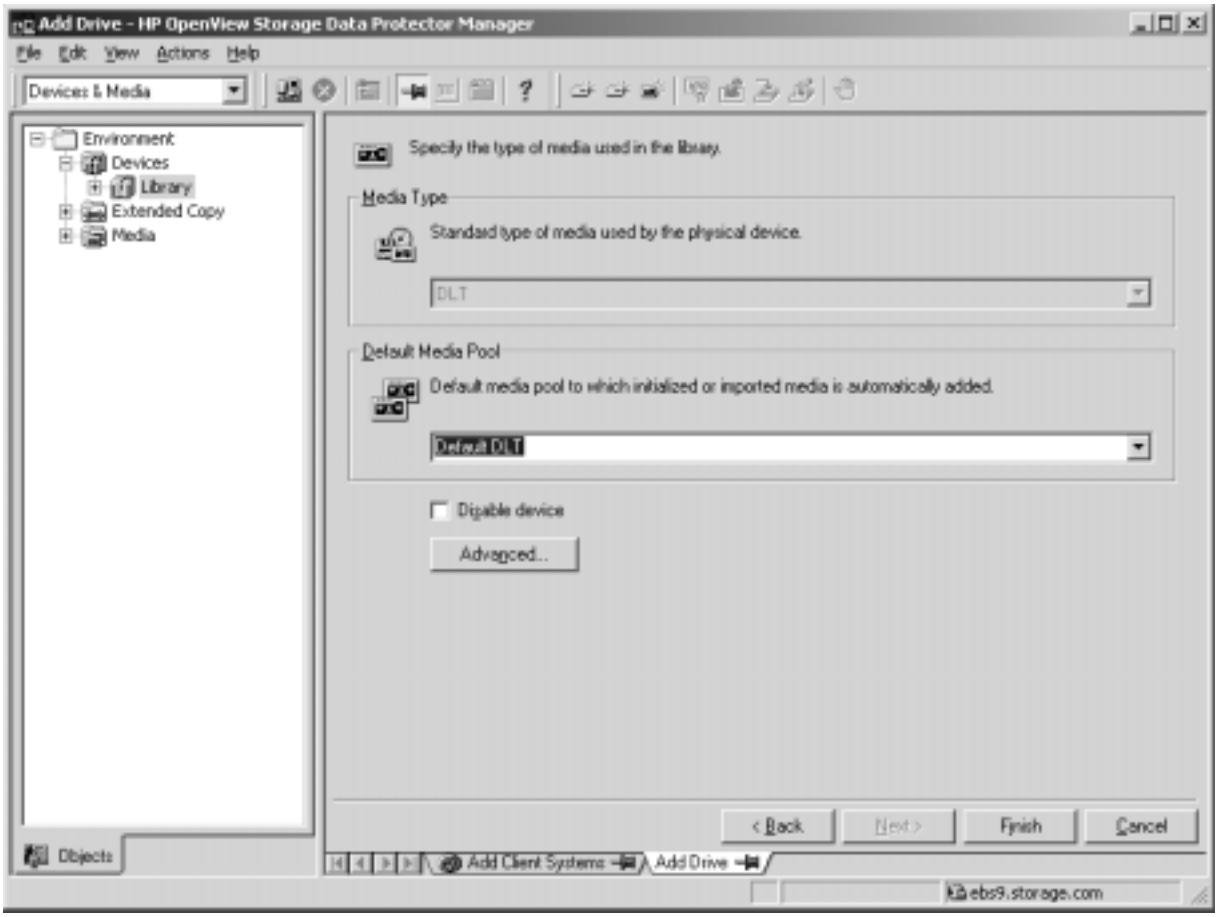
   Device name = ServerBdrive2, Drive index =1, lock name = drive2



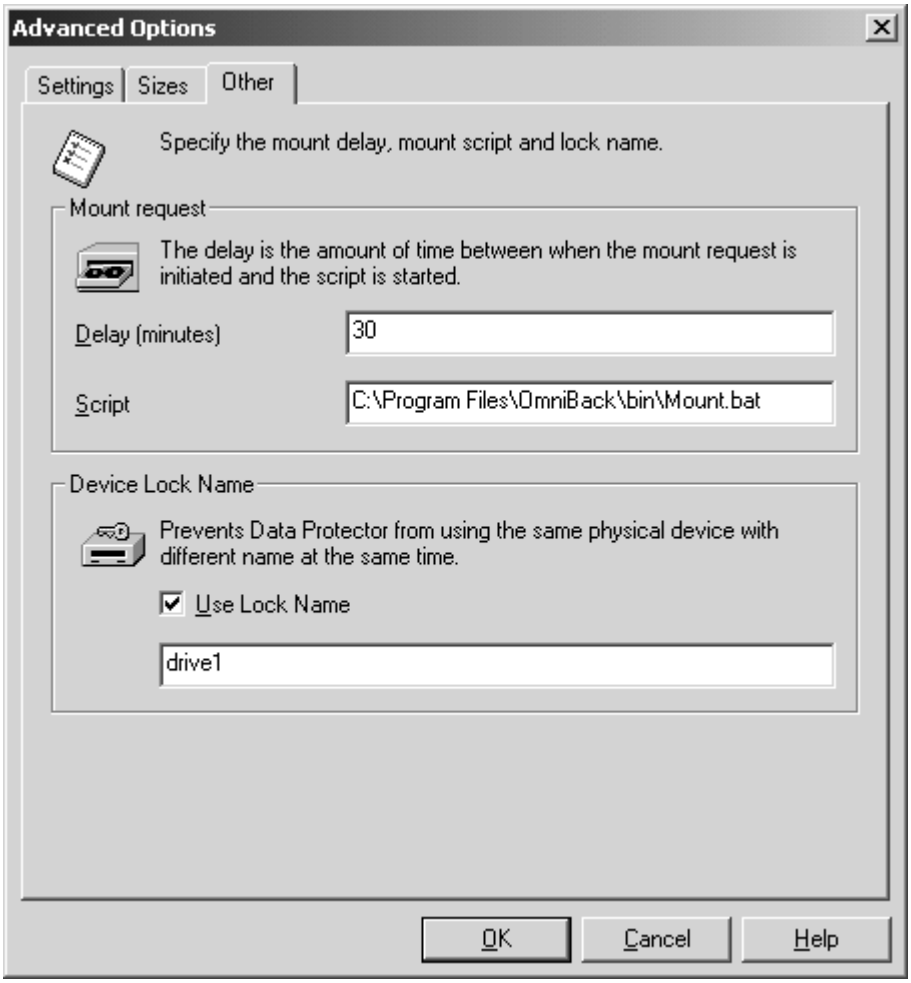
8. In the *Device Name* field, type *serverAdrive1*, where serverA is the server name of the Cell Manager. Click *Next*. The Specify the data drive's SCSI address window displays.



9. In the SCSI address of the drive field, click the drop down menu and select the first drive of the library. Click *Next*. The media type window displays.



10. Click *Advanced*. The Advanced Options screen appears.



11. Click the *Other* tab. Check *Use Lock Name* and type *drive1* in the corresponding field. Click *OK*. Then click *Finish*. Click *Yes* to create another drive.

12. Repeat steps 8 through 11 for the following drives and information

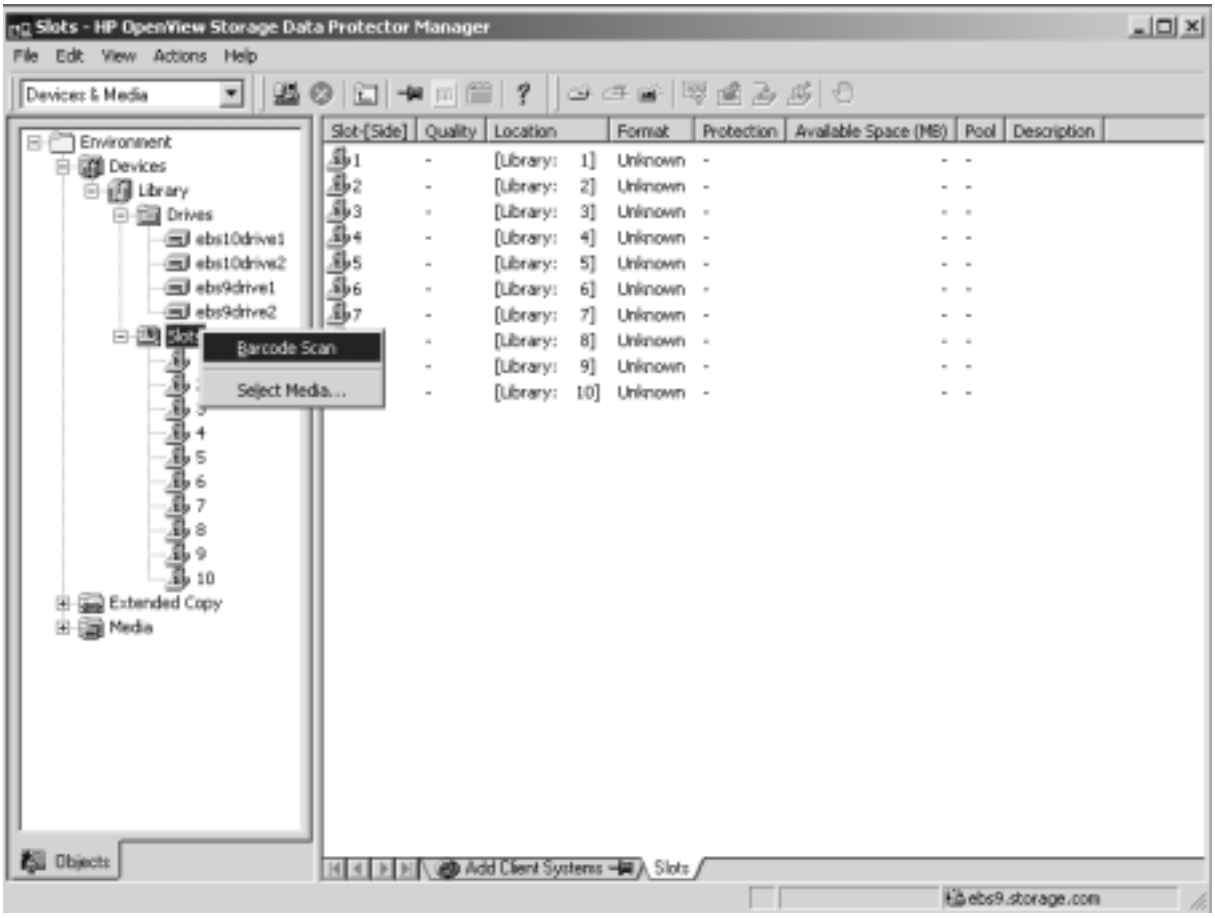
    Device name = ServerAdrive2, *Client* = ServerA, *Drive index* = 2, *Lock name* = drive2

    Device name = ServerBdrive1, *Client* = ServerB, Dri*ve index* = 1, *Lock name* = drive1

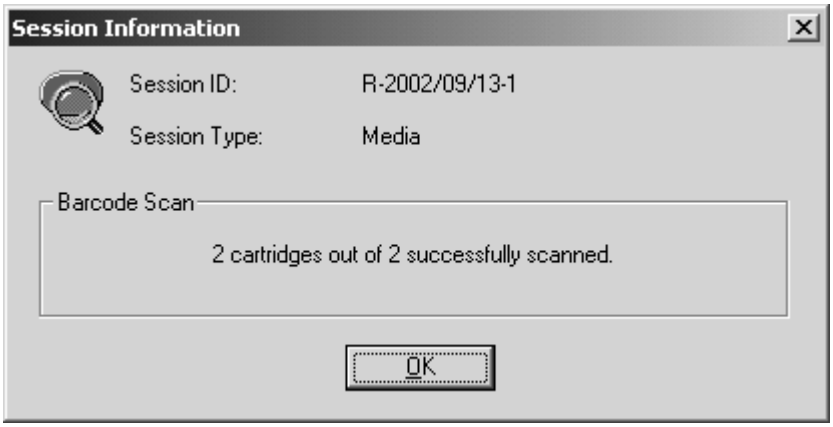
Device name = ServerBdrive2, *Client* = Server B, *Drive index* = 2, *Lock name* = drive2

13. After creating the required number of drives, click *No*. The Next Step Wizard displays.

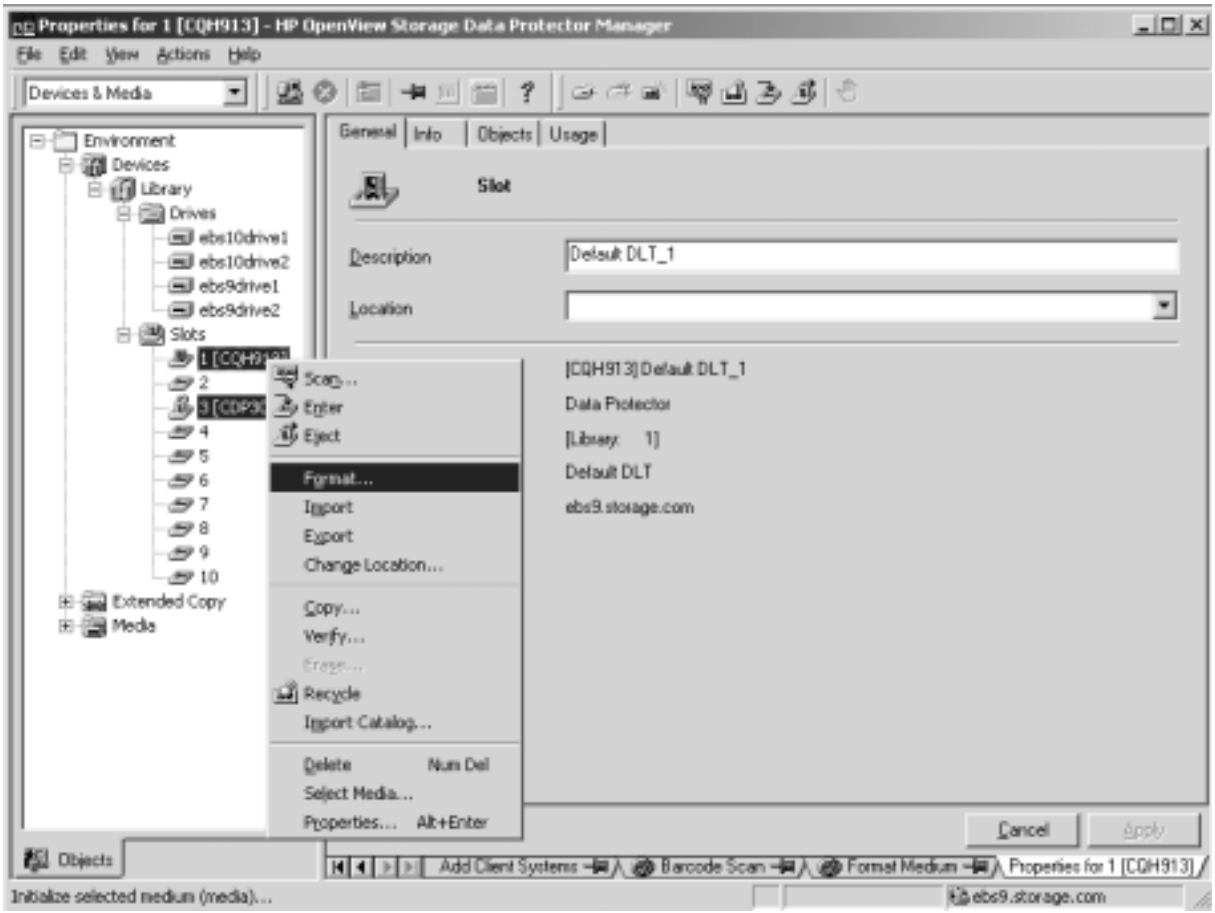
14. Click *Close*. Verify that the Devices & Media window displays.



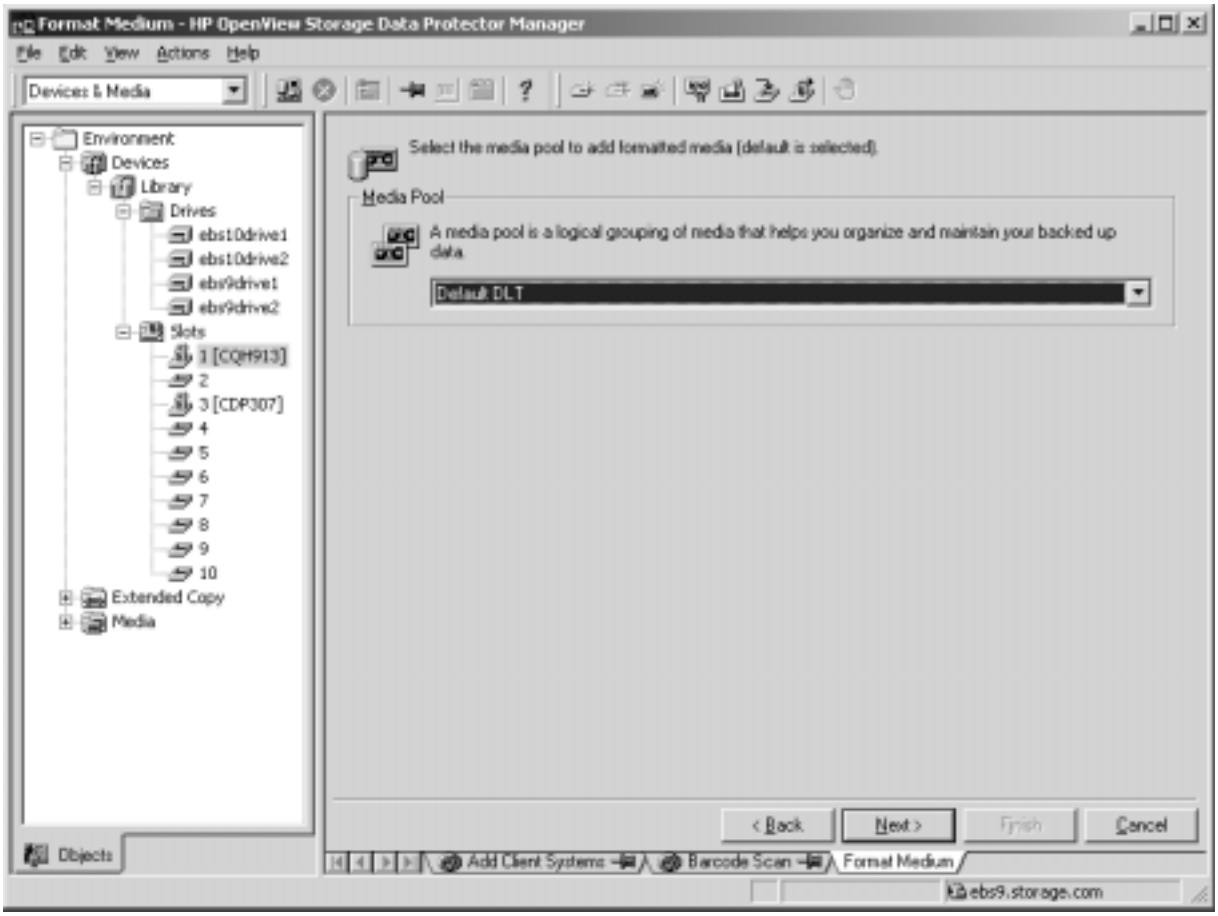
15. In the left window, expand the items in the left window until you reach the *Slots* category. Right-click and select *Barcode Scan*. After the scan completes, the Session Information window displays.



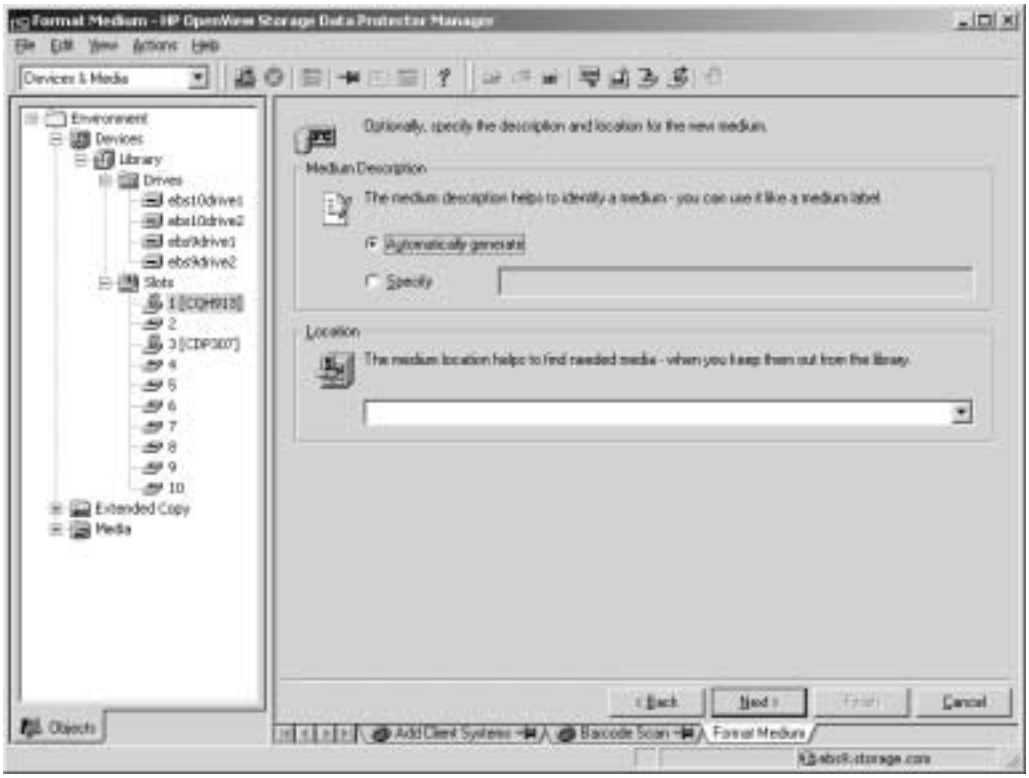
16. Click *OK*.



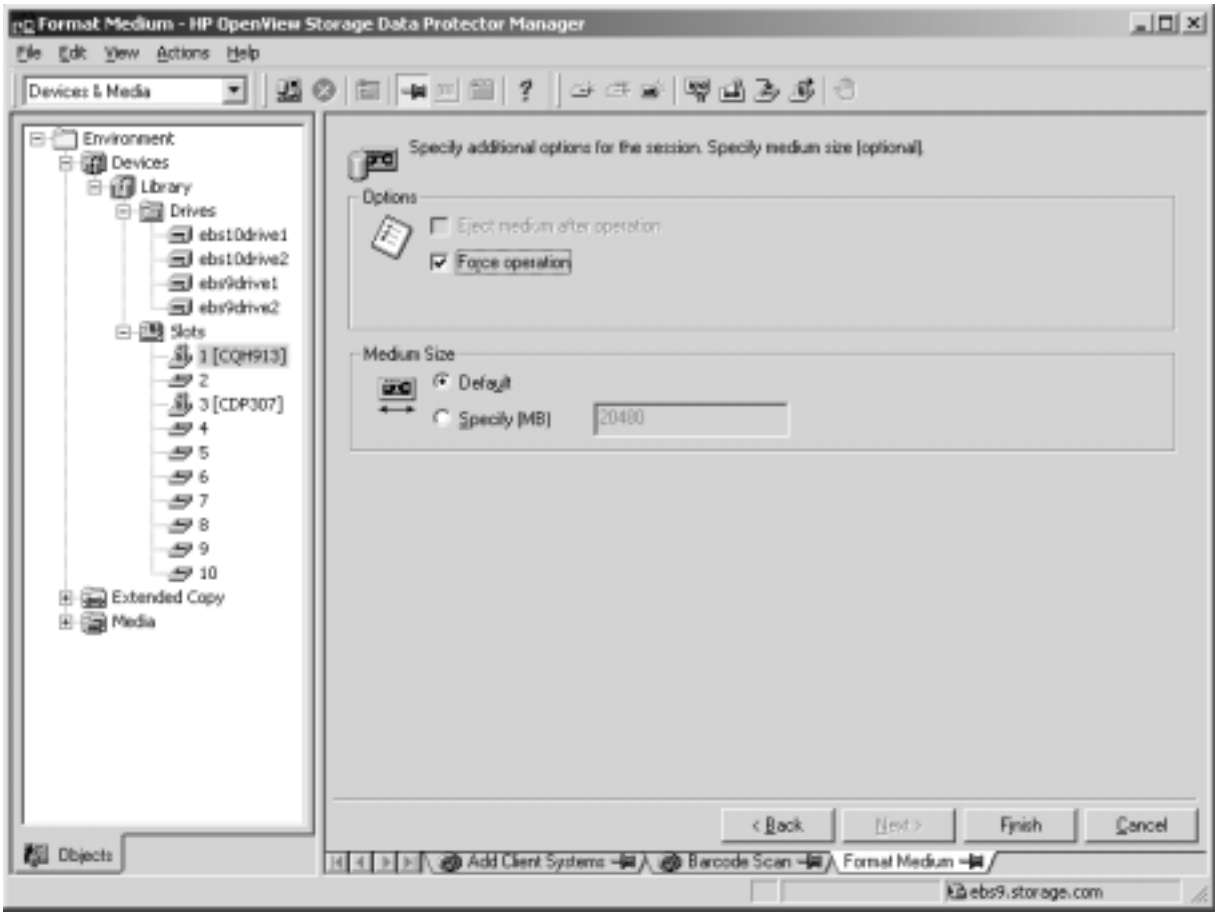
17. While holding the *Control* key, click on the slots with tapes. Right-click and select *Format* unless the tapes have data that should not be destroyed. If the tapes have data, select *Import* instead. The media pool selection window displays.



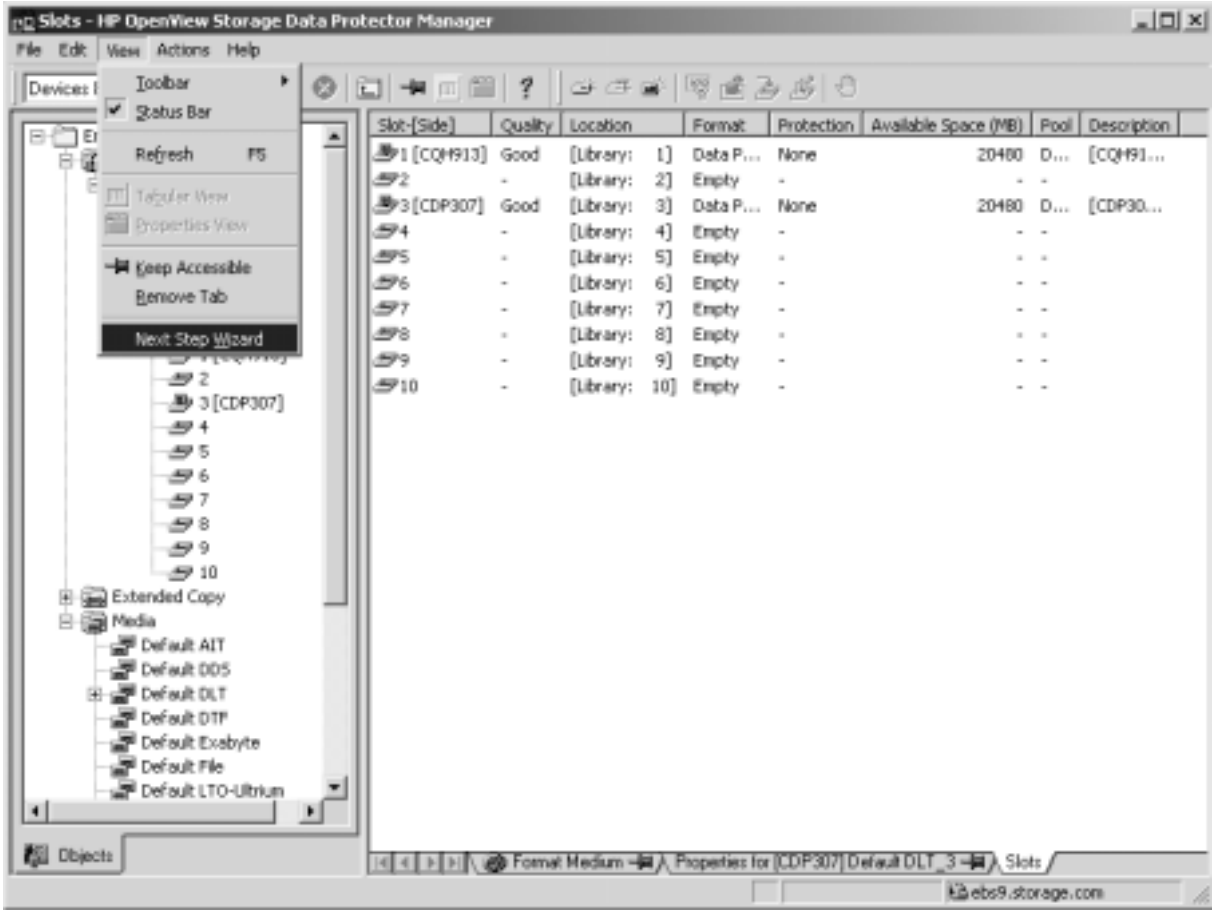
18. Click *Next*. The description and location window displays.



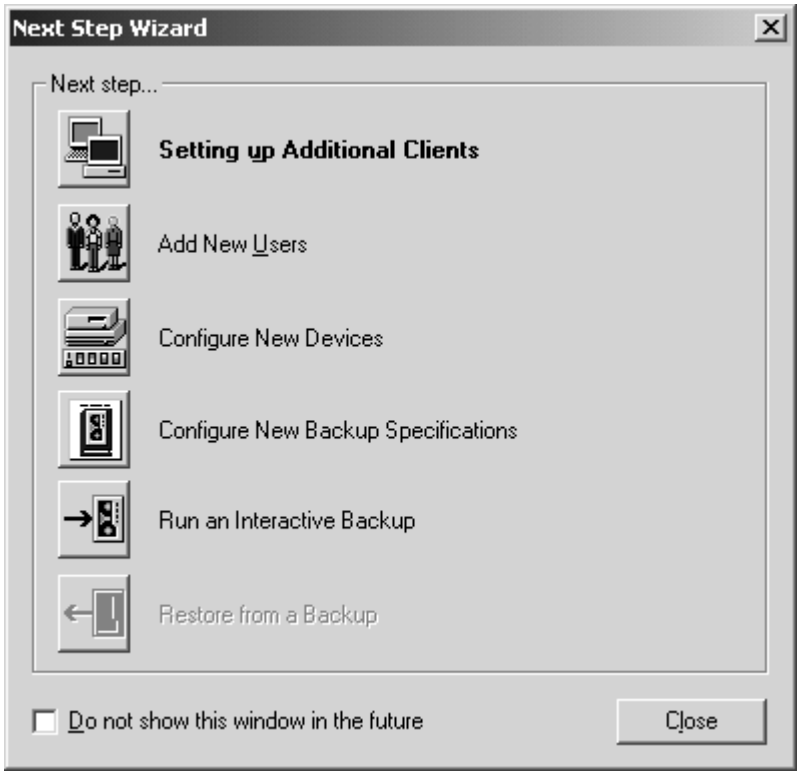
19. Click *Next*. The additional options window displays.



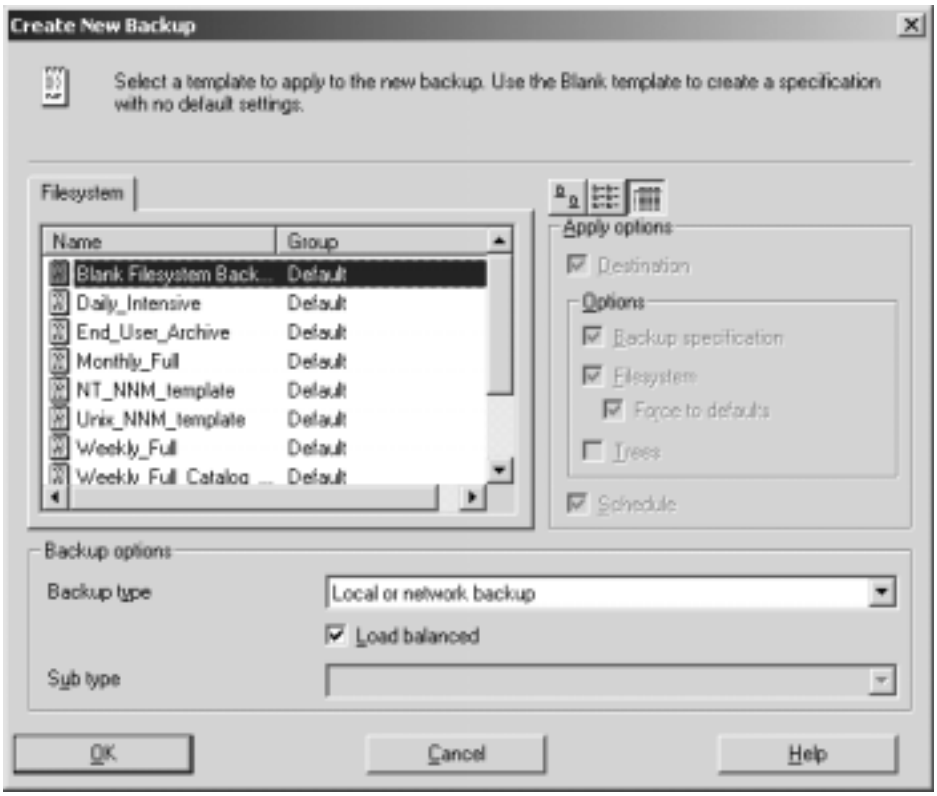
20. Check *Force operation*. Click *Finish*. Wait for the format process to complete.



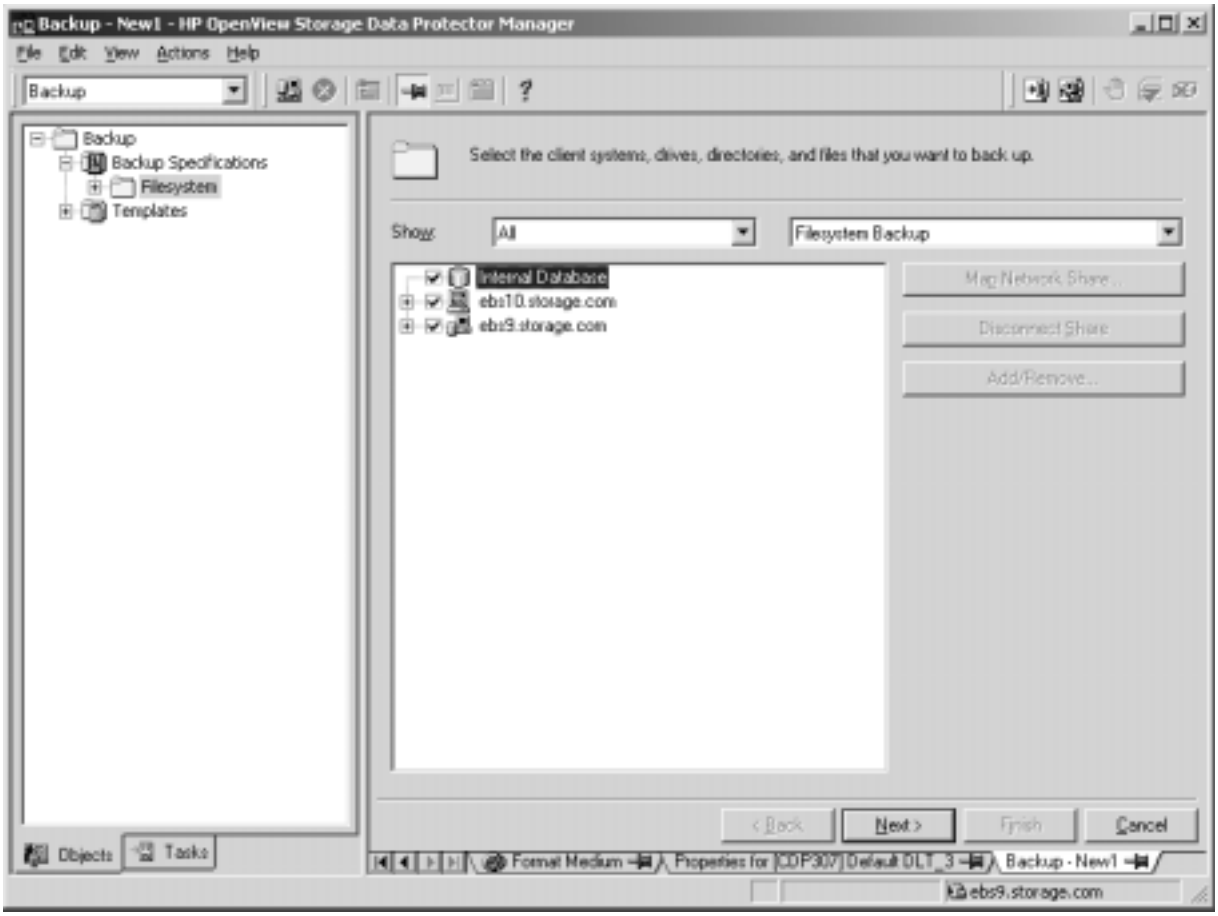
21. After the format has completed, select *View > Next Step Wizard*. The Next Step Wizard displays.



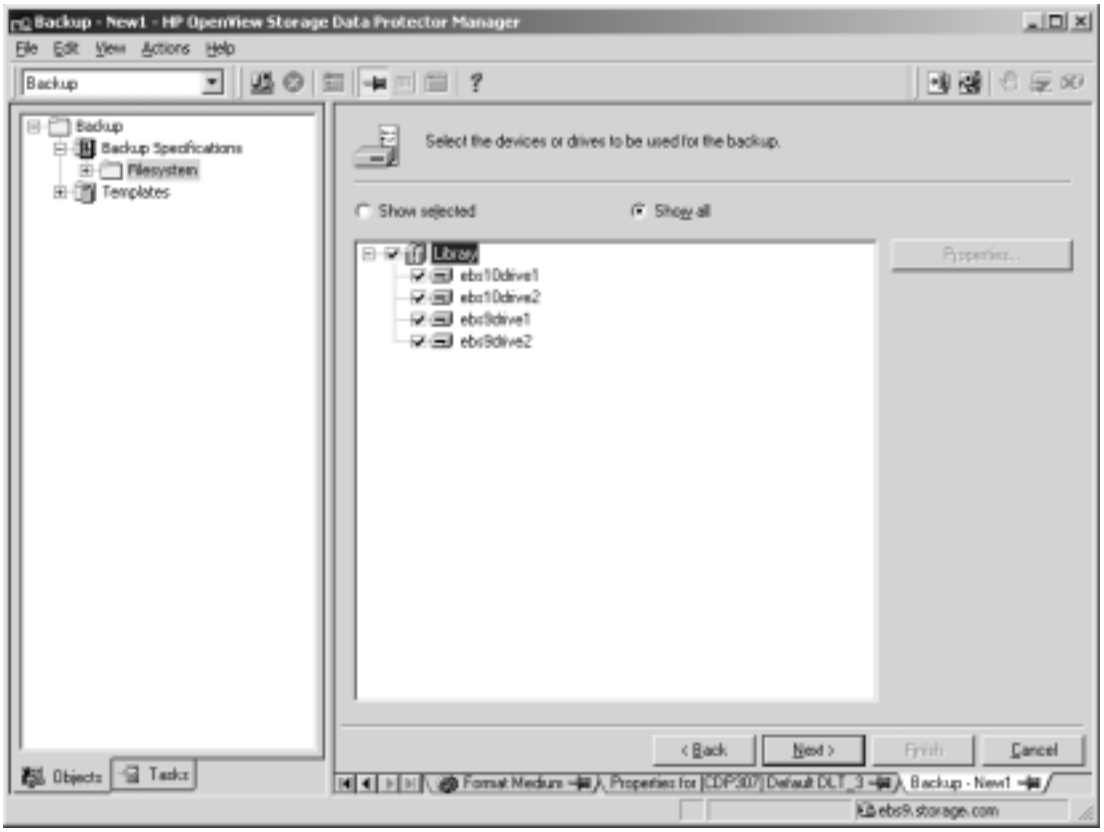
22. Select *Configure New Backup Specifications*. The Create New Backup window displays.



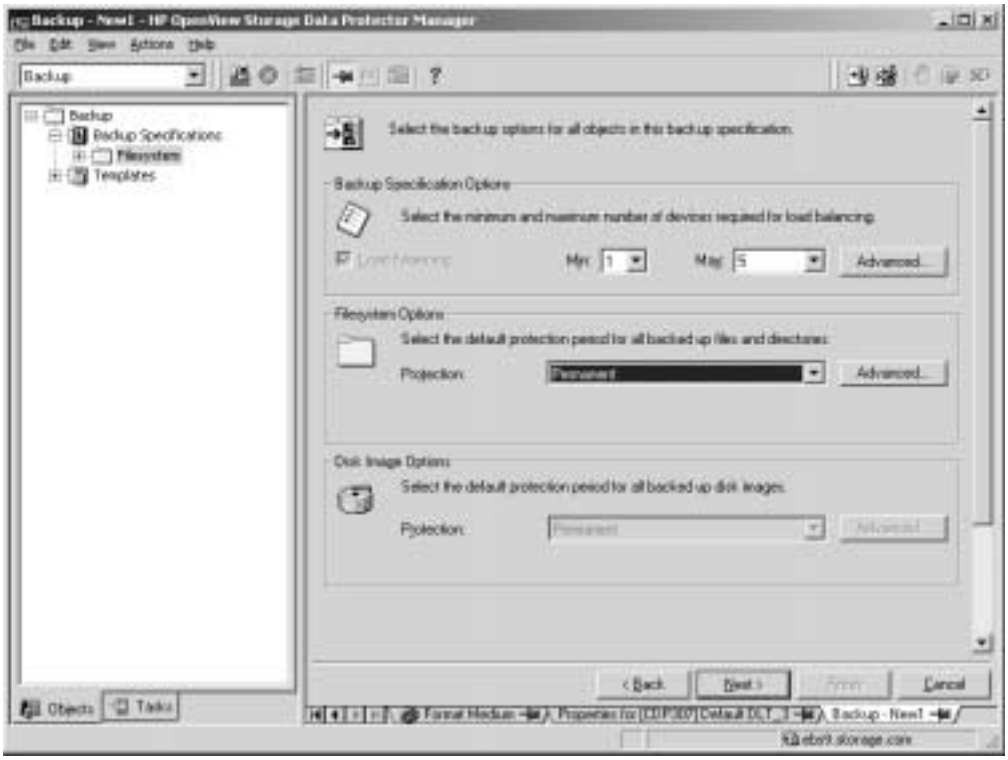
23. Double-click *Blank Filesystem*. The select client window displays.



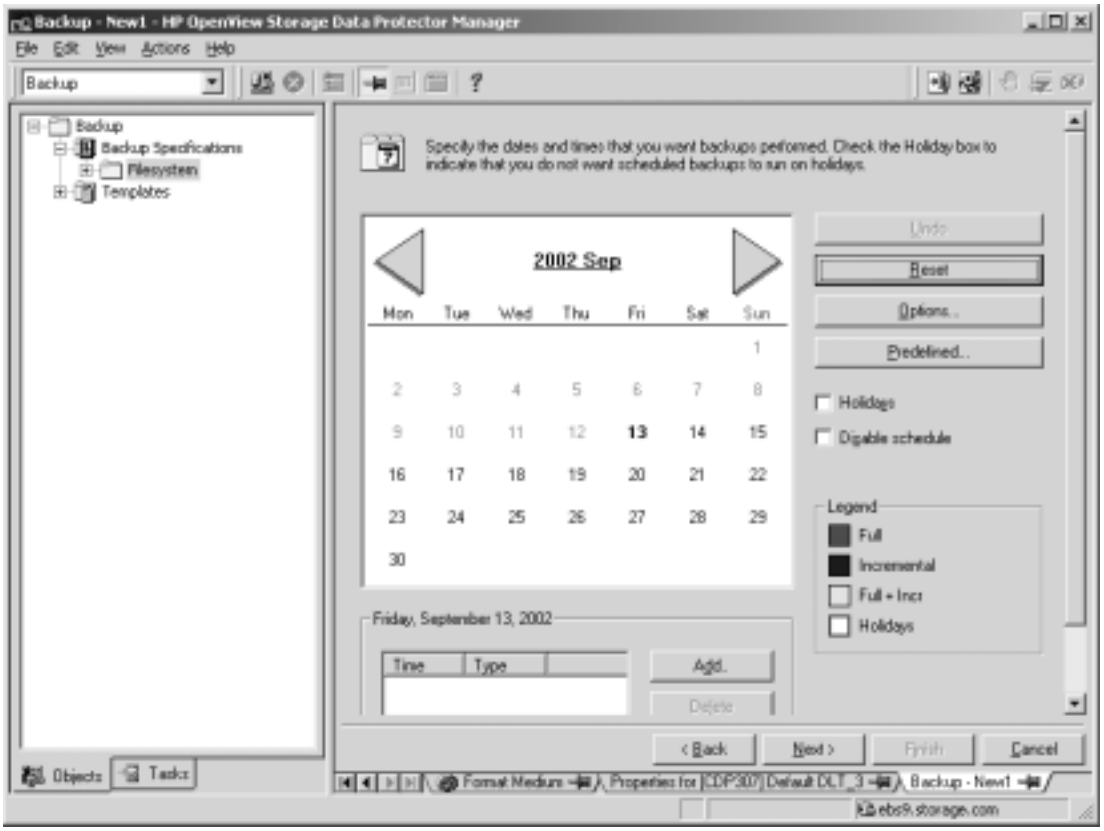
24. Check both servers and the internal database. Click *Next*. The devices or drives window displays.



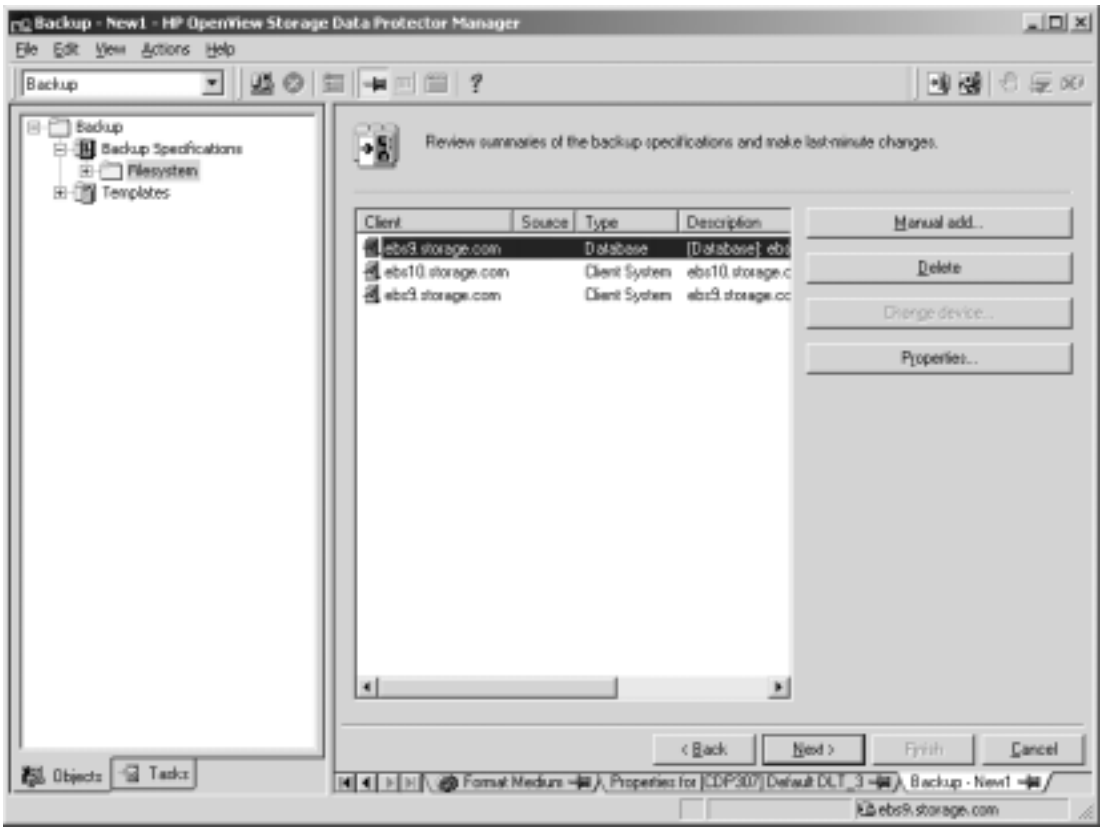
25. Select the library and all its drives. Click *Next*. The backup options window displays.



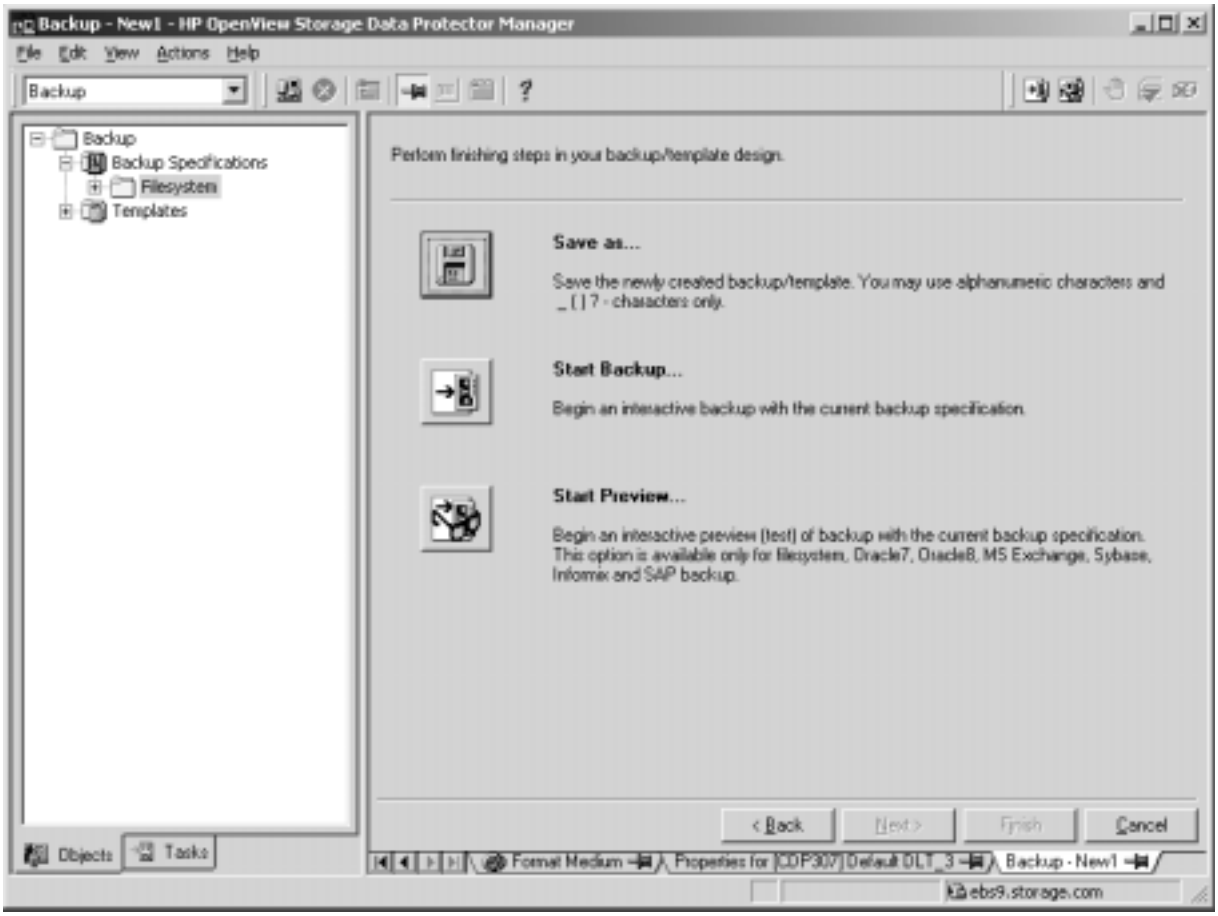
26. Click *Next*. The dates and times window displays.



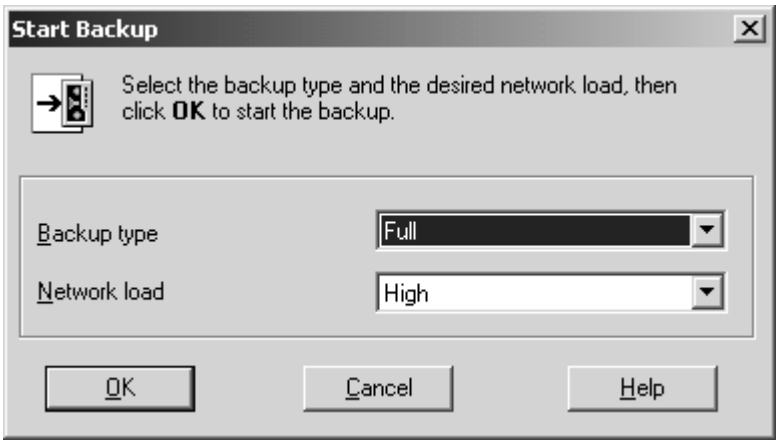
27. Click *Next*. The summaries window displays.



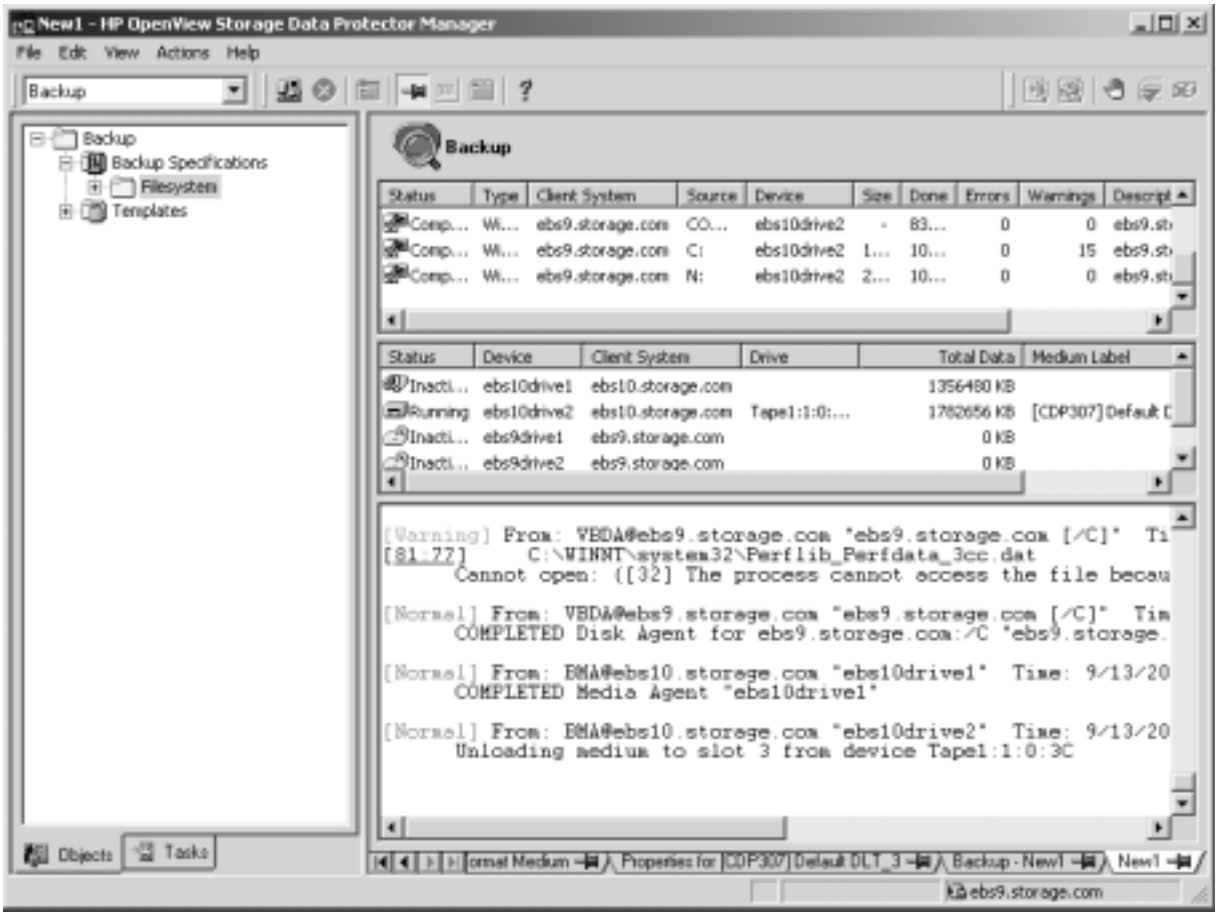
28. Click *Next*. The finishing steps window displays.



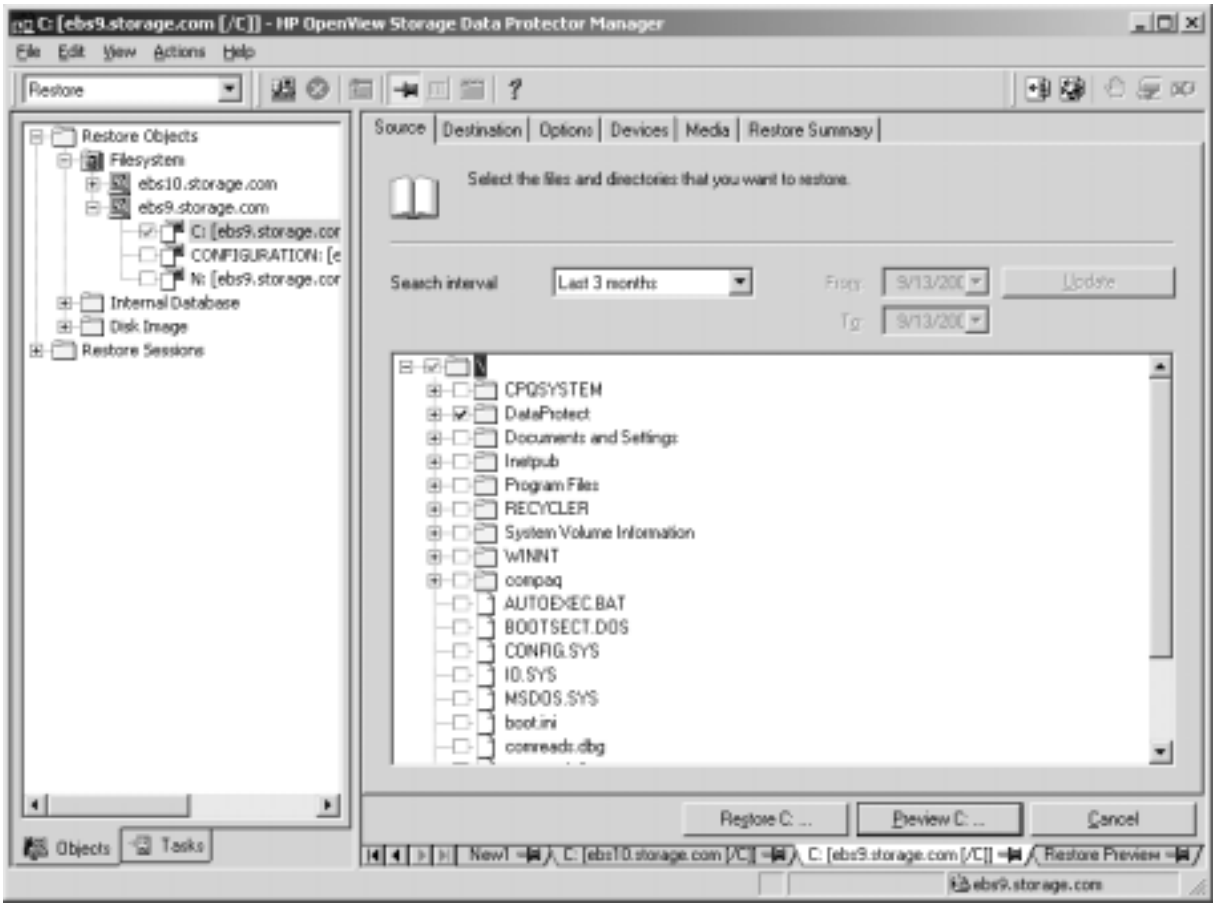
29. You may wish to save the backup specifications, but this is not absolutely necessary for lab purposes. Click *Start Backup*. The backup type window displays.



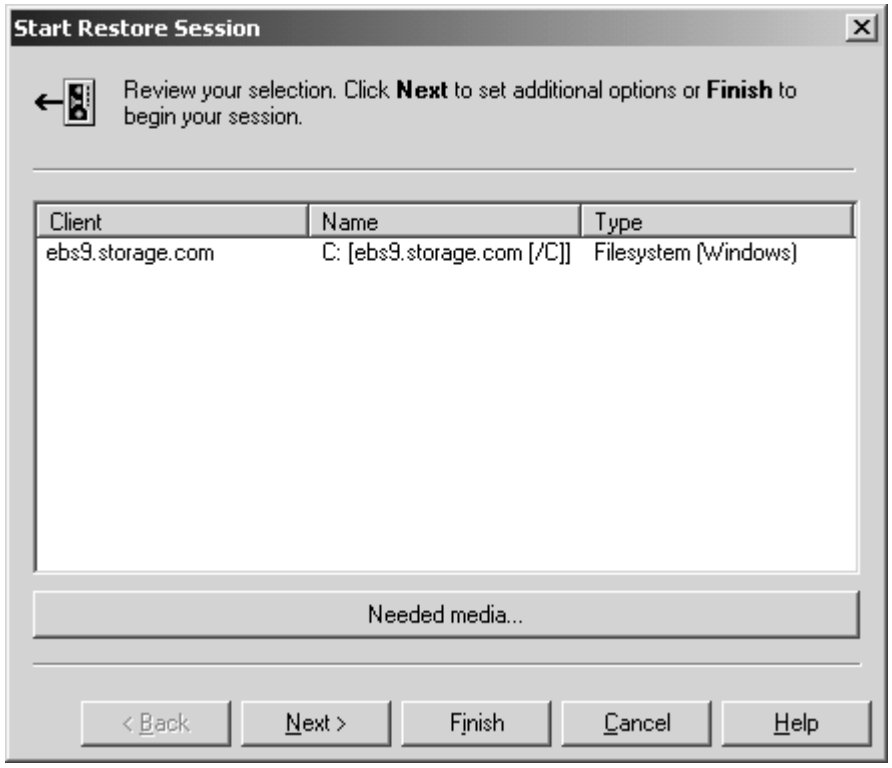
30. Click *OK*. The backup status window displays.



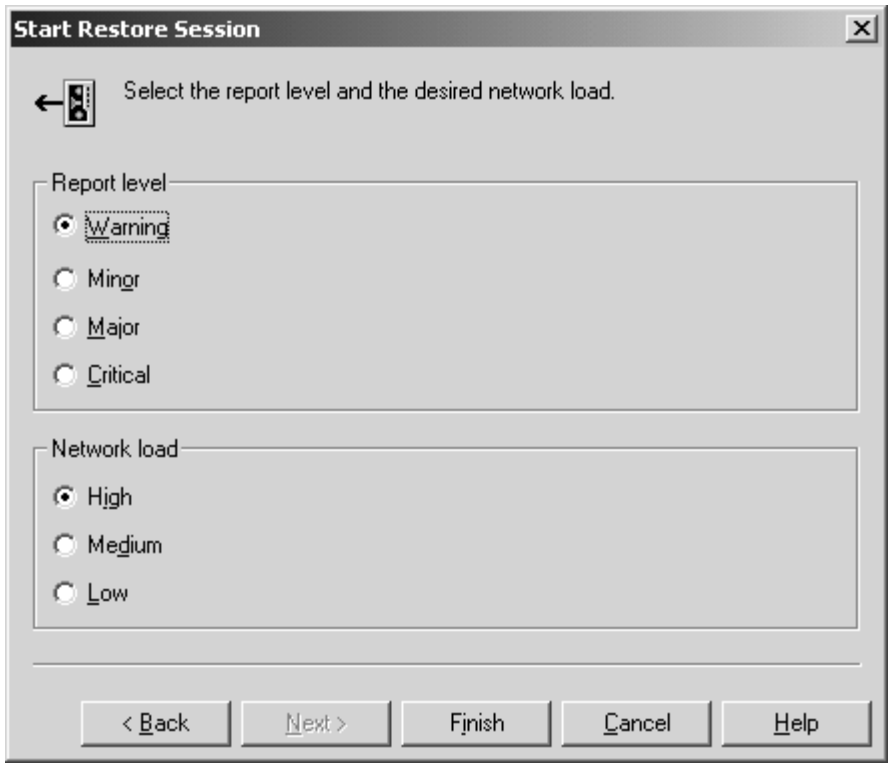
31. After the backup has completed, we will test the restore functionality. Delete a directory with non-critical files.



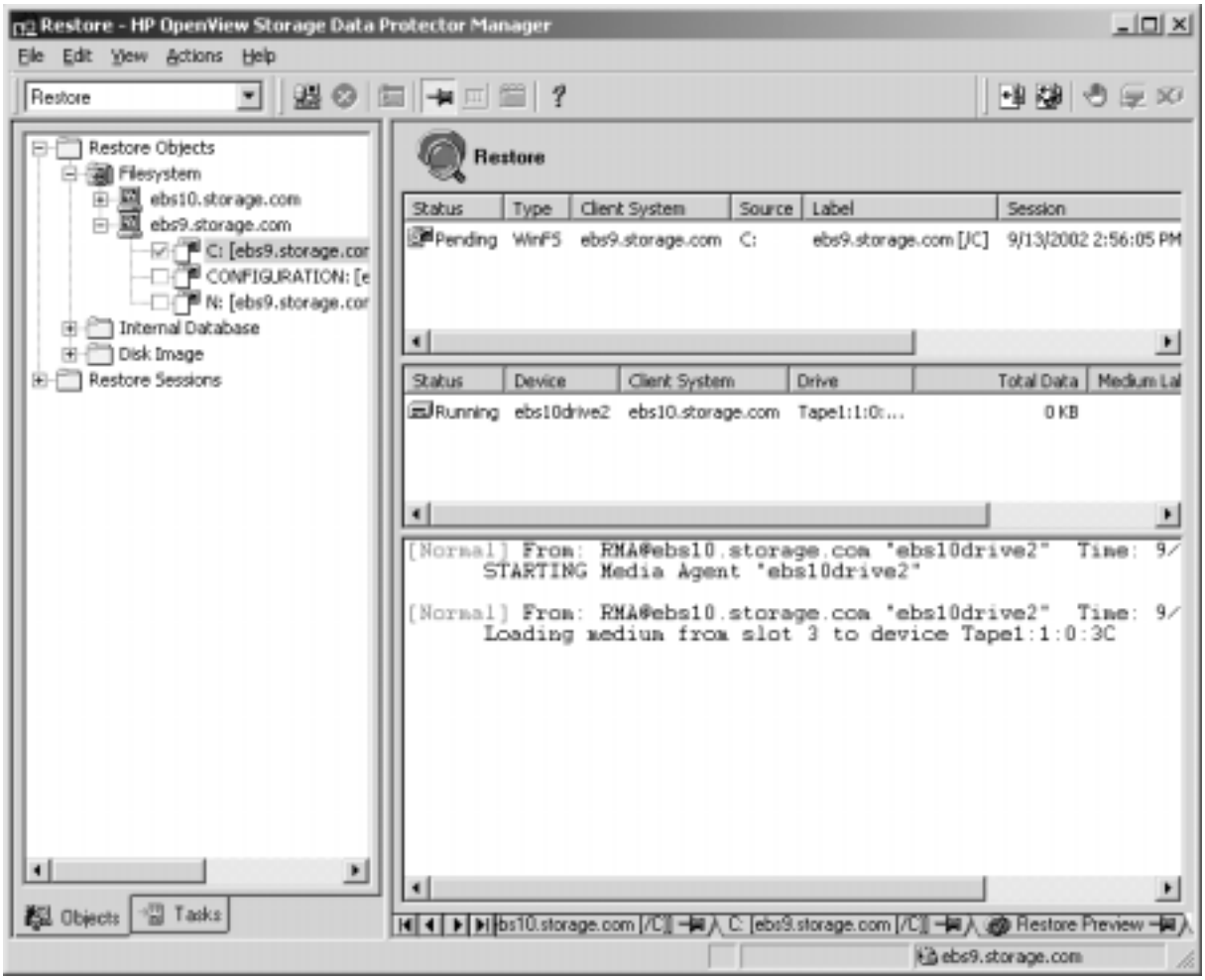
32. In the top left menu, select *Restore* in the drop down menu. Click on the appropriate client. In the right window, select the appropriate directory under the Source tab. Click *Restore*. The Start Restore Session window displays.



33. Click *Next*.



34. Click Finish. The Restore status window displays. After the restore completes, verify that the deleted files have been restored.



This completes the lab.

Designing an Enterprise Backup Solution

Module 7 — Lab 1

Objective

After completing these lab activities, you will be able to design an Enterprise Backup Solution.

Procedure

Use the EBS Site Survey Form and the steps discussed in the student guide to design an Enterprise Backup Solution for each of the following case studies.

1. Load the site survey form from diskette or receive a hard copy from your instructor.
2. Read the case study and fill out the site survey form.
3. Using the formulas provided in the Student Guide, determine the best hardware solution for each customer.
4. Create a hardware list to order the necessary Compaq equipment.

Case Study 1

LingoStar is a small translation business. Their network consists of three Proliant 6500 Servers running Microsoft Windows NT 4.0 with SP6. They use these servers for typical file and print activities.

The company has been using ARCserveIT with the Open File agent to back up their servers to manually operated 35GB AIT tape drives.

LingoStar has just updated their primary storage to a Compaq RAID Array 8000 with twelve 18GB hard drives. Each server has been assigned four drives. The array is configured for RAID 5.

The company would like full backups of all data on Sunday with differential backups made daily. LingoStar's IS director estimates a 25% change in data per day.

The IS department would like to keep all backups on separate tape sets and retain three full backups at all times. They will also erase the differential backups after three full backups. They keep five sets of differential backups.

Equipment Needed	

Case Study 2

Rodnev Enterprises provides vending services to large sporting stadiums and college campuses in nine states. They run six Proliant 7000 Servers with Windows NT 4.0 SP6. The servers maintain a large Oracle database.

The company has purchased Legato NetWorker Power Edition with the Storage Node option.

Their primary storage is supplied by four 9GB internal drives on Smart 4250 ES Controllers on each server. They are running RAID 0.

Because of their constantly changing Oracle database, Rodnev wants full backups performed every day.

The Rodnev IS department maintains all backups on separate tape sets. They retain three full sets of backups at all times.

Equipment Needed	

Case Study 3

A start-up CAD company, mchcad.com, has five ProLiant 2500 Servers running Windows NT 4.0 with SP6a. They are thinking about purchasing a 35/70GB DLT Drive for each server. The owner has used VERITAS Backup Exec in the past and wants to use this software in his current company.

Primary storage for mchcad.com consists of three 9GB internal drives on the embedded SCSI Controllers in each server. Each server runs RAID 0.

The servers are used to store the company's CAD drawings. The files can be compressed at 3.5:1.

The company would like full backups of all data made each Sunday with incremental backups made daily. They estimate a 20% change to the data each day.

All backups will be kept on separate tape sets, with two full backups retained at all times. Incremental backups will be erased after one full backup.

Equipment Needed	

Case Study 4

BigCo is looking for a new backup solution. The company has 32 servers running Windows NT 4.0 (four servers) and Tru64 UNIX (28 servers), each running Oracle.

They would like to use VERITAS NetBackup to facilitate their backups.

Primary storage for BigCo consists of four Enterprise Modular Array 12000s, each with 48 9GB drives running RAID 5 (six drives per server).

The IS department would like full backups every Sunday with differential backups the other days of the week. They estimate a 20% change in data each day. They need to keep three full backups all on individual tape sets. The differential backups will be erased with the full backups. Two differential sets should be kept at all times.

BigCo's backup window is four hours per night (12 AM-4 AM).

Equipment Needed	

Using the HP StorageWorks Backup Sizing Tool to Design an EBS

Module 7 — Lab 2

Objective

After completing this lab, you will be able to use the HP StorageWorks Backup Sizing Tool to design an Enterprise Backup Solution for Workgroup, Departmental, and Data Center customers.

Procedure

Use the EBS Site Survey Forms from the previous lab and the HP StorageWorks Backup Sizing Tool to design an Enterprise Backup Solution for each of the following case studies.

1. From the Start menu, select *Programs → HP EBS Solution Sizer v1.41 → HP StorageWorks Backup Sizing Tool*.
2. Follow the prompts and use the information on the Site Survey Forms from the previous lab.
3. Answer the questions found after each Case Study.

Case Study 1

LingoStar is a small translation business. Their network consists of three Proliant 6500 Servers running Microsoft Windows NT 4.0 with SP6. They use these servers for typical file and print activities.

The company has been using ARCserveIT with the Open File agent to back up their servers to manually operated 35GB AIT tape drives.

LingoStar has just updated their primary storage to a HP RAID Array 8000 with twelve 18GB hard drives. Each server has been assigned four drives. The array is configured for RAID 5.

The company would like full backups of all data on Sunday with differential backups made daily. LingoStar's IS director estimates a 25% change in data per day.

The IS department would like to keep all backups on separate tape sets and retain three full backups at all times. They will also erase the differential backups after three full backups. They keep five sets of differential backups.

Questions

1. What is the elapsed time of the SSL2020TL backups?
   - Full on Sunday?

     .....
   - Differential on Tuesday?

     .....
   - Differential on Thursday?

     .....
2. How many AIT tapes are required for this solution?

   .....
3. For the hardware required for this solution, fill in the information requested:
   - Part number for the Modular Data Router

     .....
   - Part number for the two-drive SSL2020TL AIT Library

     .....

Case Study 2

Rodnev Enterprises provides vending services to large sporting stadiums and college campuses in nine states. They run six Proliant 7000 Servers with Windows NT 4.0 SP6. The servers maintain a large Oracle database.

The company has purchased Legato NetWorker Power Edition with the Storage Node option.

Their primary storage is supplied by four 9GB internal drives on Smart 4250 ES Controllers on each server. They are running RAID 0.

Because of their constantly changing Oracle database, Rodnev wants full backups performed every day.

The Rodnev IS department maintains all backups on separate tape sets. They retain three full sets of backups at all times.

Questions

4. What is the elapsed time for each server's backup?

   .....

5. What is the elapsed time for all daily backups?

   .....

6. Why is server #1 backup time different?

   .....

7. How many tapes are required?

   .....

8. For the hardware and software required for this solution, fill in the information requested:

   - Part number for the 8-port switch

     .....

   - Part number for the HBA

     .....

   - Part number for NetWorker Power Edition Storage Nodes for Windows NT

     .....

   - Part numbers for the Oracle Agents

     .....

Case Study 3

A start-up CAD company, mchcad.com, has five ProLiant 2500 Servers running Windows NT 4.0 with SP6a. They are thinking about purchasing a 35/70GB DLT Drive for each server. The owner has used VERITAS Backup Exec in the past and wants to use this software in his current company.

Primary storage for mchcad.com consists of three 9GB internal drives on the embedded SCSI Controllers in each server. Each server runs RAID 0.

The servers are used to store the company's CAD drawings. The files can be compressed at 3.5:1.

The company would like full backups of all data made each Sunday with incremental backups made daily. They estimate a 20% change to the data each day.

All backups will be kept on separate tape sets, with two full backups retained at all times. Incremental backups will be erased after one full backup.

Questions

9. How many tapes are required?

   .....

10. What is the part number for the TL895 Tape Library?

    .....

11. When will backups using the TL895 Tape Library be completed on

    - Sunday?

    .....

    - Daily?

    .....

12. What is the part number for the Backup Exec for Windows NT Shared Storage Option Starter Kit?

    .....

Case Study 4

BigCo is looking for a new backup solution. The company has 32 servers running Windows NT 4.0 (four servers) and Tru64 UNIX (28 servers), each running Oracle.

They would like to use VERITAS NetBackup to facilitate their backups.

Primary storage for BigCo consists of four Enterprise Modular Array 12000s, each with 48 9GB drives running RAID 5 (six drives per server).

The IS department would like full backups every Sunday with differential backups the other days of the week. They estimate a 20% change in data each day. They need to keep three full backups all on individual tape sets. The differential backups will be erased with the full backups. Two differential sets should be kept at all times.

BigCo's backup window is four hours per night (12 AM-4 AM).

Create four data zones so the company can grow with the equipment they purchase.

Questions

13. How many DLT libraries are required?

    .....

14. How many tapes are required?

    .....

15. When do backups finish on

    - Sunday?

      .....

    - Tuesday?

      .....

    - Thursday?

      .....

    - Saturday?

      .....

Objective

After completing this module, you should be able to install and run Performance Assessment Tool (PAT) to assess primary storage performance.

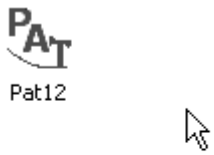
Requirements

- Server running Windows 2000 Advanced Server
- Tape library
- Storage System (if available)

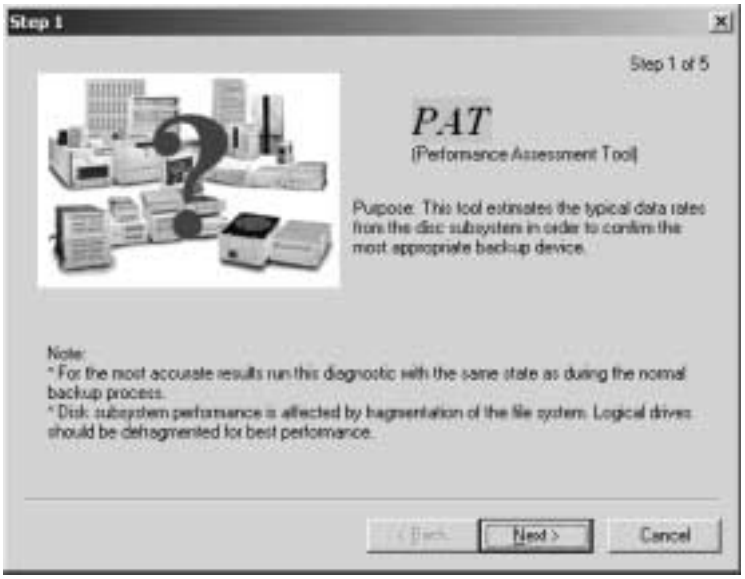
Procedure

Installation of PAT

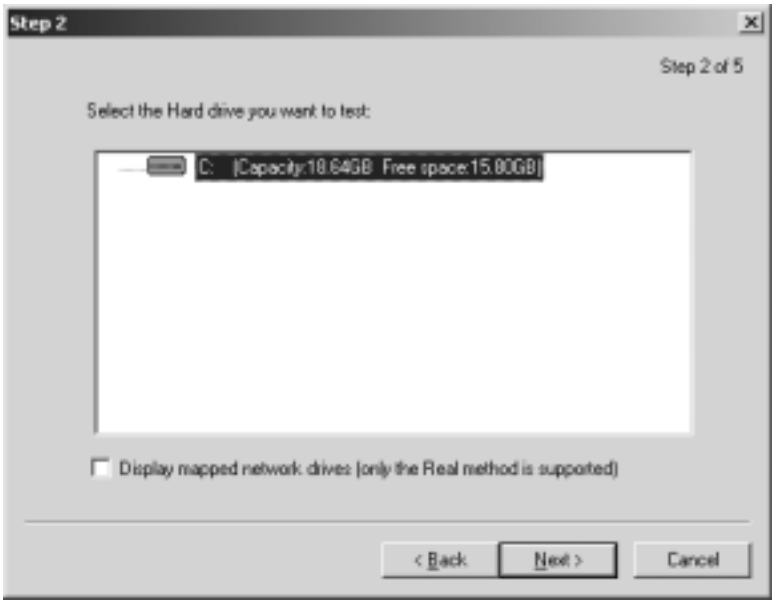
1. Double-click on the PAT12.exe file.



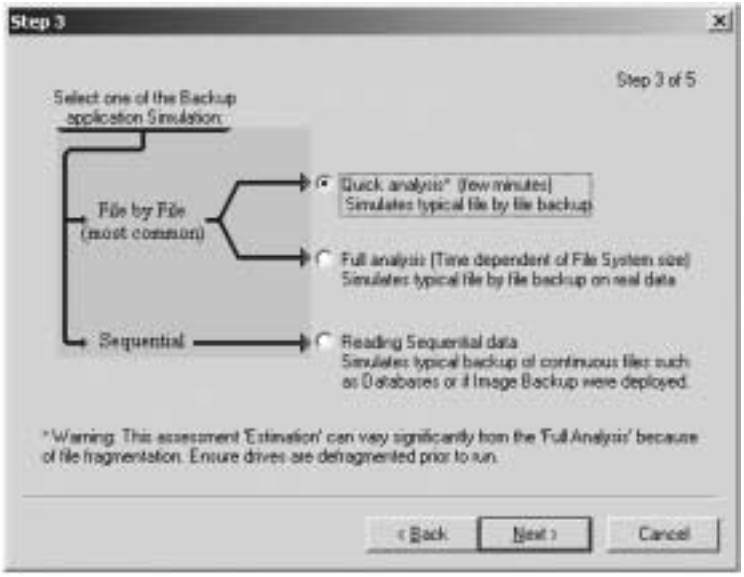
2. Click *Next* on the below screen.



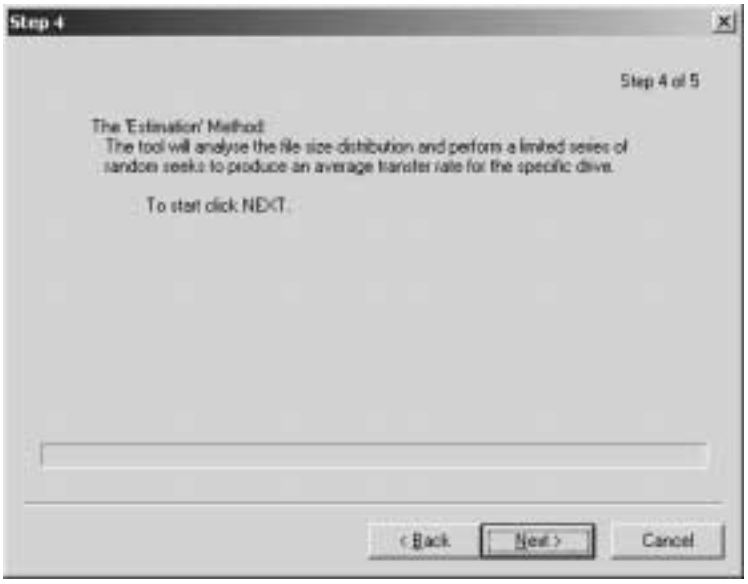
3. Select the storage you want to assess and click *Next*.



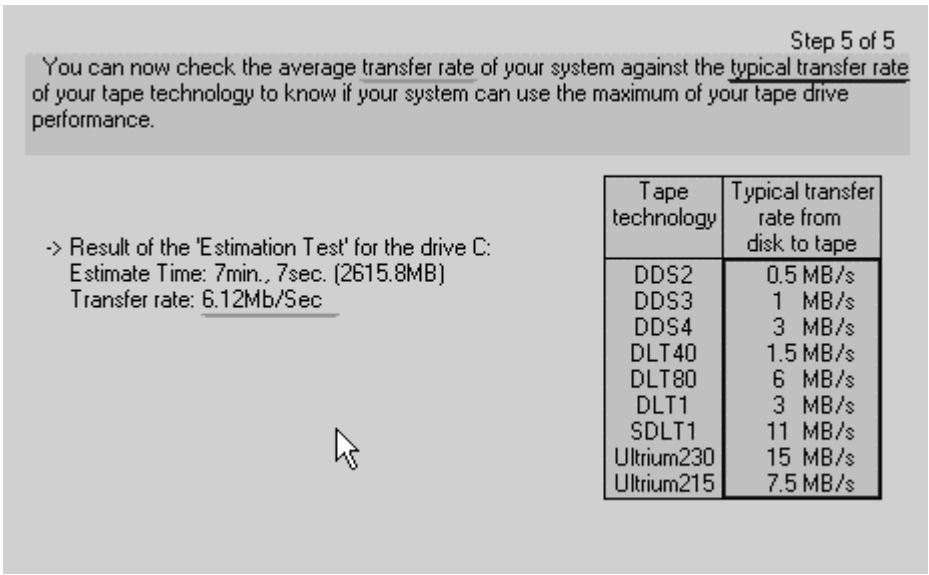
4. Select *Quick analysis* and click *Next*.



5. Click *Next* at the below screen.



6. The next screen will display the assess performance of your primary storage system's transfer rate. Click *Finish*.



Tape technology	Typical transfer rate from disk to tape
DDS2	0.5 MB/s
DDS3	1 MB/s
DDS4	3 MB/s
DLT40	1.5 MB/s
DLT80	6 MB/s
DLT1	3 MB/s
SDLT1	11 MB/s
Ultrium230	15 MB/s
Ultrium215	7.5 MB/s

This concludes the lab for PAT.

Installing and Using LT&T 3.0

Module 9 – Lab 1

Objective

After completing this lab, you will be able to install and use the HP Library and Tape Tools (LT&T) to manage and troubleshoot a tape library.

Requirements

The requirements for this lab are the equipment used in the previous labs with the previous labs completed.

- Server running Window NT/Windows 2000
- Client running Windows 95 or higher or Windows NT
- Internet Explorer 5.0 or later
- Latest Windows version of HP Library and Tape Tools software (can be downloaded from http://www.hp.com/support/tapetools)

Procedure

The lab is divided into two sections:

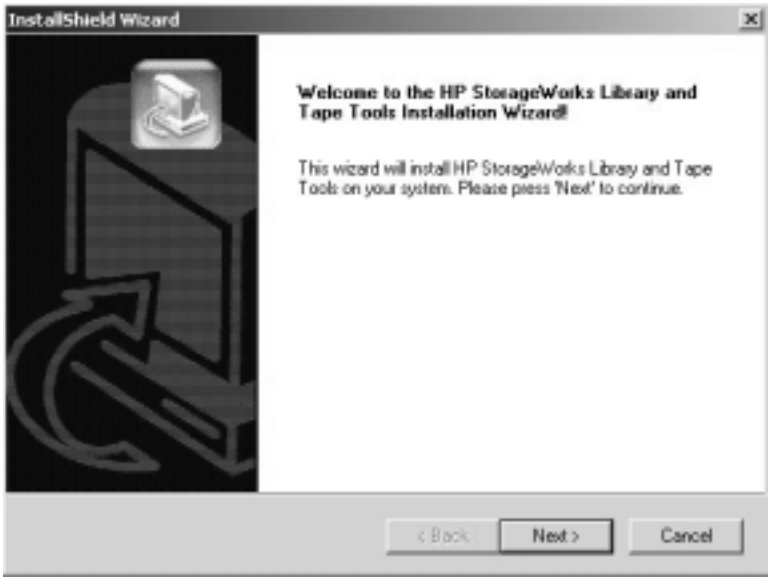
- Installing the software
- Using the software

Installing LT&T

1. Run the LT&T server installation by double-clicking on the icon on your desktop.

LT&T 3.0 install.lnk

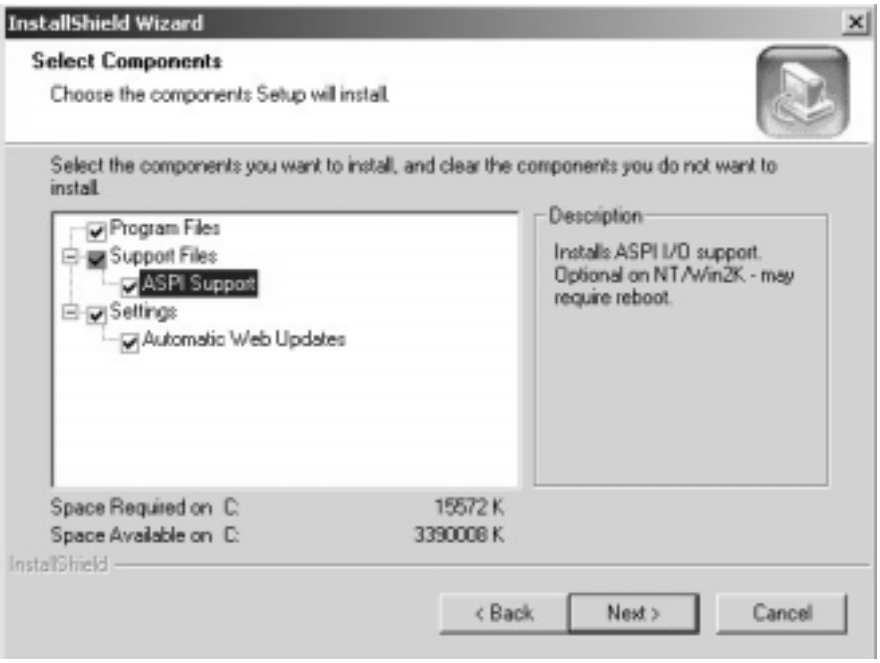
2. The Welcome window displays. Click on *Next*.



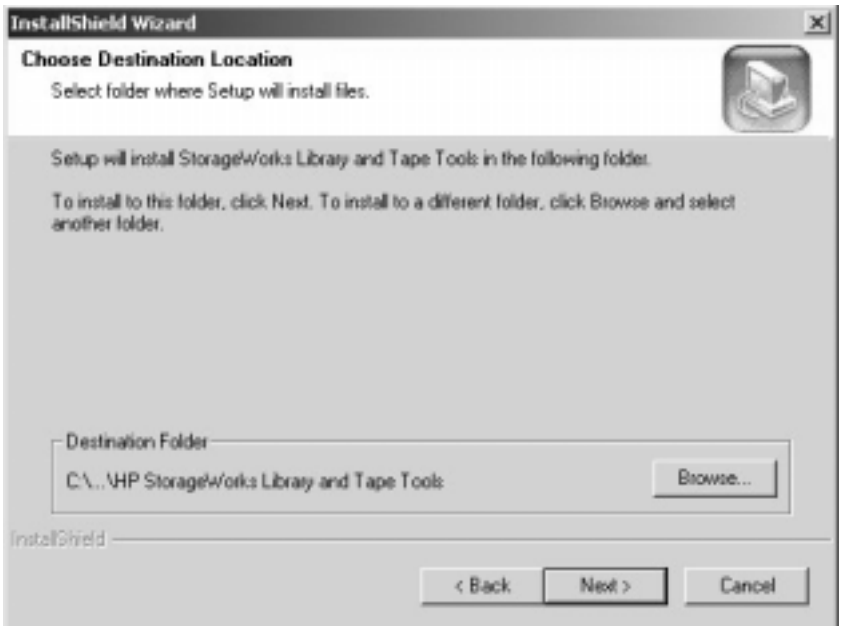
3. Click *Yes* to the license agreement.

4. Click *Next* to read the “read me” file.

5. Examine the components you wish to install, *tick* the ASPI layer, this is recommended because it gives LT&T more granularity in diagnostics. Click *Next* to continue.



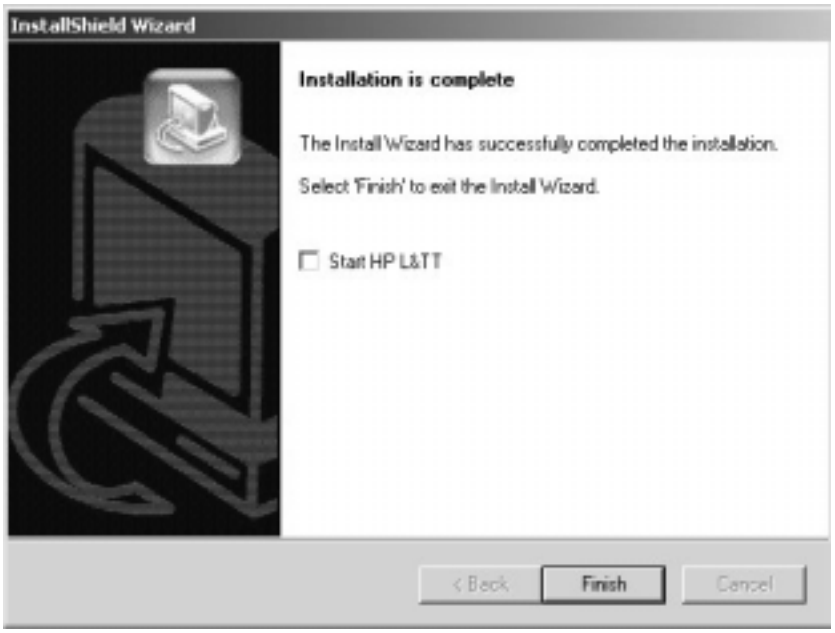
6. If install location is correct click *Next*.



7. Click *Next* to accept the program name

8. Click on *Next* to start the installation.

9. The installation runs and completes.

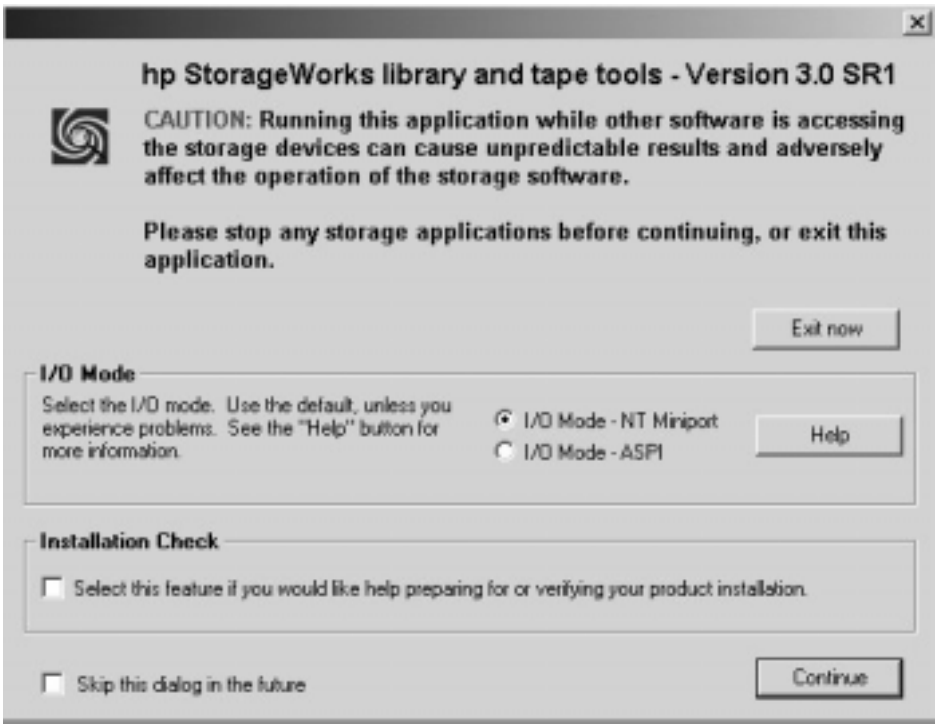


There should now be an HP StorageWorks Library and TapeTools icon on the desktop

Using LT&T

Note: If the ASPI driver layer has been installed it may be necessary to reboot the system

1. Run from either the programs menu *Start → Programs → HPStorageWorks Library and Tape Tools* or using the LT&T icon on the desktop.
2. The following screen is displayed. LT&T can talk to devices either by the inbuilt OS mini-port driver, or via the Adaptec ASPI driver layer. Using the min-port driver can give problems if the device is “claimed” by another application or is using non-standard OS drivers. In these cases choose the ASPI option.



3. LT&T can diagnose and report on tape drives and libraries in either direct SCSI or Fibre Channel attach. The first thing LT&T does is perform a scan of any HBA’s capable of supporting SCSI protocol. A screen *similar* to the one below will be displayed.

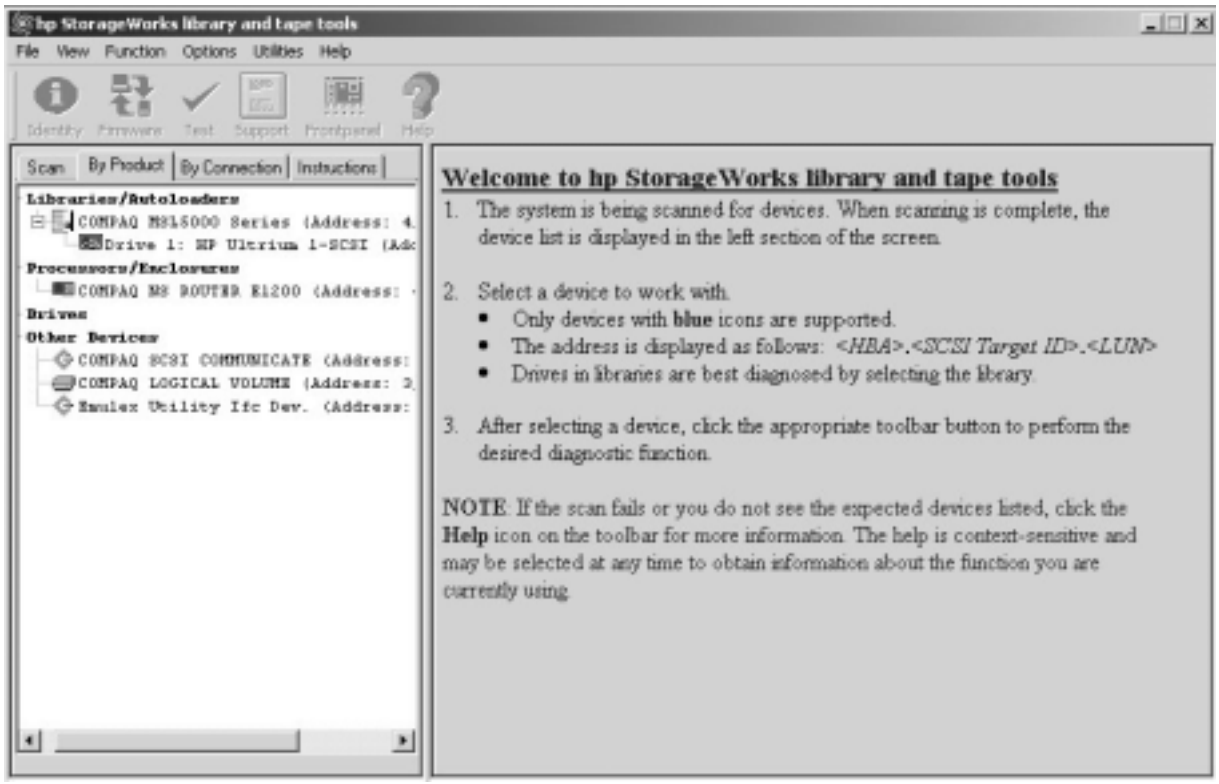
Examine the left hand device pane, checking the types of devices present and record them below:

.....

.....

.....

.....



4. First we will select the tape drive to analyse. Click on the Drive entry in the scan list to start the drive diagnostics.

The diagnostics are divided into 4 or 5 sections, as can be seen by the icons in the top right hand part of the window.

1. Identify – gives Serial # information and drive revision levels
2. Firmware – update firmware in the device

   Note: LT&T actively goes onto the HP support Web to check if firmware revisions are up to date. It is therefore recommended when LT&T is run the system also has external Web access if at all possible. If this is not possible drive and library firmware revisions can be read independently from http://www.hp.com/TBA

3. Test – run actual diagnostic tests

   Note: these tests can overwrite data on tape.

4. Support – generate a “support ticket” for HP

   Note: A support ticket reads specialist log files from the device, which HP engineers can use to accurately determine any problem. HP support will frequently ask for a “support ticket” before a device is exchanged, to confirm a failure symptom is real.

5. Front Panel – used to test front panel commands on devices that support a front panel interface.

Record the drive Serial # and the Firmware revision in use.

Drive Serial # ……

FW Rev ……

5. Click on the firmware icon, note the warning message about not upgrading a tape drive in a library independently but only through the Library device. This is because drives in a library use different firmware levels than stand alone drives and LT&T will present you with the correct library drive firmware only when you go through the library device diagnostics.

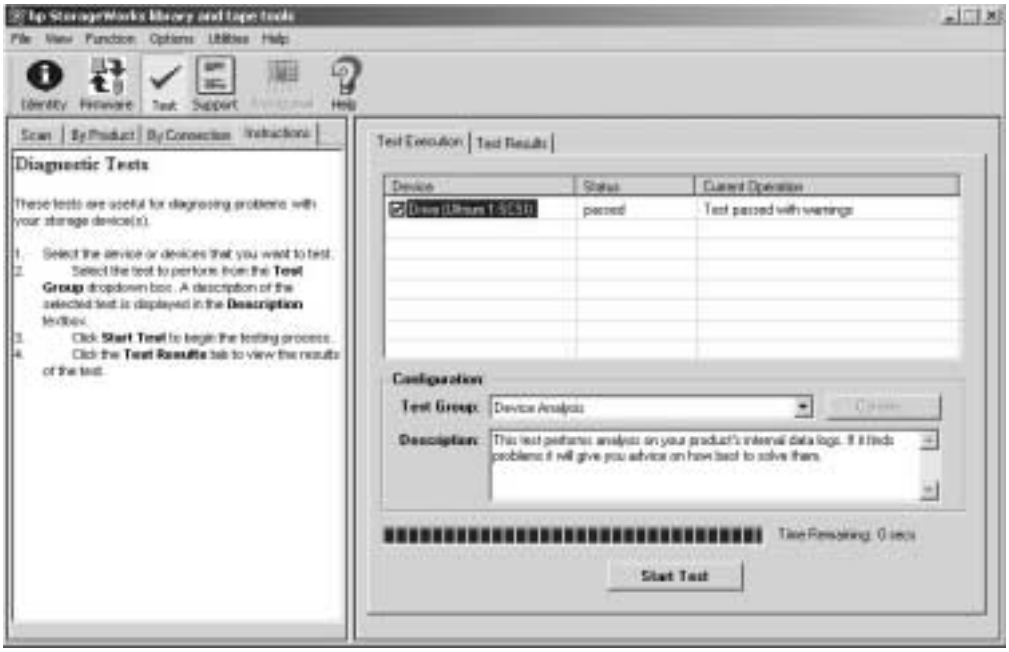
6. Click on the “test” icon in the top left hand corner of the screen.

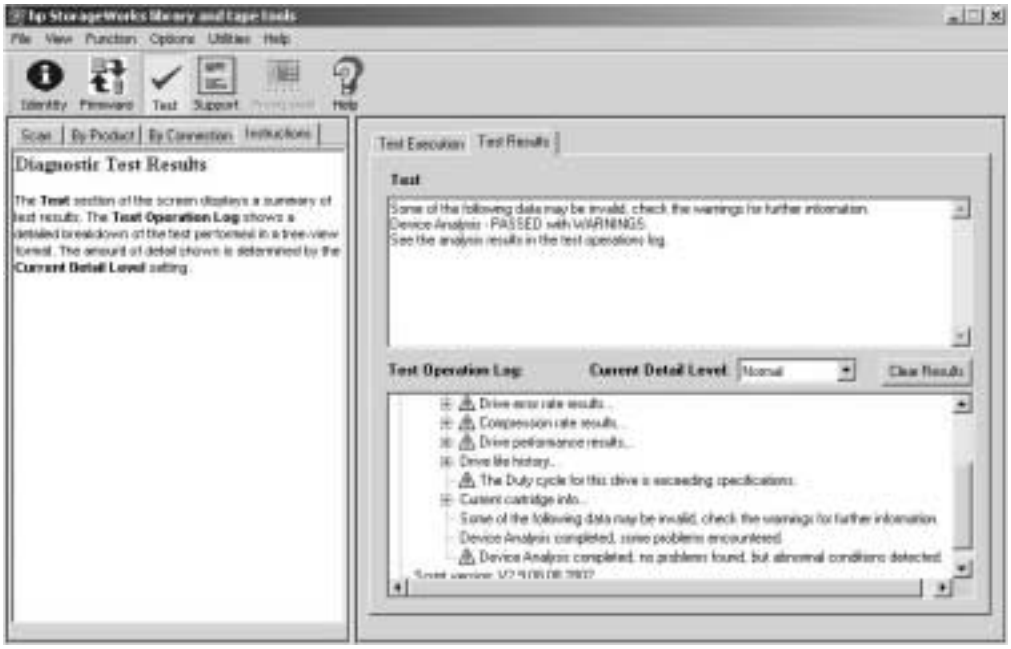
   Tick the box on the drive device you wish to test in the right hand pane.

   List all the tests possible on the drive you have selected by clicking the “drop down box” under Test Group.

   Choose a test and follow the instructions (some tests require media to be loaded) – In the example below we have chosen the device analysis test. This will tell you if your drive FW is up to date (if external web access enabled) and analyze the drive logs for any gross errors.

   When the test is complete, click on the *Test Results* tab to see the details





7. Click on the + expansion icons for each category of analysis to obtain further details.

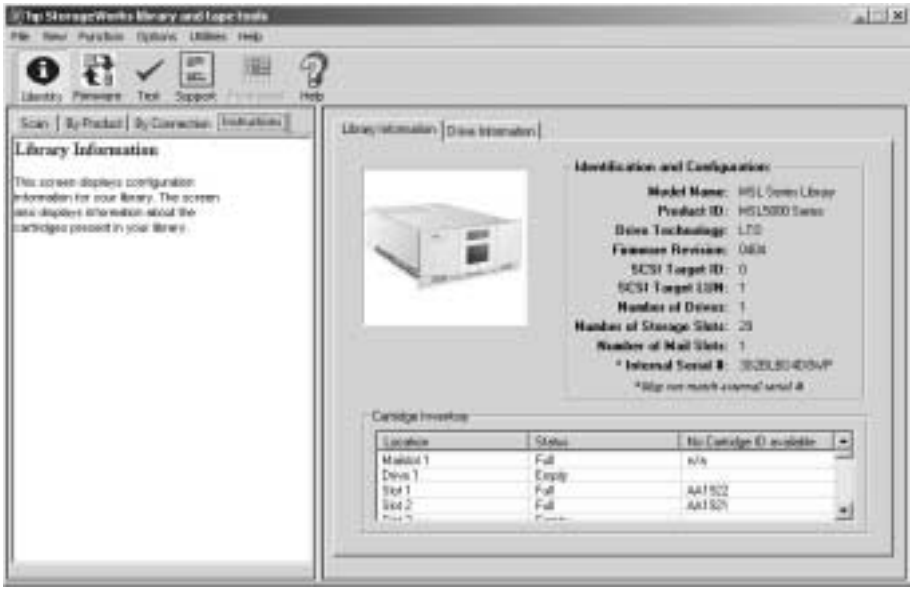
   Check with your instructor if there are any results or information you don't understand

8. Click on the support icon in the top left hand of the window. Once again because this drive is part of a library, LT&T insists the support ticket is generated through the Library device since the drives behaviour is an integral part of the Library behaviour.

9. Click the *scan* tab, then press the *Re-scan* button.

   This time select the Library device, and the Library diagnostics will load.

   Select the *Identify* icon from the list of utilities, to obtain the screen shown below.



10. Record the Library firmware revision and the Library Serial #

    Library Firmware revision …….

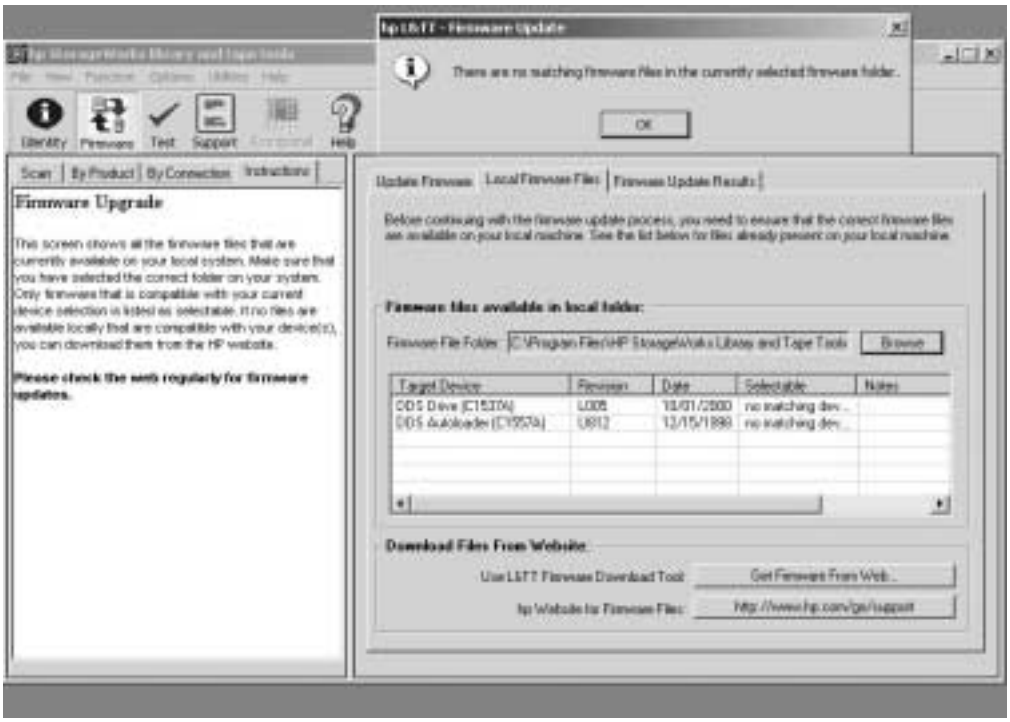
    Library Serial # ……

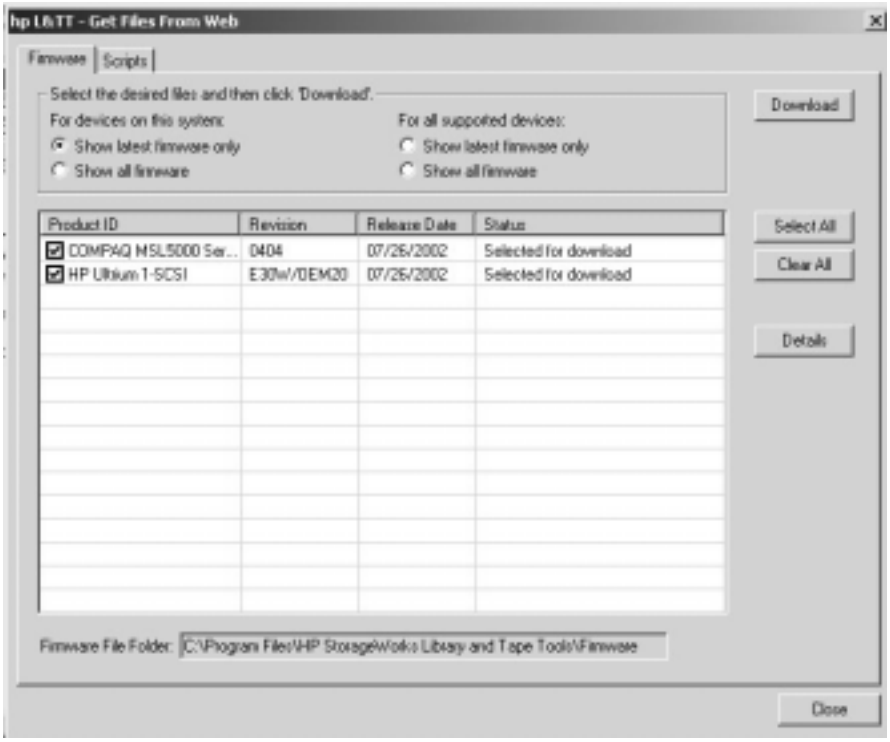
    Click the firmware icon. A warning message will appear indicating that the "local" firmware files do not contain the correct firmware type required.

    Depending on the Lab set-up at this point – either

    a) Go to the Web for the firmware update – if web access is enabled in the lab environment.

    b) Ask the instructor where on your server the correct FW download file is located.



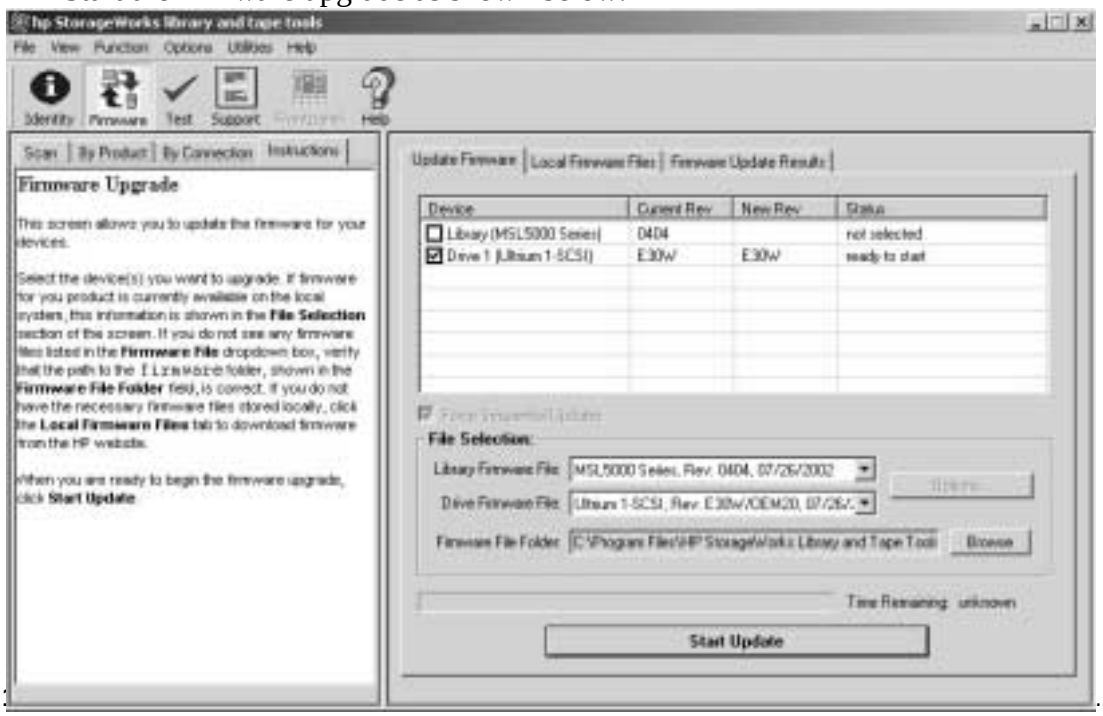


The screen shot shows a web download onto the local server.

Note: The “scripts” tab – LT&T also contains a scripting language which allows users or HP to write very specific diagnostic programs, which can also be downloaded via the Web.

Once the FW files are in the correct location the firmware download program will recognize them and the library and drive firmware can be upgraded one module at a time.

Start the firmware upgrade as shown below.



Please be aware of the following during FW upgrades.

Click OK to continue.

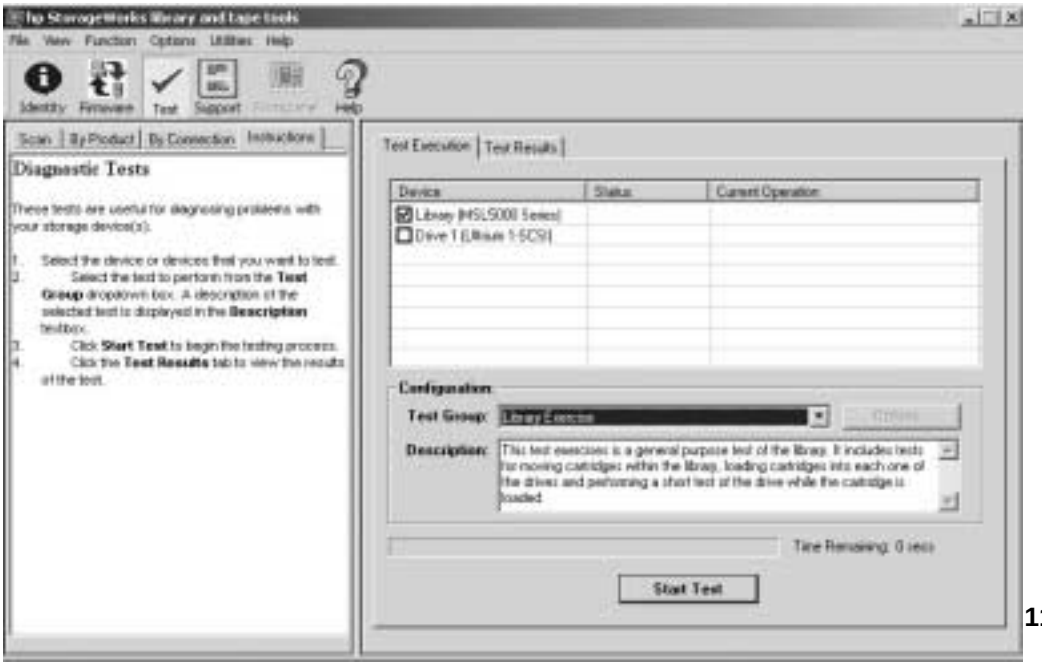
The Library and Drive firmware will then be successfully updated over the Fibre channel interface.

11. Next we will run a Library exercise diagnostic.

    Click *Test icon* and select *Library exercise* from the drop down list of tests.

    The test requires “scratch” media to be loaded into the mailslot of the Library

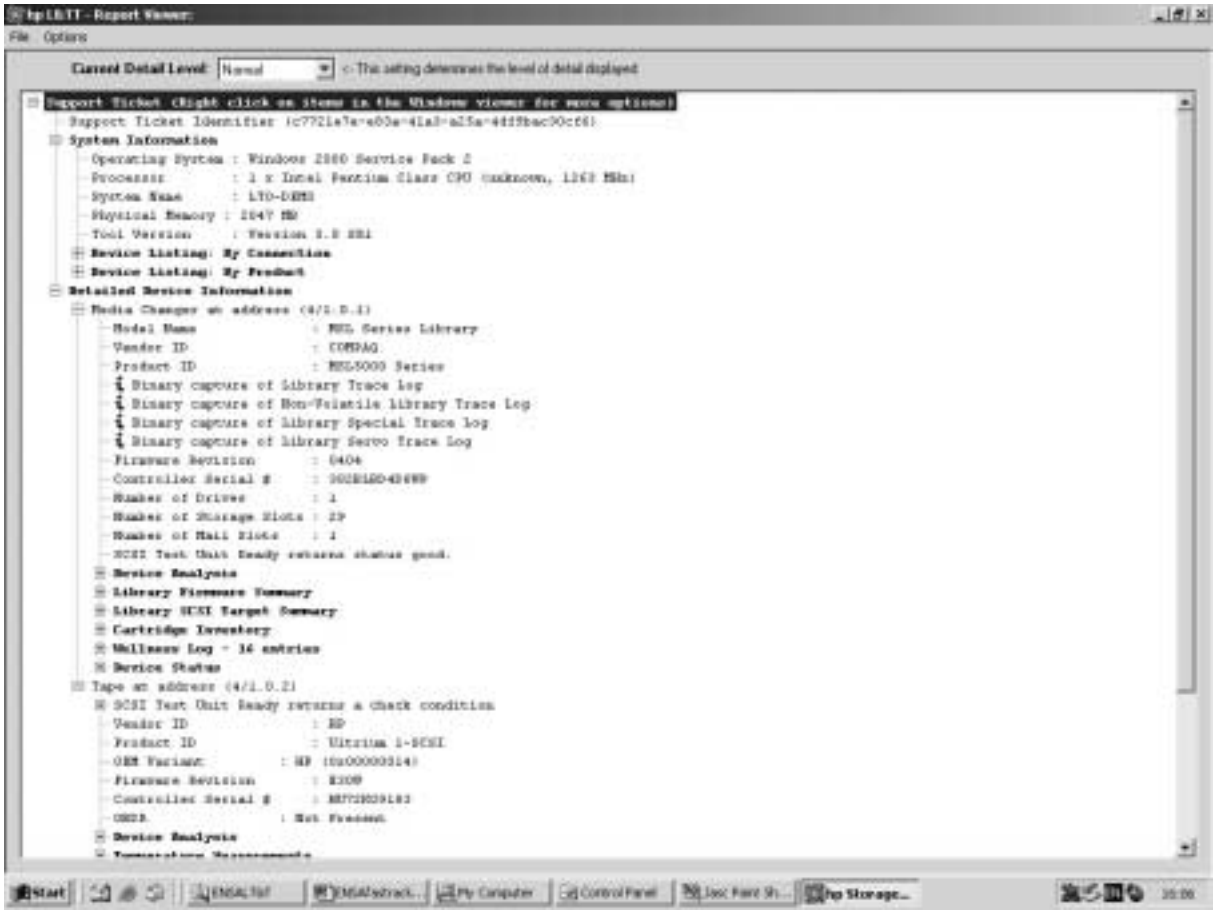
    Start the test.



12. Finally we will recover the support ticket from the Library.

    Select *Support* icon in top left hand section of window.

    Click on View Support Ticket, allow LT&T to capture the information, the following window will be displayed.



    An astounding array of information is captured, both from the Library and the tape drive, including internal firmware trace logs that can be analysed by firmware engineers.

Take some time to expand the + entries to see the range of information captured in an HP support ticket.

Note: support ticket can be saved to a file or E-mailed to HP support personnel

THIS CONCLUDES THE LT&T TRAINING MODULE

Installing VERITAS Backup Exec 8.5 for Windows NT

Appendix A: Module 6 — Lab 1

Objective

After completing this module, you will be able to install and configure Backup Exec and the Shared Storage Option for Microsoft Windows NT.

Note

Alternate labs for installing Computer Associates ARCserve 2000 and Legato NetWorker are available in the appendix.

Requirements

- Windows NT 4.0 with Service Pack 6.
- For the shared database server, 300MB of free hard disk space and 128MB RAM are recommended.
- For other servers on the loop, 25MB of free hard disk space is required and 64MB RAM is recommended.
- A minimum of 52MB of physical memory available (as shown in the Windows NT Task Manager) plus the file cache (20MB for File Cache and 32MB for Backup Exec Shared Storage Database services and client).

Before You Install

It is important to note that the shared ADAMM and catalog databases for the shared storage network will reside on the first server on which the Shared Storage Option is installed. For best performance, the primary server should be the fastest server on the shared storage network that is not heavily loaded with non-Backup Exec activities. However, the Shared Storage Option must be locally installed at each server that will be sharing secondary storage devices.

For a Fibre Channel connected installation, additional requirements include:

- A Fibre Channel host bus adapter (HBA) and its device drivers must be installed.
- For Backup Exec to automatically configure the library hardware and properly associate the tape drives with the library, the Fibre Channel HBA must be connected to recognize all the secondary storage devices. For the adapter to do this, the following requirements must be met:
  - The storage hub must be connected to all the Fibre-to-SCSI bridges on the loop.
  - All the tape libraries must be connected to the bridges.
  - The storage hub and all tape libraries must be powered up before powering up the bridges.
  - The bridges must be powered up before Windows NT 4.0 loads the Fibre Channel driver (usually during the restart phase).

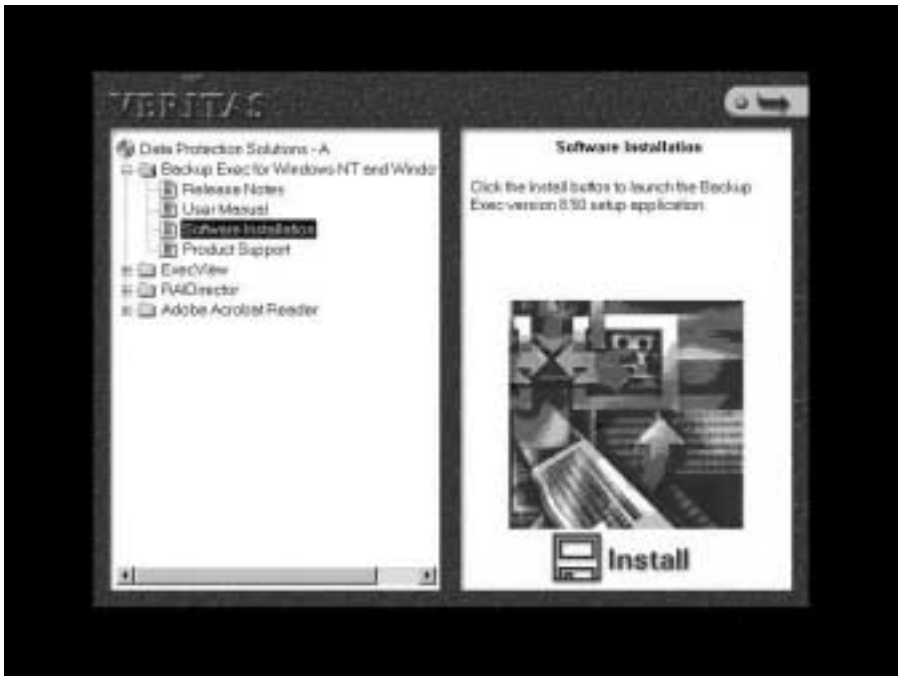
Procedure

1. Insert the CD into the CD-ROM drive and wait for the autorun option to display the menu.

2. Click *Contents*. The Contents screen displays.

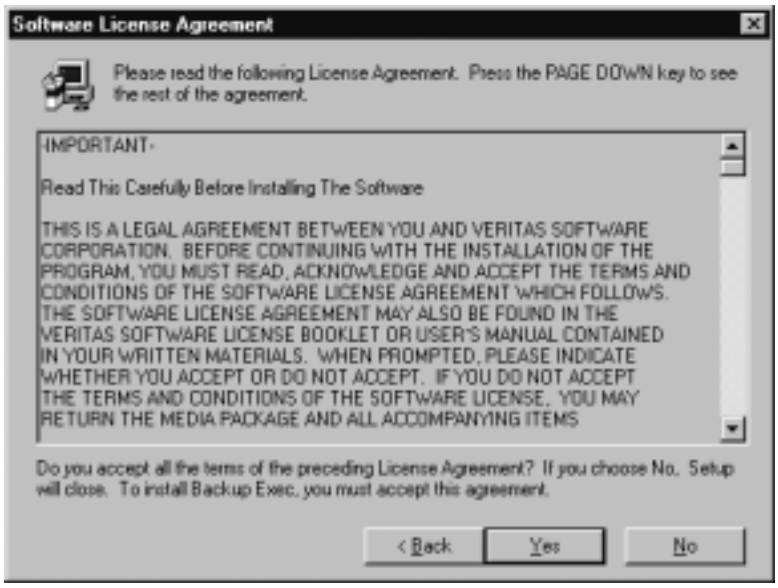
3. Expand Backup Exec for Windows NT/2000.

4. Select *Software Installation*. The Software Installation window displays.



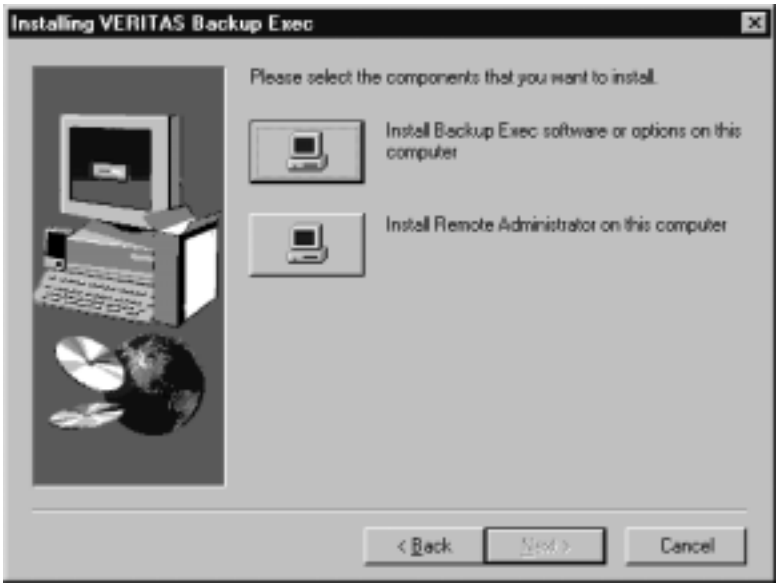
5. Click *Install*. The Welcome window displays.

6. Click *Next* to proceed with the installation. The Software License Agreement window displays.

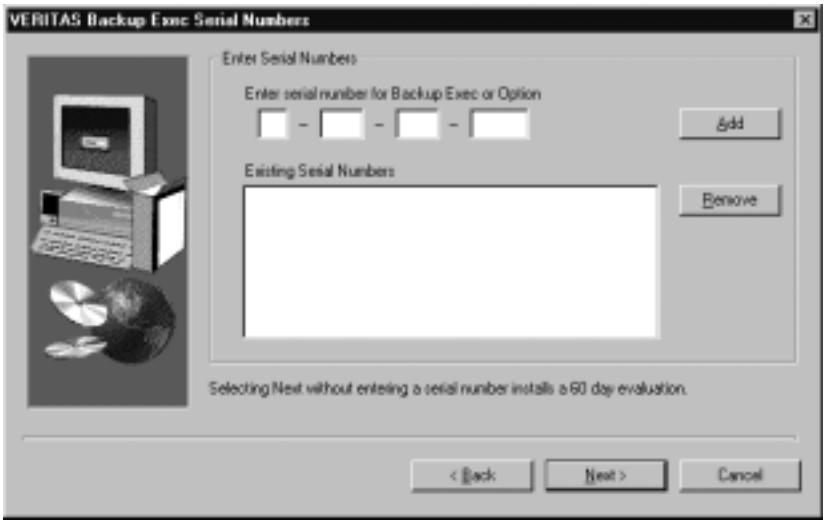


7. Click *Yes* to accept the terms of the agreement. The VERITAS Backup Exec Information window displays and provides information about the installation and its requirements.

8. After reading this information, click *Next*. The Installing VERITAS Backup Exec window displays.



9. Select the *Install Backup Exec Software or options on this computer* icon. The VERITAS Backup Exec Serial Numbers dialog box displays, requesting your serial numbers.

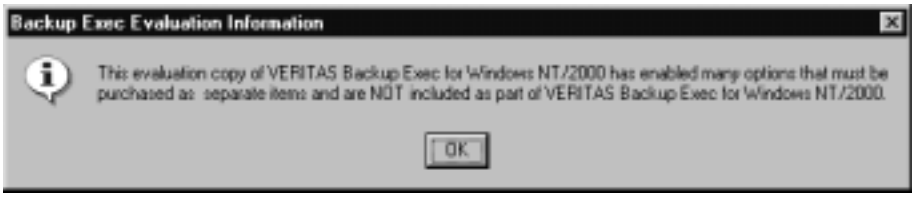


10. Enter the Backup Exec and the Shared Storage Option serial numbers, as well as the serial numbers for any other options being installed. (For training purposes, do not enter a serial number.) Click *Next*.

Note

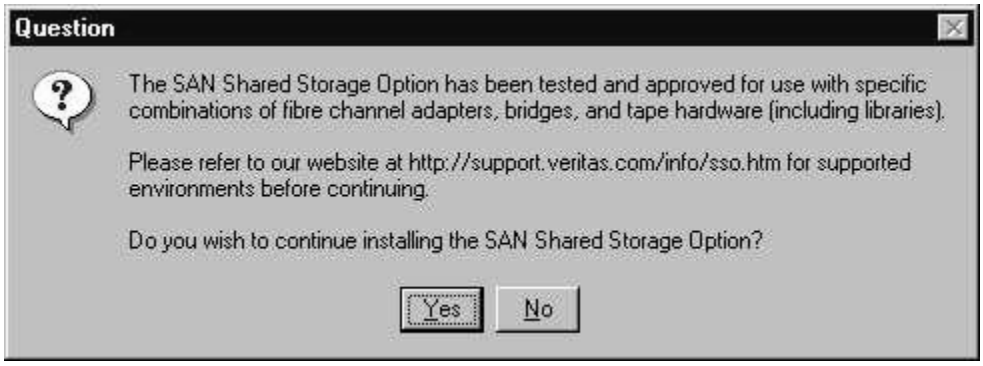
A serial number is not required for Backup Exec's fully functional evaluation version. However, if the Fibre Channel device drivers are not loaded, the Shared Storage Option will not display in the list of evaluation components. If installing the evaluation version, click *OK* when the evaluation message displays.

If choosing to use the evaluation version of the software, the following Backup Exec Evaluation Information window displays.



11. Click *OK*. The Backup Exec Install Options window displays.

12. Select *Backup Exec*, *Tape Device Drivers*, *Enable Autoloader Support*, and *SAN Shared Storage Option* and then click *Next***.** A Question dialog box displays.



13. Click *Yes*. The Start Copying Files dialog box displays.

14. Verify the options being installed and click *Next*.

    The installation program starts copying files.

During the file copy process, if Backup Exec is being installed for the first time, the Service Account dialog box displays. Enter the user name, domain (in the From field), and password for the Service Account information that will be used. (For training purposes, enter *Administrator* as the user with no password or the preexisting user name and password).

Note

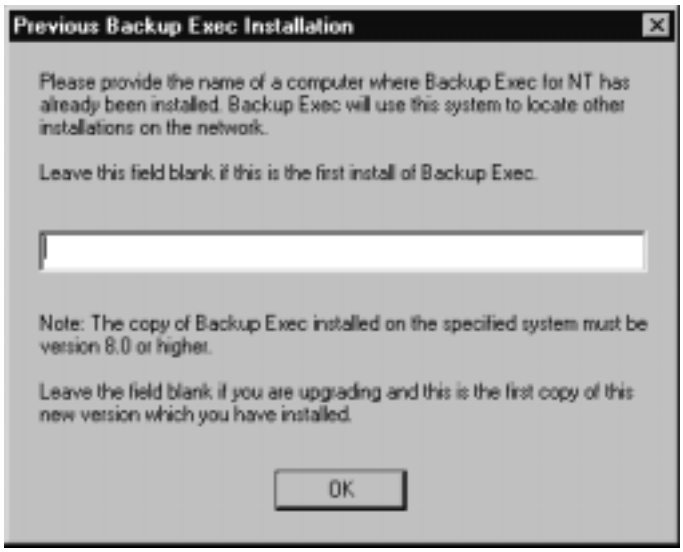
It is recommended that the same user name and password be used on all Backup Exec servers and that a workgroup (or the same domain) be used to minimize issues with Windows NT security.

Note

On all servers, log on to the local domain in the *From* field with *Administrator* as the user.

15. Click *OK*. The Rights Granted notification displays.

16. Click *OK*. The Previous Backup Exec Installation screen displays.

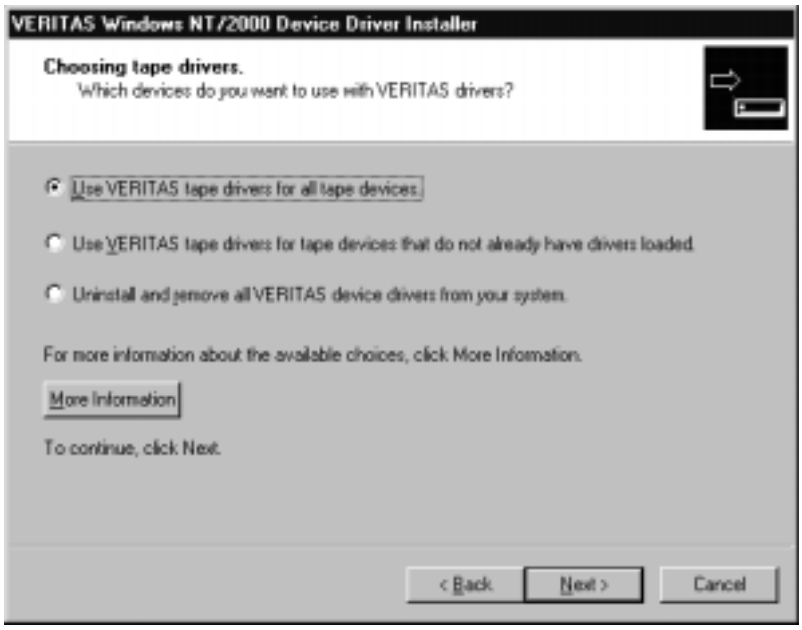


17. If this is the first installation on Backup Exec on your SAN, leave this field blank. Then click *OK*. If you have already installed Backup Exec on another Windows NT server on your SAN, enter the name of that server and click *OK*. The Installing Shared Storage Option window displays.

18. If you are installing on the server that will be the database server, select *Yes* and click *Next*. You will be prompted to enter the name of the share directory on the database server. The default of *bent* will work for the database server and for all regular Backup Exec servers.

19. Enter the name of the share directory or accept the default and click *Next*. The Windows 2000/NT Device Driver Installer window displays.

20. Click *Next*. The Choose Tape Drivers window displays.



21. Select *Use VERITAS tape drivers for all tape devices* and click *Next*. The Hardware scan window displays.

22. When the hardware scan is complete, click *Next*. The Installing VERITAS drivers window displays.

23. When drivers installation is complete, click *Next*. A window indicating the driver installation is complete displays.

24. Click *Finish*. The Program Group window displays.

25. Select *Private Program Group* to prohibit other accounts from accessing the Backup Exec client on this server, or select *Common Group* to allow other users to run the Backup Exec client from this server. For training purposes, select *Private Program Group* and click *Next*. When the installation completes, the Setup Complete screen displays.

26. Click *Yes, I want to restart my computer now* and then click *Finish*. Remove the CD from the drive. The system will restart.

> **Note**
> Restarting is necessary because the Autoloader option is also being installed and the system must restart to determine the hardware configuration. The server containing the shared database must be running before other Backup Exec servers can be installed properly.

27. Stop all Backup Exec services.
28. Extract the Backup Exec patch files from the cpq-dt3315.exe file.

    This file contains two patches for two issues that can be applied to Backup Exec for Windows NT v8.0 (build 3315).

    This patch contains the following files:

    - devtypes.dll: Contains recognition for Compaq Fibre Channel driver CPQKGPSA.SYS
    - bserver.exe: Fixes a problem where utility jobs may hang on large Fibre Channel configurations

> **Important**
> This patch should only be applied to Backup Exec for Windows NT/2000 v8.0 (build 3315)

29. Copy the files devtypes.dll and beserver.exe from the \<language> directory (created when the files were extracted) to the Backup Exec\NT program files directory. For example, for the English version of Backup Exec these files are located in the \Eng directory.
30. Respond *Yes* when prompted to overwrite the existing files.
31. Restart the server and log in.

> **Note**
> As an alternate to installing Backup Exec on a second Windows NT server, you may choose to install Backup Exec on a Novell NetWare server and share the tape library. The NetWare installation lab can be found in the appendix. You can only share the library in a Fibre Channel Arbitrated Loop environment.

> **Important**
> Complete the configuration lab before installing Backup Exec on the second server.

This completes the lab exercise.

Configuring Backup Exec for the SAN

Appendix B: Module 6 — Lab 2

Objective

After completing this module, you will be able to configure Backup Exec for EBS.

Requirements

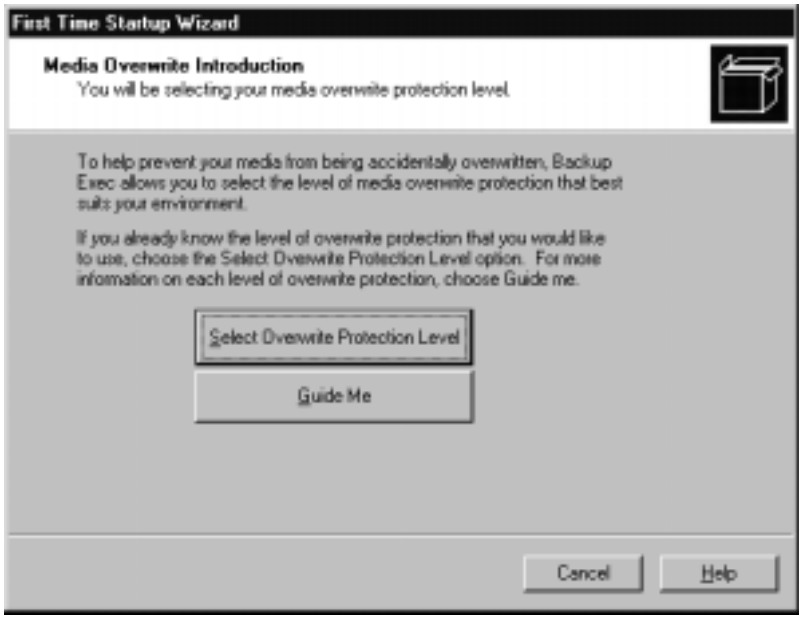
The requirements for this lab are the equipment used in the previous labs with the previous labs completed.

Procedure

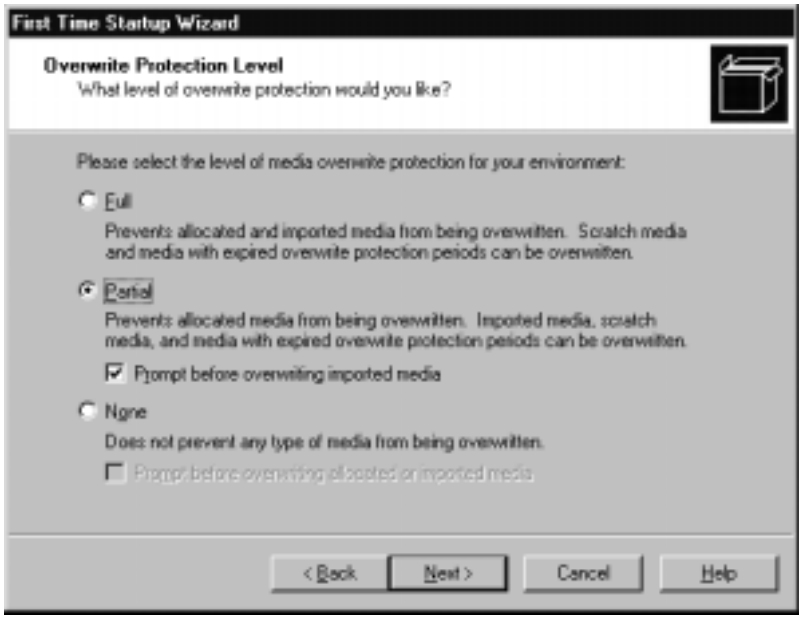
Run Configuration Wizards

1. Start Backup Exec by clicking *Start* → *Programs* → *VERITAS Backup Exec* → *VERITAS Backup Exec*. The First Time Startup Wizard displays.

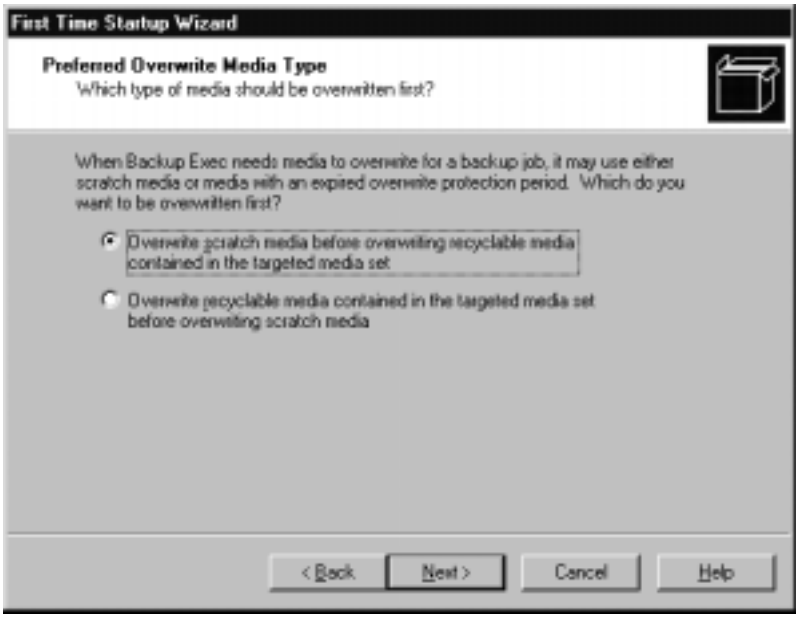
2. Click *Next*. The Media Overwrite Introduction window displays.



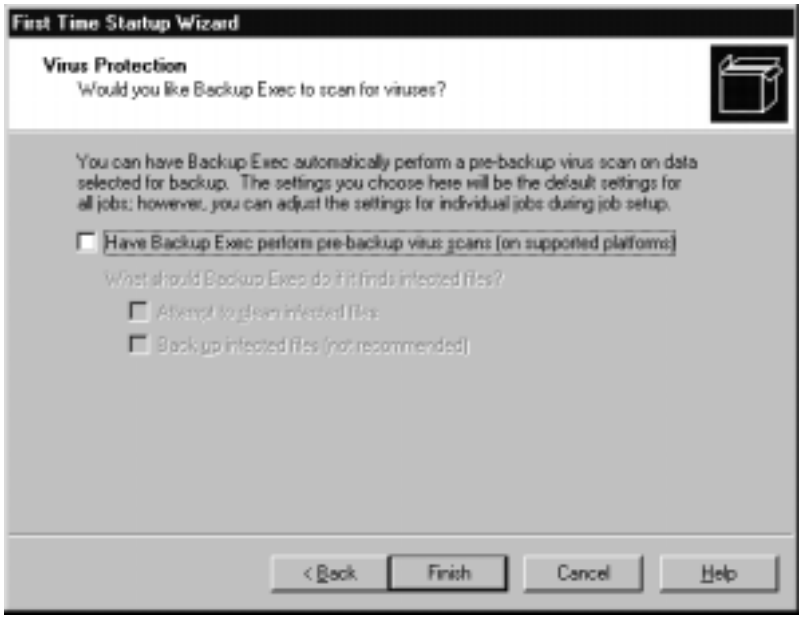
3. Click *Select Overwrite Protection Level*. The Overwrite Protection Level window displays.



4. Make sure *Partial* and *Prompt before overwriting imported media* are selected, then click *Next*. The Preferred Overwrite Media Type window displays.

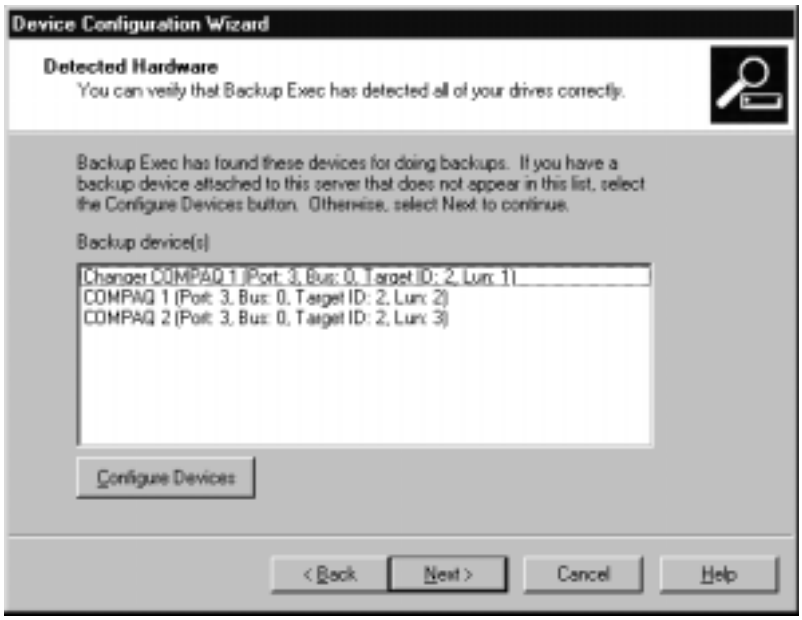


5. Make sure the *Overwrite scratch media* option is selected and click *Next*. The Virus Protection window displays.

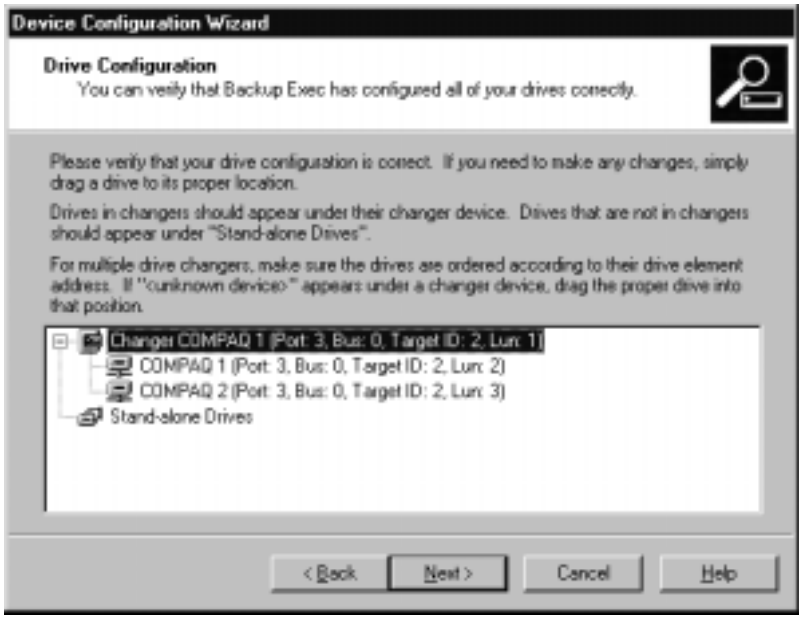


6. Click *Finish*. The Device Configuration Wizard window displays.

7. Click *Next*. The Detected Hardware window displays.

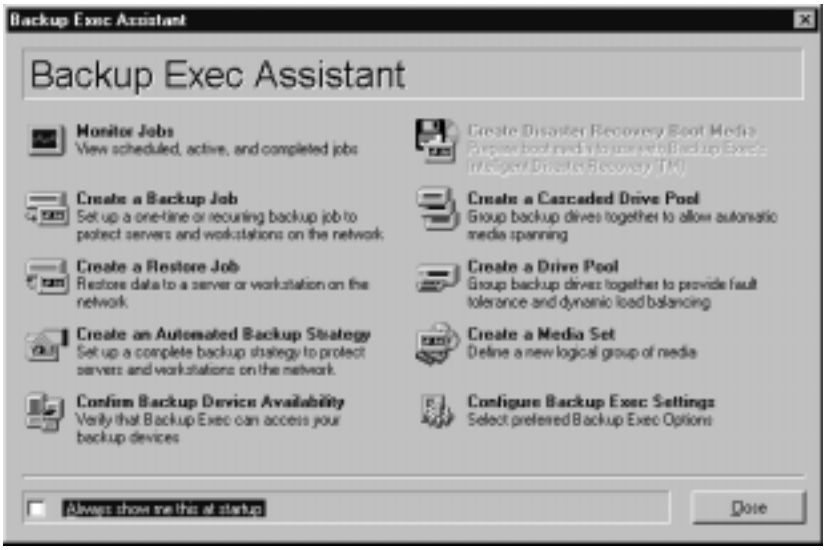


8. Click *Next*. The Drive Configuration window displays.



9. Click *Next*. The Device Configuration Complete window displays.

10. Click *Finish*. The Backup Exec Assistant displays.

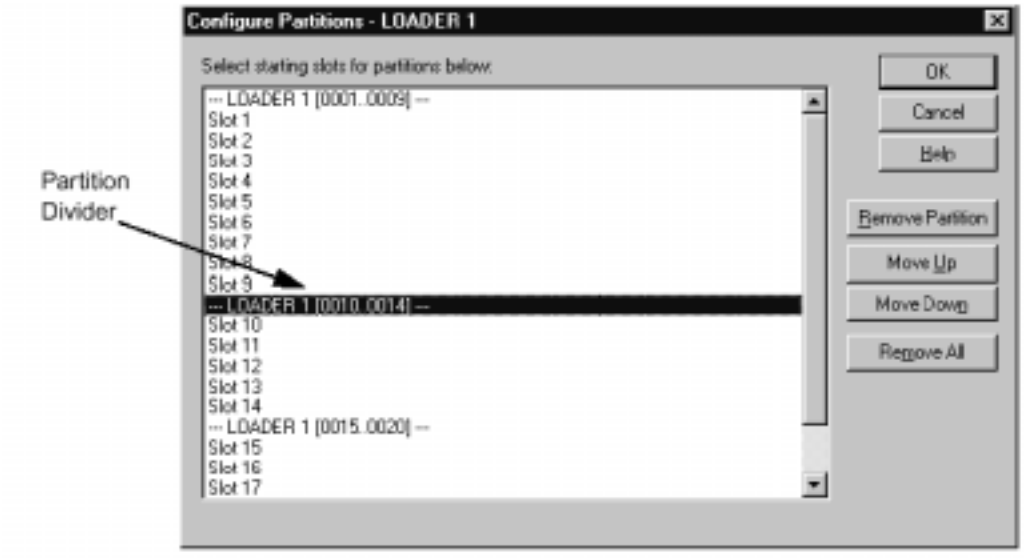


11. Deselect *Always show me this at startup* and click *Close*.

Partition the Library

> **Note**
> Only perform this part of the lab if you will be sharing the library between Windows NT/2000 and NetWare. When sharing the library, you specify the slots that each operating system will use since the tape are formatted differently for each operating system.

1. From the Devices tab, right-click the changer for the loader containing the slots that you want to partition and select *Configure Partitions*.



2. Select the loader slots to include in each partition by clicking the slots on which each new partition should begin. A partition divider listing the range of slots included in the partition is inserted wherever you click.

> **Note**
> Partitions can include any number of loader slots; however, the first partition cannot be moved or deleted until no other partition definitions exist.

3. Click *OK* after completing the configuration of your partitions. You will be prompted to confirm your selection.

   The partition drive pools appear under the Changer listing for the loader on which they were created. All partition drive pools for a changer have the same name and display the slot ranges for the partition in parentheses within the name.

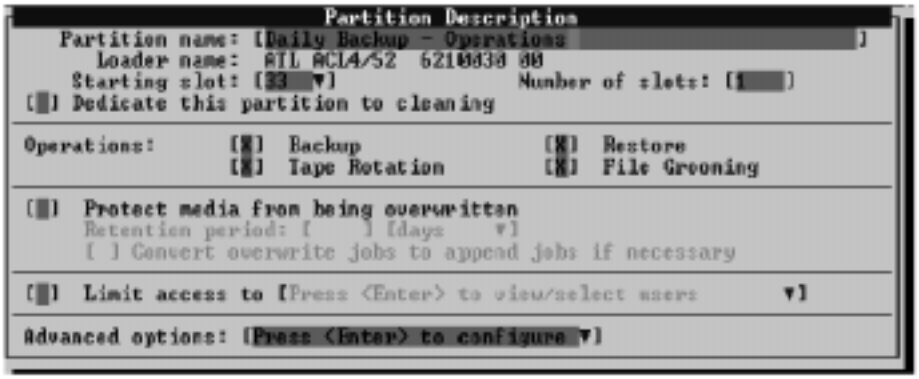
Procedure for NetWare

1. From the Job Manager screen, press <Ctrl + O> to access the Options menu.
2. Select *Options → Partition Management*. The Partition Management window displays.

3. Select *Define/Maintain Partition* and press Enter. The Define/Maintain Partition window displays.

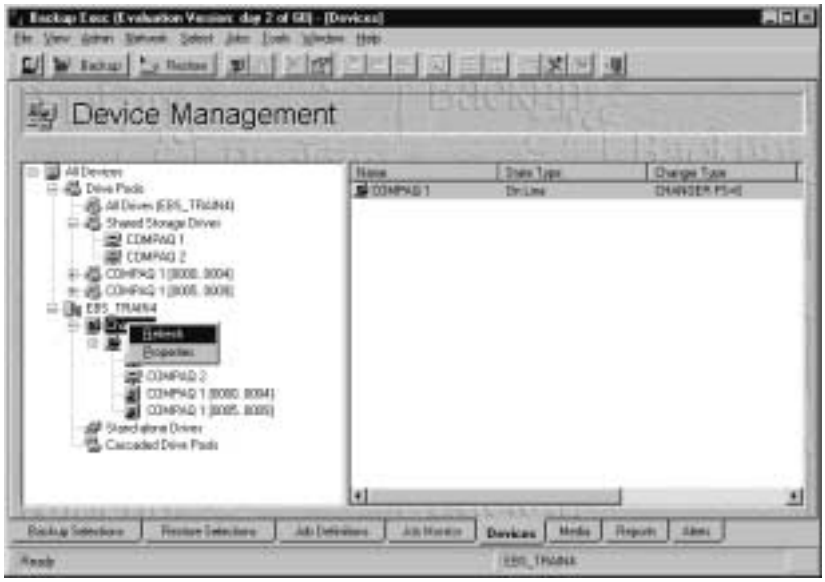
4. Press *Del* to delete existing partitions that you want to redefine. You may also want to edit existing loader partitions to update the number of slots to be used.
5. To create a new partition, press *Ins*. A screen listing the available loader(s) will appear.

6. Move the selection arrows next to a drive that you want to include in the partition and press *F2*. The Partition Description window displays.



Inventory the First Partition

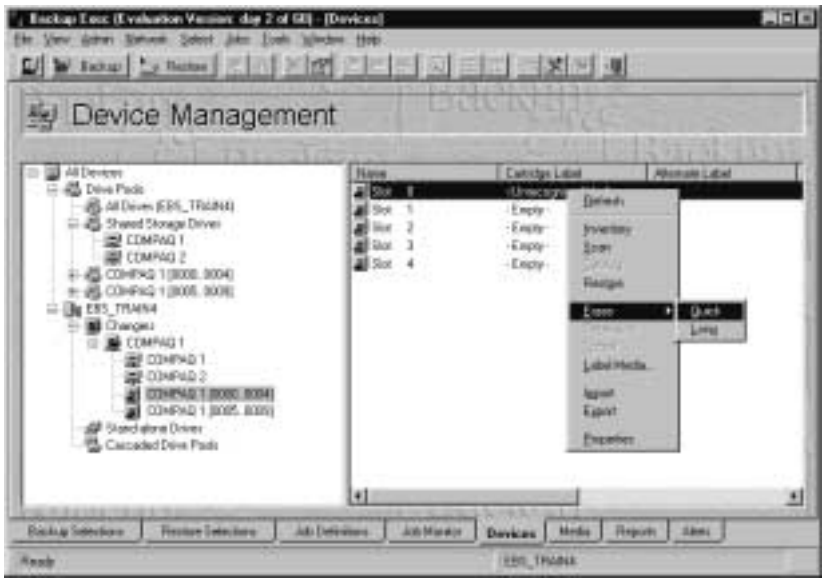
1. Exit the command prompt and return to Backup Exec.
2. Click the Devices tab.
3. Right-click Changers and select Refresh.



4. Right-click the first partition and click Inventory.

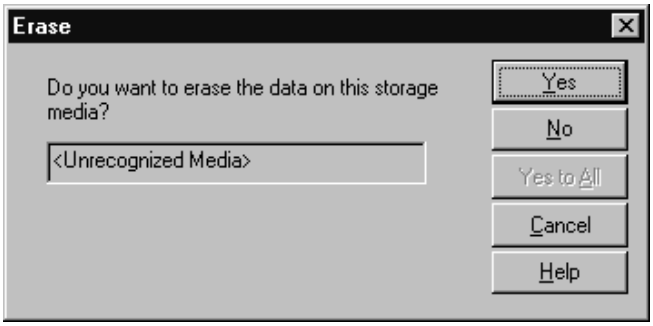
Erase the Tapes in the Partition

1. Right-click one of the tapes in the first partition and select Erase → Quick.



A warning message displays.

2. Read the warning message and click OK. A confirmation message displays.



3. Read the message and click Yes.
4. Wait for the tape to be erased.
5. Repeat steps 1 through 5 for the other tapes in the partition.

This completes the exercise.

Running a Simple Backup Job with Backup Exec

Appendix C: Module 6 — Lab 3

Objective

After completing this module, you will be able to run a simple backup using Backup Exec software.

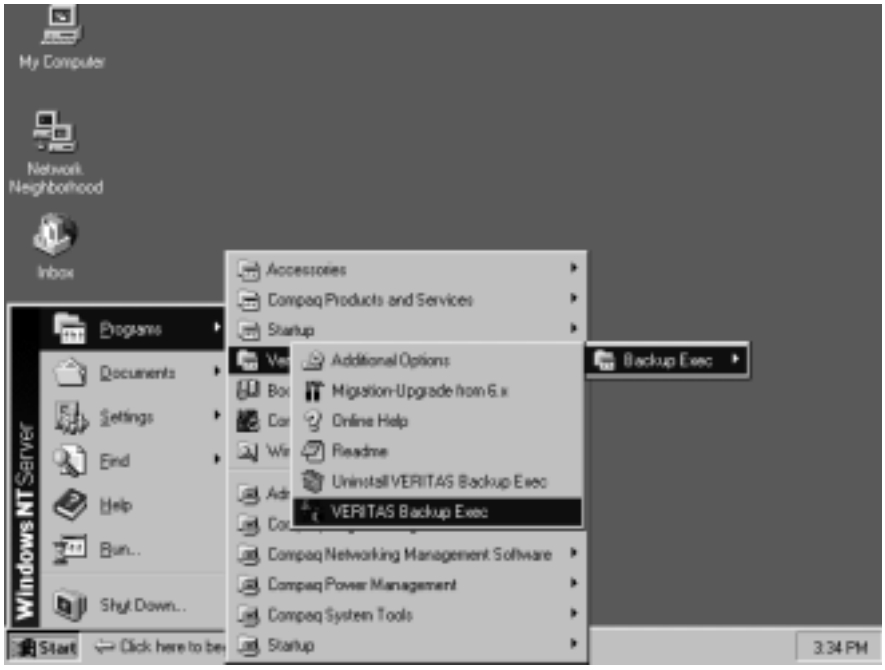
Requirements

The requirements for this lab are the equipment used in the previous labs with the previous labs completed.

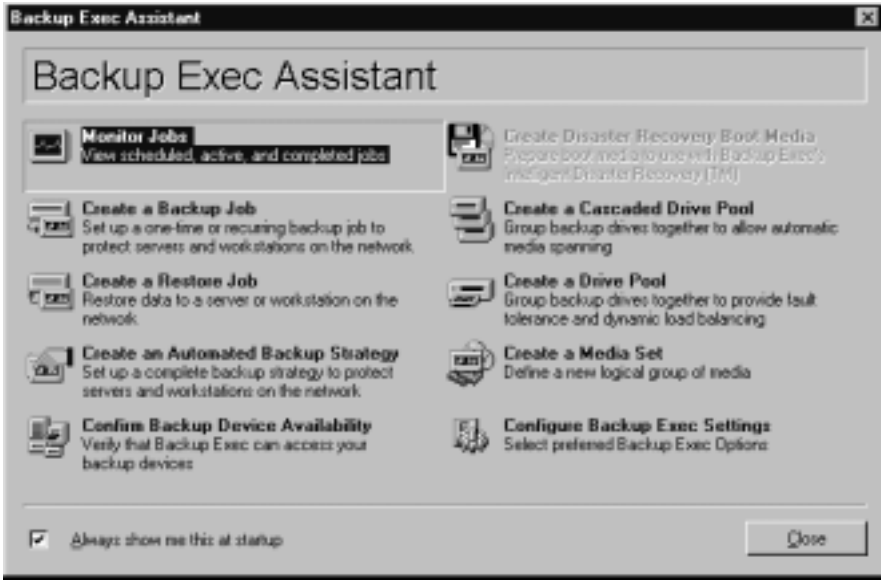
Procedure

Using Backup Exec on Windows NT

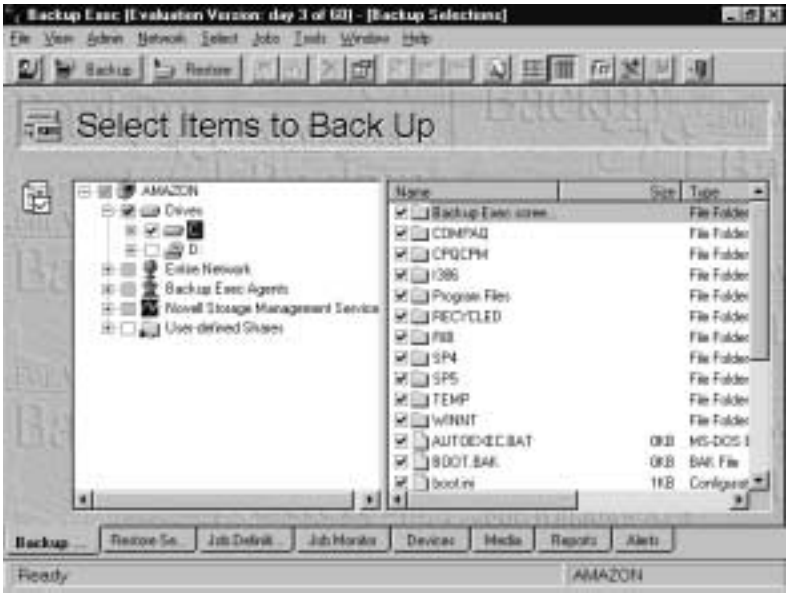
1. Start Backup Exec by clicking *Start* → *Programs* → *Veritas* → *Backup Exec* → *VERITAS Backup Exec*.



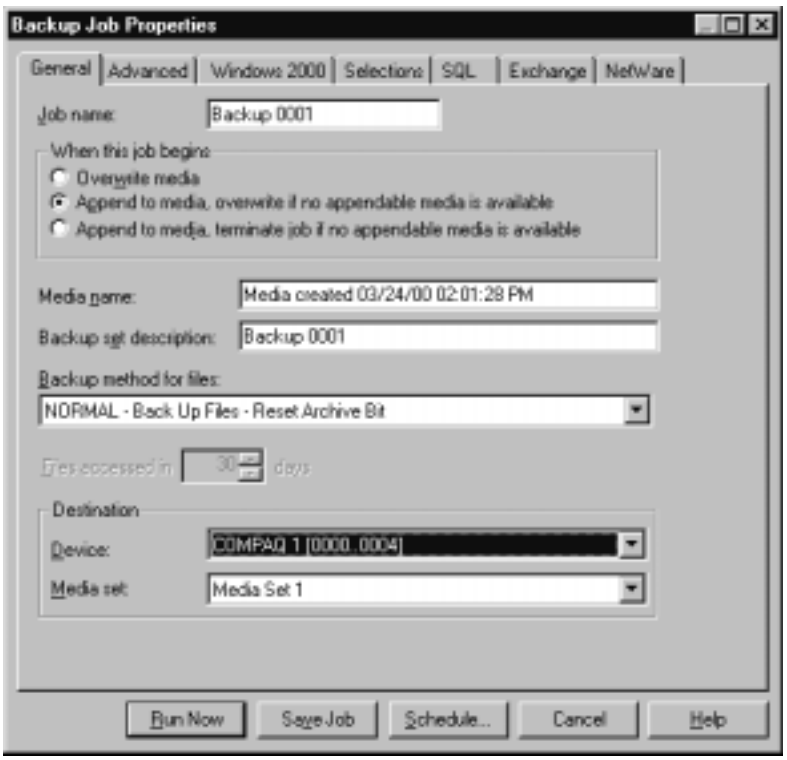
2. The VERITAS splash screen will display, followed by the Backup Exec Assistant screen.



3. Click the *Backup Selections* tab at the bottom of the screen. Select a few files and/or directories by checking the boxes next to the data to be backed up.



4. Click the *Backup* button from the toolbar. The Backup dialog box displays.



5. Provide the information on the General tab, which must be provided for every backup:

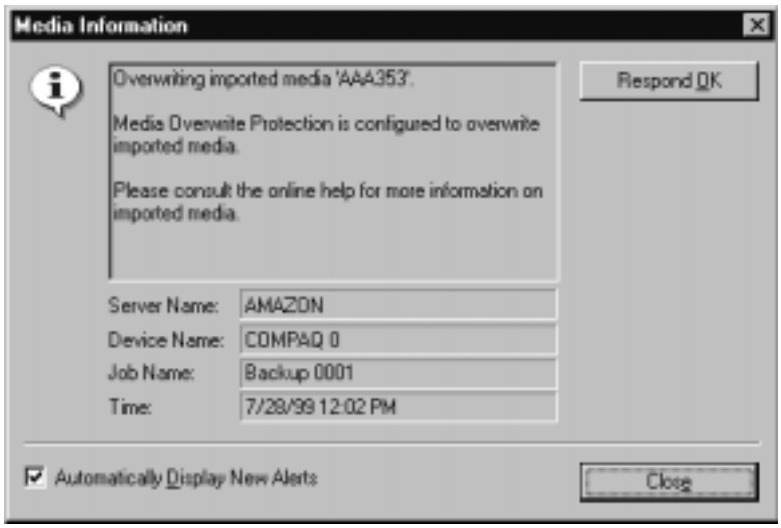
- **Job Name** — Enter a name (up to 25 characters) that describes the device or data that you are backing up. This name is used to differentiate backups in Backup Exec.
- **When this job begins**
  - **Overwrite media** — Select this option to place this backup on overwritable media. Ensure that appropriate media is in the stand-alone drive or drive pool you select in the Device field. The media in the drive is overwritten if the media is scratch (unwritten) or recyclable (its overwrite protection period has expired). If allocated or imported media is in the drive, it also might be overwritten, depending on the Media Overwrite Protection Level. If the media in the drive is not overwritable, a message is displayed requesting that you insert scratch media.
  - **Append to media, overwrite if no appendable media is available** — Select this option to append this backup to the media set listed in the Destination/Media Set fields. The backup set is appended if appendable media is available in the selected media set. If not, overwritable media is used and added to the media set.
  - **Append to media, terminate job if no appendable media is available** — Select this option to append this backup to the media set listed in the Destination/Media Set fields. The backup set is appended if appendable media is available in the selected media set; if not, the job is terminated.
- **Media Name** — Specify a label for the new or overwritable media.
- **Backup Set Description** — Enter a description of the contents you are backing up.
- **Backup Method for Files** — Select a backup method.
- **Destination**
  - **Device** — Select a drive pool or stand-alone drive to be used for processing the backup. Ensure that appropriate media (overwritable or appendable) is in the stand-alone drive or drive pool you select. If the media in the drive is not overwritable or appendable, a message is displayed requesting that you insert scratch media.
  - **Media Set** — Select the media set for the backup. If you selected *Append to media*, this backup is added to other backups on media belonging to this media set.

! **Important**
For this exercise, select the first partition created in the earlier lab in the Device field.

6. After entering the information for your backup, click *Run Now*.

7. To monitor the operation while it is processing, click the *Job Monitoring* tab at the bottom. (It should be blue in color.) Then double-click the job you want to view. The Active Job screen will display.

8. It is likely that Backup Exec will display a media information screen with a description of the media you will be overwriting. Close this screen.



Using Backup Exec on NetWare

1. Copy a few files and directories from the Windows NT server to the SYS volume of your NetWare server.
2. From the NetWare server, switch to the Backup Exec – NetWare Client screen.
3. Select *Commands* → *Backup* → *Make Selections*.
4. Select *NetWare File System* and press *Enter* twice.
5. Log in as your admin user.
6. Select the SYS volume and press *Enter*.
7. Select a few files and directories by highlighting them and pressing the spacebar.
8. Press <F2> to accept the selections.
9. Select *Submit* and press *Enter*.
10. Enter a job name and select *Quick check*.
11. Select *Target Partition* and press *Enter*.
12. Select *Partition 1* (the second partition made for the library) and press *Enter*.
13. Press <F2> to accept your selections.
14. Enter a backup set name and press *Enter*.
15. Press any key to continue.
16. Wait for the job to finish, then delete one or more of the directories and files you backed up.
17. Return to the Backup Exec – NetWare Client screen on the NetWare server.
18. Select Commands → Restore → Make Selections by Device.
19. Press Enter until your backup set displays.
20. Select your backup set and press Enter.
21. Select some of the files you deleted and press the spacebar.
22. Press <F2> to accept the selections.
23. Select Submit and press Enter.
24. Press <F2> to accept the default locations.
25. Enter a job name and press <F2>.
26. Press any key to continue.

This completes this lab.

Installing CA ARCserve 2000 for Windows NT

Appendix D: Module 6 — Lab 1

Objective

After completing this module, you will be able to install and configure ARCserve 2000 and the Enterprise Library Option for Microsoft Windows NT.

Requirements

- Windows NT 4.0 with Service Pack 6.
- For the shared database server, 300MB of free hard disk space and 128MB RAM are recommended.
- For other servers on the loop, 25MB of free hard disk space is required and 64MB RAM is recommended.

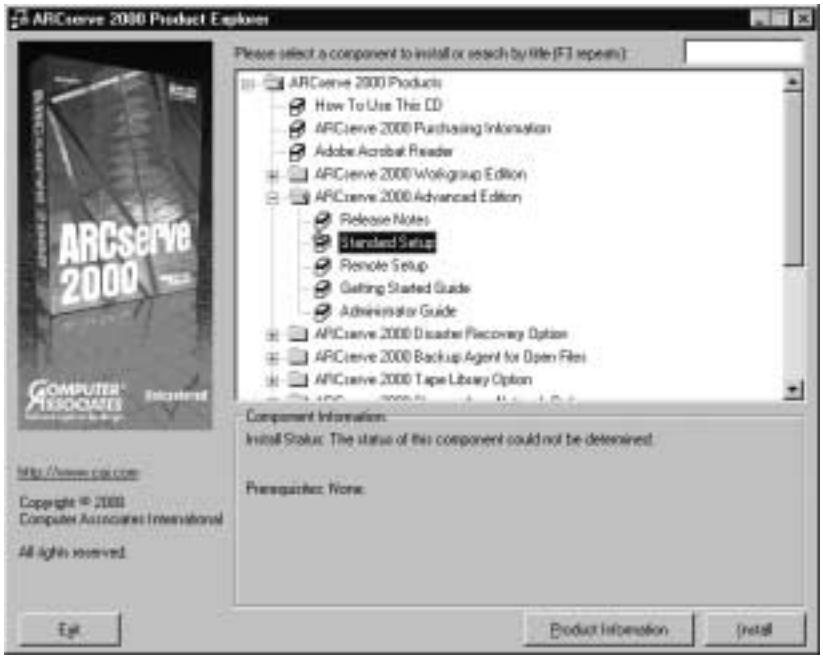
Before You Install

For a Fibre Channel connected installation, additional requirements include:

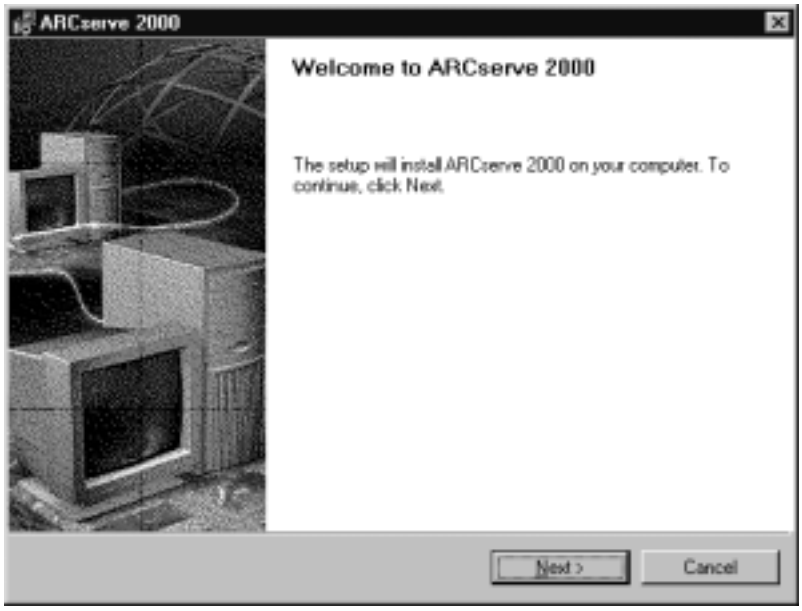
- A Fibre Channel host bus adapter (HBA) and its device drivers must be installed.
- For ARCserve 2000 to automatically configure the library hardware and properly associate the tape drives with the library, the Fibre Channel HBA must be connected to recognize all the secondary storage devices. For the adapter to do this, the following requirements must be met:
    - The storage hub must be connected to all the Fibre-to-SCSI bridges on the loop.
    - All the tape libraries must be connected to the bridges.
    - The storage hub and all tape libraries must be powered up before powering up the bridges.
    - The bridges must be powered up before Windows NT 4.0 loads the Fibre Channel driver (usually during the restart phase).

Procedure

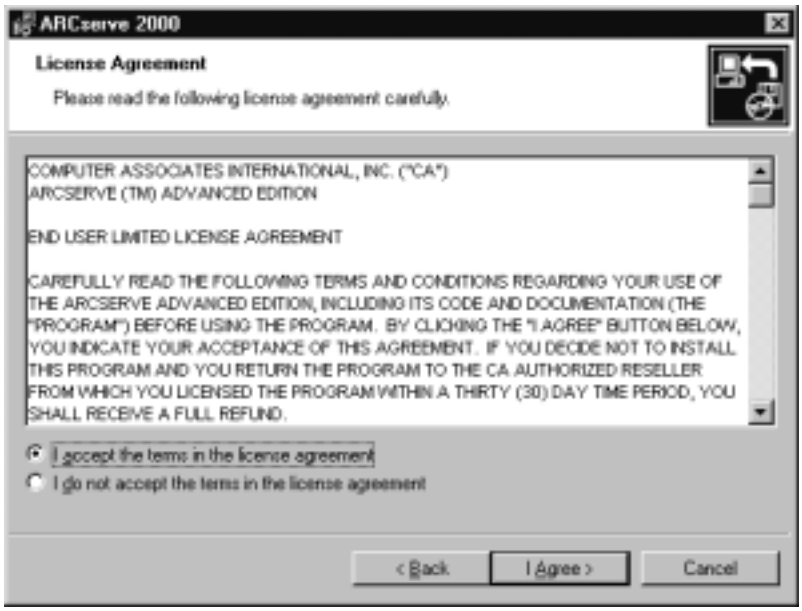
1. Insert the CD into the CD-ROM drive and wait for the autorun option to display the Product Explorer.



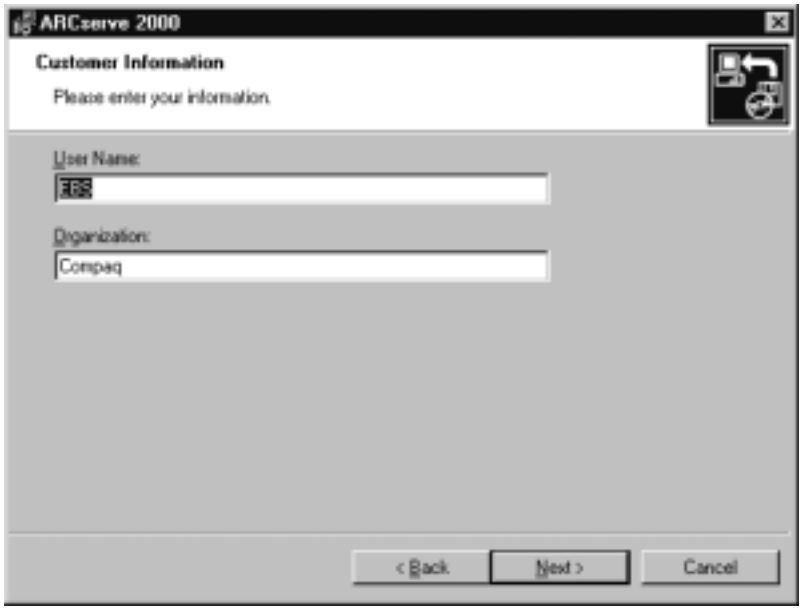
2. Expand *ARCserve 2000 Advanced Edition* and double-click *Standard Setup*. The Welcome screen displays.



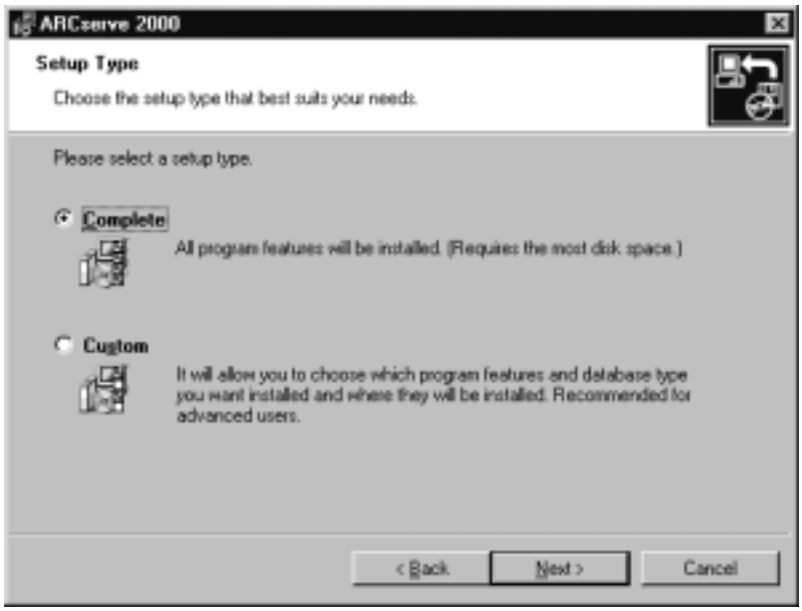
3. Click *Next*. The Software License Agreement window displays.



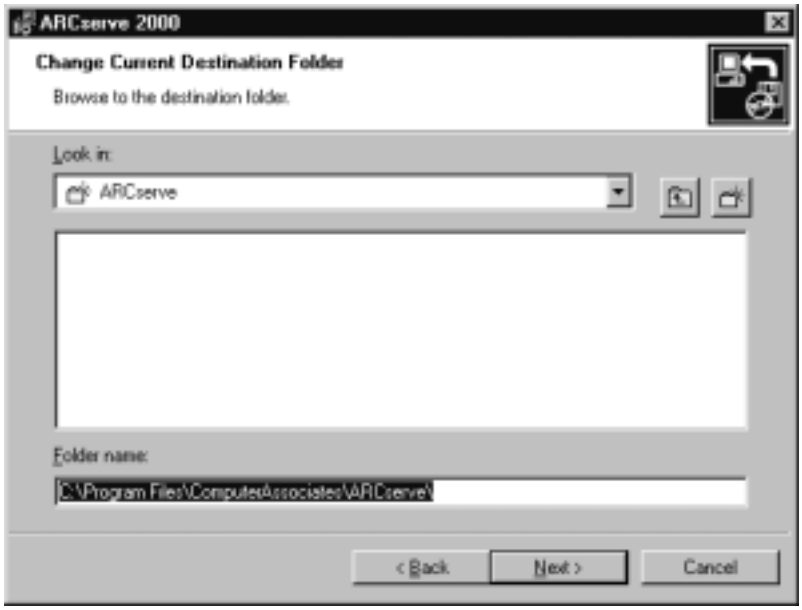
4. Select *I accept the terms in the license agreement* and click *I Agree*. The Customer Information window displays.



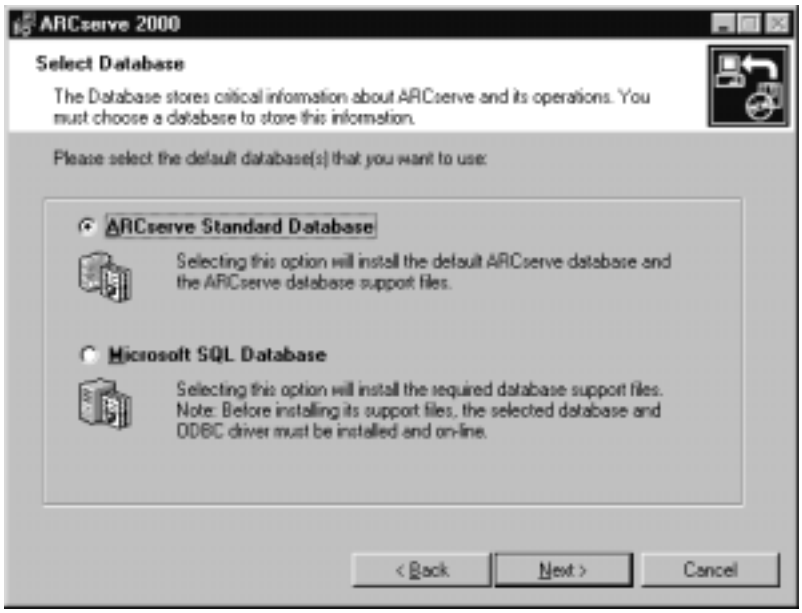
5. Leave the default values and click *Next*. The Setup Type window displays.



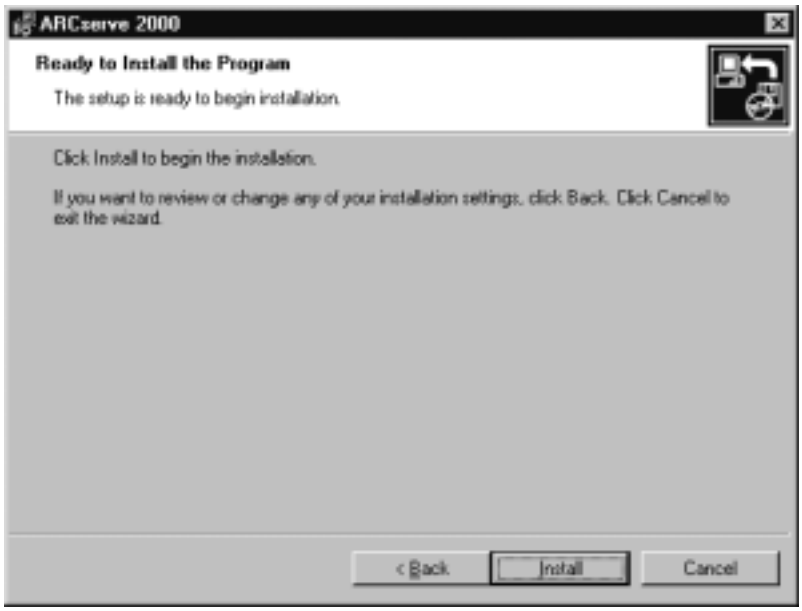
6. Make sure Complete is selected and click *Next*. The Change Current Destination window displays.



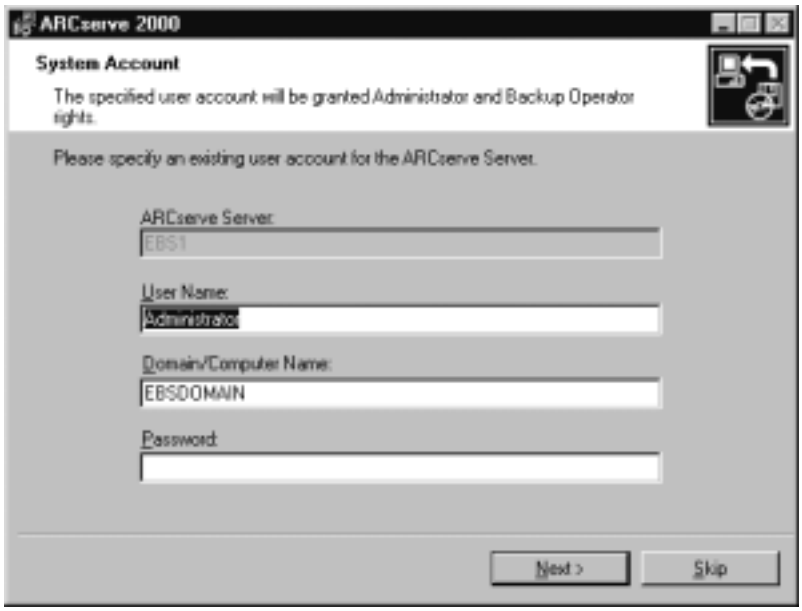
7. Keep the default directory and click *Next*. The Select Database window displays.



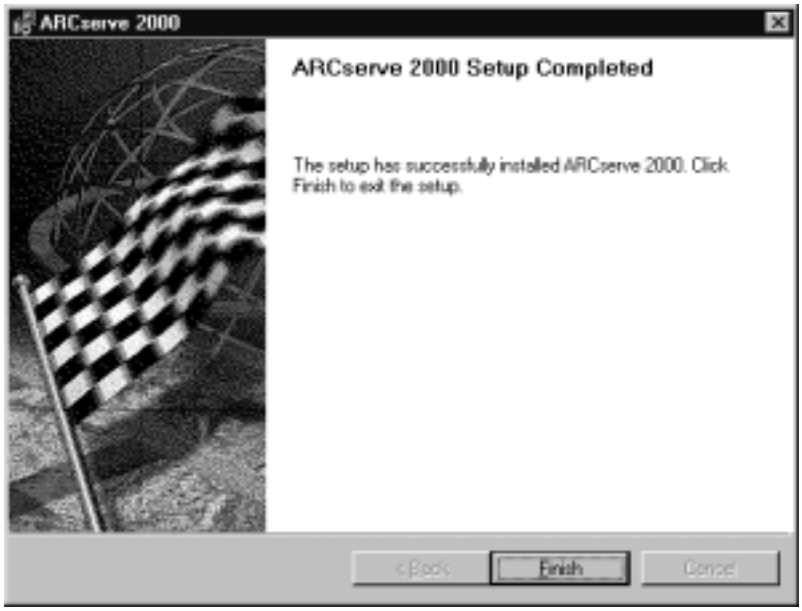
8. Make sure *ARCserve Standard Database* is selected and click *Next*. The Ready to Install window displays.



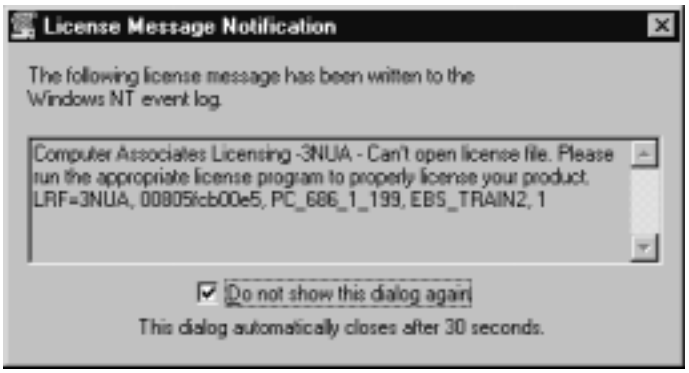
9. Click *Install*. A File in Use window may display. If it does, close the applications listed and click *Retry*. When the files are finished being copied the System Account window displays.



10. Enter the information for your Administrator account and click *Next*. The Setup Completed window displays.



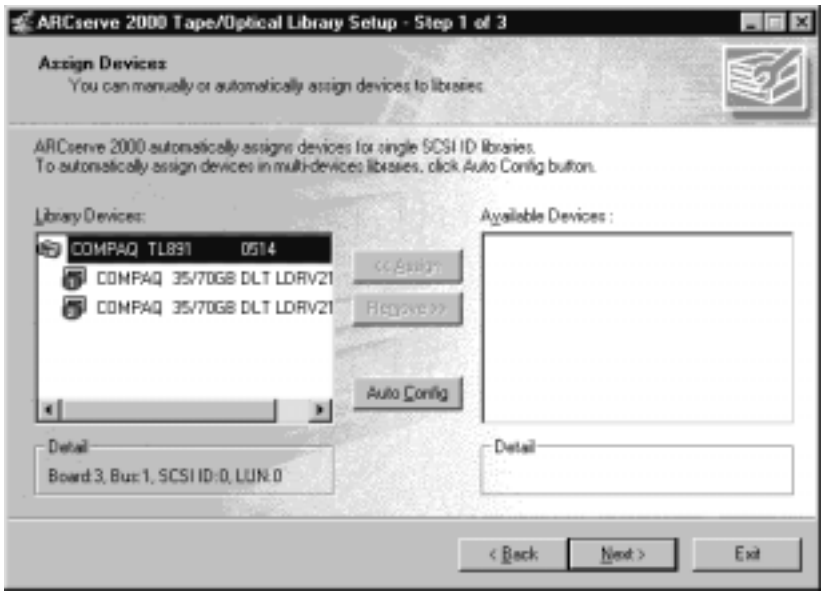
11. Click Finish.
12. Click Yes to restrt the server and log in. A licensing message displays.



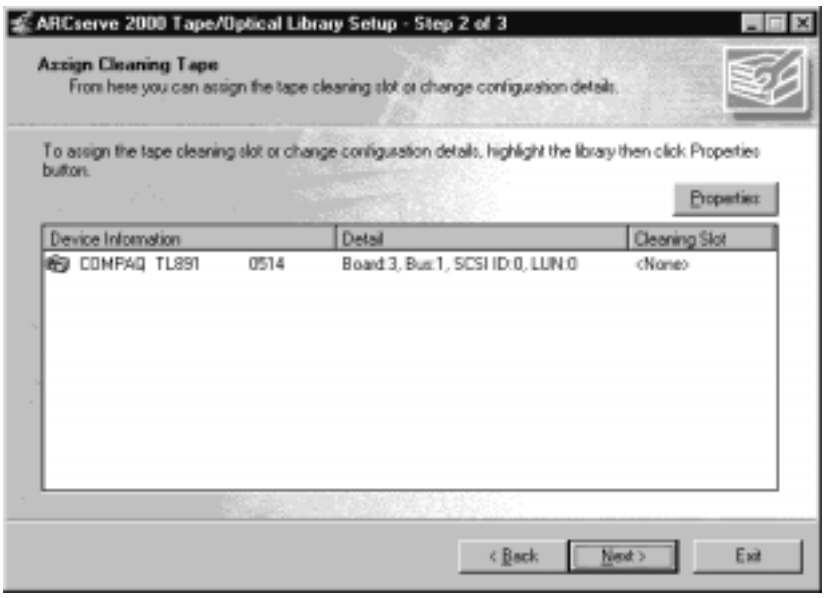
Note
A serial number is not required for ARCserveIT's fully functional evaluation version.

13. Select *Do not show this dialog again*.
14. Insert the ARCserve 2000 CD and wait for the Product Explorer window to display.

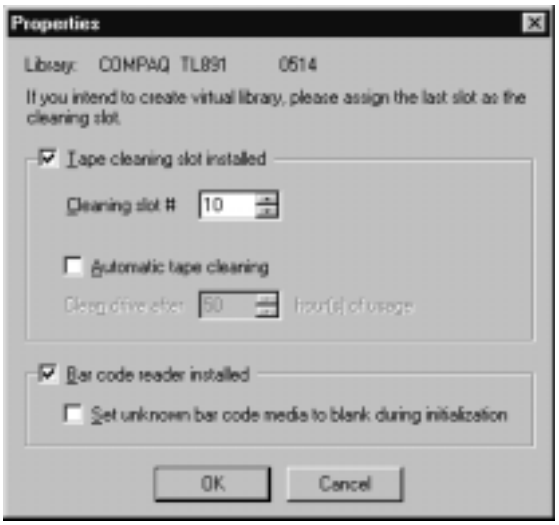
15. Expand *ARCserve 2000 Tape Library Option* and double-click *Standard Setup*. The Welcome window displays.
16. Click *Next*. The License window displays.
17. Select *I accept the terms in the license agreement* and click *I Agree*. The Customer Information window displays.
18. Click *Next*. The Ready to Install window displays.
19. Click *Install*.
20. Wait for the Setup Complete window to display and click *Finish*. The Assign Devices window displays.



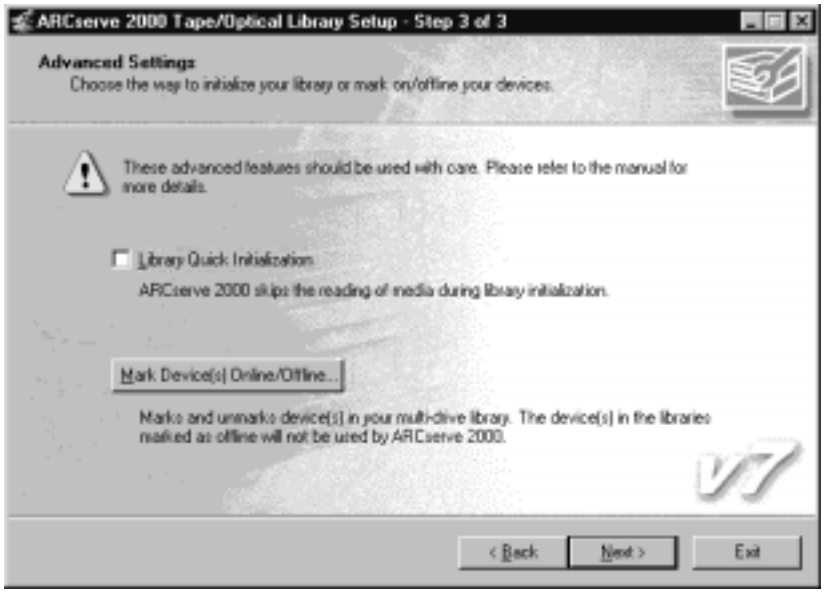
21. Click *Next*. The Assign Cleaning Tape window displays.



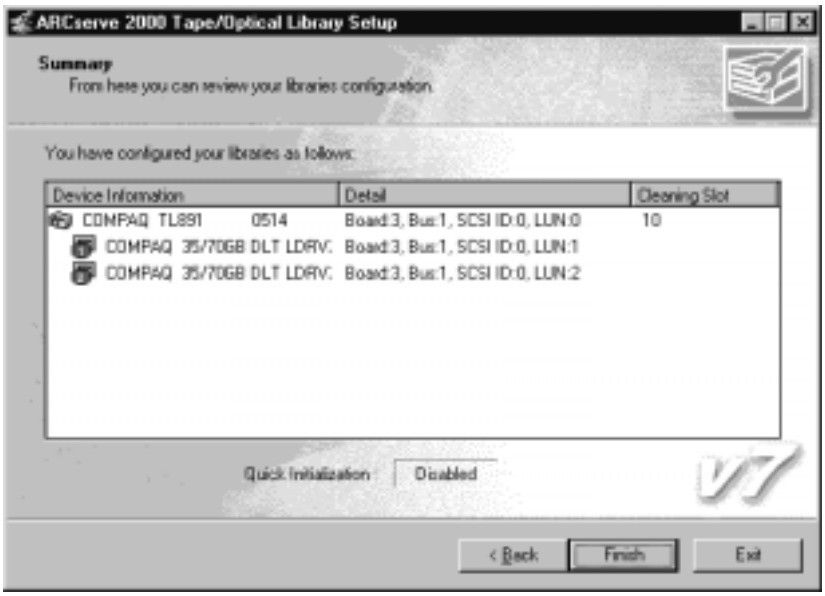
22. Select the library and click *Properties*. The Properties window displays.



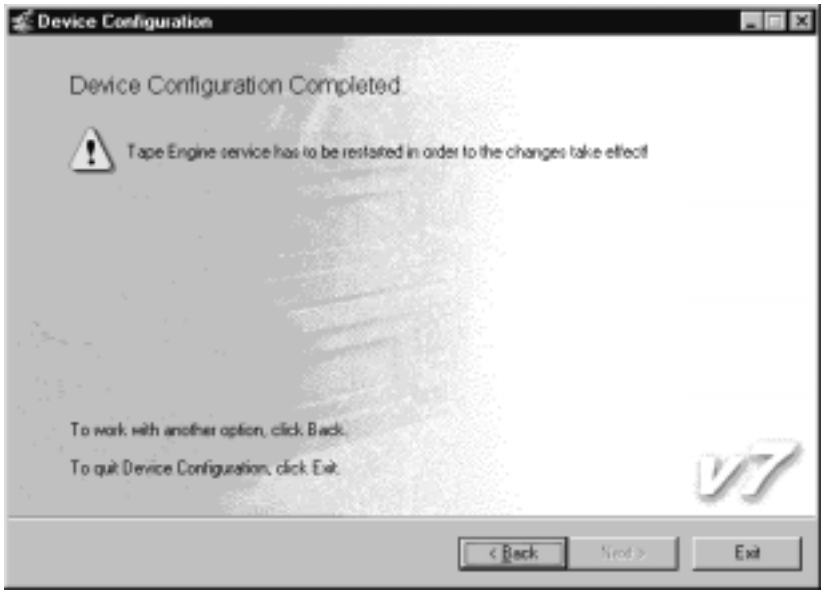
23. Select *Tape cleaning slot installed* and enter the number where the cleaning tape is located.
24. Select *Bar code reader installed* and click *OK*.
25. Click *Next*. The Advanced Settings window displays.



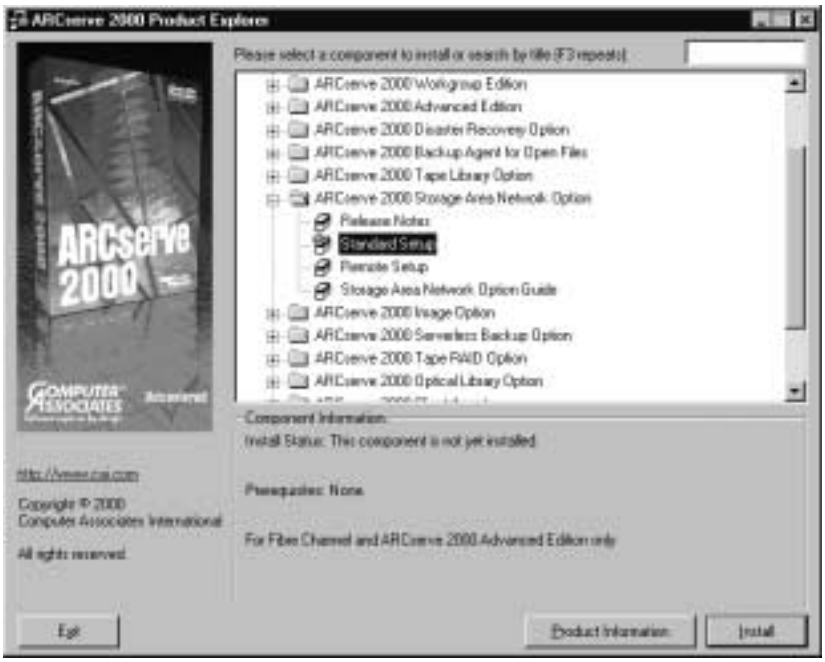
26. Do not select any options. Click *Next*. The Summary window displays.



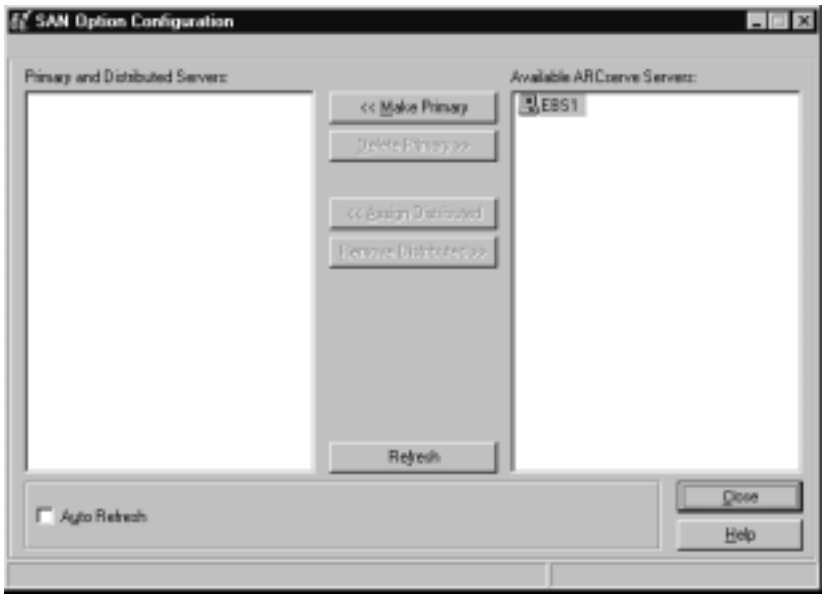
27. Click *Finish*. The Device Configuration Complete window displays.



28. Click *Exit*. The Product Explorer window displays.



29. Expand *Storage Area Network Option* and double-click *Standard Setup*. The Welcome screen displays.
30. Click *Next*. The License agreement window displays.
31. Select *I accept the terms in the license agreement* and click *I Agree*. The Customer Information window displays.
32. Click *Next*. The Ready to Install window displays.
33. Click *Install* and wait for the installation to complete.
34. Click *Finish*. The SAN Option Configuration window displays.



35. If this is the first server on your SAN, select the server in the Available ARCserveIT Servers field and click *Make Primary*. **Do not** close this window. If this is the second ARCserve server, click the second server's name in the Available ARCserveIT Servers field and click *Assign Distributed*. (You can change the "primary" and "secondary" status of all servers from any of the participating servers console if proper communication exist between the servers.)
36. Log in. If you are installing the second server, return to the second server's console to continue if you are not currently at the second server's console.
37. Return to the Product Explorer and exit.
38. Exit Setup Launcher.
39. Repeat the exercise for the second server.
40. When both servers have been installed, restart the servers and log in. Make sure the Primary server (first server installed) fully loads and you are logged in before starting the second server.

Running a Simple Backup Job with ARCserve 2000

Appendix E: Module 6 — Lab 2

Objective

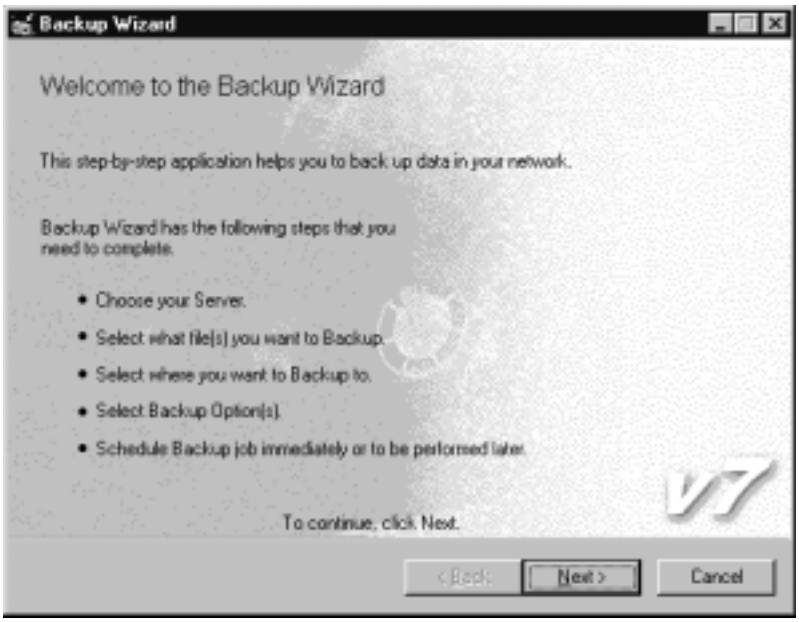
After completing this module, you will be able to run a simple backup using ARCserve 2000 software.

Requirements

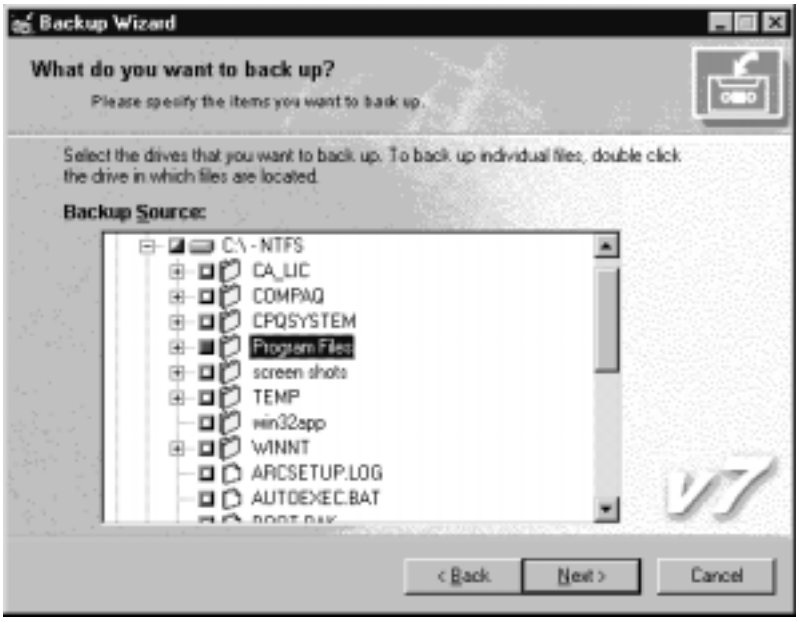
The requirements for this lab are the equipment used in the previous labs with the previous labs completed.

Procedure

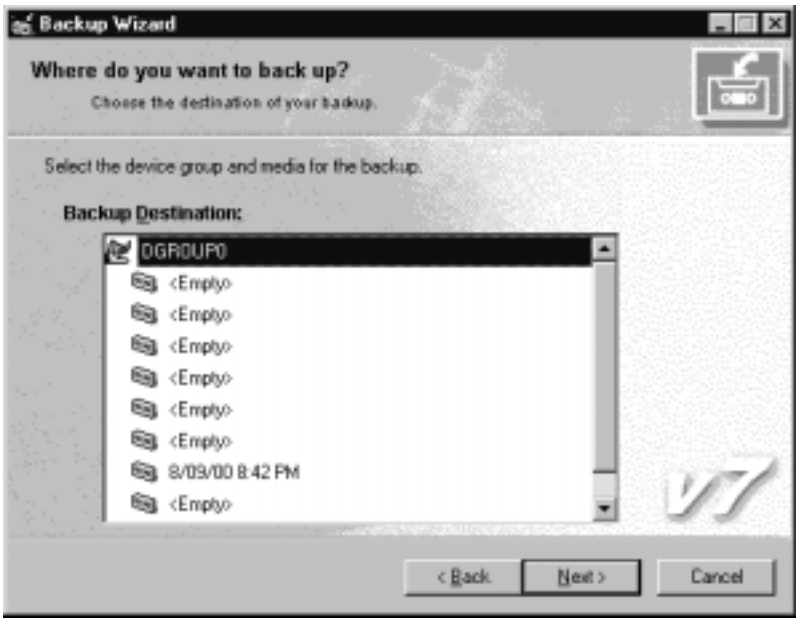
1. From the ARCserve Manager, click *Backup Wizard*. The Backup Wizard window displays.



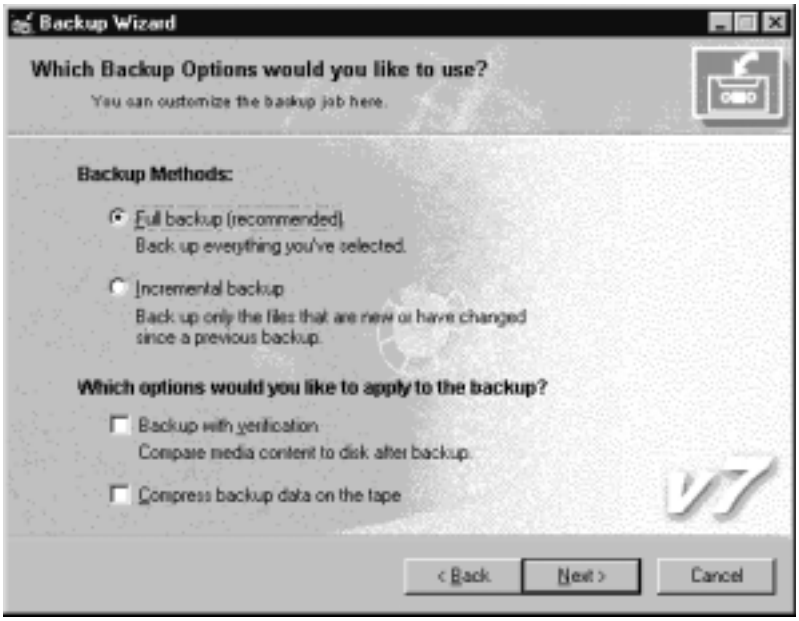
2. Click *Next*. The What server do you want to back up? window displays.
3. Select your server and click *Next*. The What do you want to back up? window displays.



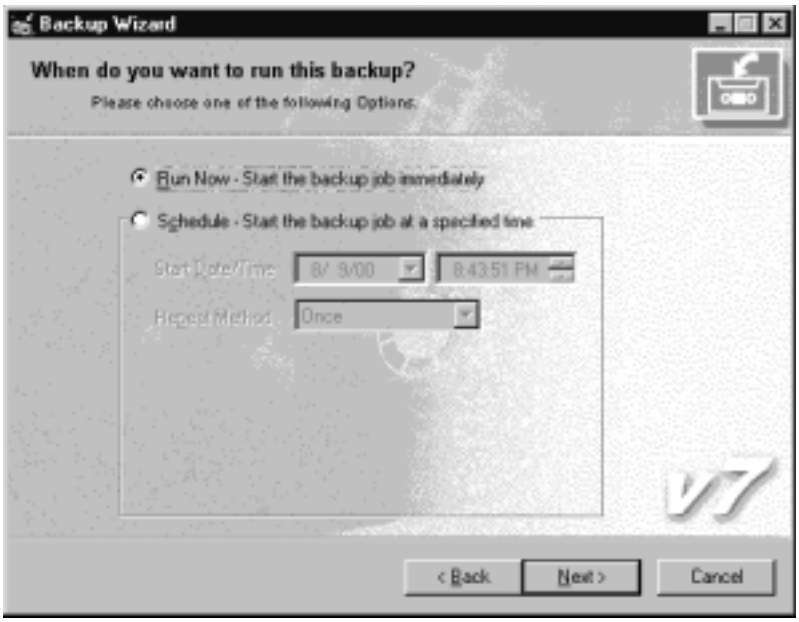
4. Select a few files and/or directories and click *Next*. The Where do you want to back up? window displays.



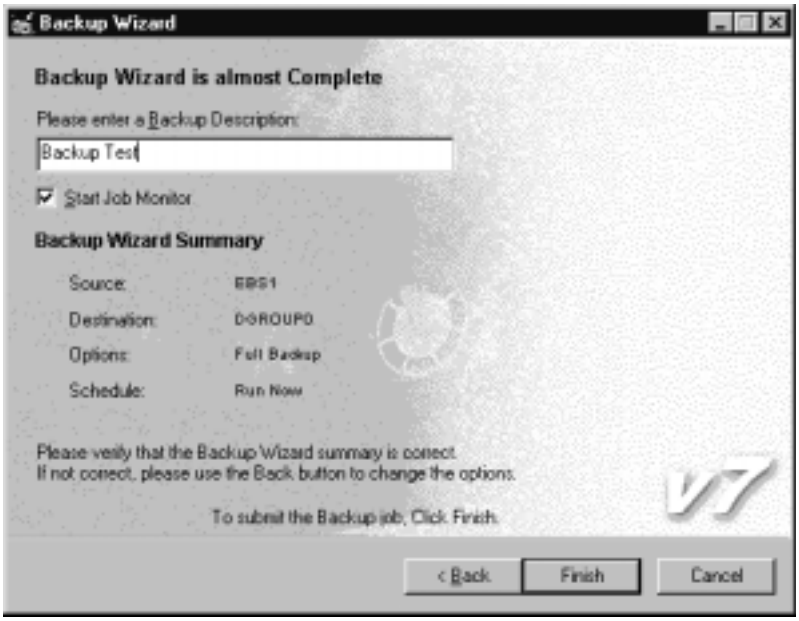
5. Click *Next*. The Which Backup Options would you like to use? window displays.



6. Keep the default values and click *Next*. The When do you want to run this backup? window displays.



7. Make sure *Run Now* is selected and click *Next*. The Backup Wizard is almost Complete window displays.



8. Enter a name for the backup and click *Finish*. The Job Monitor window displays.

9. When the Operation successful window displays, click *OK* and close the Job Monitor.
10. Immediately repeat steps 1 through 9 for the second server.

Performing a Serverless Backup with ARCserve 2000 Advanced Edition

Appendix F: Module 6 — Lab 3

Objective

After completing this module, you should be able to perform a Serverless backup using BrightStor ARCserve 2000 Advanced Edition with the Serverless Option.

Requirements

- Backup/Database Server with:
  - Windows 2000 with Service Pack 2 minimum (for large LUN support).
  - 128MB RAM
  - BrightStor ARCserve 2000 Advanced Edition installed
  - Tape Library, Storage Area Network, Image and Serverless Backup Options installed
- HSG80 Storage Subsystem with:
  - Clone of mirrorset presented to Backup/Database Server created with SANworks Enterprise Volume Manager
- HP StorageWorks M2402 Network Storage Router
- Latest patches from http://www.cai.com for ARCserve 2000

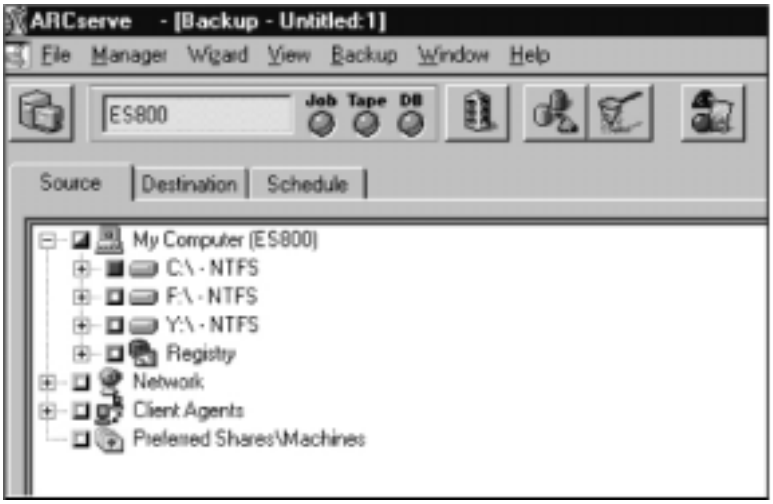
Procedure

! **Important**
Be sure to have applied the latest patches from http://www.cai.com for ARCserve 2000.

To perform a Serverless backup, it is necessary to first enable Serverless support. This can be done through the Image/Serverless Wizard or directly in ARCserve Manager.

Note: You can only perform a serverless backup on a machine where both ARCserve and the Serverless Backup option are installed.

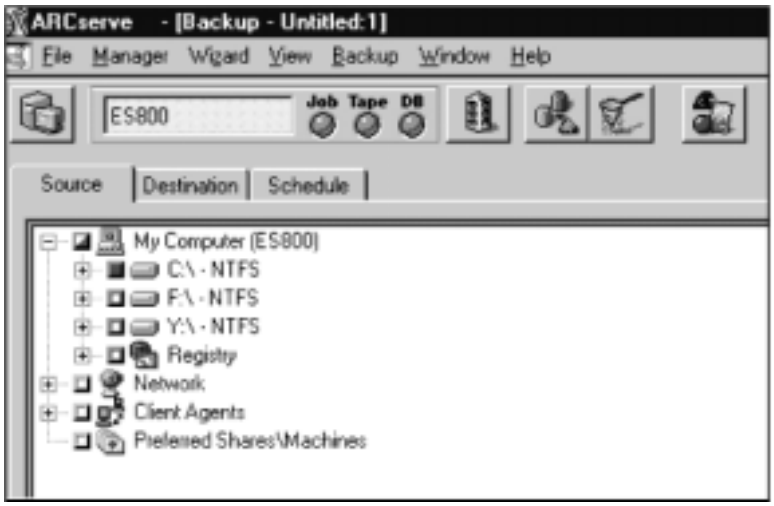
1. In the Visual Manager Interface of the Network Storage Router, be sure that under *System* > *Active Fabric*, the setting for Server Free Backup Mode is set to *Enabled*.
2. Launch ARCserve Manager.
3. Click the *Backup* link. The *Backup Manager* dialog appears:



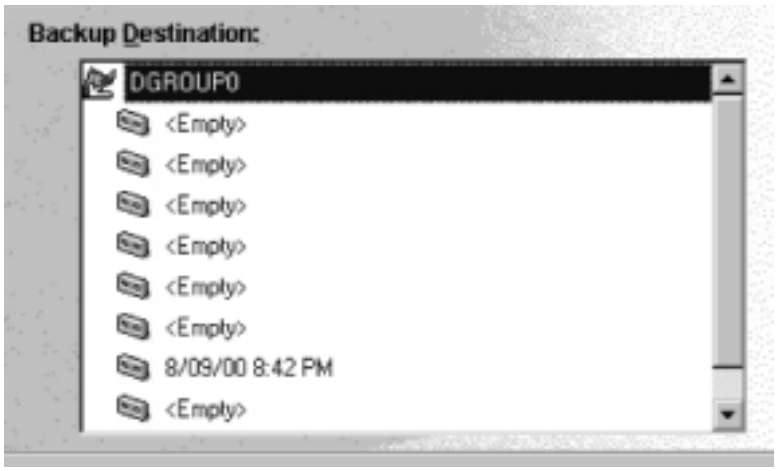
4. Click the Image/Serverless Wizard button on the ARCserve toolbar. The Image/Serverless Wizard dialog appears:

5. Click the *Enable the following selected drives only* radio button and select the clone you created with EVM. Click *Next.* The *Image/Serverless Backup Wizard – Options* dialog appears:

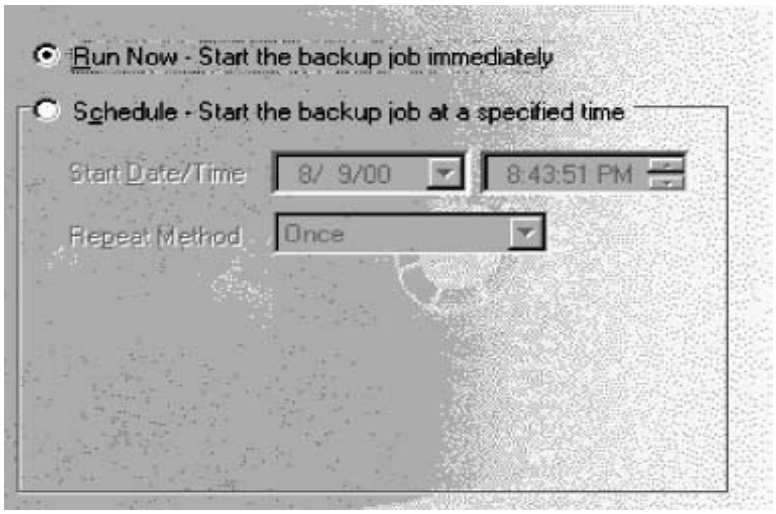
6. Leave the default selections as is and click *Finish*. The *Backup Manager* dialog is displayed again:



7. In the *Source* window, select *only* the cloned drive by clicking the radio button next to the disk.
8. Click the *Destination* tab and select the media group to backup to.



9. Click the *Schedule* tab and select the *Run Now* radio button to scheule the job to start immediately.



10. Click the *Traffic Light* Icon in the Backup Manager window to start the backup.
11. In the Job Properties dialog, it will indicate that the Serverless Backup option has been used by displaying “Serverless Backup” in the Drive field.

- This completes the serverless backup lab.

Installing Legato NetWorker 6.0.1 for Windows NT

Appendix G: Module 6 — Lab 1

Objective

After completing this module, you will be able to install and configure NetWorker for Microsoft Windows NT.

Requirements

- Windows NT 4.0 with Service Pack 6
- 64MB RAM
- 44MB free disk space for NetWorker software
- Enough free disk space to allow for 5% of total backup data (allow for up to 3 times the index size during software update conversion)

Before You Install

NetWorker for Windows NT supports the Microsoft Autorun technology. Autorun automates part of the NetWorker installation process. Because of differences in web browser capabilities, Autorun can either bring up a Welcome screen (if you are using Microsoft Internet Explorer 3.0x or later) or start the installation program (if you are using Netscape). The type of installation is determined by which browsers are installed and which one is the default.

If the Autorun feature on your computer has been disabled, you can start the installation through Windows Explorer. Right-click the CD-ROM drive icon and select “Install NetWorker” from the pop-up menu.

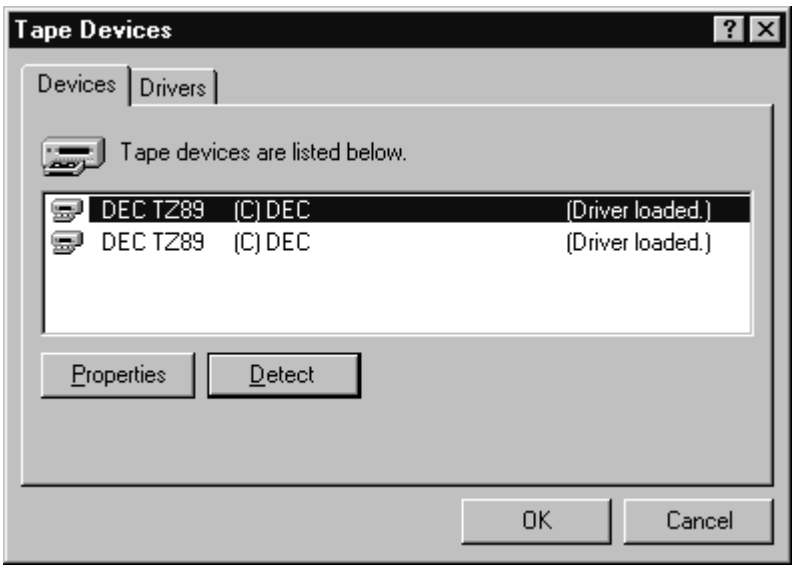
You can also start the installation program manually from your NetWorker CD-ROM if, for example, Internet Explorer has been disabled on your computer.

In this lab, we will use the Autorun feature to install NetWorker.

Procedure

Installing the Client and Server

1. Edit the hosts file from the C:\winnt\system32\drivers\etc subdirectory and enter the ip addresses and hostnames of your two servers. (In the pictures, the two hostnames are pdc.domain and bdc.domain)

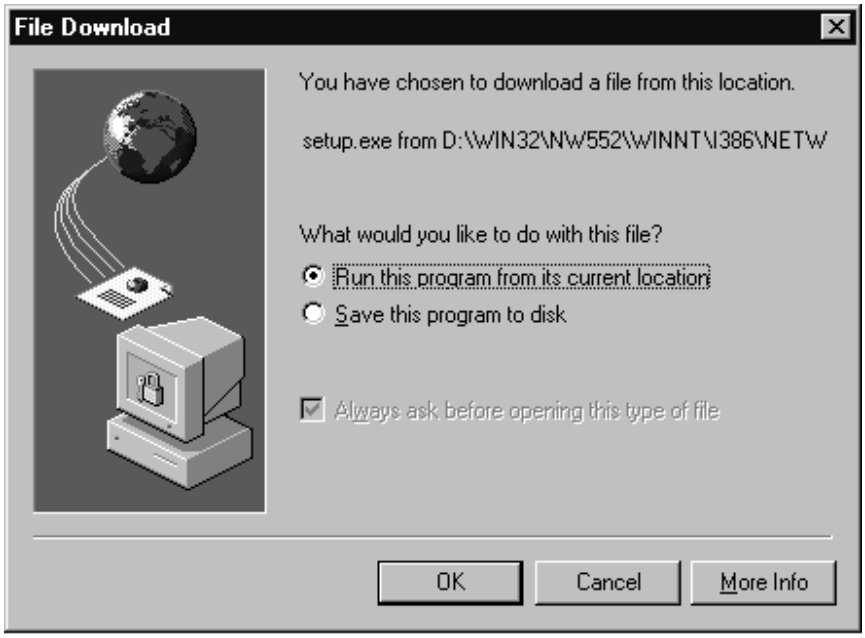


2. Make sure that under Control Panel > Tape, the tape device drivers are loaded. If not, then load the native NT tape driver for your tape library by clicking on *Detect* under the Devices tab and then *Add* under the Drivers tab.

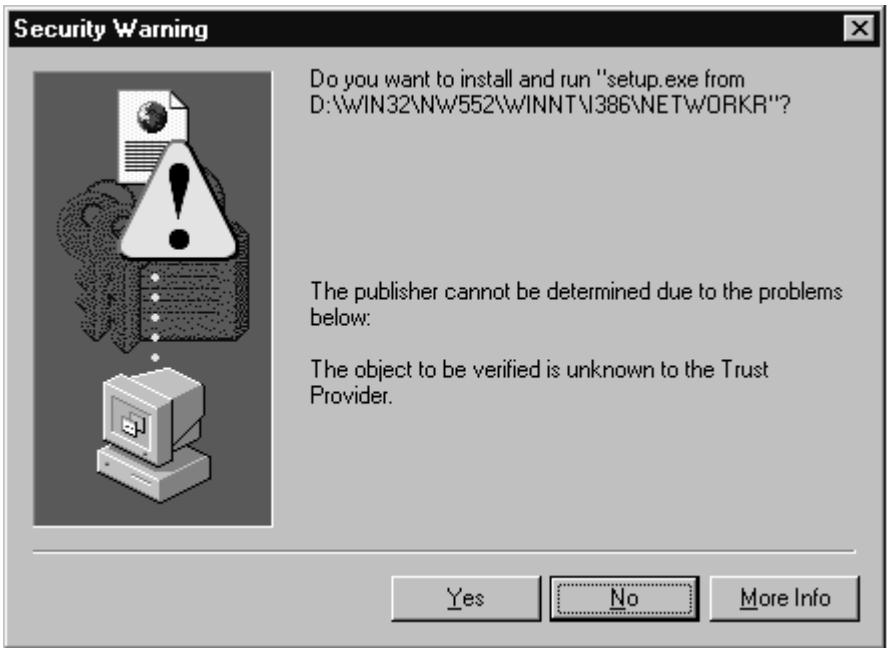
3. Insert the NetWorker Servers, Clients, & Storage Nodes CD into the CD-ROM drive and wait for the autorun option to display the menu.

   Use explorer to run the file off the server.
   E:\LEGATO\WIN32\NW57\WINNT\I386\AUTORUN\AUTORUN.HTML

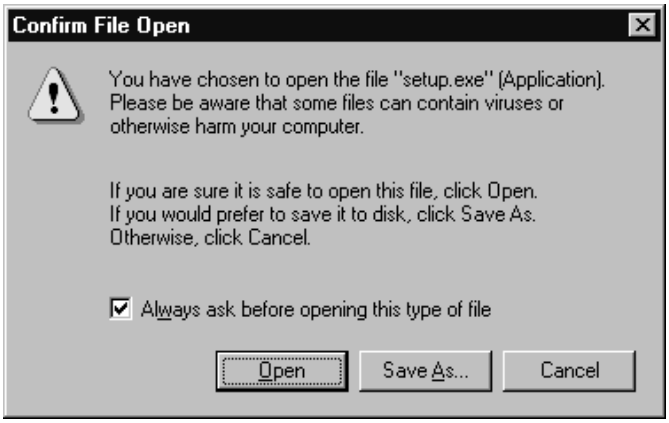
4. Scroll to the bottom of the window and select *NetWorker 5.5.2 for Windows NT (i386)*. The Confirm File Open window displays.



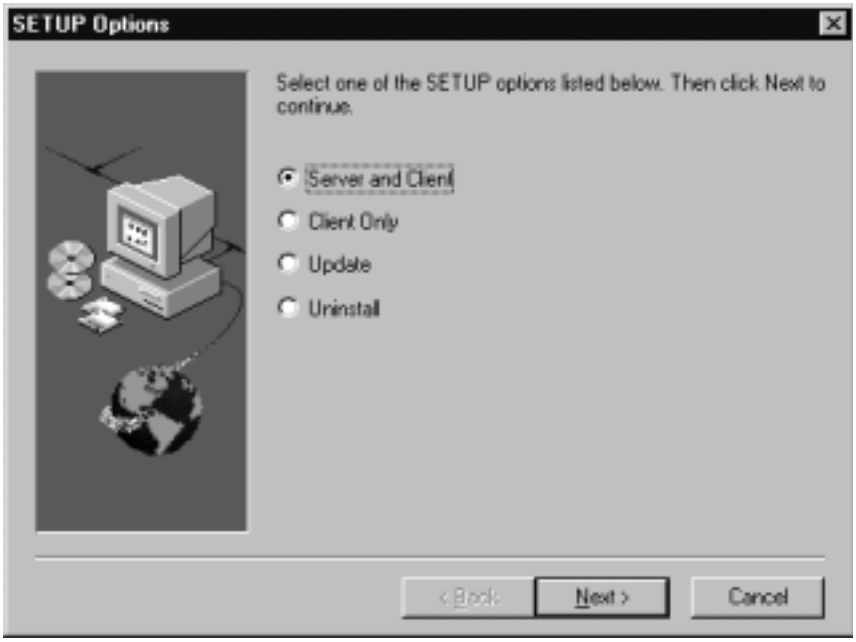
5. Select run this program from its current location, then click *OK*



6. When the security-warning screen appears, click *YES*.

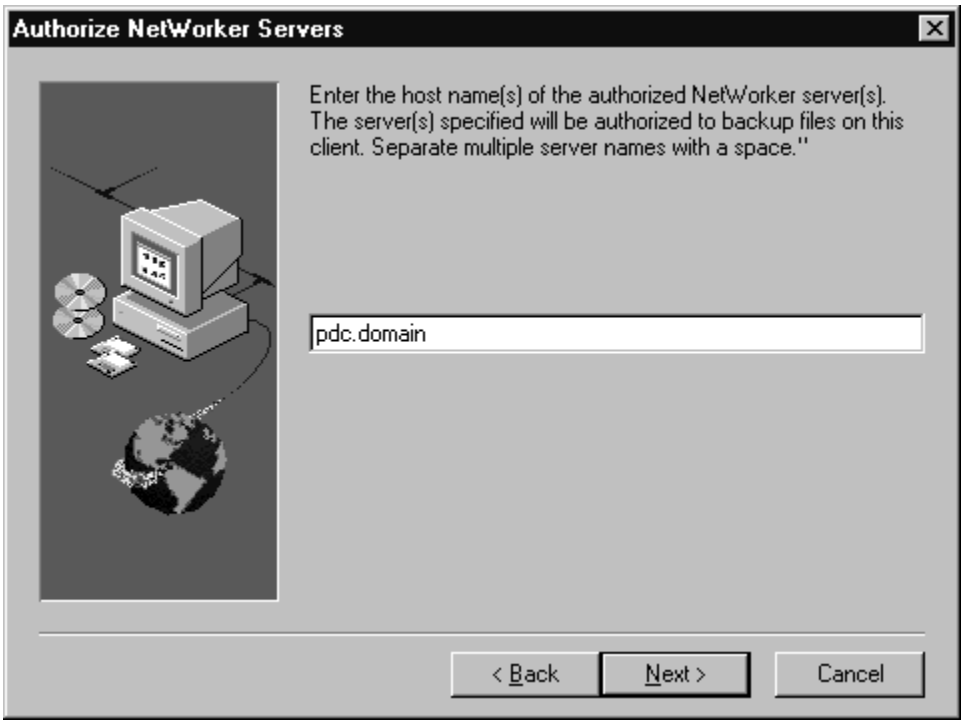


7. When the Confirm File Open appears, Click *Open*. The Setup Options window displays.



8. Select *Server and Client* and click *Next*. The Choose destination directory window displays.

9. Keep the default installation directory and click *Next*. The Authorize NetWorker Servers window displays.



10. The Authorized NetWorker Servers are all NetWorker servers this client can back up to. You are installing both the client and server pieces on the first server. However, the client can use another NetWorker server to back up data

located on this server. Enter your server's name and click *Next*. The NetWorker client and server software are installed.

11. Once the installation is complete, click OK.

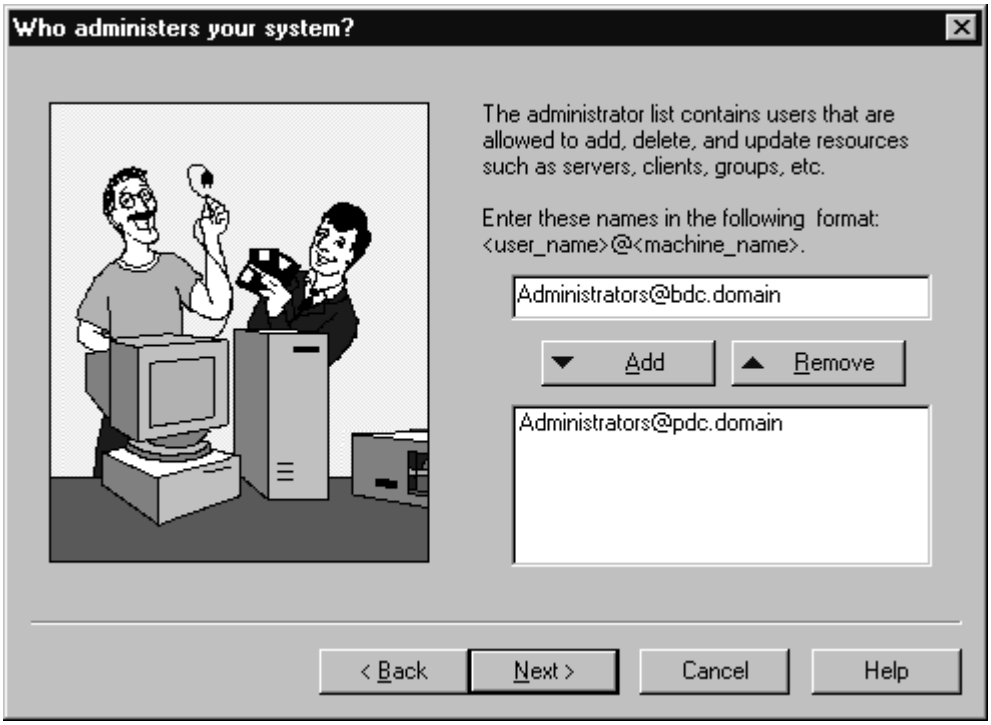
Configuring the Server

12. Run NetWorker Administrator from the NetWorker Program Group. A warning displays.

13. Click *OK*. The Welcome to NetWorker window displays.

14. Click *NetWorker Wizard*.

15. The Who administers your system? window displays. Type in the administrators of your second server as well and Click *Next*.



16. By default, the Administrator Account is added. If additional administrators need to be added, enter them in here and click on add. For this lab, Click *Next*.

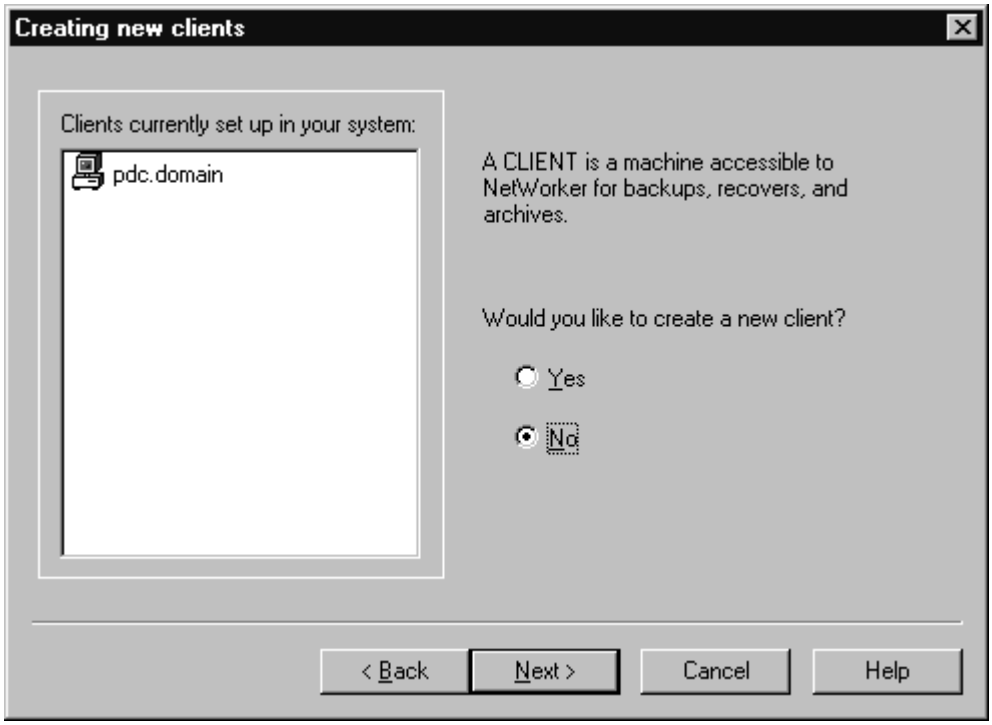
Note

@ means anyone from anywhere can administer this server. Be very careful when using this designation.

17. The Saving your files manually window displays, make sure *Yes* is selected and click *Next*.

18. When the First step is complete window displays, click *Next*.

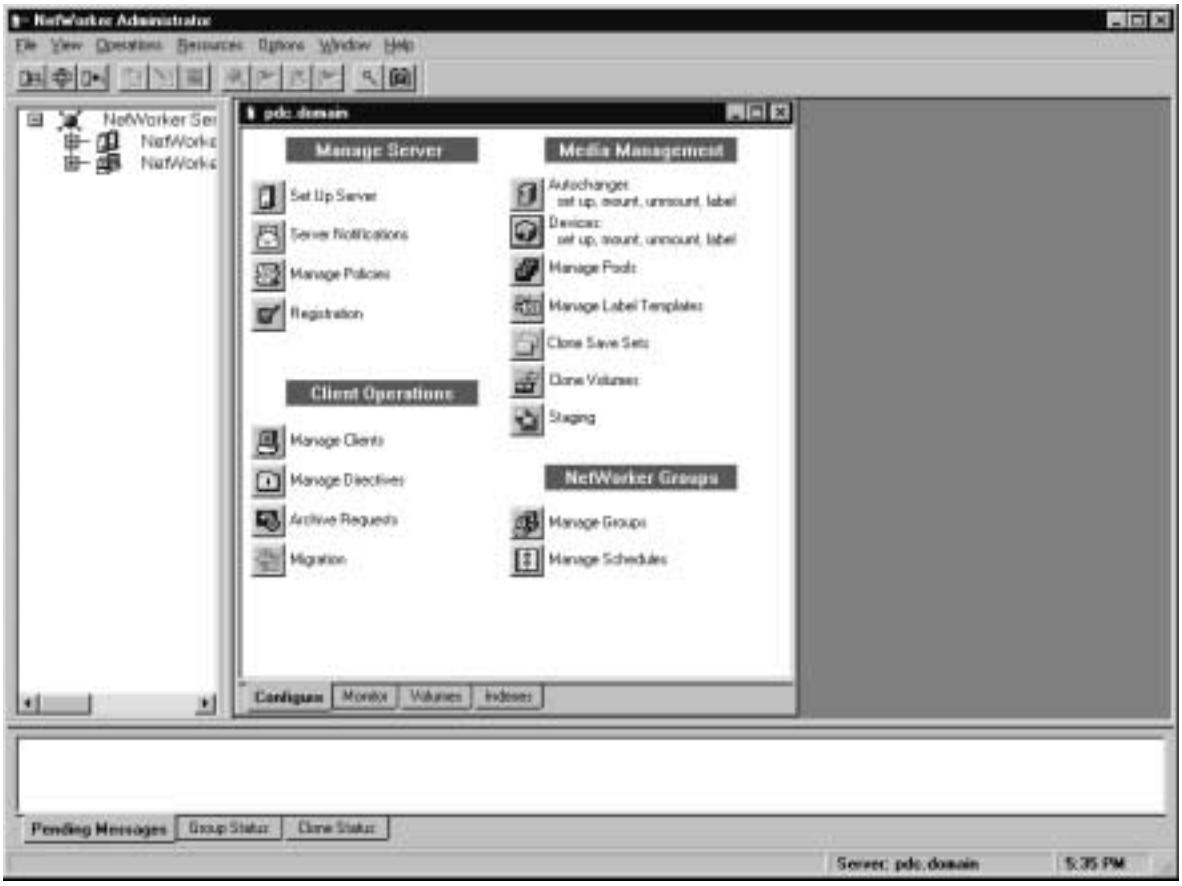
Note: *The NetWorker server is now configured.*



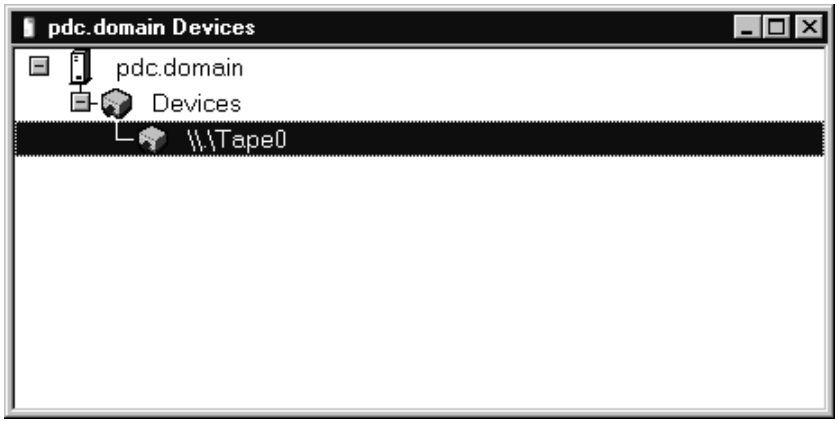
19. The Create new clients windows displays, your server should appear in the list of current clients. Select *No* and click *Next*.

20. The Second step is complete window displays, click *Cancel*.

21. A warning screen appears, click *Yes*.



22. The NetWorker Administrator window displays, from the NetWorker Administrator window, click *Devices: set up, mount, unmount, label*. The Devices window displays.



23. Select *\\Tape0* and press the *Delete* key.

    Note: *By default, NetWorker creates a default 4mm device. This is why we are deleting it.*

24. A warning displays, click *Yes*.
25. Wait for the device to be deleted and then close the Devices window.
26. Open a MS Dos Command prompt.

```
C:\WINNT\System32\cmd.exe
Microsoft(R) Windows NT(TM)
(C) Copyright 1985-1996 Microsoft Corp.

C:\>cd win32app\nsr\bin

C:\win32app\nsr\bin>inquire -l

-l flag found: searching all LUNs, which may take over 10 minutes per adapter
        for some fibre channel adapters.  Please be patient.

scsidev@0.0.0:COMPAQ  CD-224E         9.0B|CD-ROM
scsidev@3.0.0:Compaq  PSEUDO          0100|Unknown Device Type
scsidev@4.0.0:Compaq  Disk Array      0.06|Disk, \\.\PHYSICALDRIVE0
scsidev@5.0.0:COMPAQ  SCSI COMMUNICATEDA02|Unknown Device Type
scsidev@6.0.0:Compaq  PSEUDO          0100|Unknown Device Type
scsidev@8.0.0:DEC     TL800    (C) DEC0514|Autochanger (Jukebox)
scsidev@8.0.2:DEC     TZ89     (C) DEC2150|Tape, \\.\Tape0
scsidev@8.0.3:DEC     TZ89     (C) DEC2150|Tape, \\.\Tape1
scsidev@12.26.0:Emulex  Utility Ifc Dev.EMU2|(Unknown Device Type b)

C:\win32app\nsr\bin>_
```

27. Change to the Win32app\nsr\bin directory.

    Note: *If using FCTCs then complete step 17, otherwise skip to step 18.*

28. Enter `inquire -l` and press *Enter*. This command searches all SCSI devices and lists them. The `-l` option allows the search to skip any breaks in LUNs.

29. Write the names for your drives in the spaces provided (for example, \\.\Tape0) If you do not see any Tape devices listed, check Control Panel > Tape to see if the drivers are loaded.

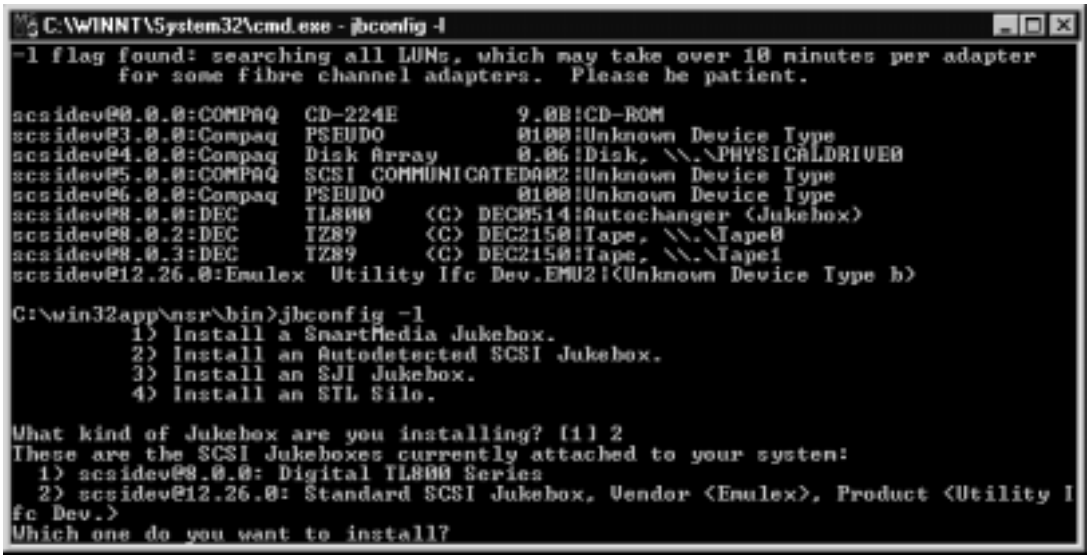
    .....

    .....

30. Enter `jbconfig -l` and press *Enter*.

```
C:\WINNT\System32\cmd.exe - jbconfig -l

C:\>cd win32app\nsr\bin

C:\win32app\nsr\bin>inquire -l

-l flag found: searching all LUNs, which may take over 10 minutes per adapter
        for some fibre channel adapters.  Please be patient.

scsidev@0.0.0:COMPAQ  CD-224E         9.0B|CD-ROM
scsidev@3.0.0:Compaq  PSEUDO          0100|Unknown Device Type
scsidev@4.0.0:Compaq  Disk Array      0.06|Disk, \\.\PHYSICALDRIVE0
scsidev@5.0.0:COMPAQ  SCSI COMMUNICATEDA02|Unknown Device Type
scsidev@6.0.0:Compaq  PSEUDO          0100|Unknown Device Type
scsidev@8.0.0:DEC     TL800    (C) DEC0514|Autochanger (Jukebox)
scsidev@8.0.2:DEC     TZ89     (C) DEC2150|Tape, \\.\Tape0
scsidev@8.0.3:DEC     TZ89     (C) DEC2150|Tape, \\.\Tape1
scsidev@12.26.0:Emulex  Utility Ifc Dev.EMU2|(Unknown Device Type b)

C:\win32app\nsr\bin>jbconfig -l
        1) Install a SmartMedia Jukebox.
        2) Install an Autodetected SCSI Jukebox.
        3) Install an SJI Jukebox.
        4) Install an STL Silo.

What kind of Jukebox are you installing? [1] 2
```

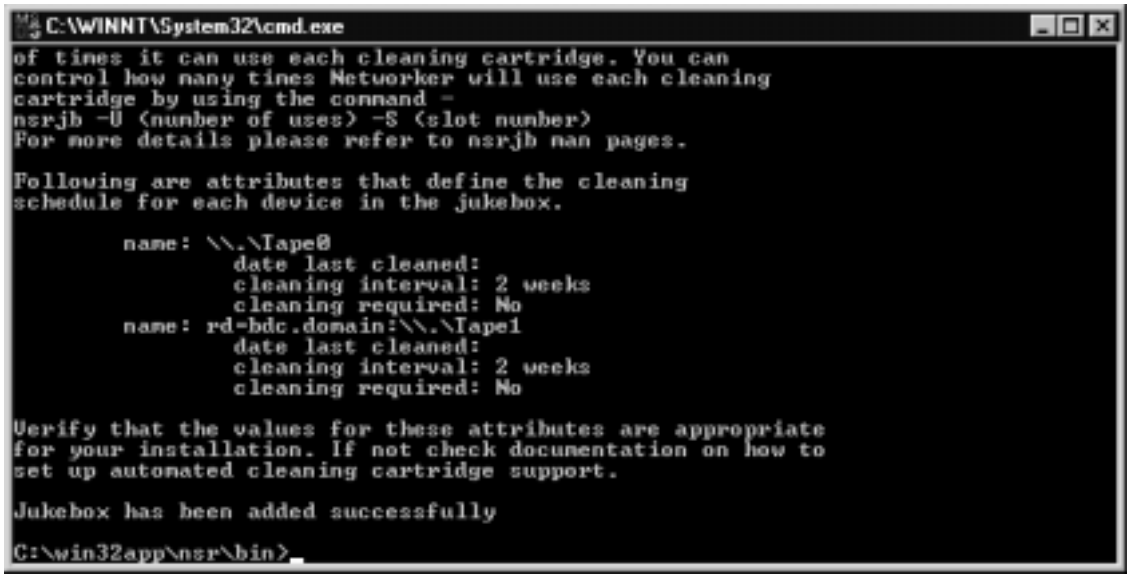
31. Enter *2* and press *Enter*.



32. Wait for the library to be found. This may take several minutes. Enter the appropriate number for your library and press *Enter*.
33. Enter a name for your library and press *Enter*.

    Example: TL800, TL895
34. Press *Enter* to accept the auto-detected pathname for the control port for the library.
35. Enter *yes* and press *Enter* when asked if you want auto-cleaning support enabled.
36. Press *Enter* to accept this server as the owner of drive 1.
37. Enter the name for drive 1 that you recorded in Step 18 and press *Enter*.

    Example: \\.\tape0
38. Enter *15* (the dlt7000 tape device) or *20* (the tz89) and press *Enter*.
39. When asked to enter the hostname that owns media drive, type the hostname of your second server (bdc.domain).
40. Enter the name for drive 2 that you recorded in step 18 and press *Enter*.
41. Enter *yes* to enable bar code reader support and press *Enter*.
42. Enter *yes* to have volume labels match barcodes and press *Enter*.

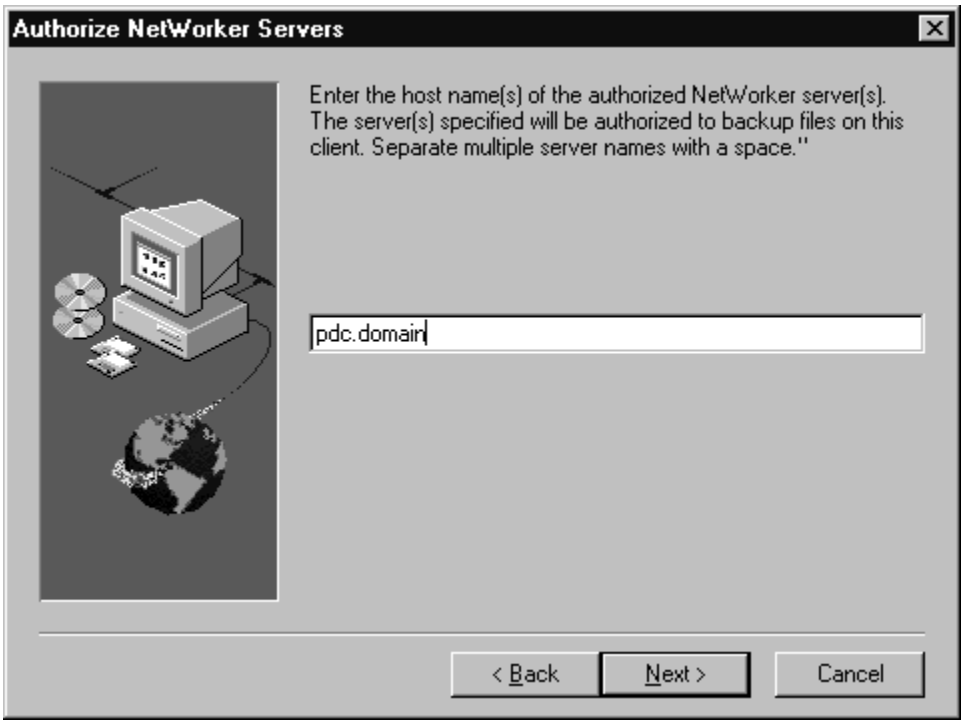


43. Exit the command prompt and return to NetWorker Administrator.

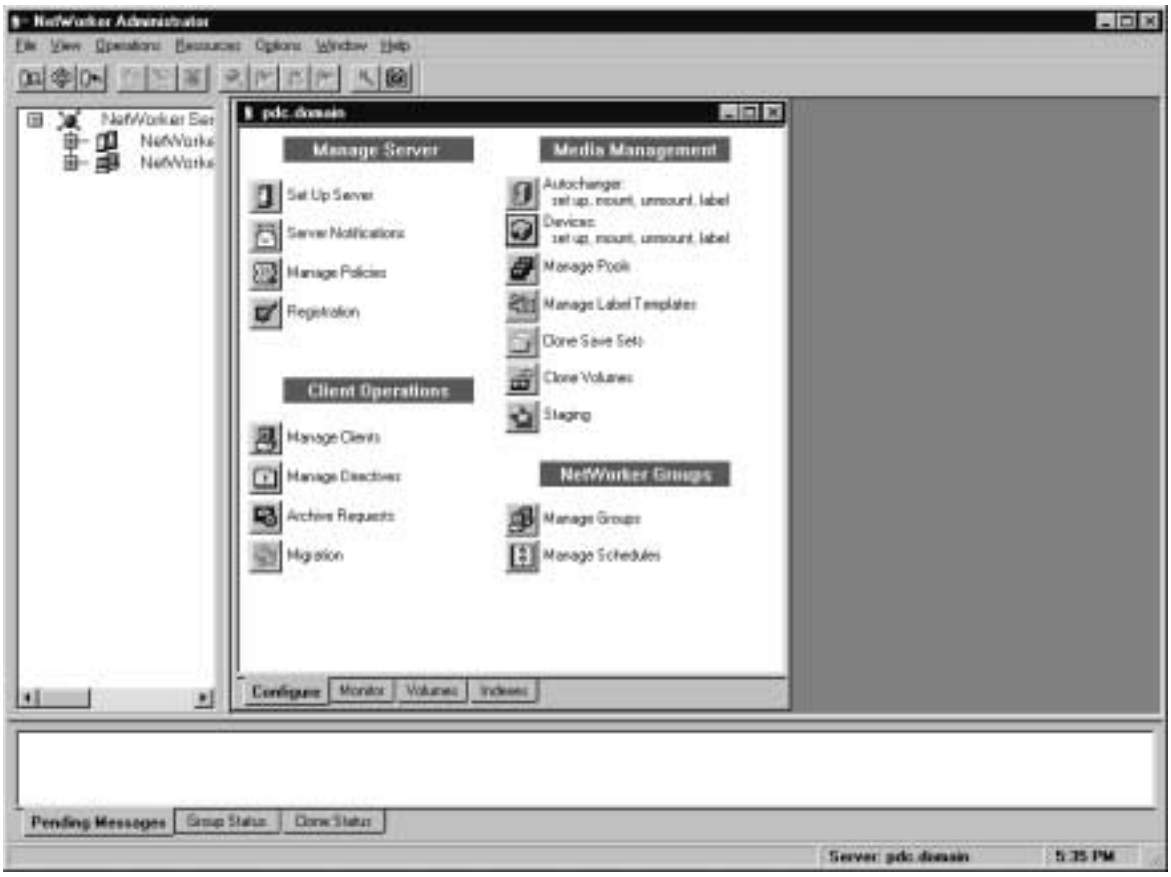
    Note: *If not running two servers, skip to step 35.*

44. Install the NetWorker client on the second server. At the SETUP Options screen, select *Client Only*.

At the Authorize NetWorker Servers screen, type in the host name of the first server.

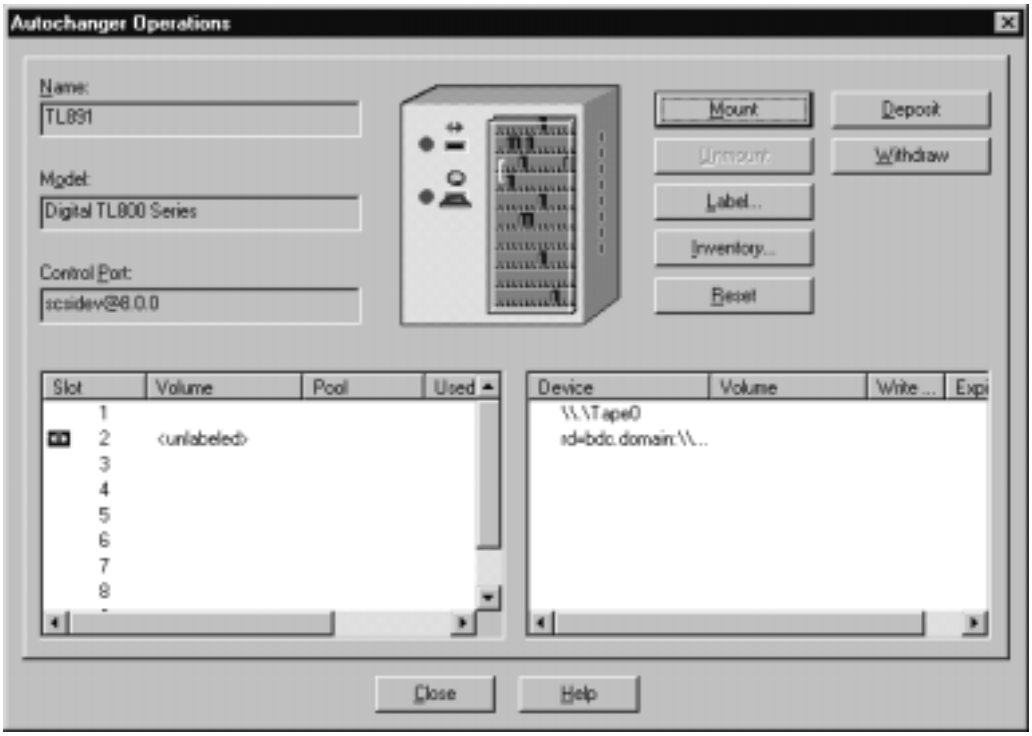


45. After the second server is installed, return to NetWorker Administrator on the first server.

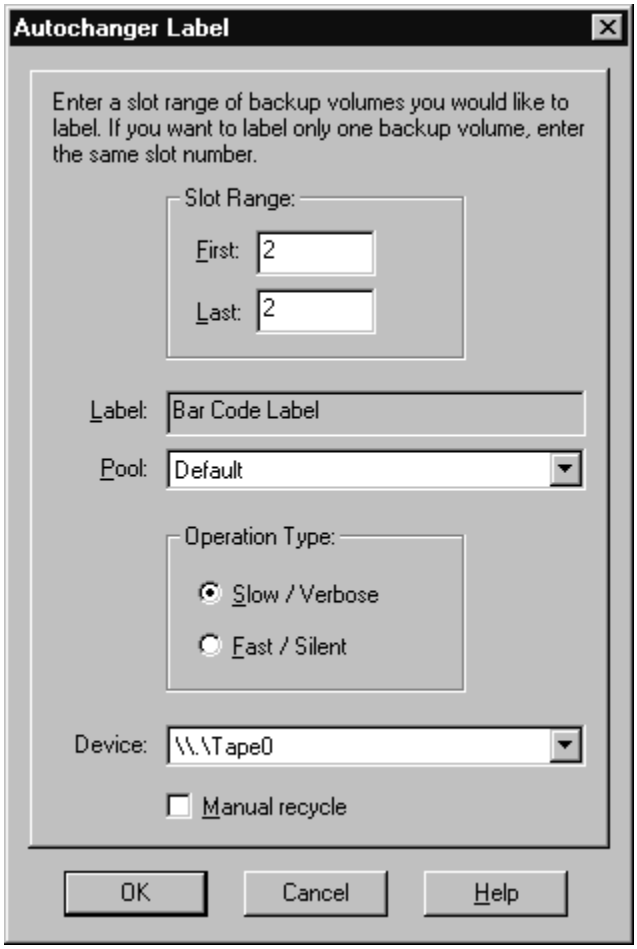


46. Click Autochanger: set up, mount, unmount, label to view the library and drives.

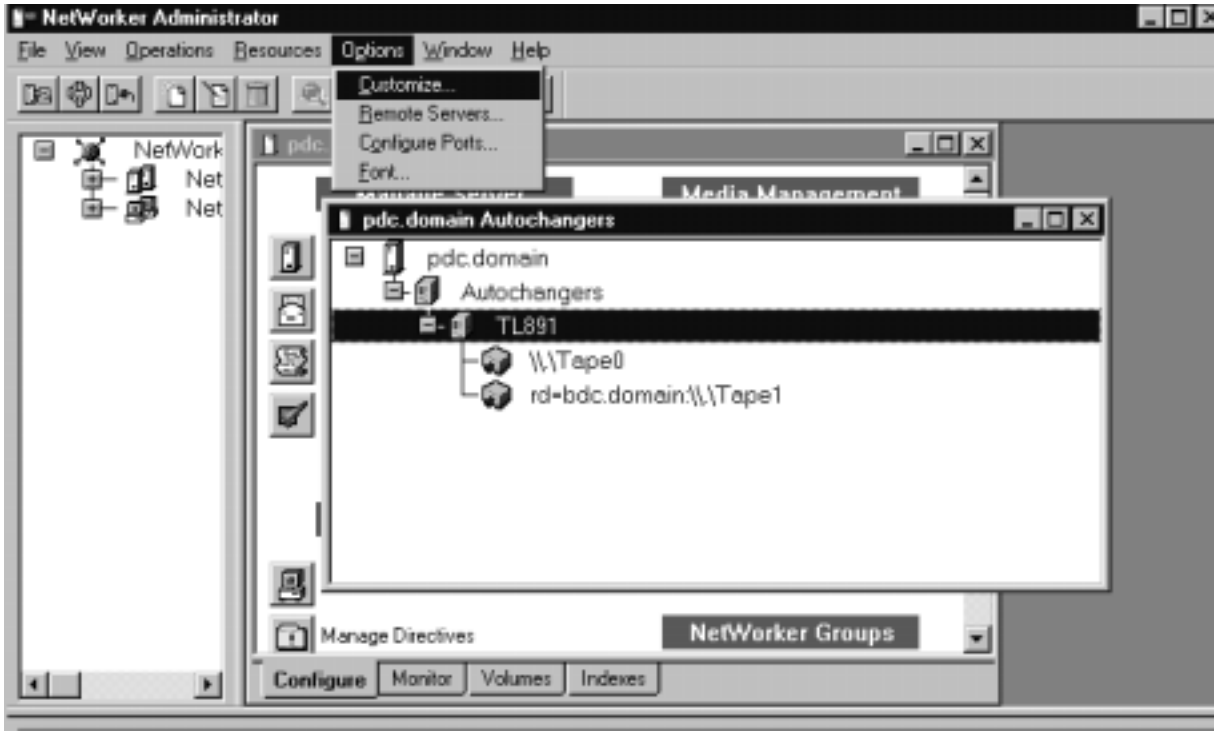
47. Right-click the TL891 library.
48. Click *Operations*. The Autochanger Operations window displays.



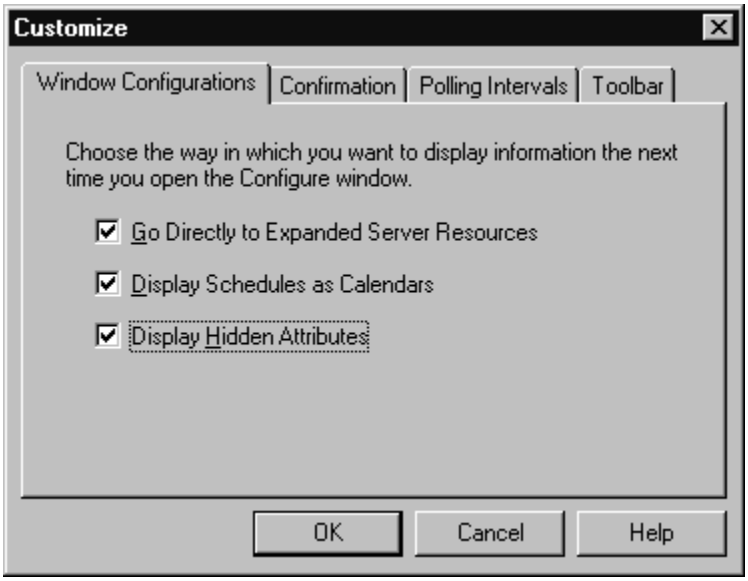
49. Click *Label*.



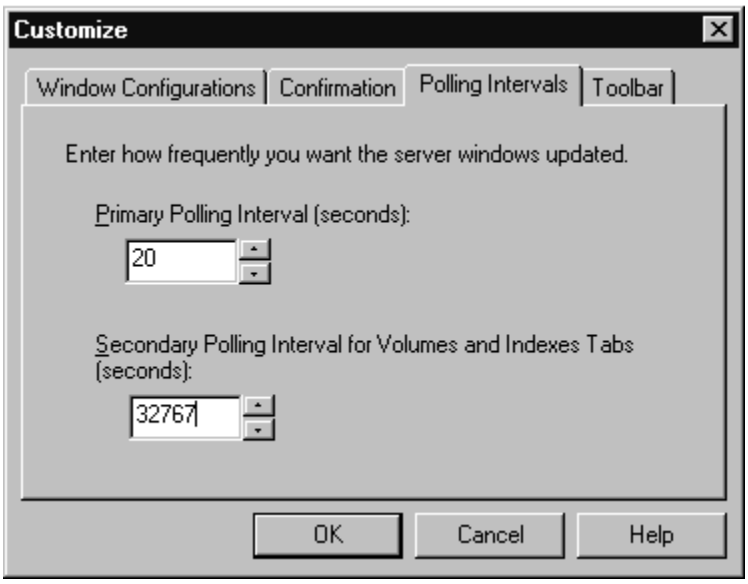
50. Change the slot range to include only one tape.
51. Select *Slow/Verbose*.
52. Click *OK*.
53. Wait for the tape you selected to be formatted and labeled.
54. Close the Autochanger Operations window.



55. Click *Options* → *Customized*.

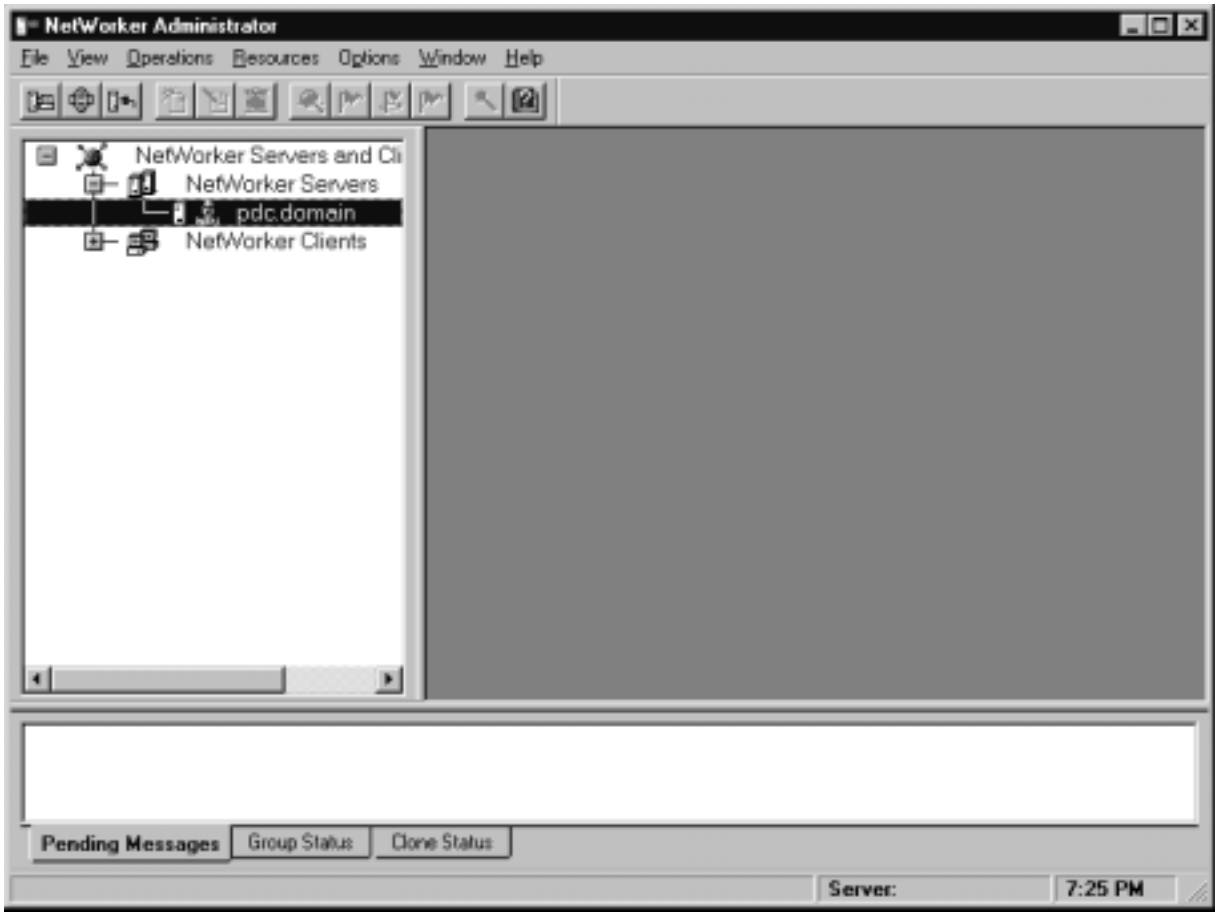


56. Select *Go Direct to Expanded Server Resources* and *Display Hidden Attributes*. Leave *Display Schedules as Calendars* selected.



57. Click *Polling Intervals*.
58. Change the secondary polling interval to 32767. This changes the polling interval to avoid a known problem. If left at 60 seconds, the devices disappear after 60 seconds and do not show up until the screen is refreshed.
59. Click *OK*.

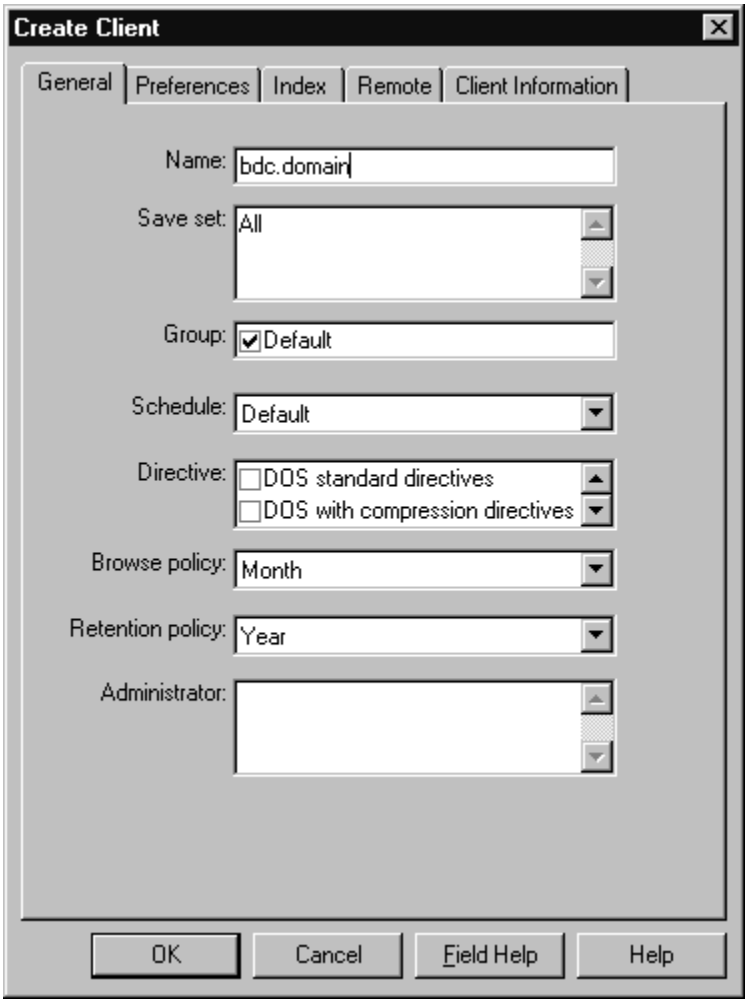
60. Close the right-hand window that is within the NetWorker Administrator window. You will get a warning message; click *YES*.



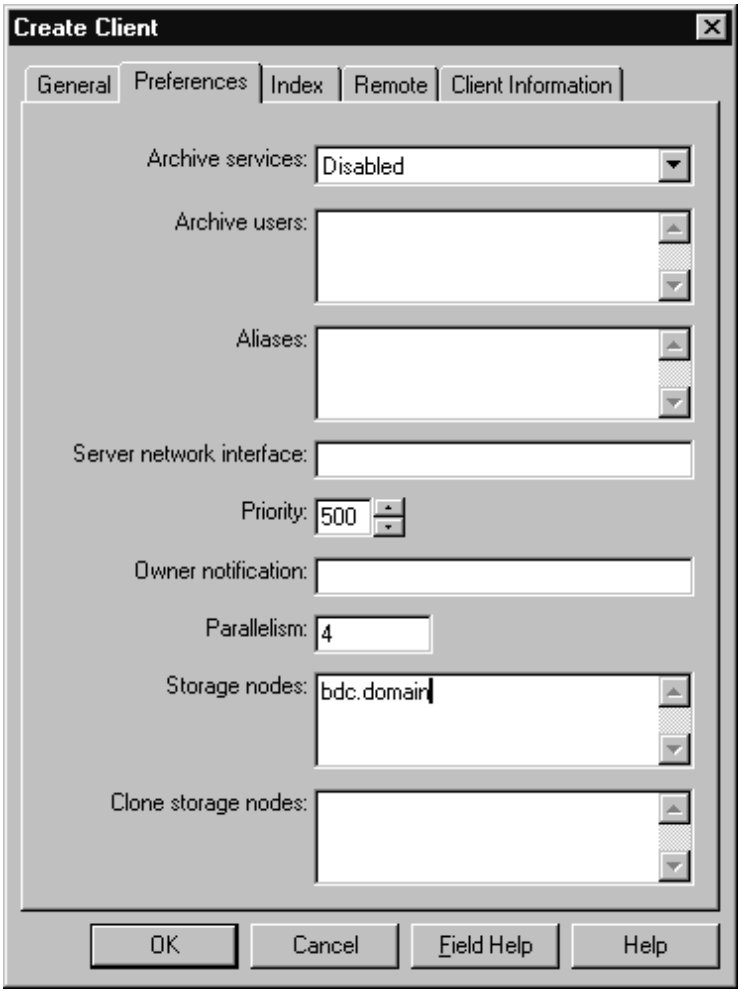
61. Reopen it using the new settings by clicking NetWorker Servers in the left-hand pane and then double clicking on your network server.

Note: *If you only have one server, then this completes the lab, otherwise continue on.*

62. Right-click *Clients* and choose *Create*. The Create Client window displays.

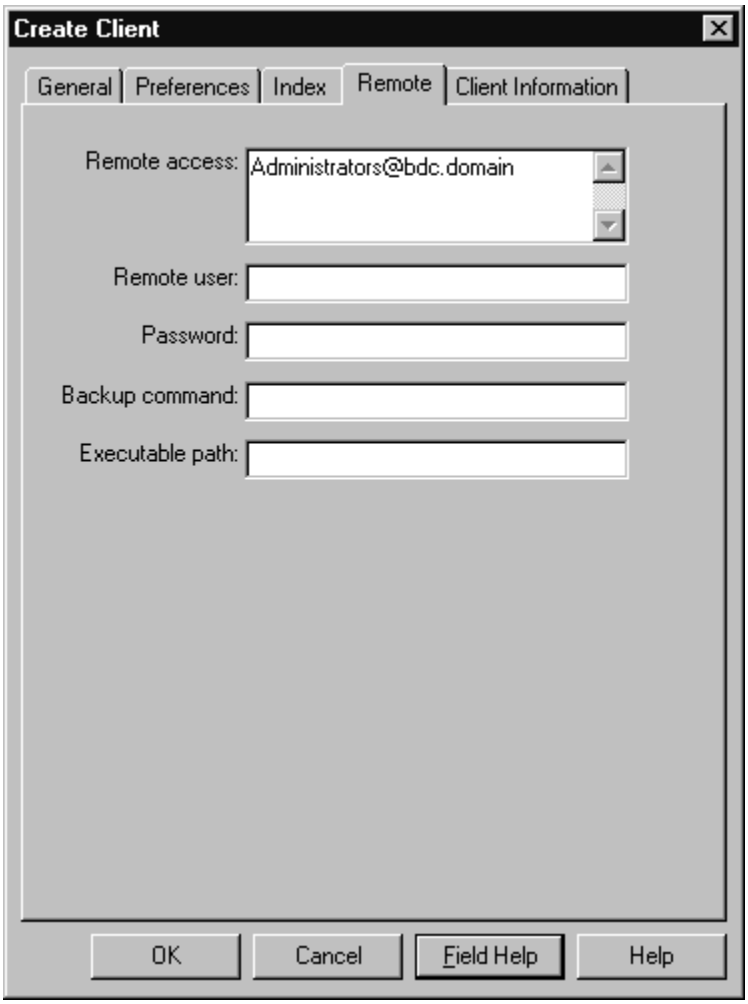


63. Enter the name of the second server (where only the client is installed) in the Name field.



64. Click *Preferences*.
65. Enter the name of the second server in the Storage nodes field.

66. Click Remote.



67. Enter *Administrator@<servername>* (replacing <servername> with the name of the second server) in the Remote access field.

68. Click *OK*.

Running a Simple Backup Job with NetWorker

Appendix H: Optional Module 3 — Lab 6

Objective

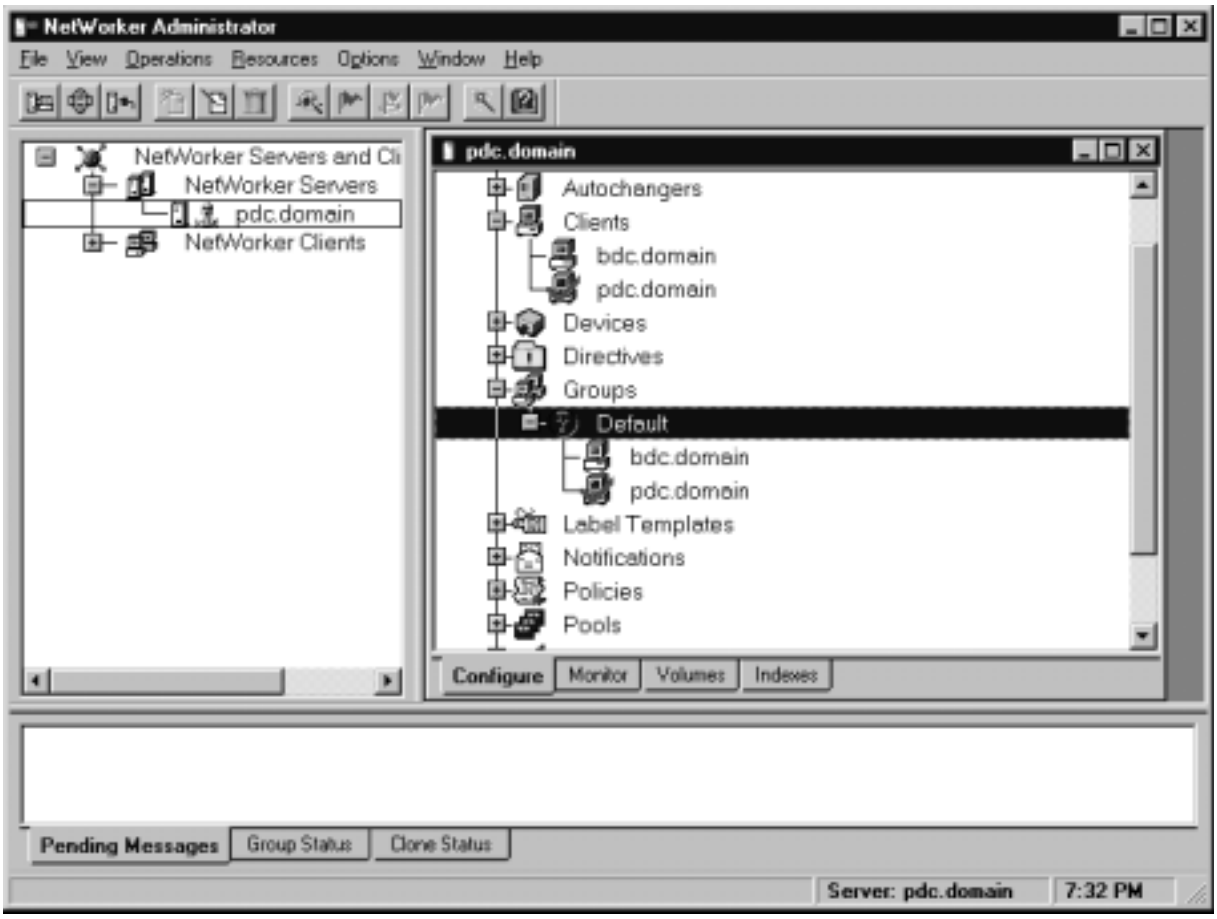
After completing this module, you will be able to run a simple backup using NetWorker software.

Requirements

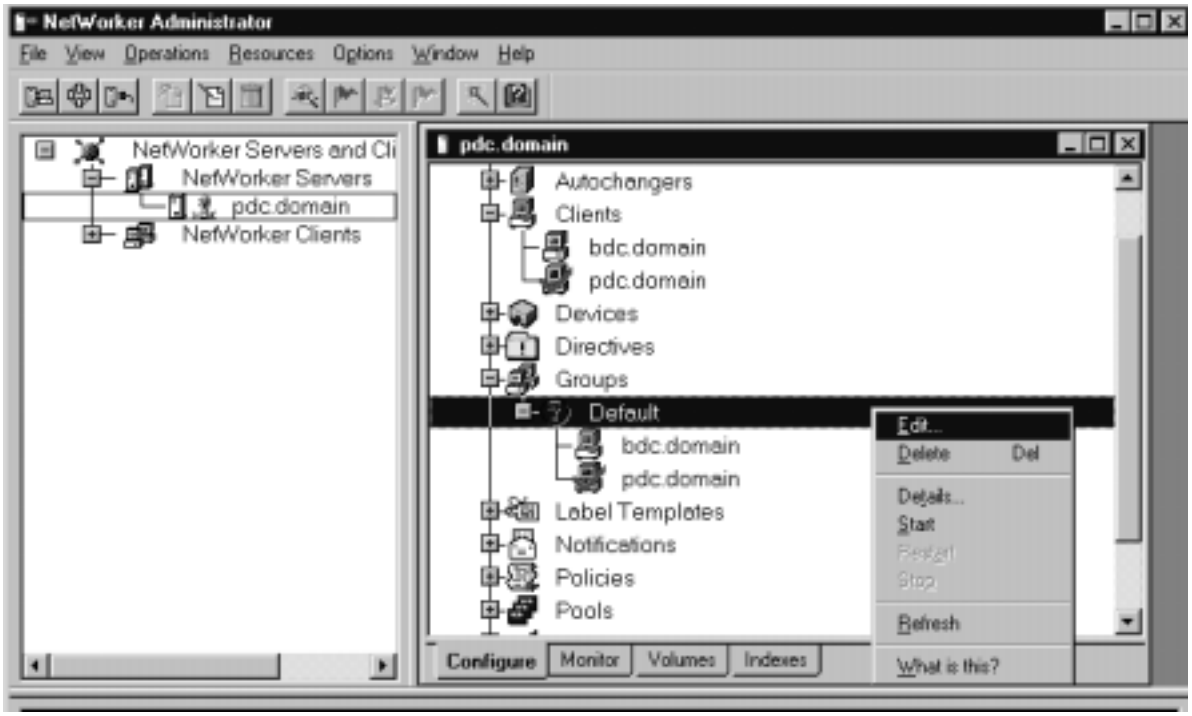
The requirements for this lab are the equipment used in the previous labs with the previous labs completed.

Procedure

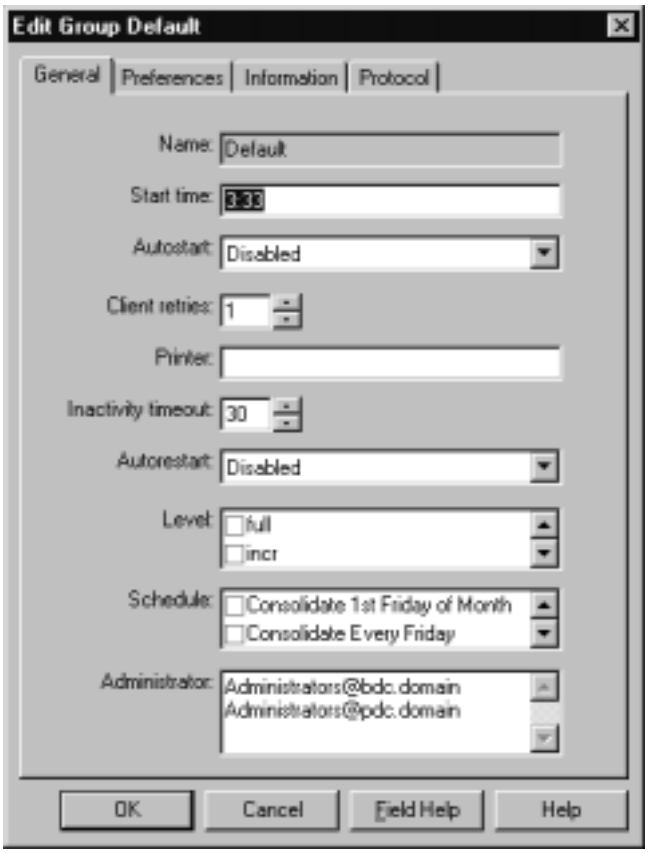
1. Open NetWorker Administrator program. Double-click the NetWorker server in the left frame.



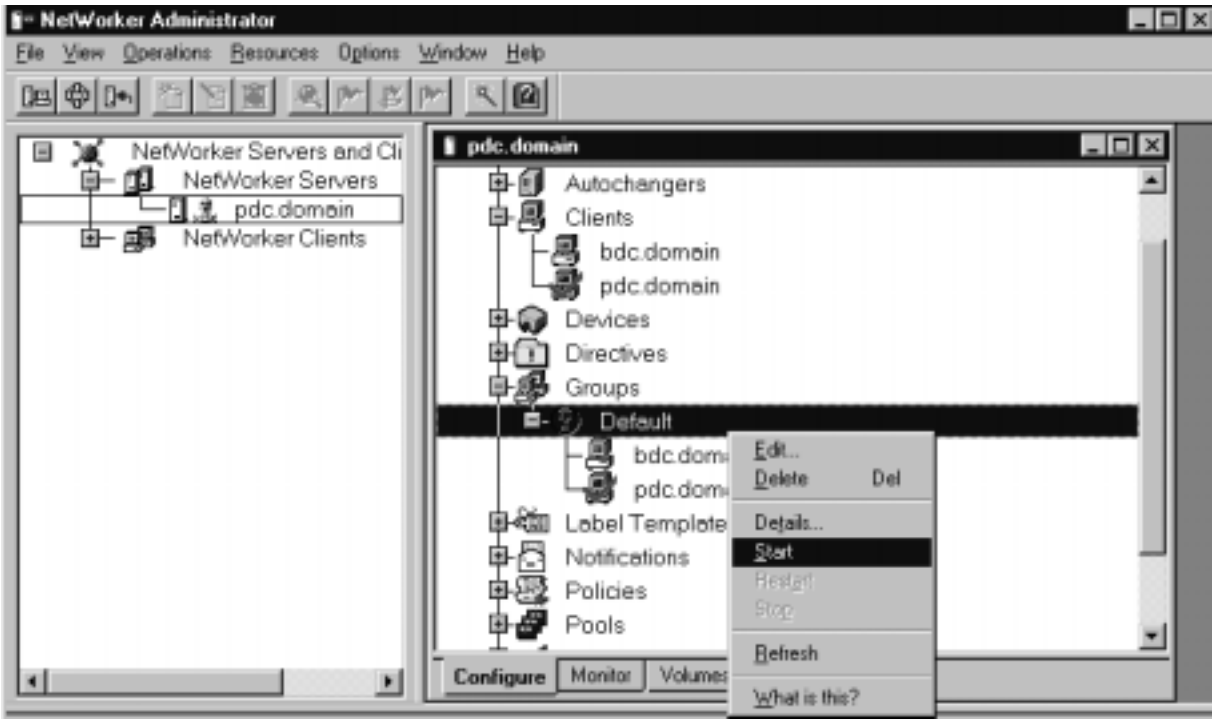
2. Expand the Groups icon.



3. Right-click the *Default* group and select *Edit*.



4. Verify that the appropriate administrators are listed in the Administrator field near the bottom of the window. Click *OK*.

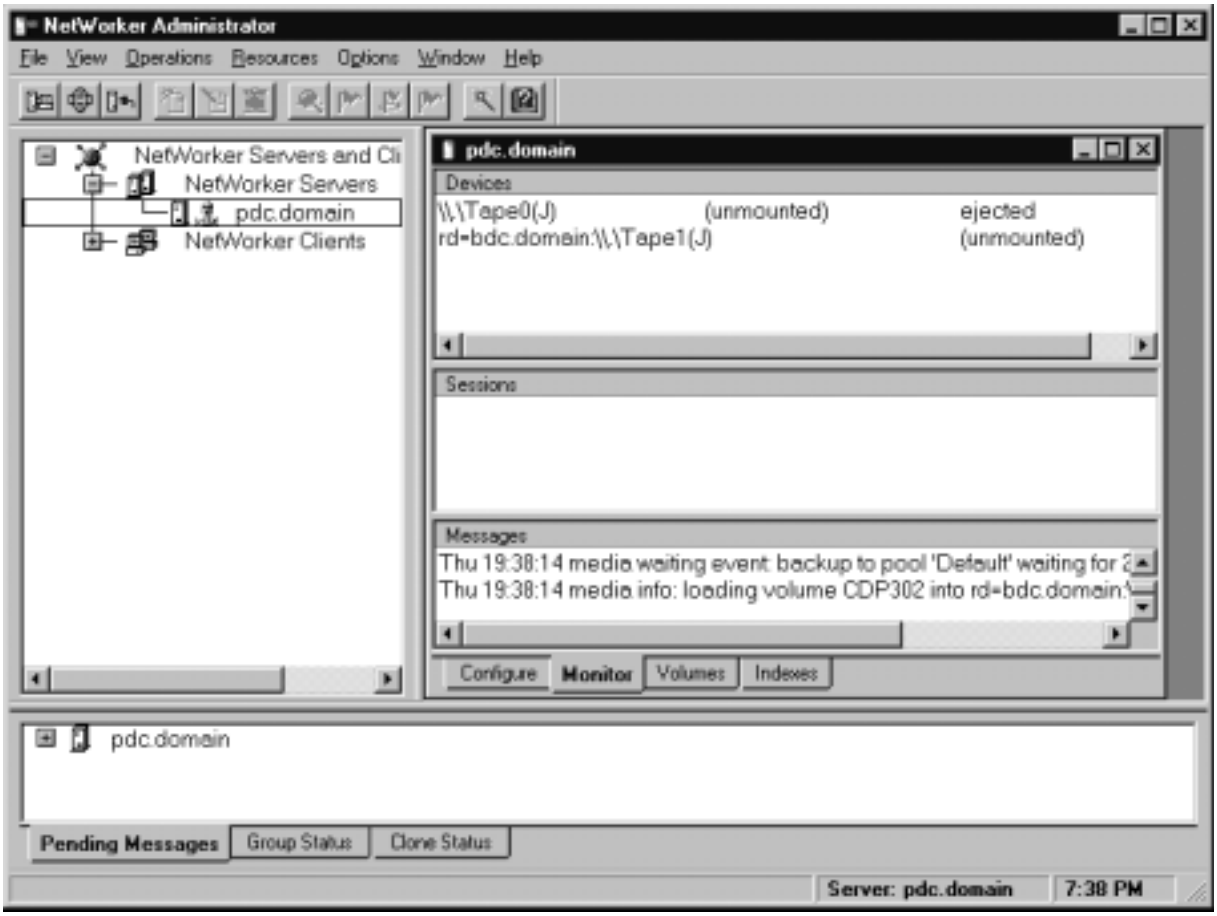


5. To start a backup of both servers in the Default group, right-click the *Default* group and choose *Start*.

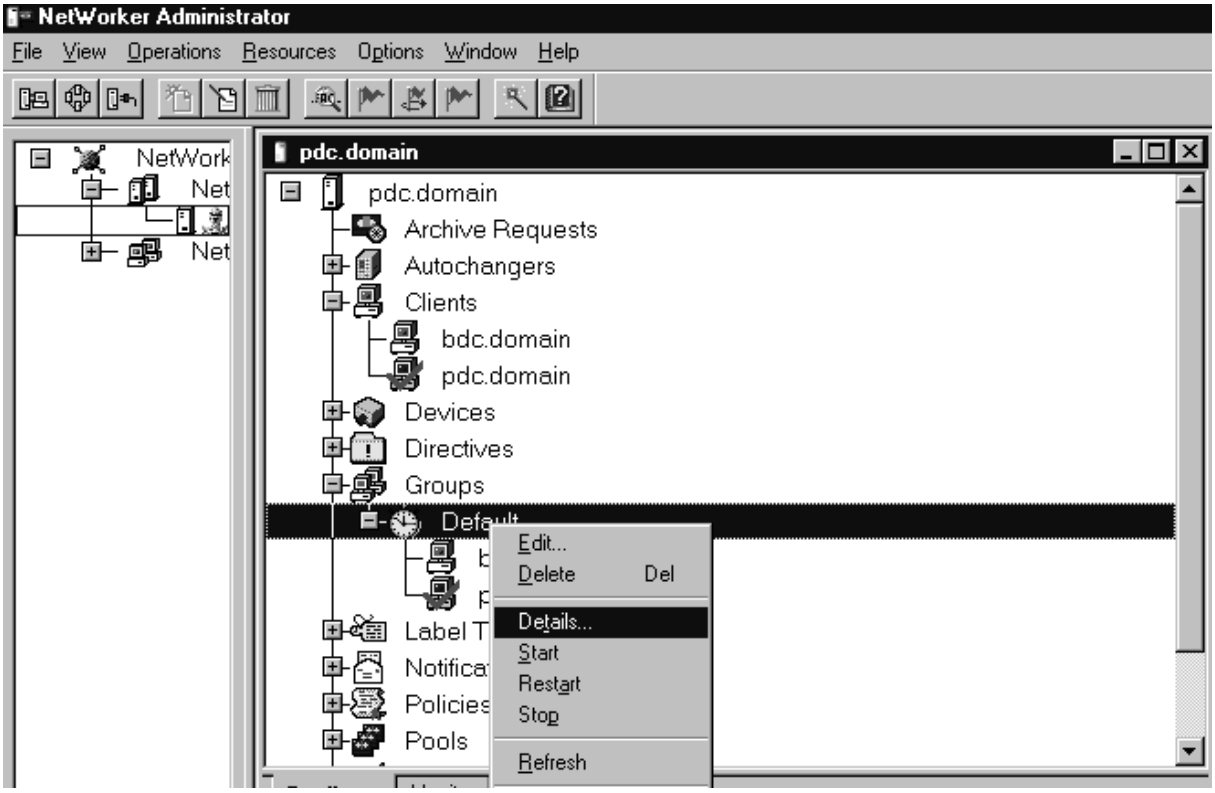
Note

If you wish to back up only one server, you would create a group. Then modify the properties of the associated clients to associate them to the new group. If you wish to back up only certain directories as opposed to the entire server, you would also modify the properties of the associated client.

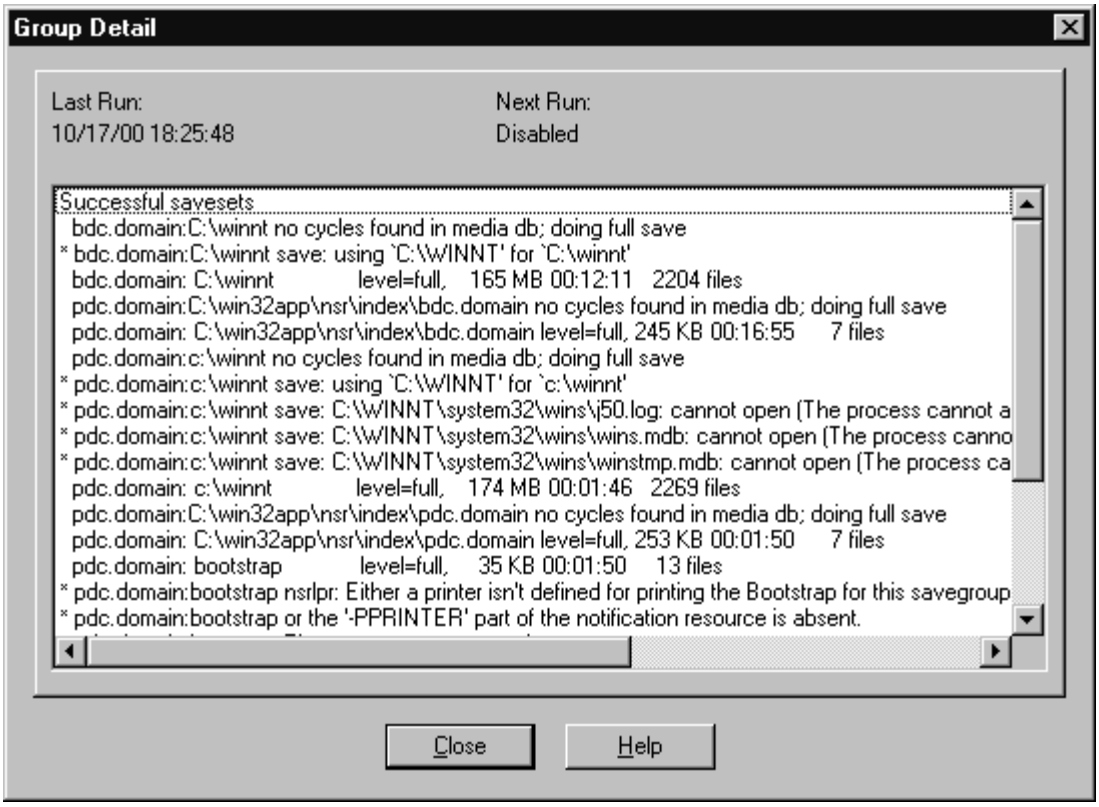
6. Click *Yes* to start the backup.



7. To monitor the backup, click on the *Monitor* tab.



8. You can see other messages about the status of the backup by going back to the *Configure* tab, then right-clicking the group being backed up, and selecting *Details*.



Installing VERITAS Backup Exec 8.5 for NetWare 5

Appendix I: Module 6 — Lab 1

Objective

After completing this module, you will be able to install and configure Backup Exec and the Shared Storage Option for Novell NetWare.

Note
Sharing the library with a Windows NT server can only be accomplished in a Fibre Channel Arbitrated Loop environment.

Requirements

- NetWare 5.0 with Support Pack 4, Netware 5.1, or Netware 4.11 with Support Pack IWSP7A.
- 128MB RAM is recommended.

Before You Install

For a Fibre Channel connected installation, requirements include:

- A Fibre Channel host bus adapter (HBA) and its device drivers must be installed.
- For Backup Exec to automatically configure the library hardware and properly associate the tape drives with the library, the Fibre Channel HBA must be connected to recognize all the secondary storage devices. For the adapter to do this, the following requirements must be met:
  - The storage hub must be connected to all the Fibre-to-SCSI bridges on the loop.
  - All the tape libraries must be connected to the bridges.
  - The storage hub and all tape libraries must be powered up before powering up the bridges.
  - The bridges must be powered up before Windows NT 4.0 loads the Fibre Channel driver (usually during the restart phase).

Procedure

1. Mount the VERITAS CD as a volume on the NetWare server.
2. Enter the following command from the server console:

   `load veritas:\netware\beinstl.nlm`
3. Select the appropriate language and press <F2>.
4. Enter the product serial number. For training purposes, leave these fields blank and press <F2>.
5. Select *Multiserver Edition with Advanced Autoloader Option*, press the spacebar, and then press <F2>.
6. Read the license agreement and press <Esc> then <F2> to accept the license.
7. When asked if you want to evaluate the Open File Option, press *n*.
8. Select *Custom installation* and press the spacebar and then press <F2>.
9. Update the Novell NLMs by pressing *y*.
10. Press *Enter* to display a list of controllers.
11. Select *Compaq FC Host* and press *Enter*.
12. Press <F2> to accept the selected controller.
13. Enter your admin name and password and press <F2>. Depending on your NDS configuration (whether or not the target server hosts a read/write partition replica) you may be required to input the admin account name in the fully qualified format (for example, .cn=admin.o=*container_name*)
14. Press *y* to have the Backup Exec NetWare Client load automatically when Backup Exec is loaded.
15. Press *y* to have Backup Exec load automatically on server startup.
16. If you encounter name space warnings, read the warning and press any key to continue.
17. Wait for files to install, the press any key to continue.
18. Press *n* when asked to update other NetWare servers.
19. Press *y* to create the smdrincl.dat file. Make sure to only include this server in the smdrincl.dat file. Including additional servers will cause startup delays while the NetWare client scans for Backup Exec agents running on those other servers.

20. Press <F2> to select your server.
21. Read the message regarding autoexec.ncf and press any key.
22. Press <F2> to exit the installer.
23. Enter the following command at the server console:

    ```
    bestart
    ```

24. Log in to your server as your admin object.
25. Switch to the Backup Exec – Job Monitor screen.
26. Read the message about shared devices and press *y*.
27. Select *Enable support for shared devices* and press the spacebar.
28. Select *Designate this server as the Primary Group Server* and press the spacebar.
29. Press <F2> to accept your selections.
30. Read the message regarding the Primary Group Server and press any key.
31. Read the message regarding overwrite protection and press *y*.
32. Select *Protect media from being overwritten* and press the spacebar.
33. Change the retention period to five days and select *Convert overwrite jobs to append jobs if necessary* and press <F2>.

This completes this lab.

VERITAS NetBackup Datacenter 3.4 Installation and Configuration

Appendix J: Optional Module 4 – Lab 5

Objective

After completing this module, you will be able to install and configure NetWorker for Microsoft Windows NT.

Requirements

- Windows NT 4.0 with Service Pack 5
- 32MB RAM
- 100MB disk space

Procedure

1. Verify that the native driver for the tape drive has been installed.
2. Insert the NetBackup Datacenter 3.4 CD and let the cd autorun.

3. Select NetBackup Server for Microsoft Windows NT.

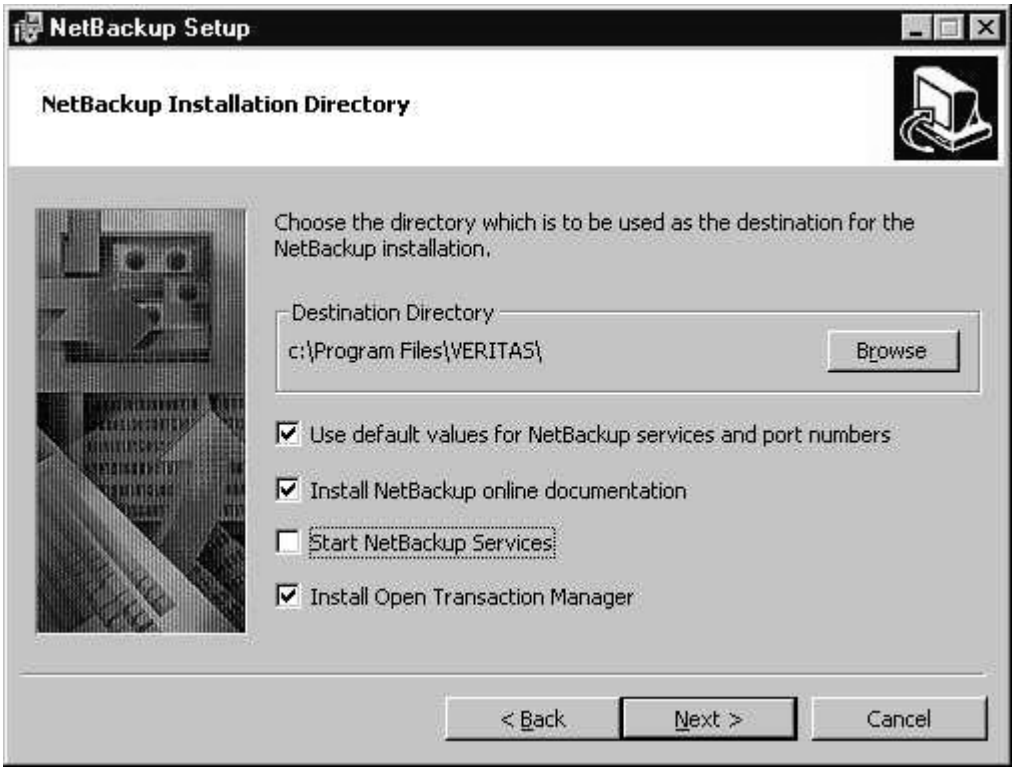
4. Click OK to continue.

5. Click Next to continue.

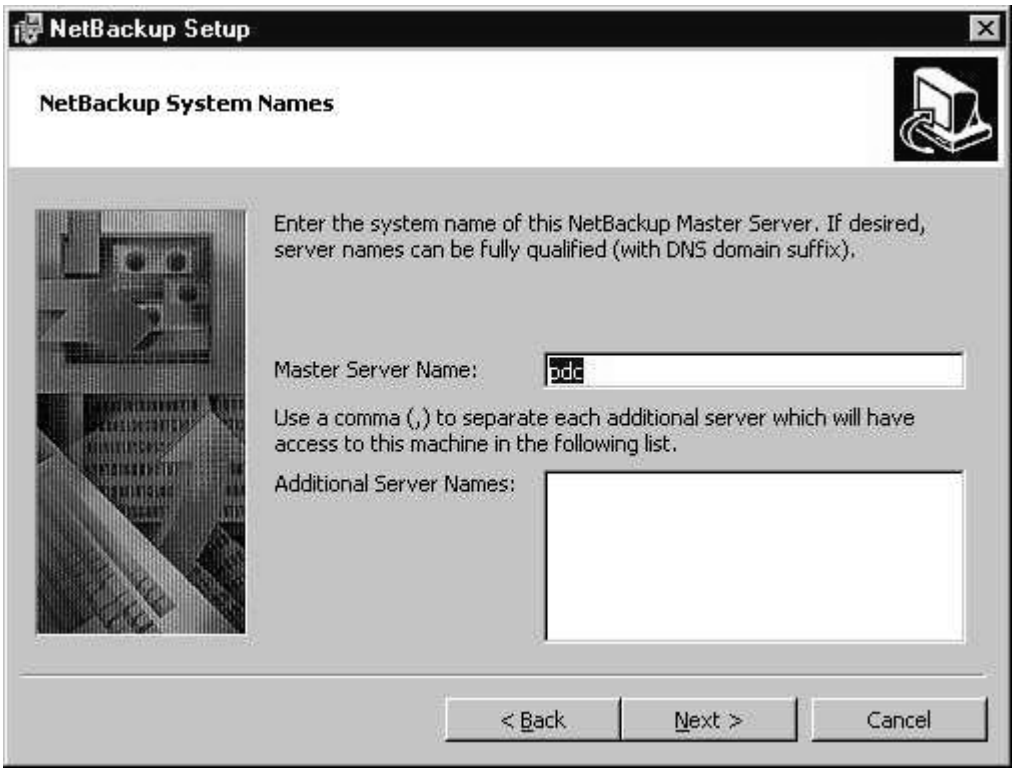
6. When prompted for a license key, type in the key from the instructor.

7. Click on Next.

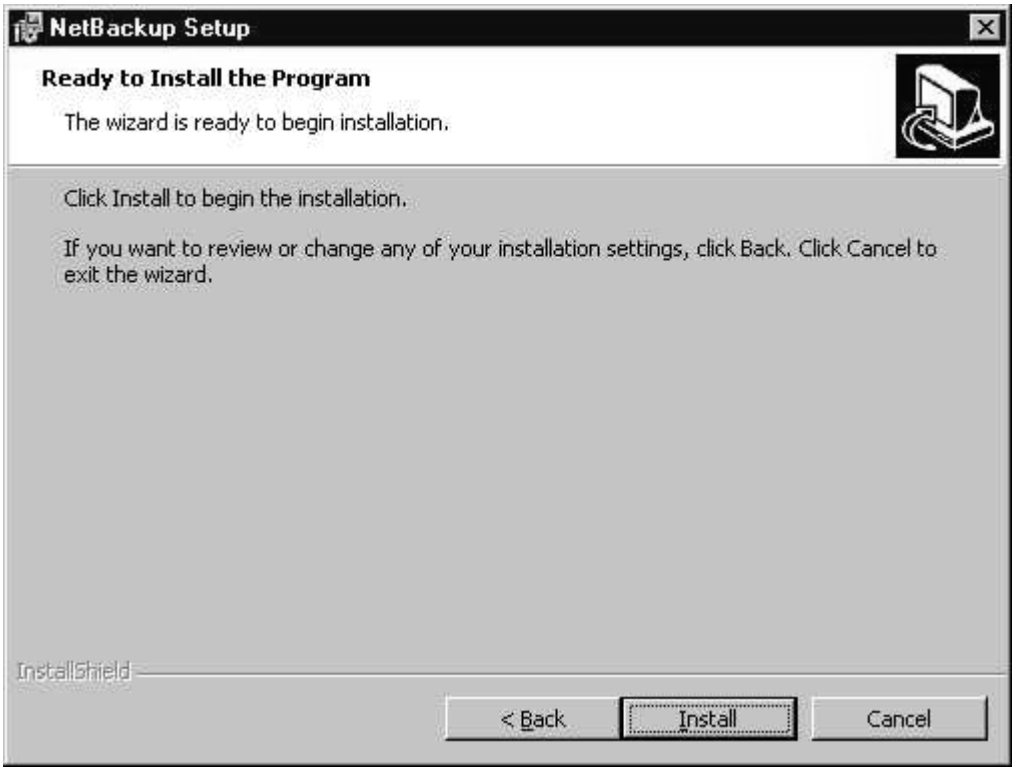
8. On the first server, click NetBackup Master Server. On the second server, click on NetBackup Media Server.



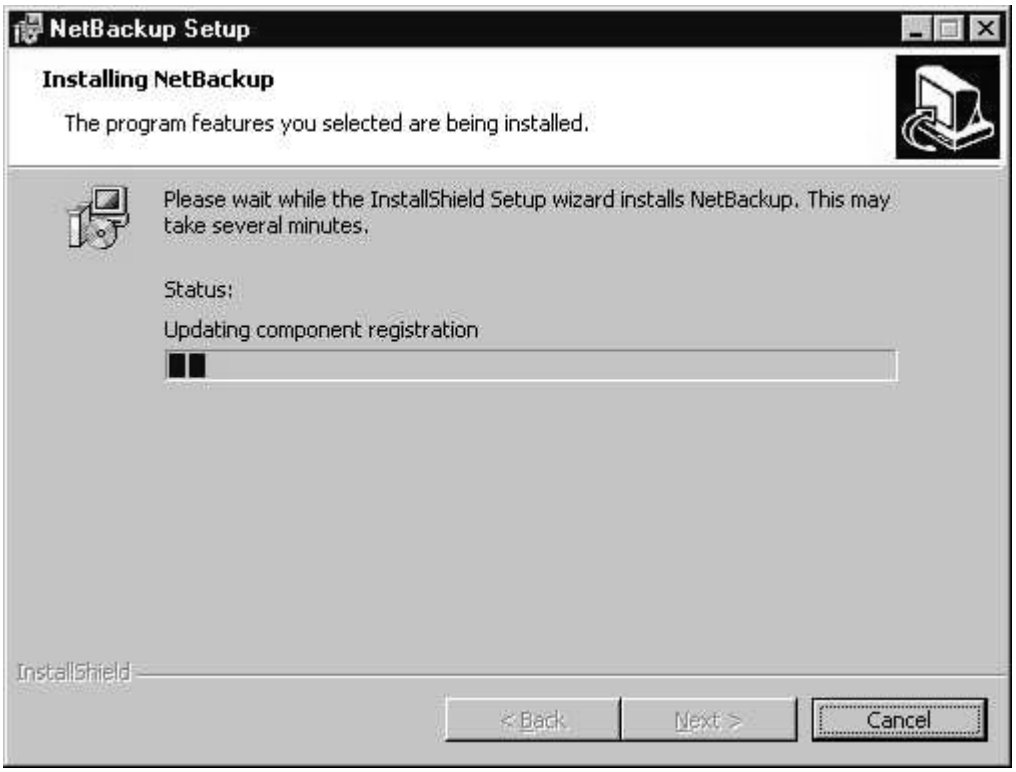
9. Uncheck the box for “Start NetBackup” and click Next.

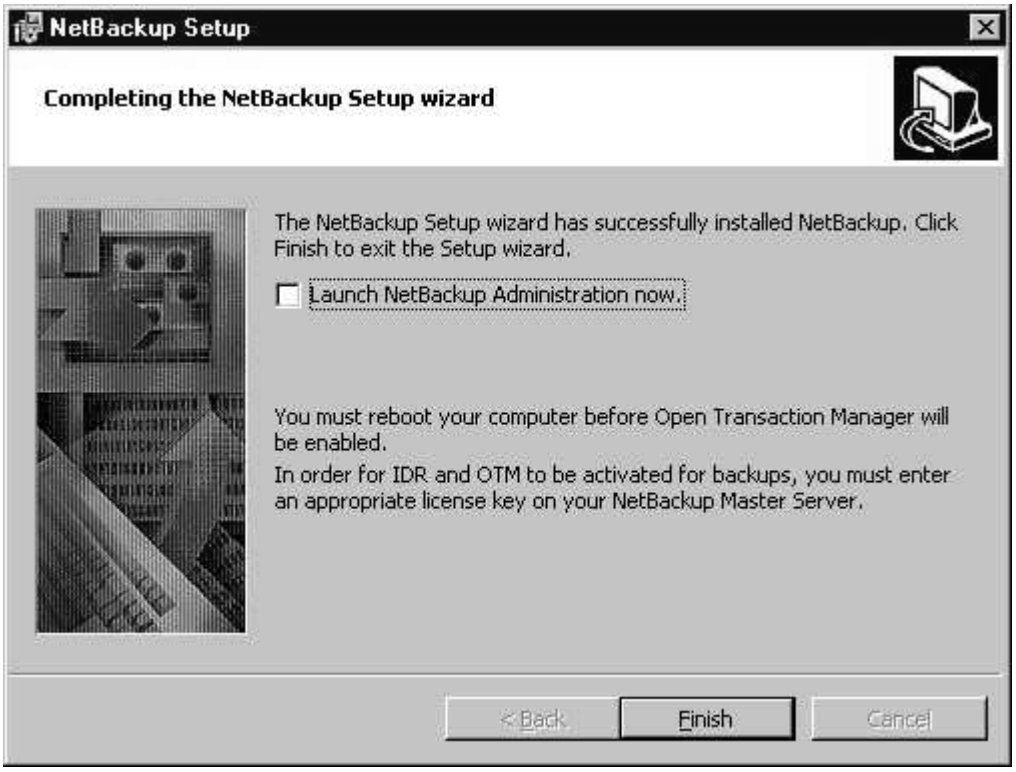


10. Enter the name of the Master Server and click on Next.



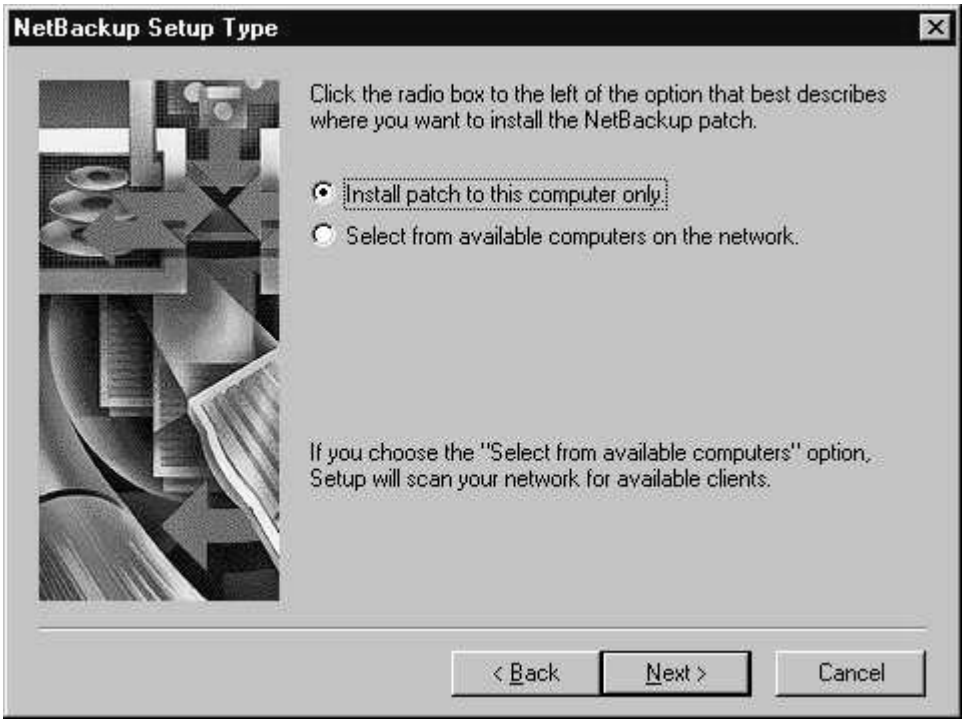
11. Click on Install to continue.



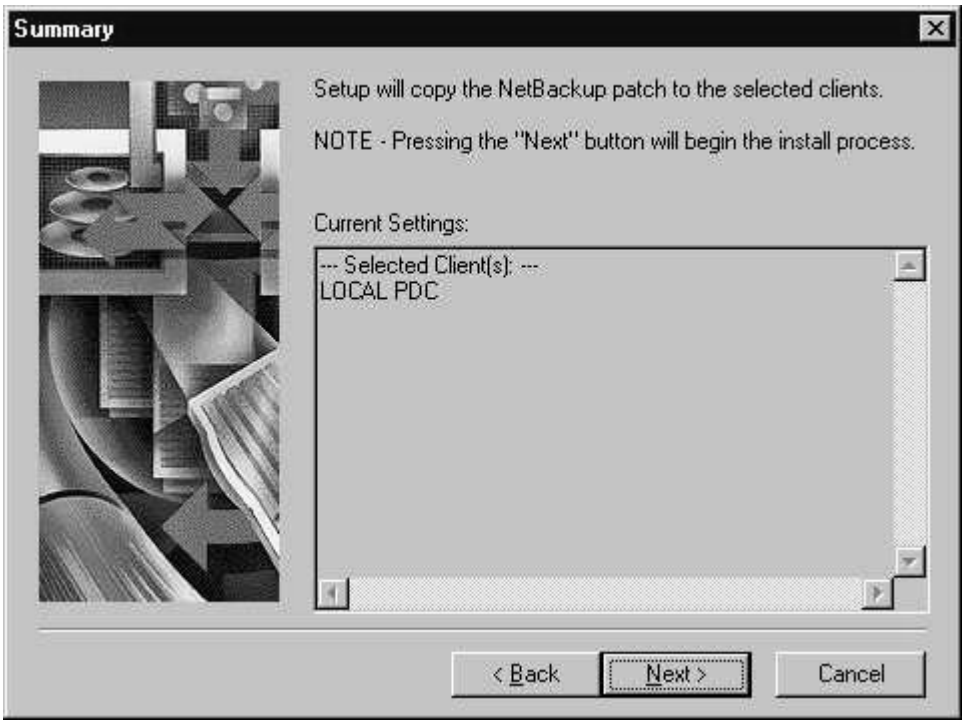


12. Uncheck the box for “Launch NetBackup Administration now”.

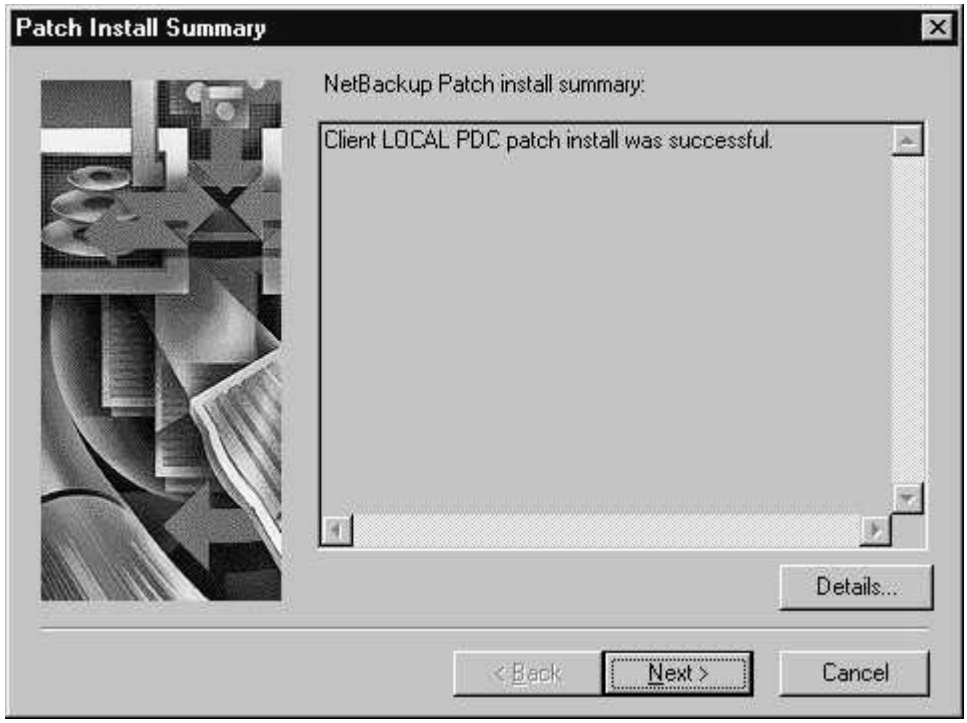
13. Double-click on the patch for NetBackup 3.4.



14. Select Install patch to this computer only and click on Next.

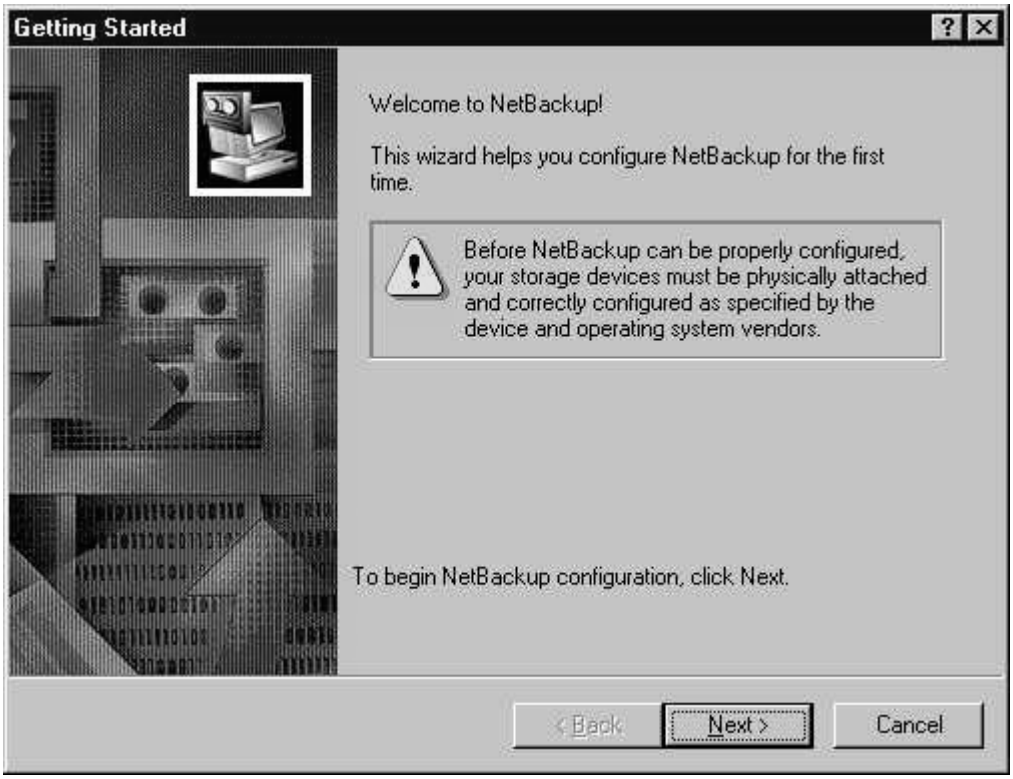


15. Click on Next.

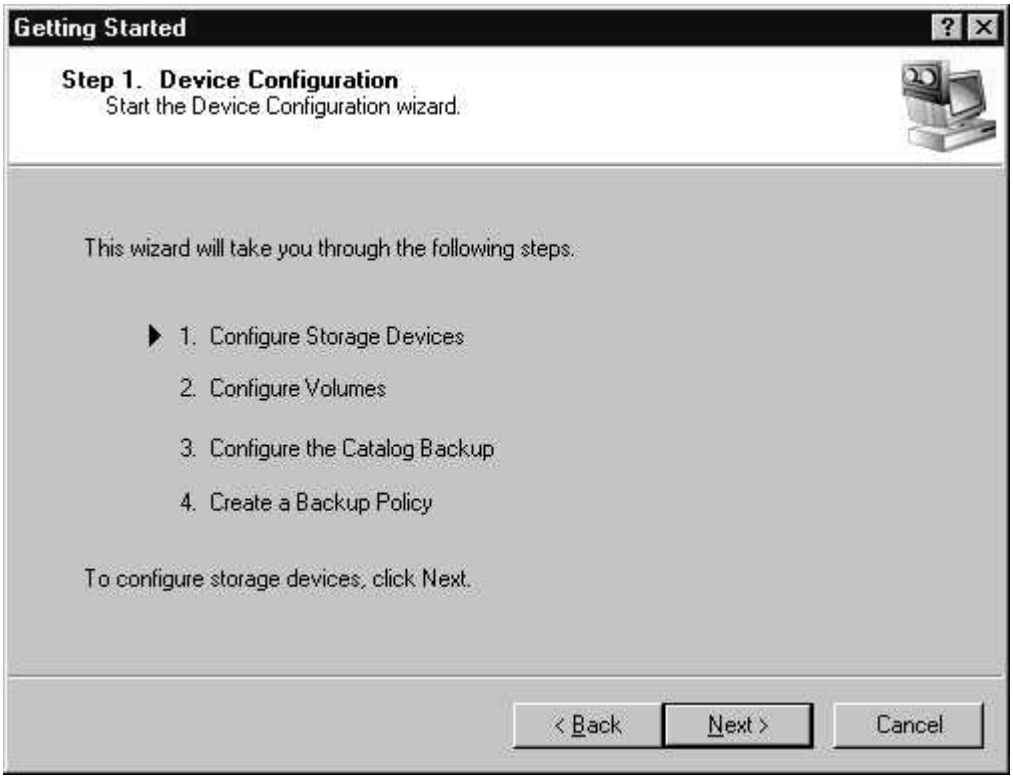


16. Click on Next.

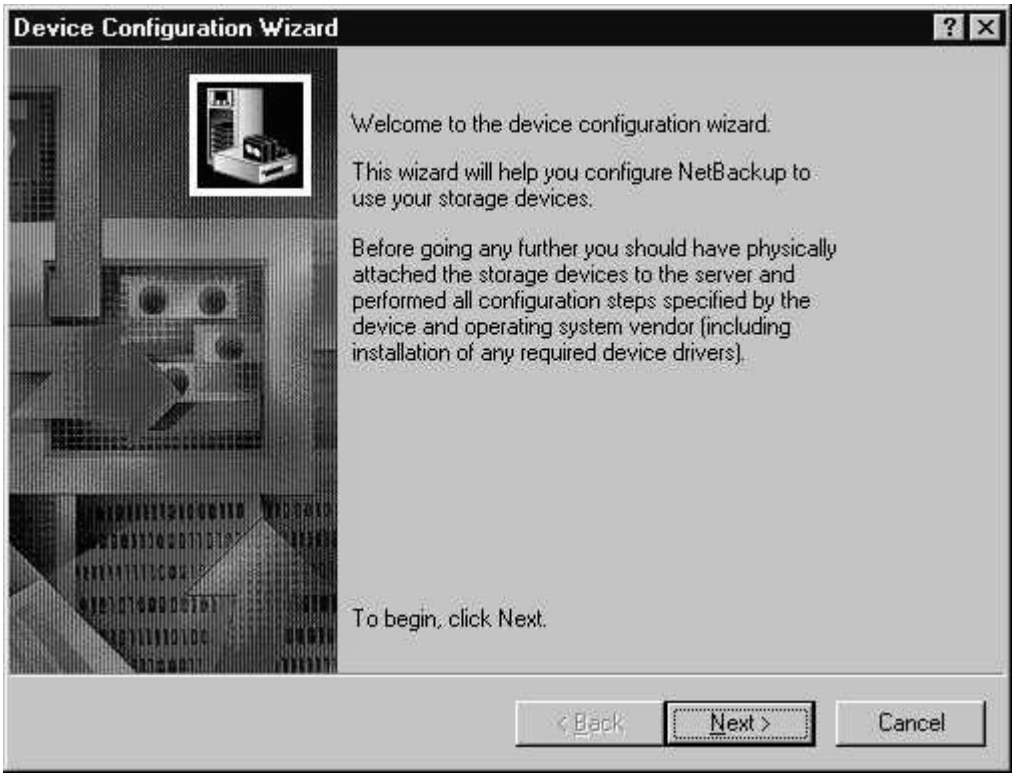
17. Click on Finish to complete Setup.
18. Install NetBackup Datacenter on the second server as a NetBackup Media server. Then apply the patch to the second server.



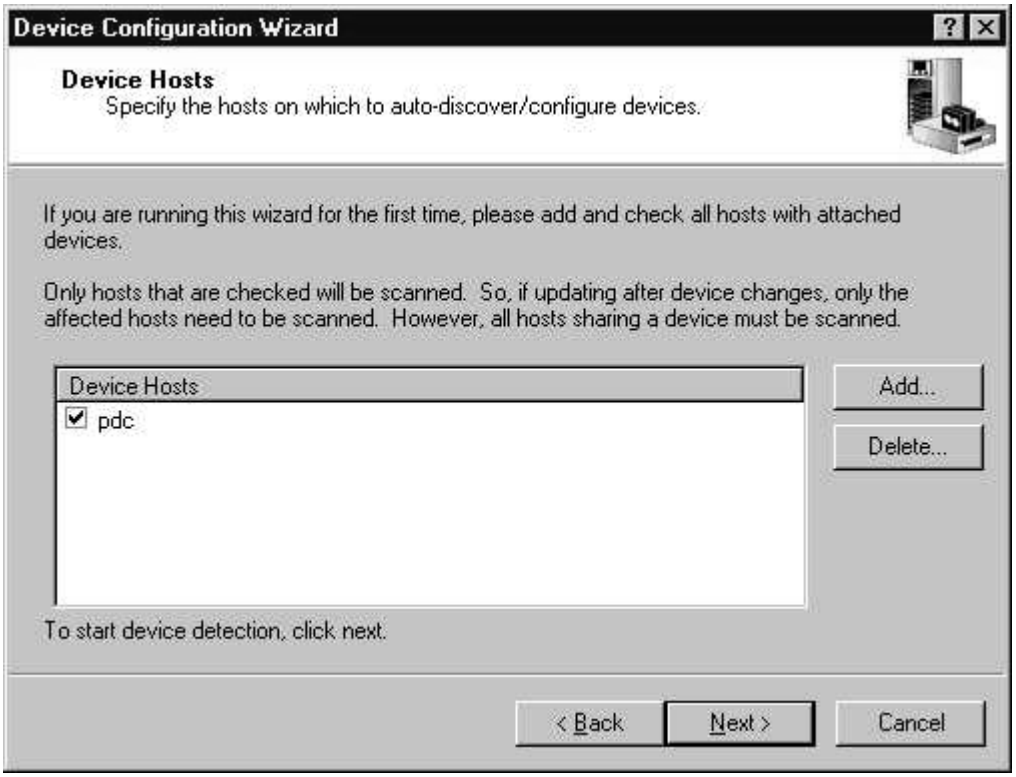
19. From the NetBackup Master server, launch the NetBackup Administrator by selecting Start > Programs > NetBackup Administrator.

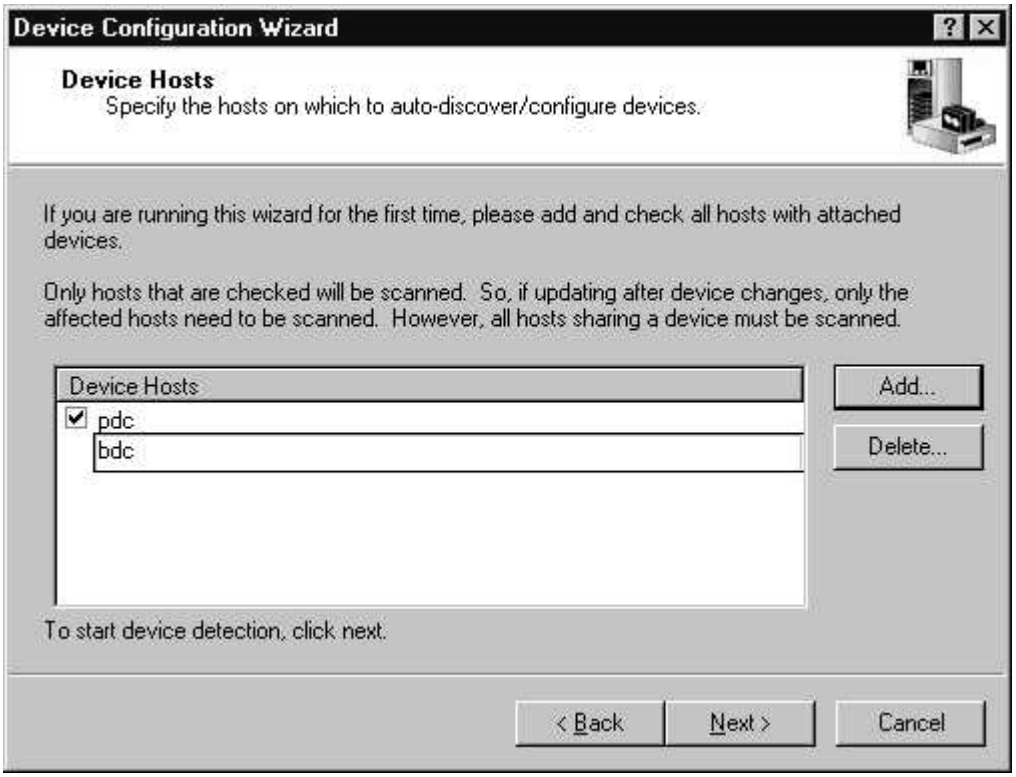


20. To begin the Device Configuration wizard, click on Next.

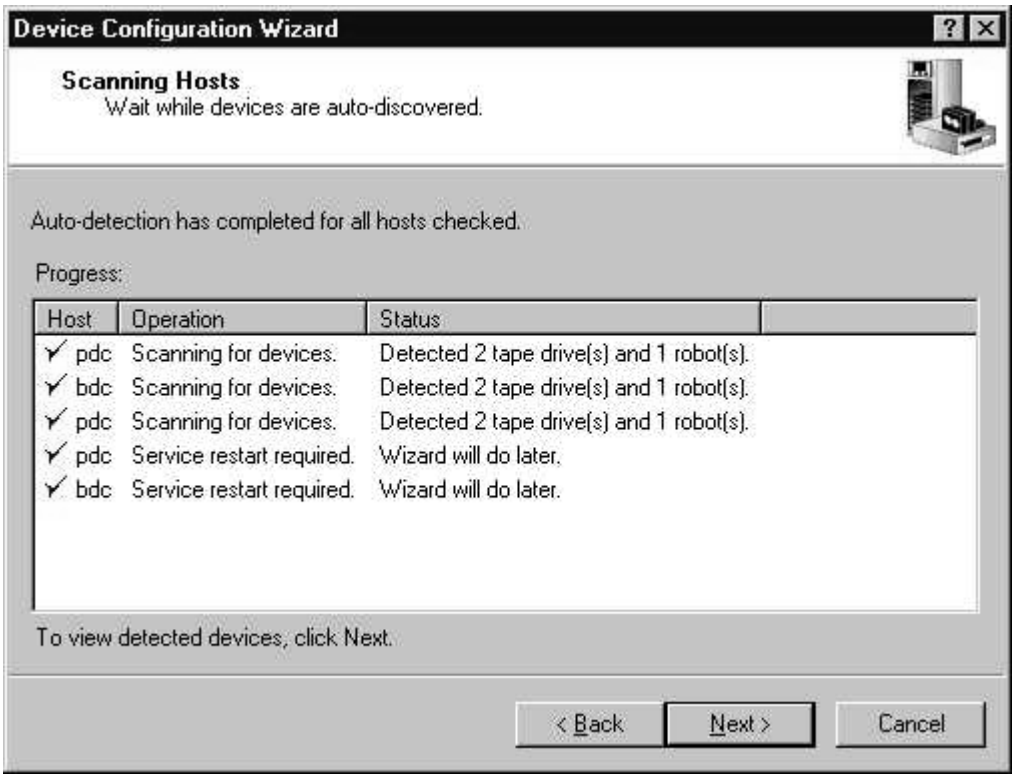


21. Click on Next.

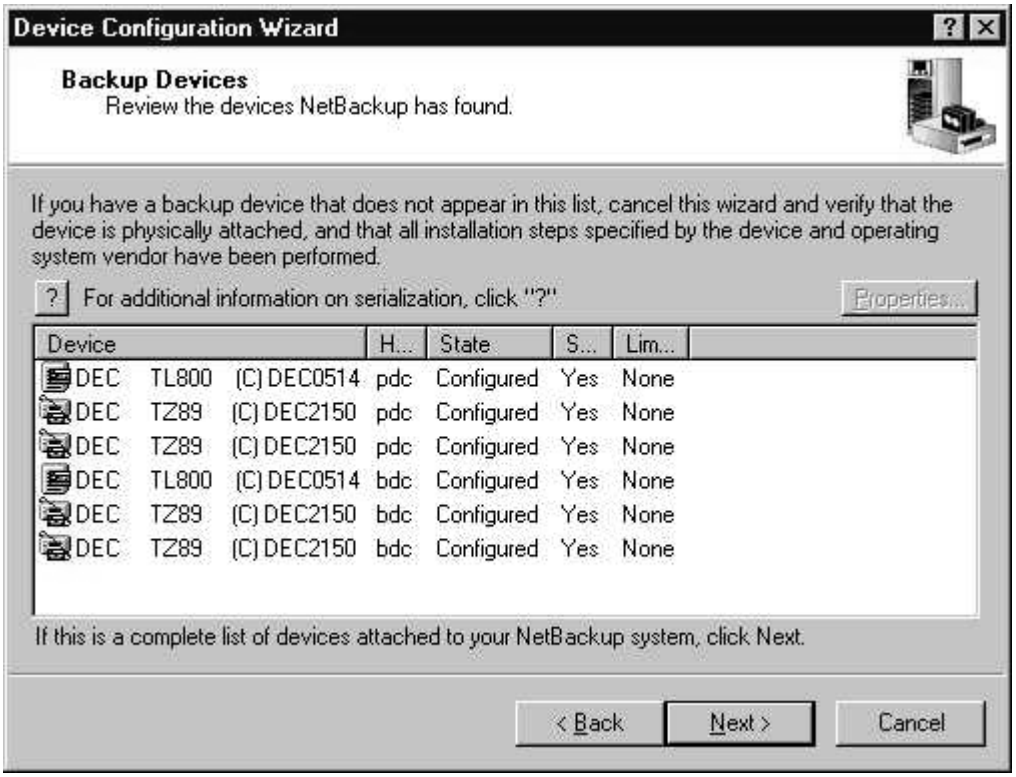




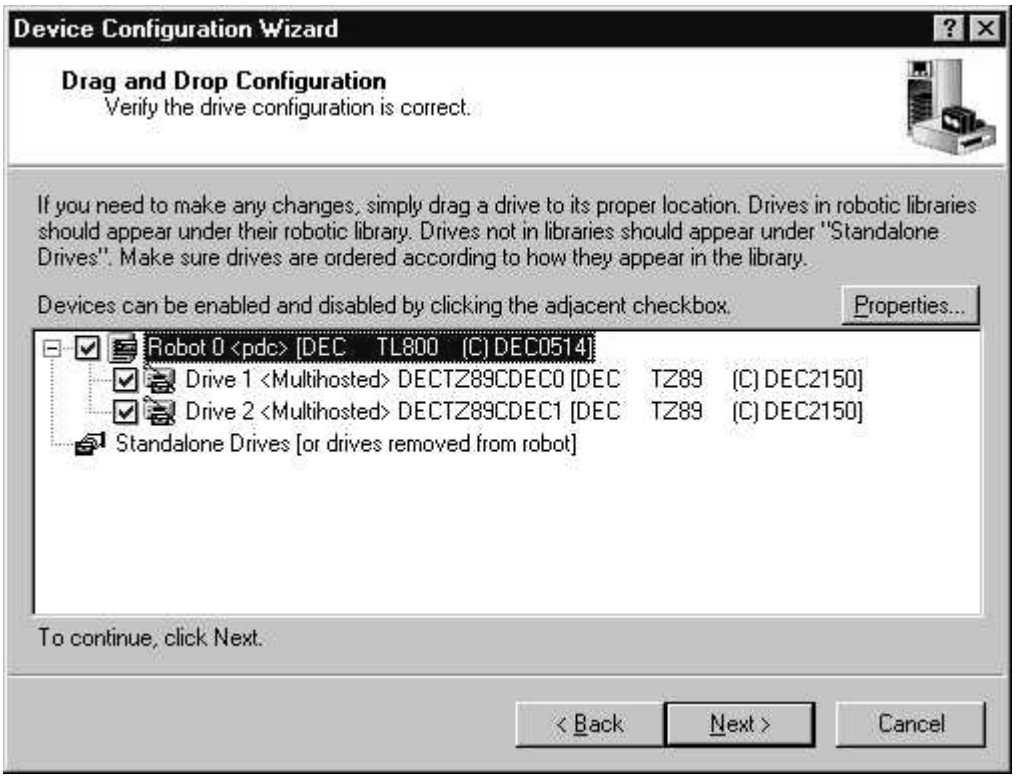
22. Click on Add and type in the name of the other server.
23. Click on Next.



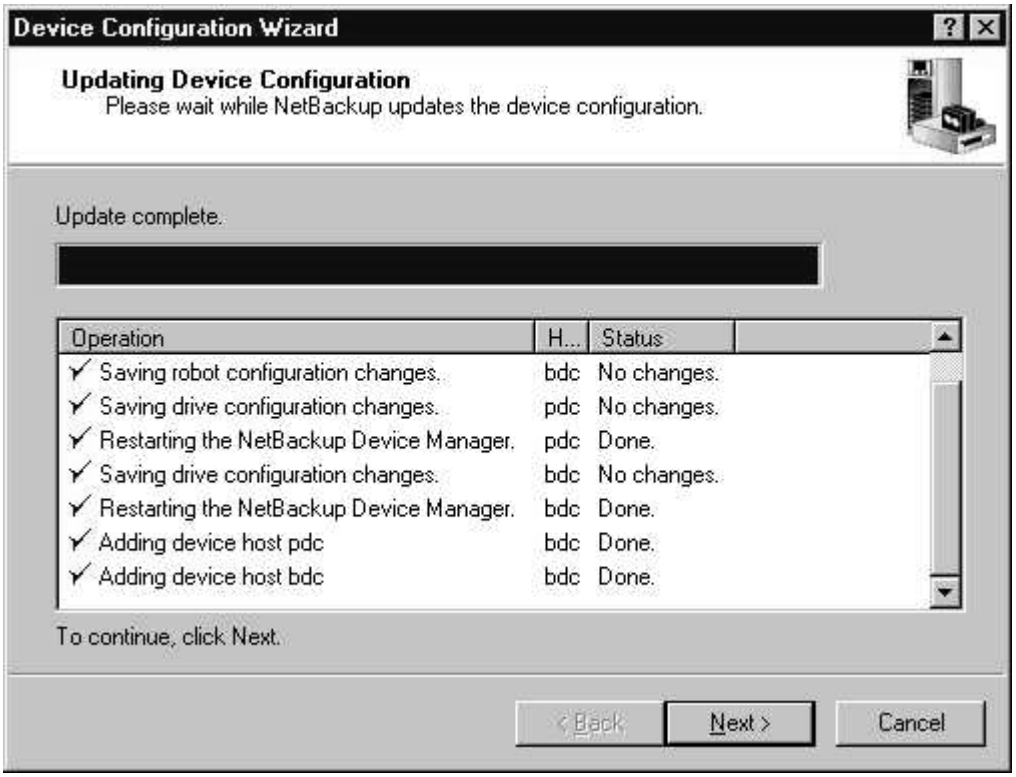
24. Click on Next after auto-detection has completed.



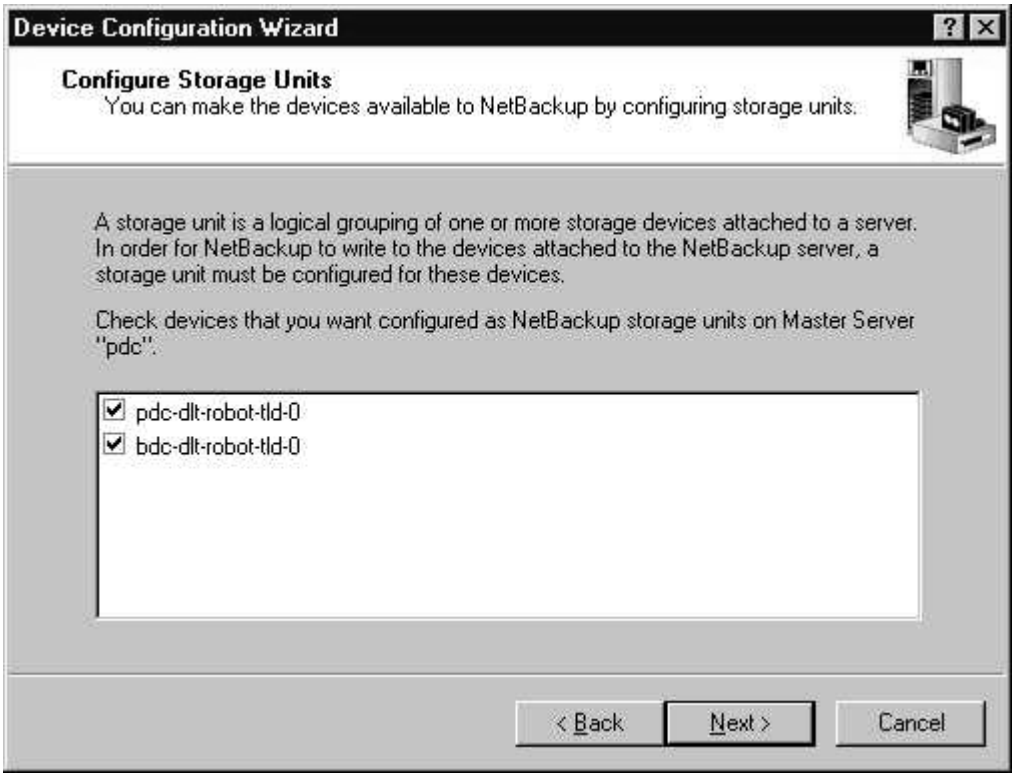
25. Click on Next after verifying that the robot and drives in the tape library are recognized.



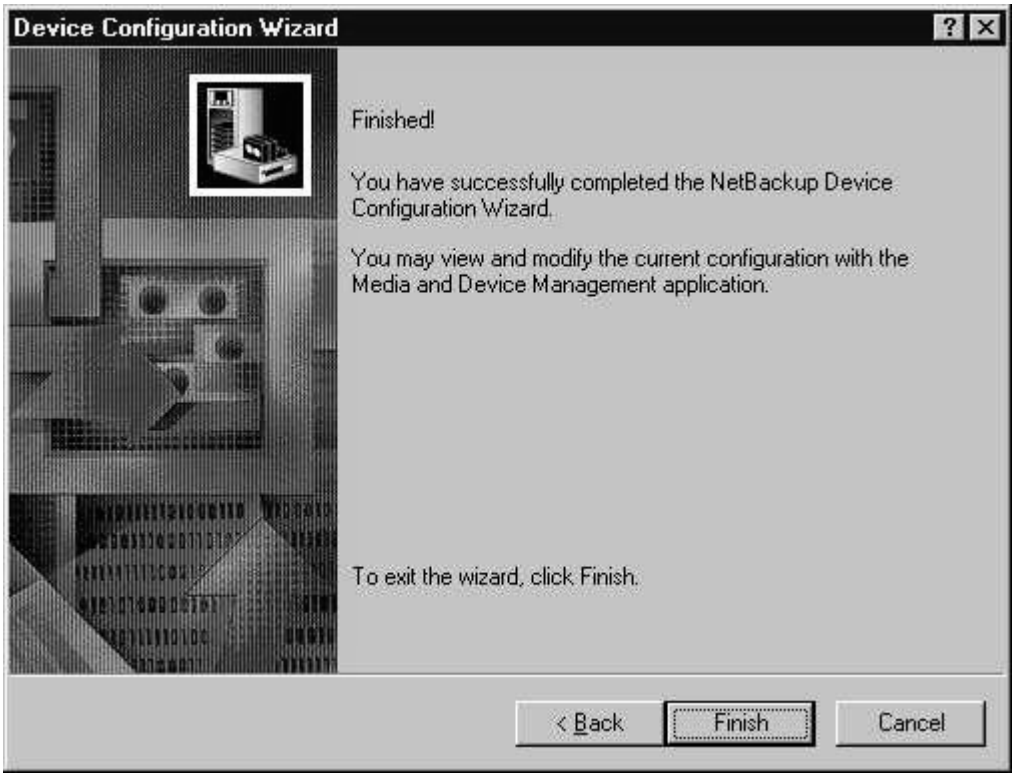
26. Expand the robot by clickin on the + sign and verify that the drives in the tape library are listed as “Multihosted”. Click on Next.



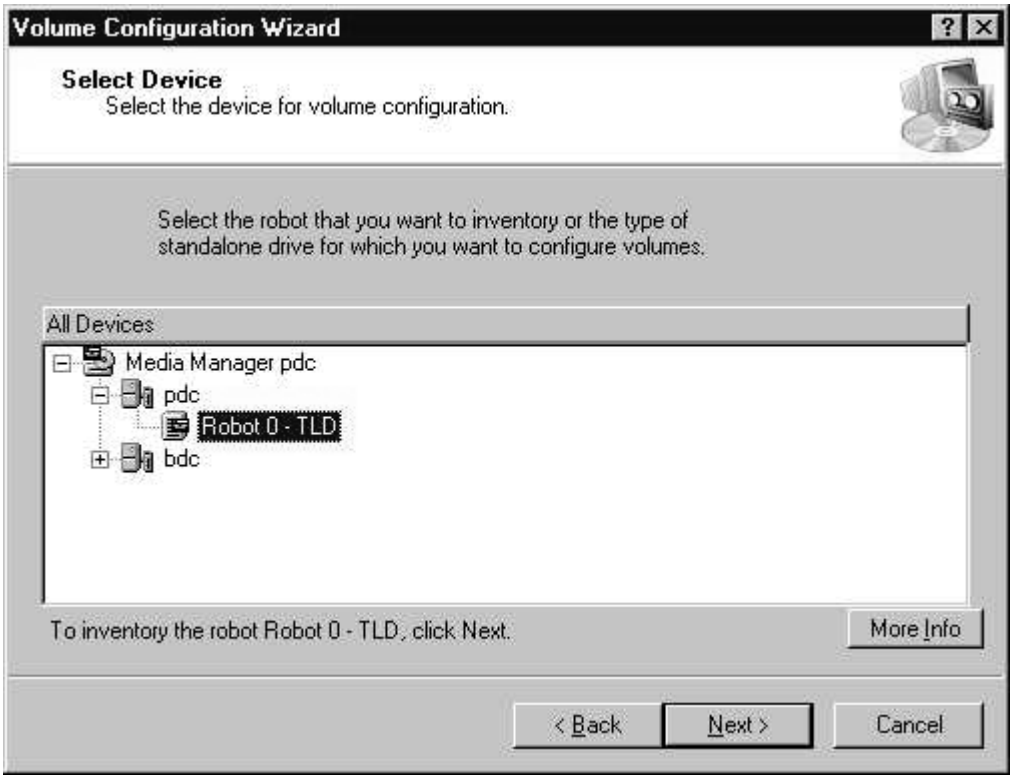
27. Click on Nex after updates are complete.



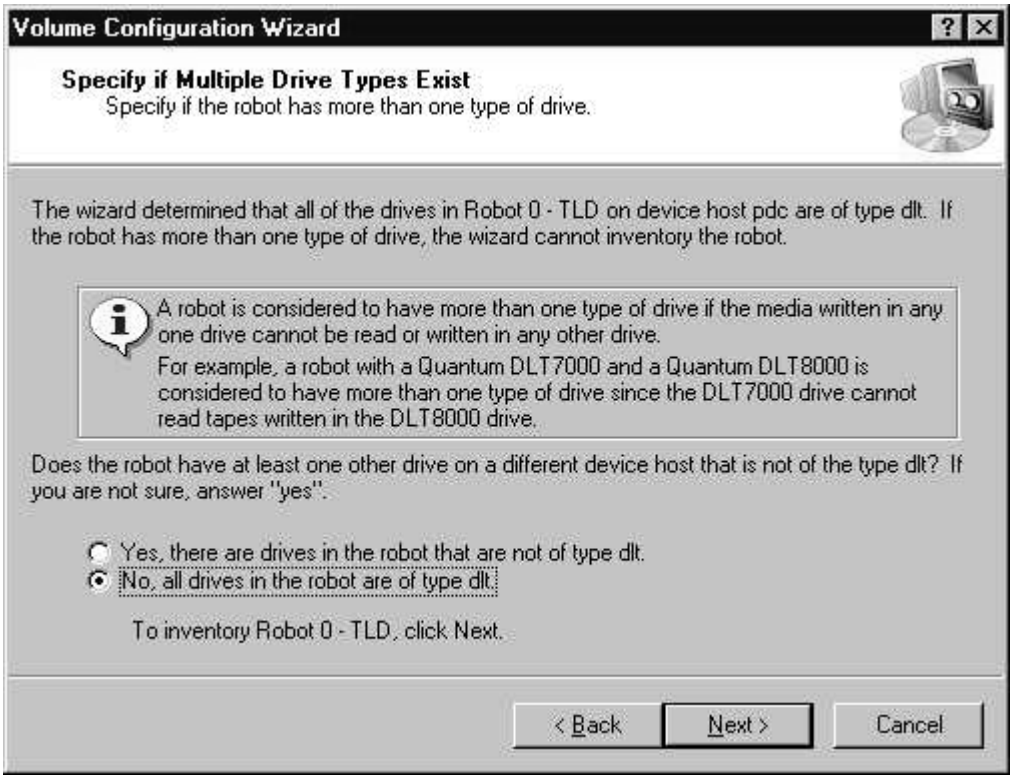
28. Check the Storage Units and click on Next.



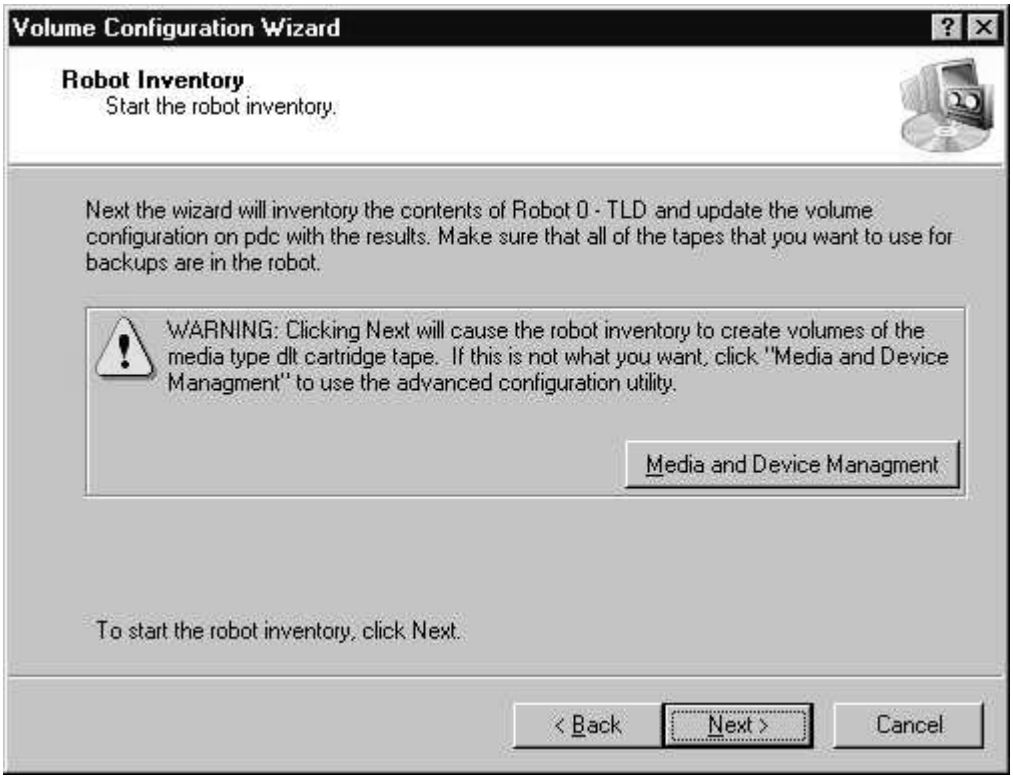
29. Click on Finish to complete the Device Configuration wizard.



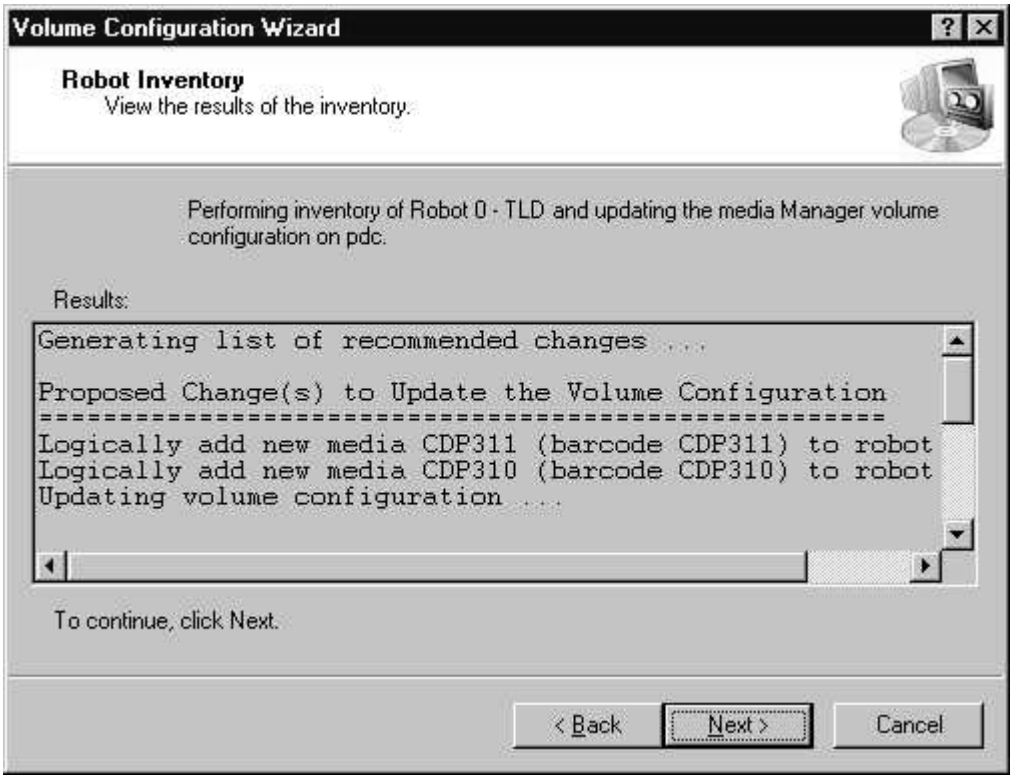
30. Expand the + sign next to the master server and click on the robot. Then click on Next.



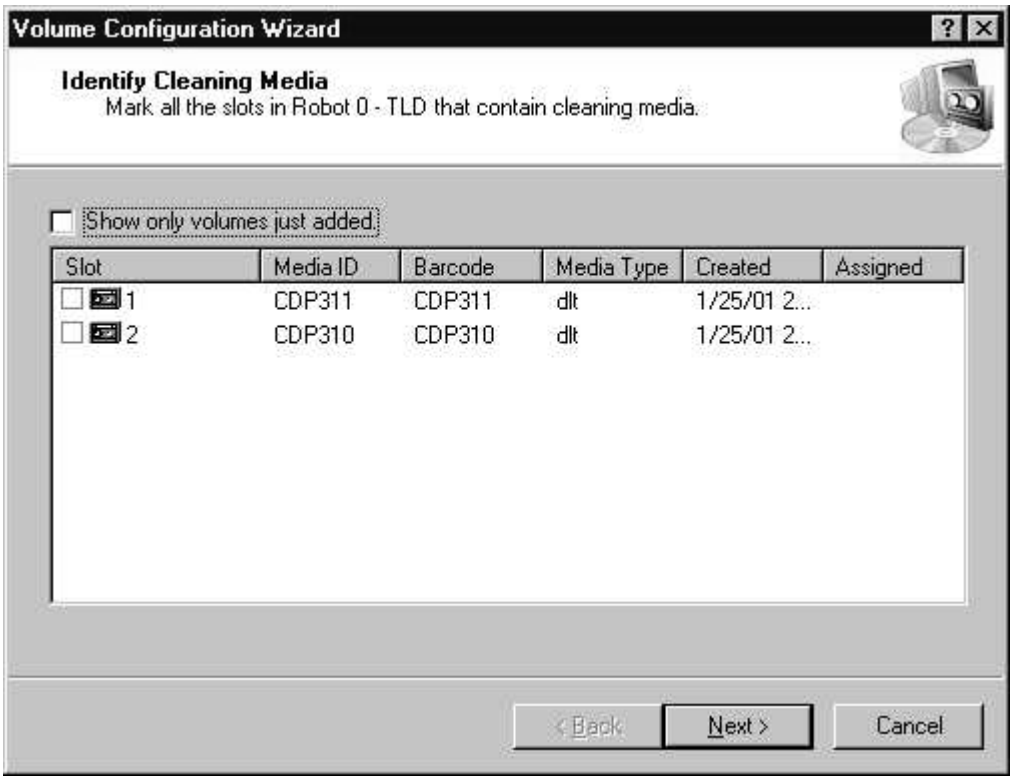
31. Click No so that only DLT tapes are used.



32. Click next to start the robot inventory.

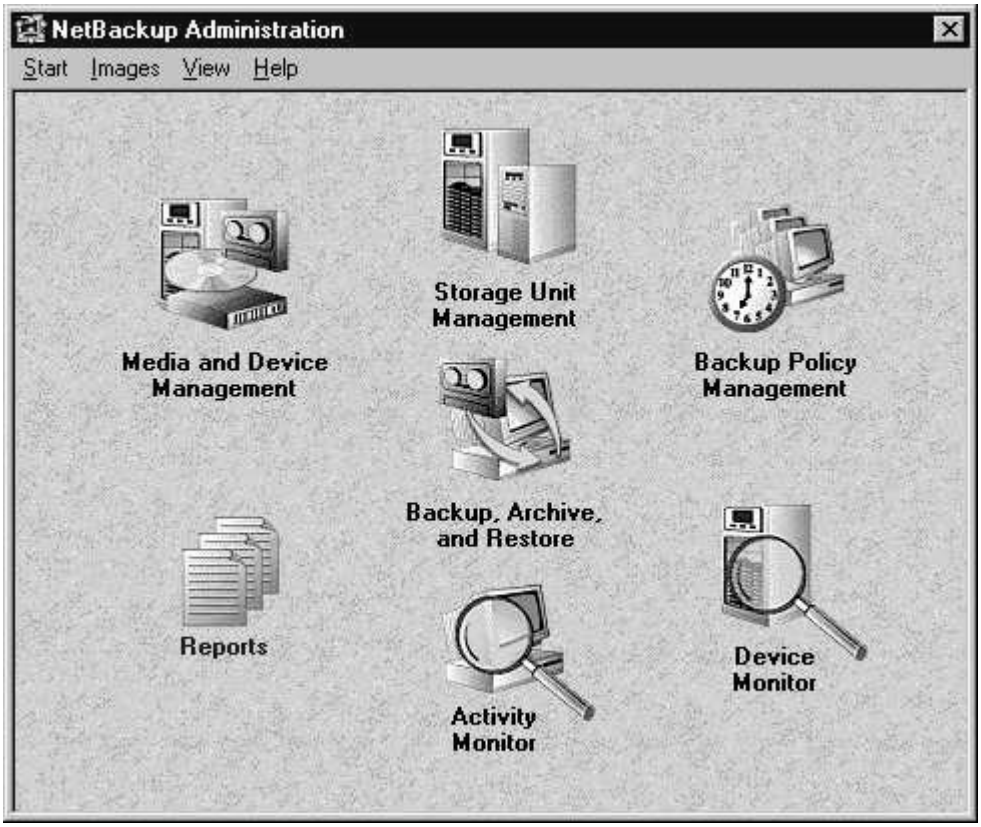


33. Verify that the results of the robot inventory. All tapes in the library should be listed. Click Next.

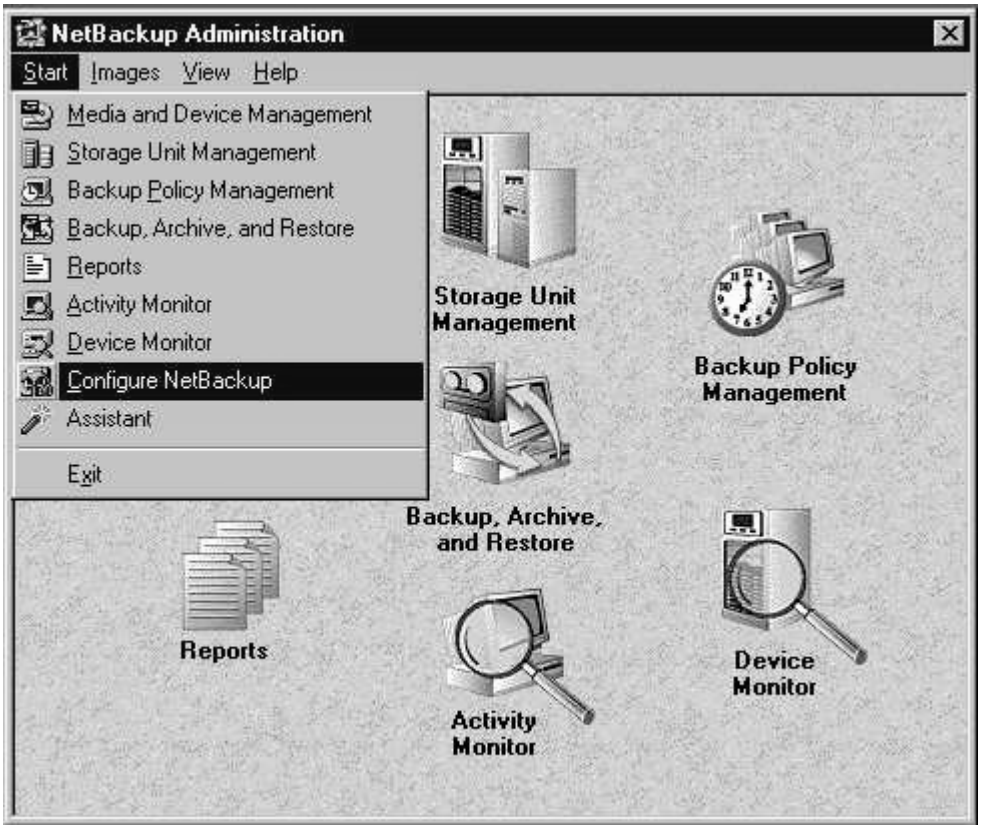


34. If any of the tapes are cleaning tapes, check the corresponding box. Click Next.

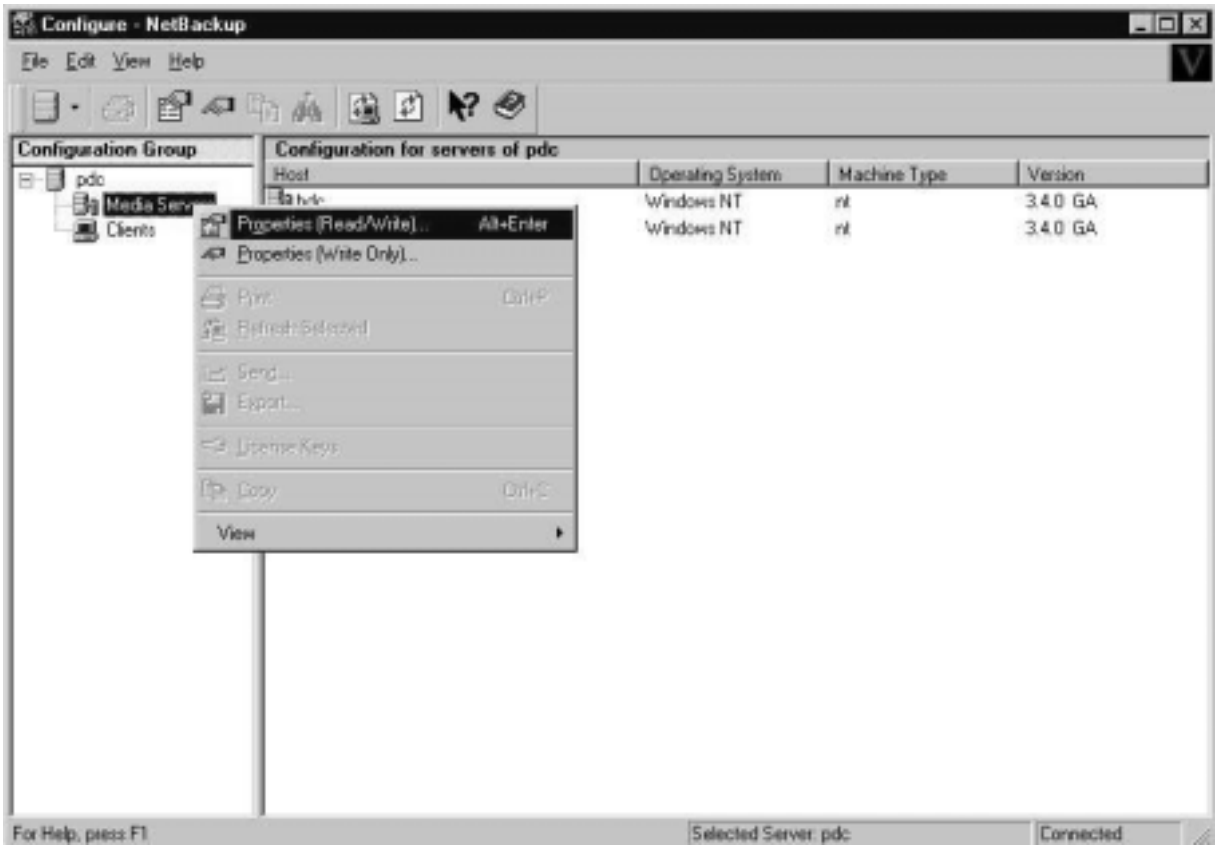
35. Click Finish to complete the Volume Configuration wizard.



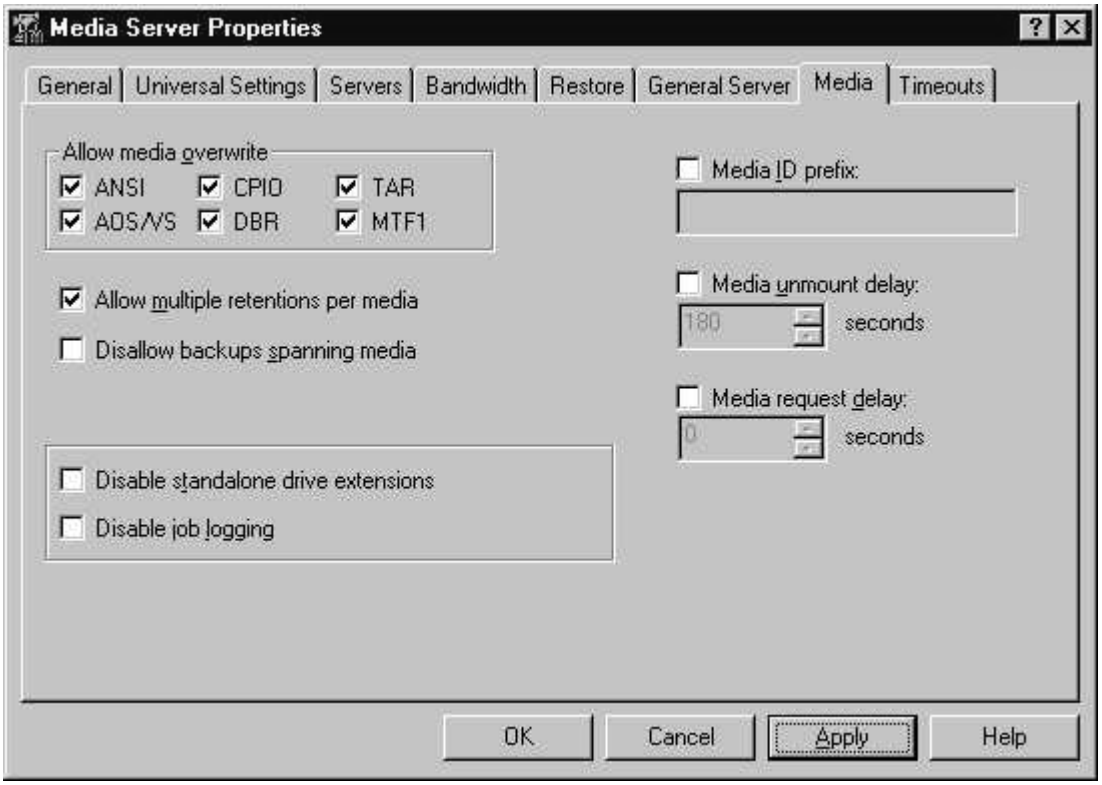
36. Launch the NetBackup Administration from Start > Programs > NetBackup Administration.



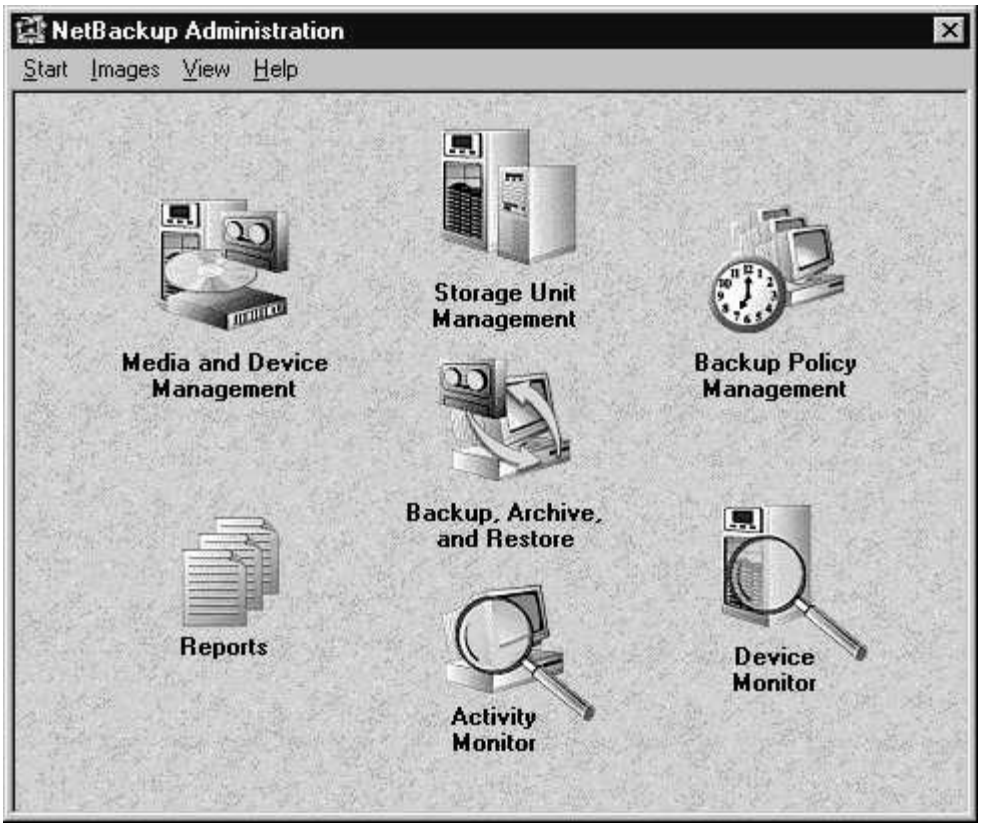
37. From the menu at the top, select Start > Configure NetBackup.



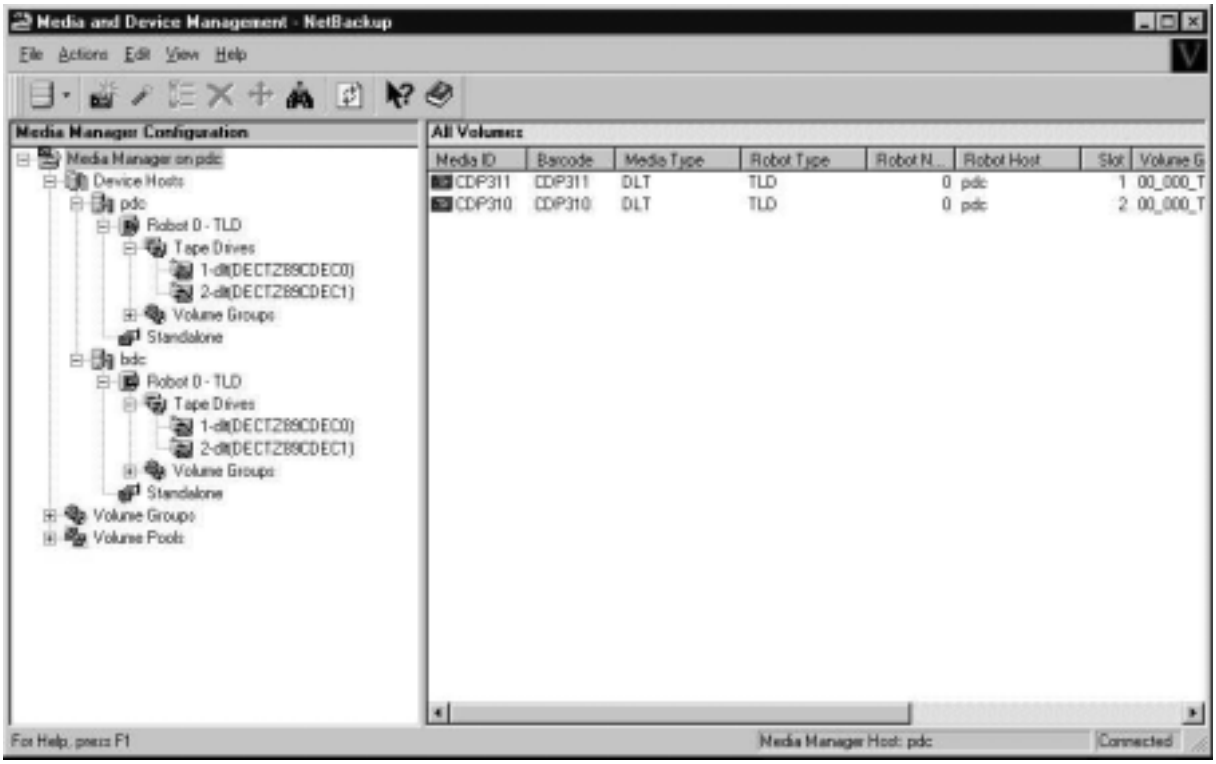
38. Click on Media Servers. Then right-click and select Properties.



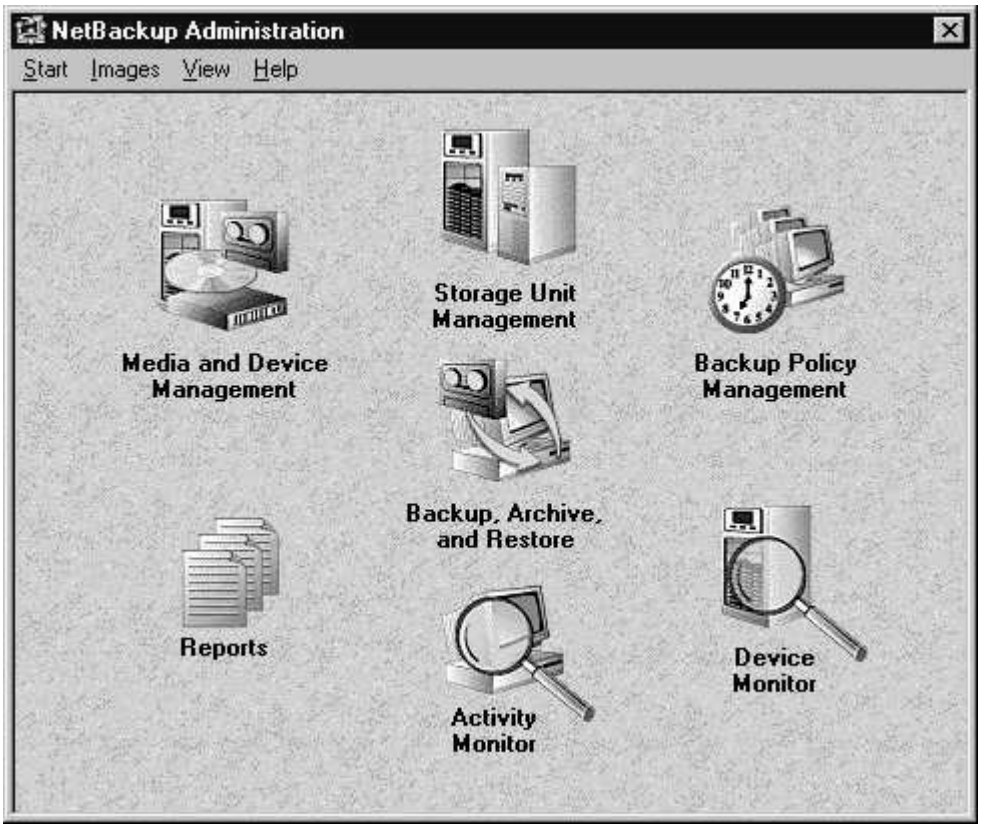
39. Select the Media tab. Select allow media overwrite for all the choices. Then click OK.



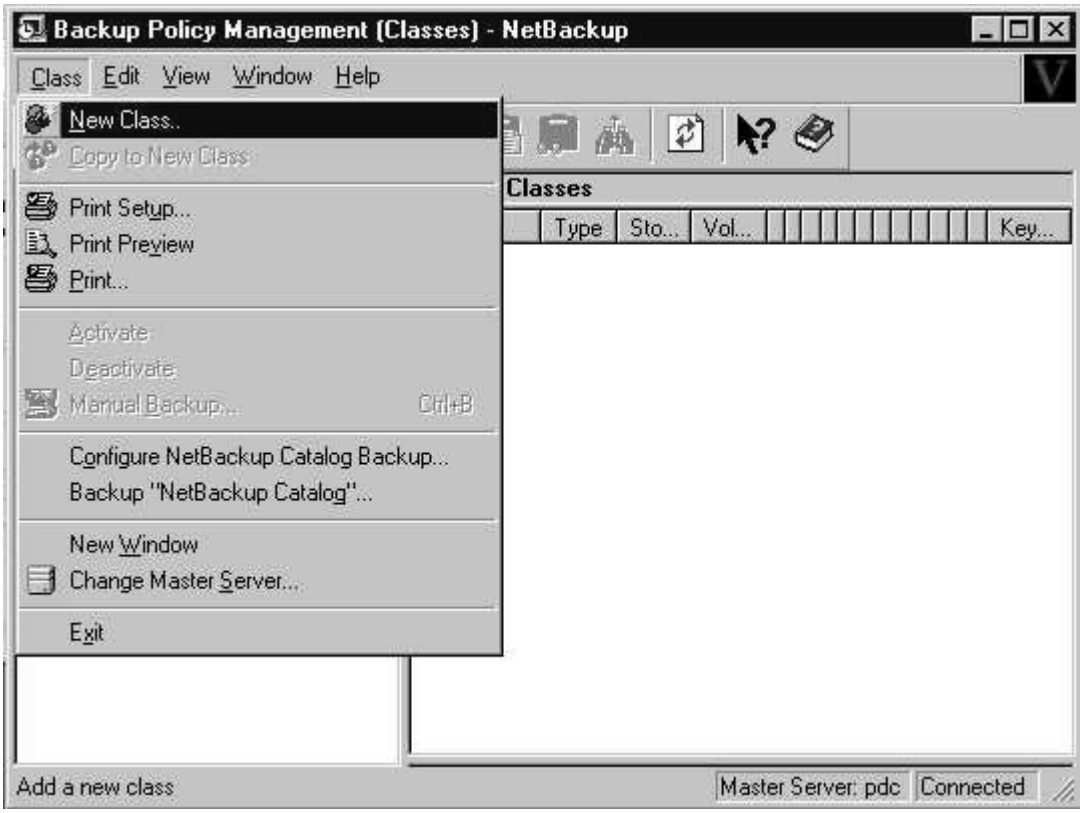
40. Return to the NetBackup Administration window. Select Media and Device Management.



41. Expand the + signs and verify that the robot, drives, and tapes are recognized. Then exit the window.

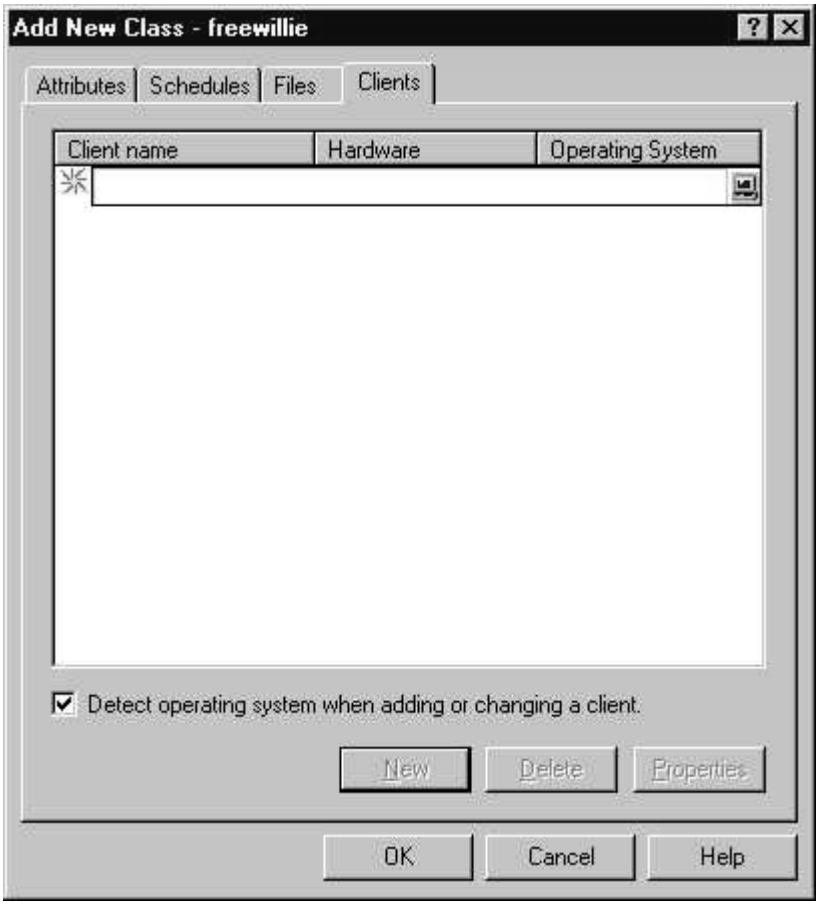


42. Launch the NetBackup Administrator window. Click on Backup Policy Management.



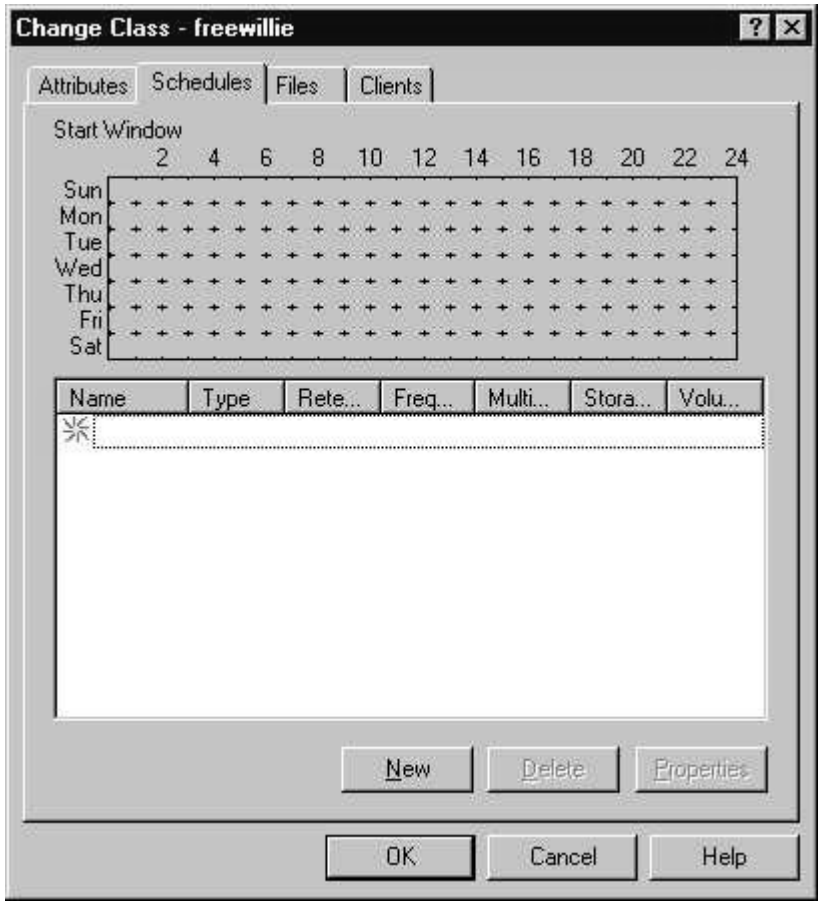
43. From the top menu, choose Class > New Class.

44. Type in the name for the class and click OK.

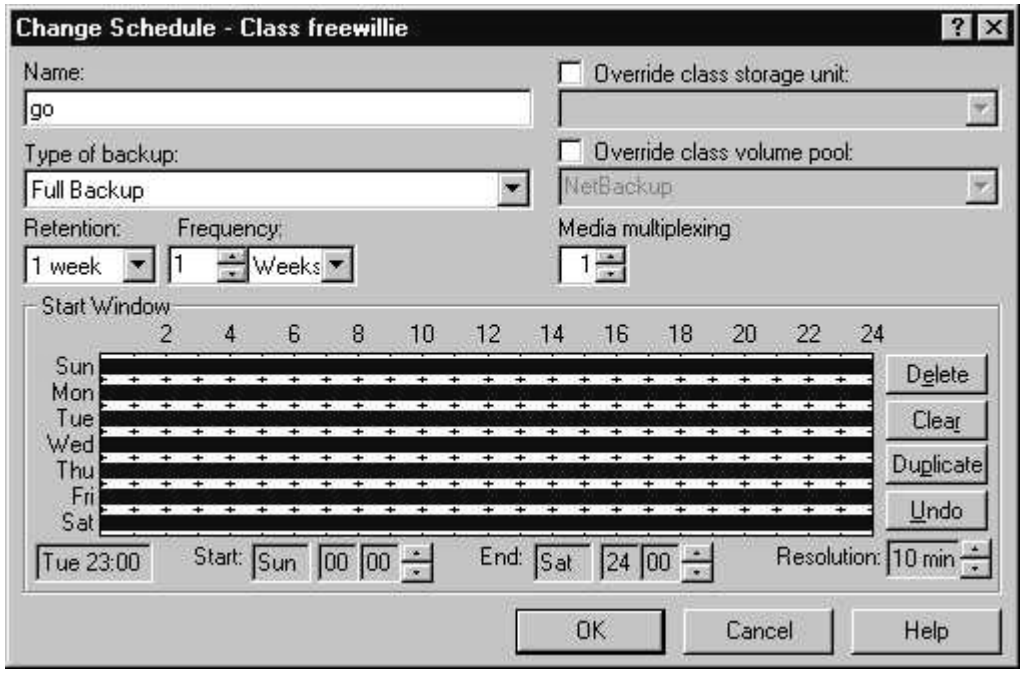


45. Click on the Clients tab. Then click on the small computer icon under the Operating System. Add both the master and the media servers into the clients list.

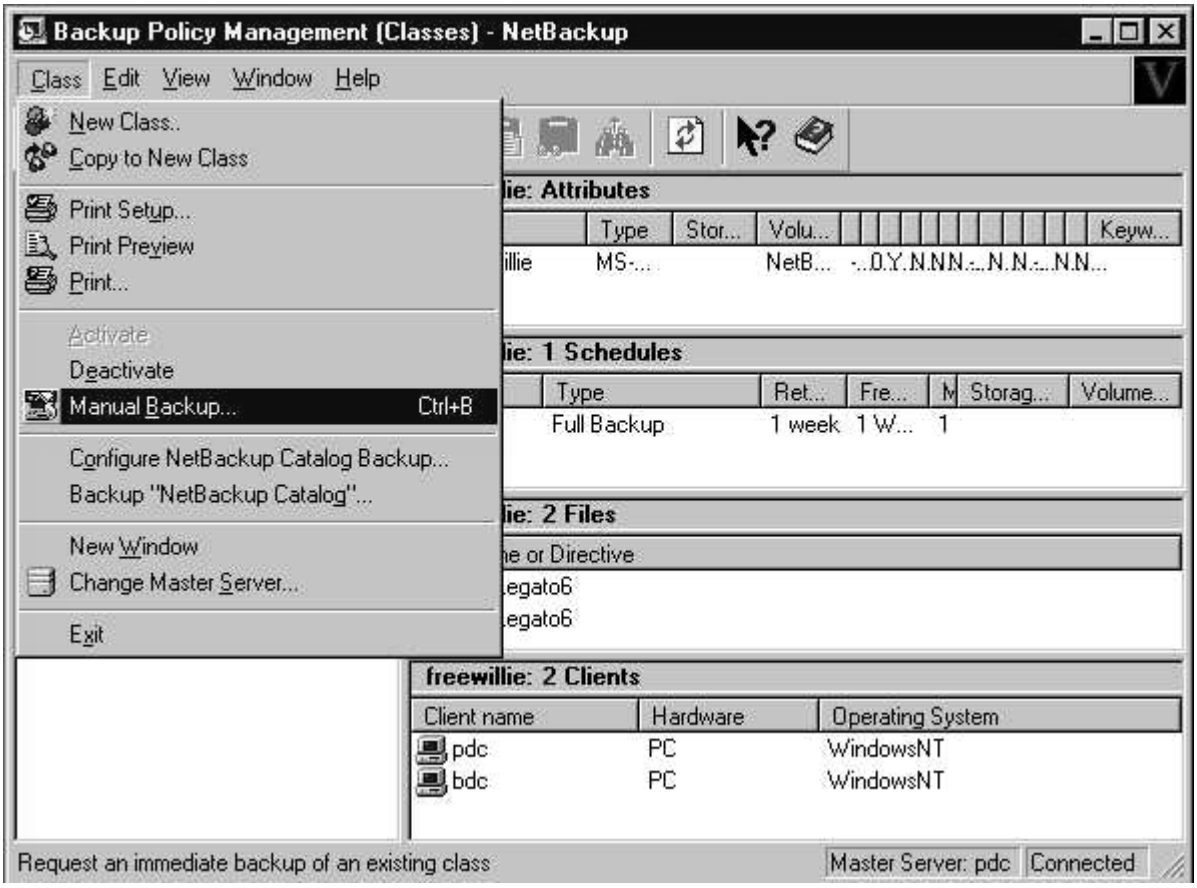
46. Click on the Files tab. Then click on the folders icon near the upper right corner. Choose some folders on both servers to back up.



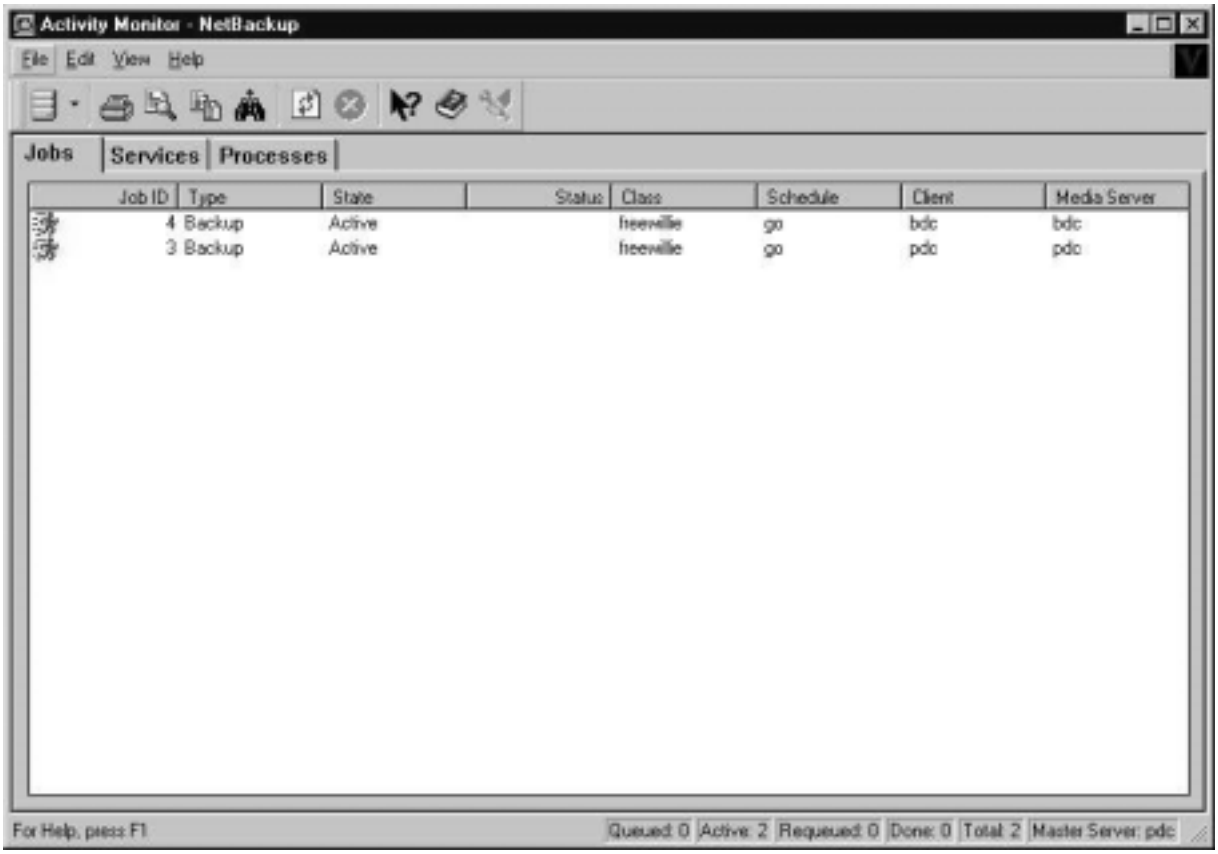
47. Click on the Schedules tab and then click New.



48. Type a name for the schedule and select all times. Change the retention to 1 week. Click OK.



49. From the top menu of the Backup Policy Management window, select Class > Manual Backup.



50. Return to the NetBackup Administration window. Click on Activity Monitor.

51. Right-click a particular backup job to monitor the progress of the backup.

Objective

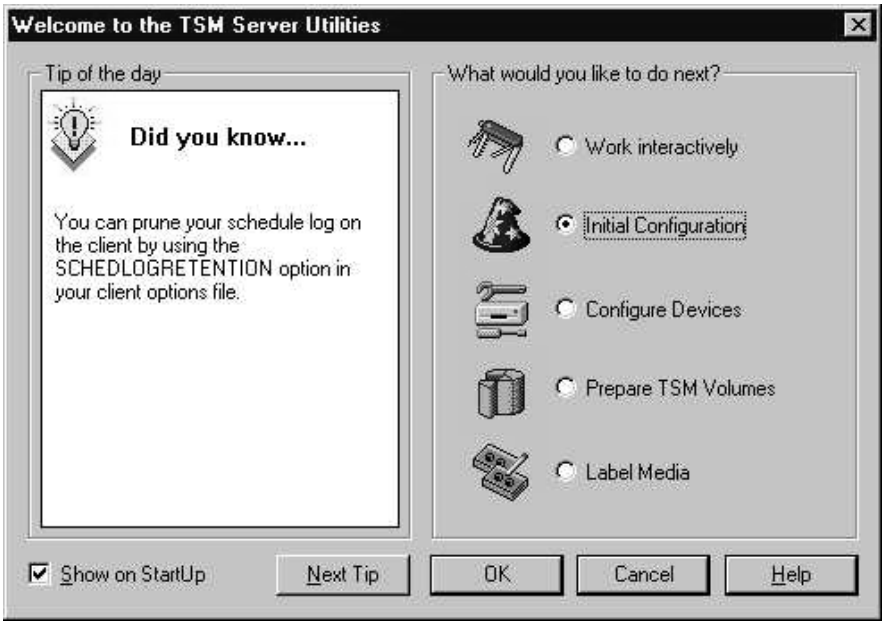
After completing this module, you will be able to install and configure NetWorker for Microsoft Windows NT.

Requirements

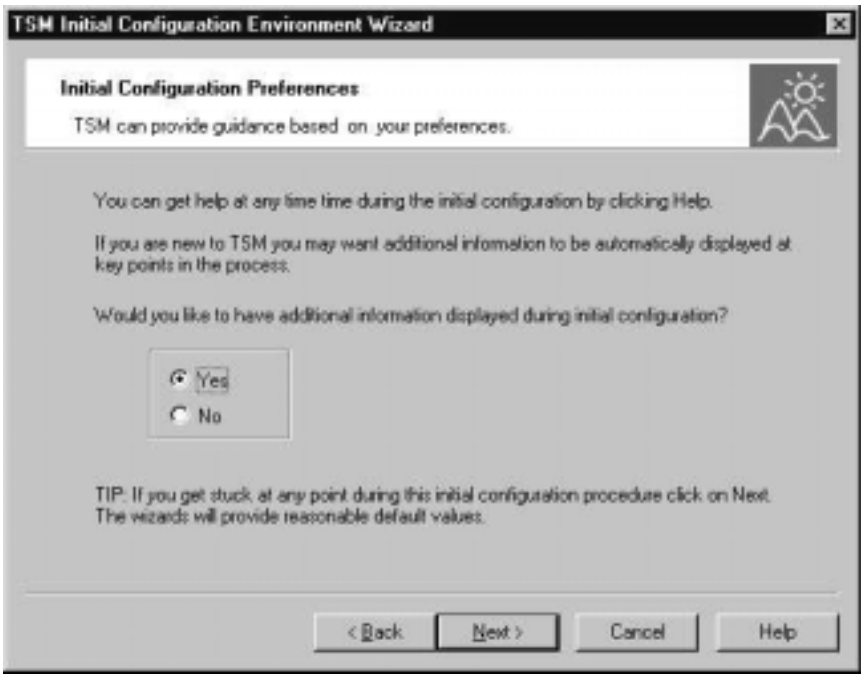
- Windows NT 4.0 with Service Pack 6
- 64MB RAM
- 110 MB disk space

Procedure

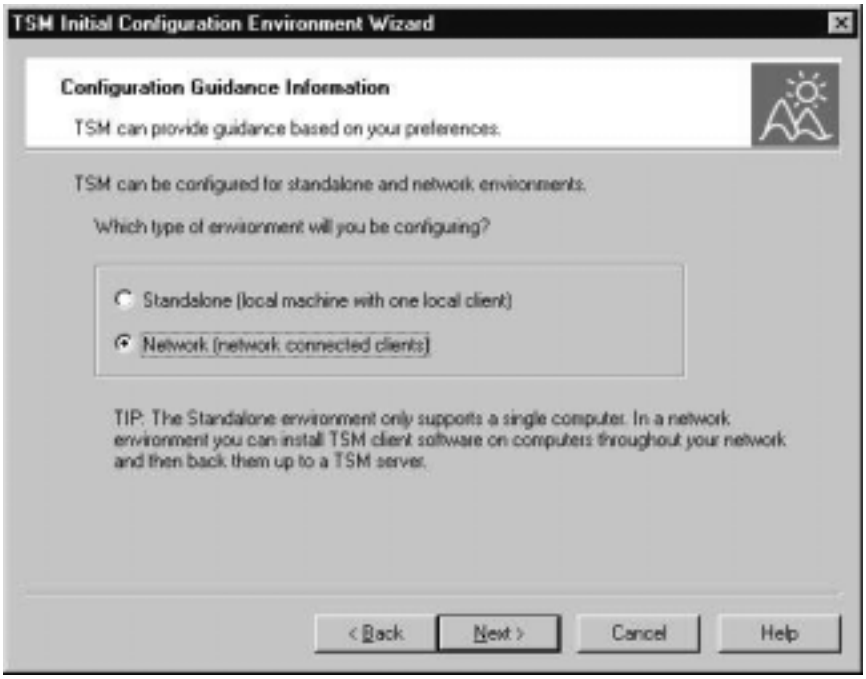
1. Insert the TSM 4.1 for Windows CD and install defaults as prompted. Reboot.
2. Install the TSM 4.1.1. upgrade. Reboot.



3. Access TSM Server Utilities via icon. When windows appear, choice for Initial Configuration should be default. Click OK to configure.

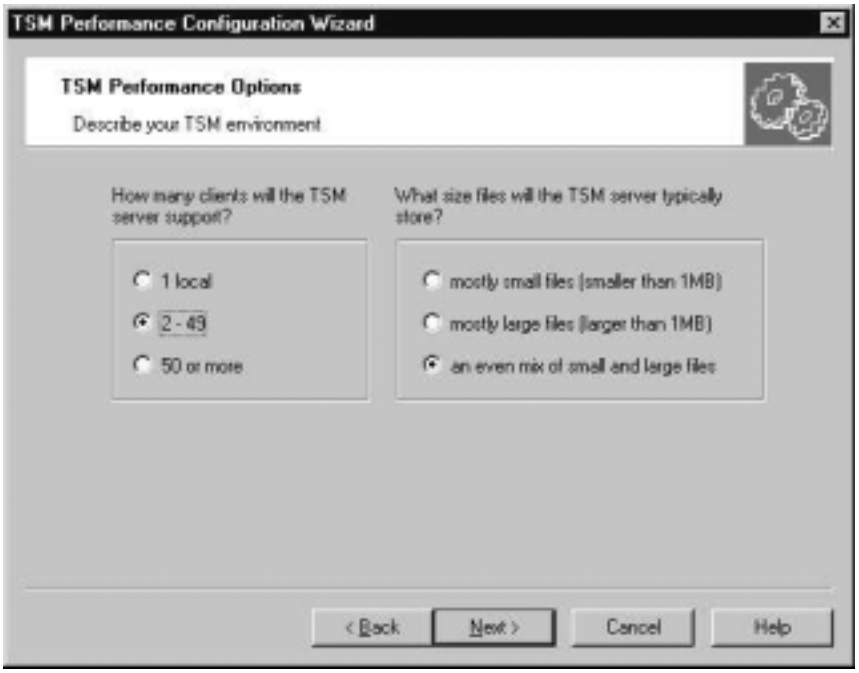


4. Default is to have additional info displayed during procedures. Click Next.

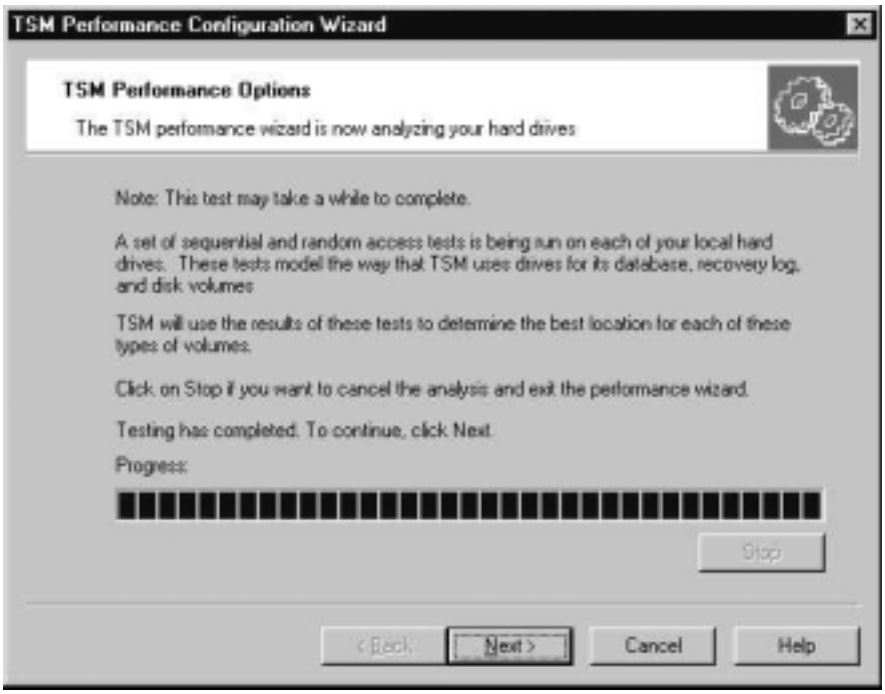


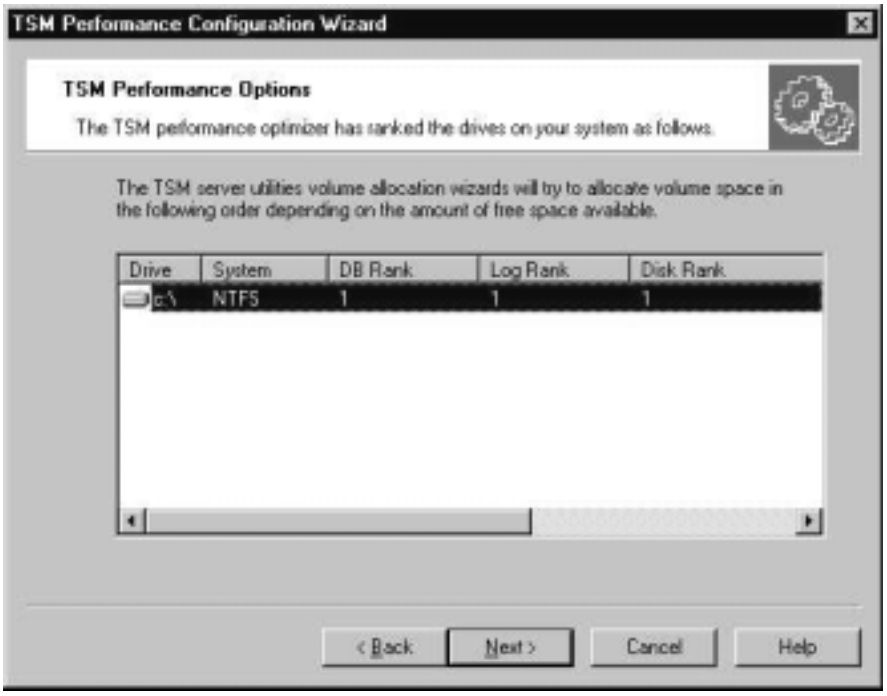
5. Default is Network configuration. Click Next.
6. Click Finish to complete Initial Configuration Wizard.

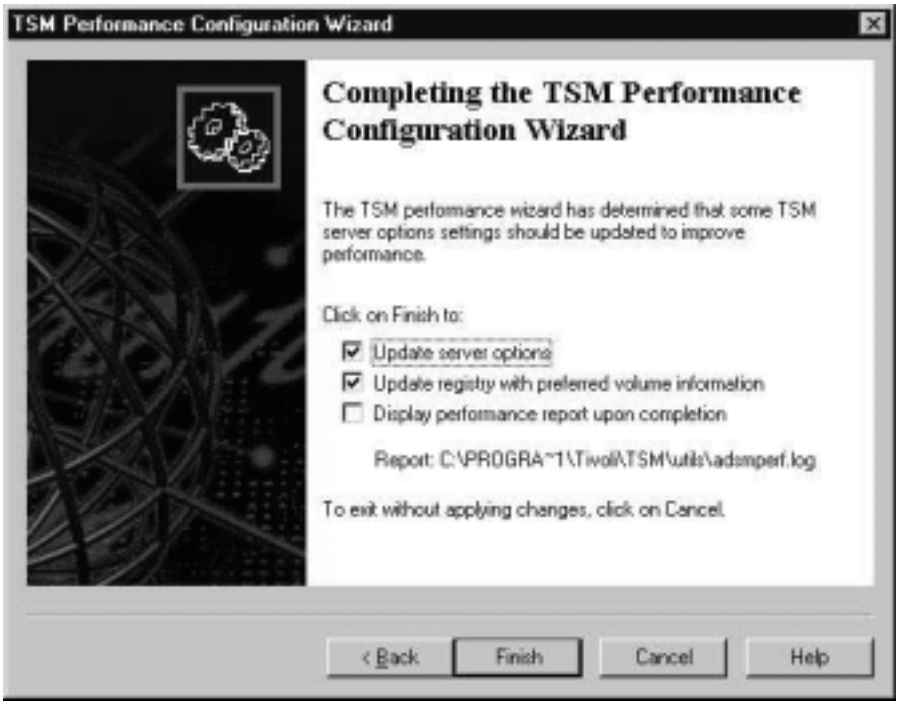
7. Click Next to start Performance Wizard.



8. Default is 2-49 clients, and a mix of small and large files. This will suffice for our test purposes. Click Next.

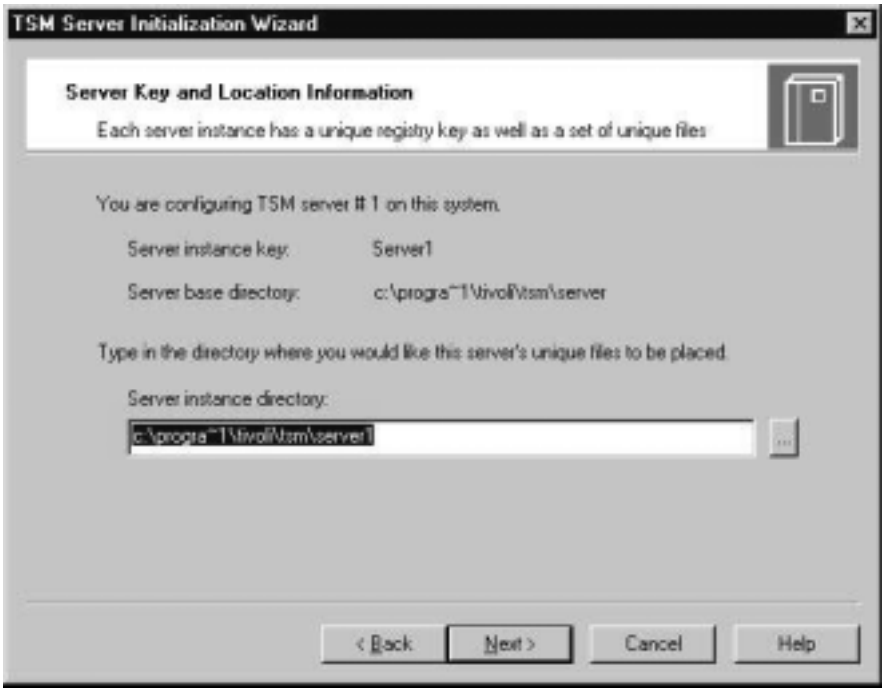




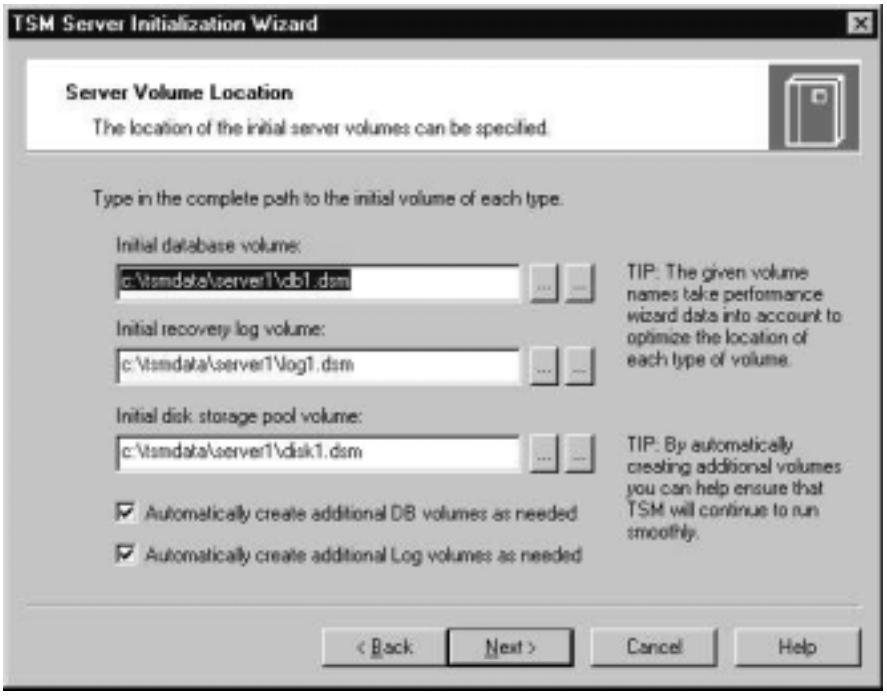


9. Performance Wizard will now analyze the available volumes for recommendations on where to set up disk storage pools, recovery logs, etc. Click Next when complete. Click Finish to complete.

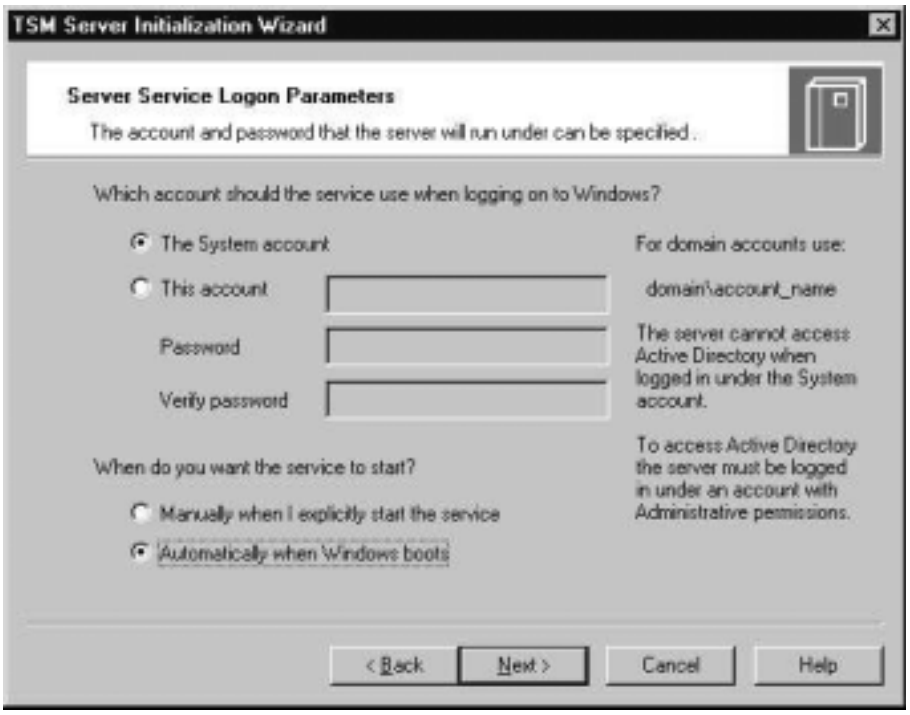
10. Click Next to start Server Initialization Wizard. Click Next.



11. Leave defaults for Server Key and Location Information. Click Next.

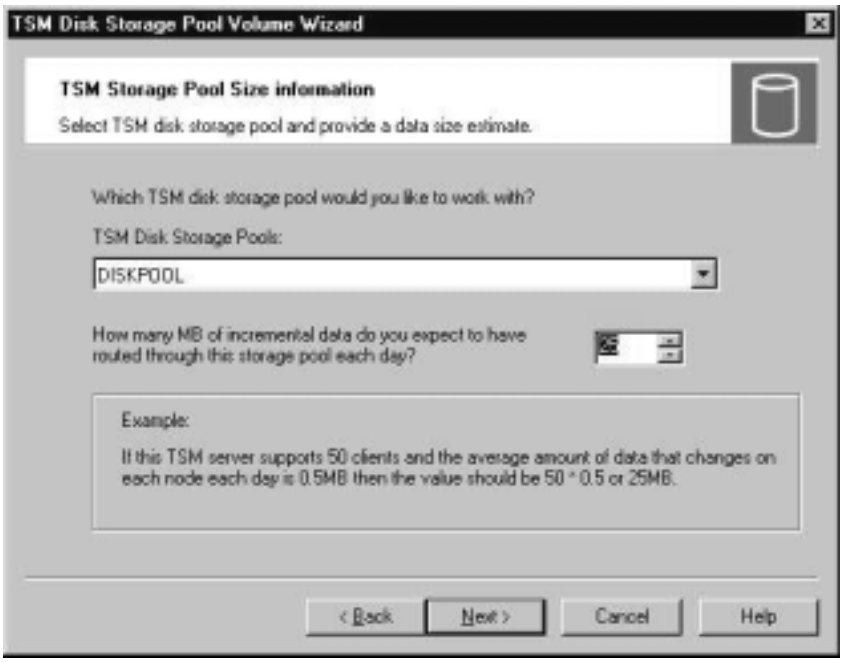


12. Leave defaults for volume locations. Click Next.

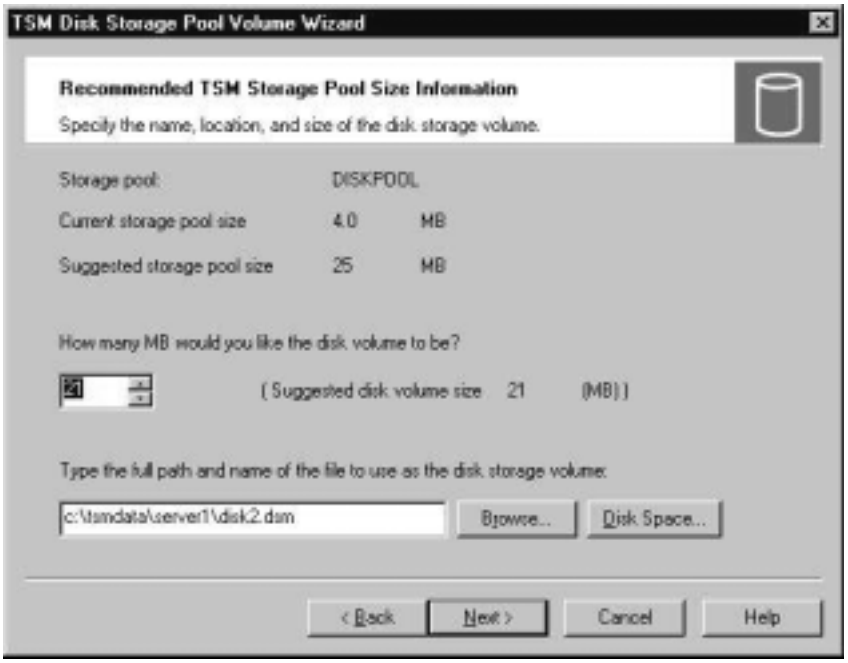


13. Leave the System account as the choice for login account. Choose Automatically when Windows boots for the service start choice. Click Next.
14. Click Finish to complete Server Initialization.

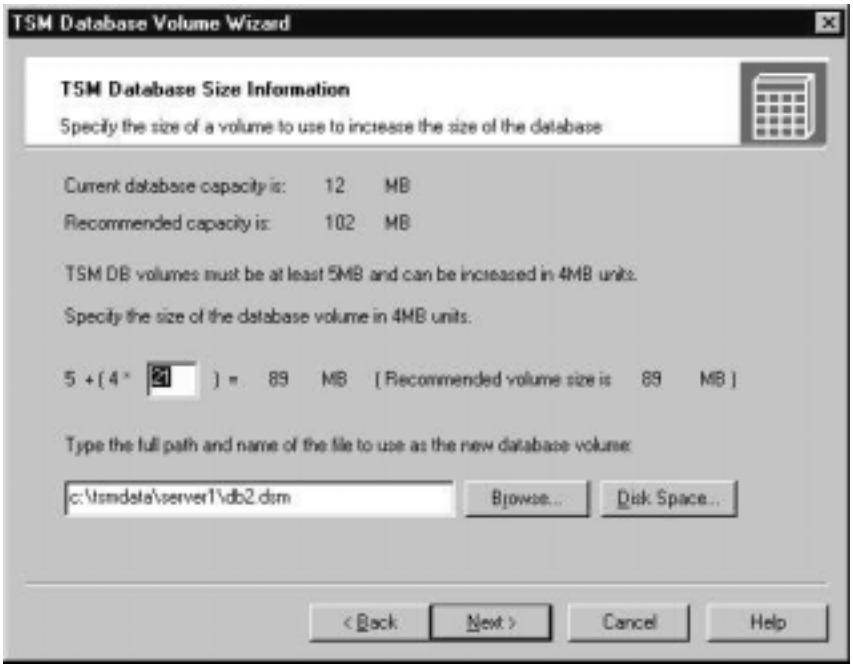
15. Click Next to start the Disk Storage Pool Volume wizard.



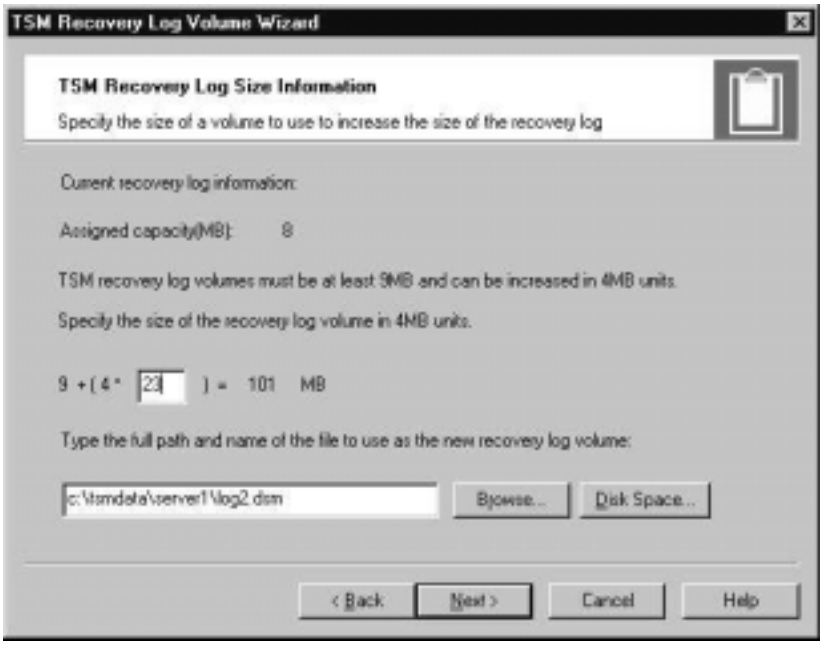
16. For our purposes, the disk storage pool volume needs to be relatively small. We are more interested in writing to tape than providing quick access to incremental data for restore purposes. Make DISKPOOL 100 MB. Click Next.



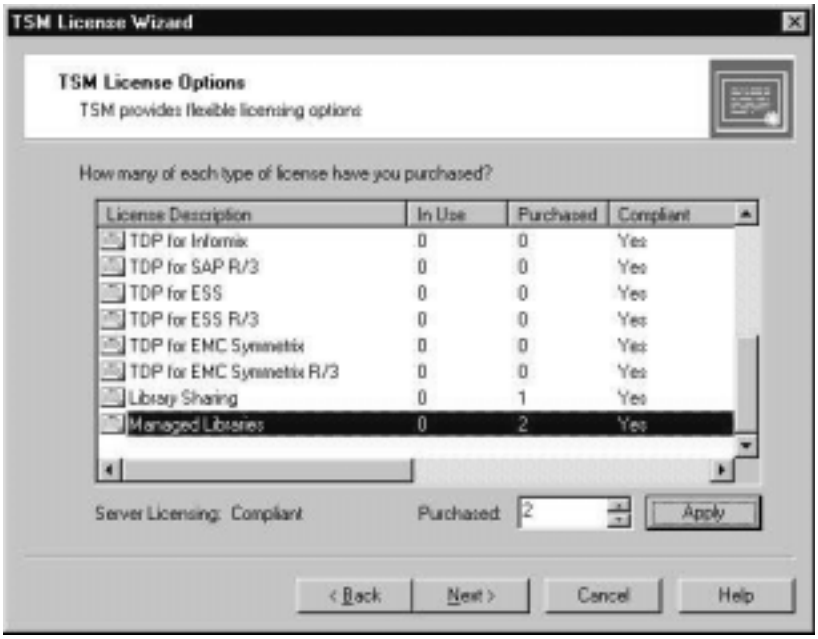
17. Leave defaults for storage pool size. Click Next.



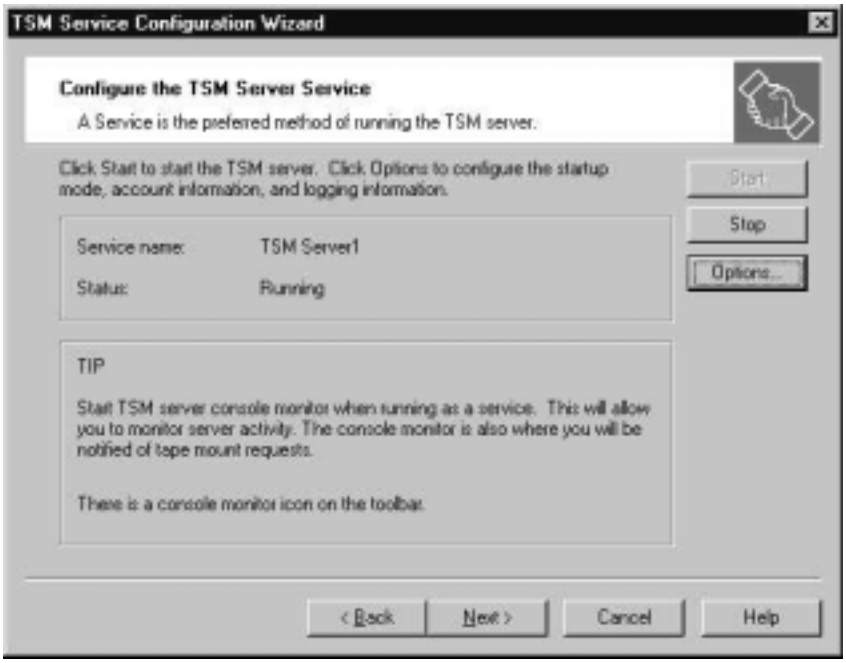
18. Choose defaults for database volume wizard.



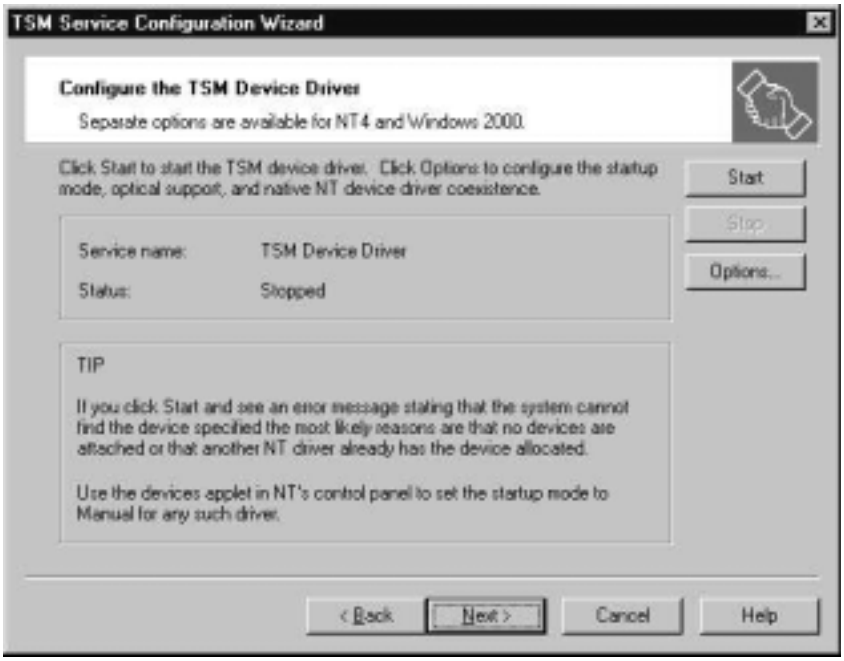
19. In recovery volume wizard, make sure volume is at least 100 MB. Entering 23 in the calculation window will create a recovery log volume of 101 MB. Click Next, then Finish.



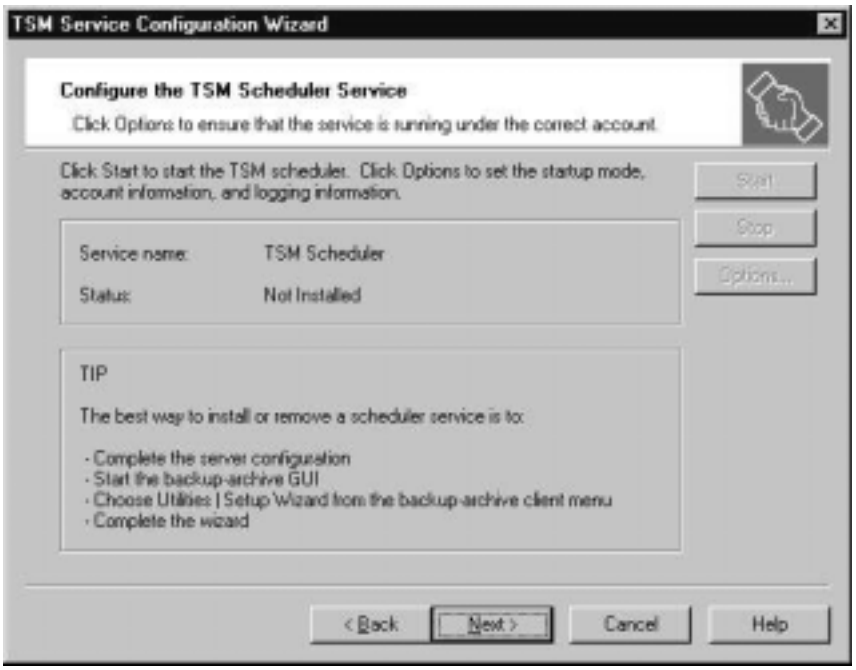
20. In license wizard, enable 50 Managed System for LAN licenses, 50 Managed System for SAN licenses, one Shared Library license, and several Managed Library licenses *if this is the library master. If it is a library client, do not enable the Managed Library license.*



21. In the service configuration wizard, click on Options. The Server service should already be started and set to Automatic. Confirm and click Next.



22. Click on Options and configure the Device Driver to start automatically. Click Start to start the driver and click Next to continue. NOTE: Do not do this if you are using the IBM 3584 LTO tape library (Anaconda). It uses its own drivers and not the TSM driver.



23. The Scheduler service will need to be installed later via the Backup/Archive GUI. Click Next to continue.

24. **DO NOT USE THE DEVICE CONFIGURATION WIZARD.** Configuring the library and drives are more easily done via command line. Click Cancel to opt out of this wizard. Click Yes when asked if you want to mark this wizard as completed.

25. **DO NOT USE THE CLIENT NODE CONFIGURATION WIZARD.** You will need to set up the local client node after configuring the library. Again, when prompted, mark the task as completed.
26. **DO NOT USE THE SCHEDULING WIZARD.** This is best done after configuring the client node. Mark the task as completed.
27. **DO NOT USE THE CLIENT OPTIONS WIZARD.** This is only for setting up specific situations for backup clients. As we will work only with servers, this is unnecessary. Mark the task as completed.
28. This completes the initial server setup. Click no when prompted to begin a backup of the local client.

Tivoli Storage Manager 4.1.1 Configuration and Backup

Appendix L: Module 6 – Lab 1

Objective

After completing this module, you will be able to configure Tivoli Storage Manager with Microsoft Windows NT and then run a backup job.

Requirements

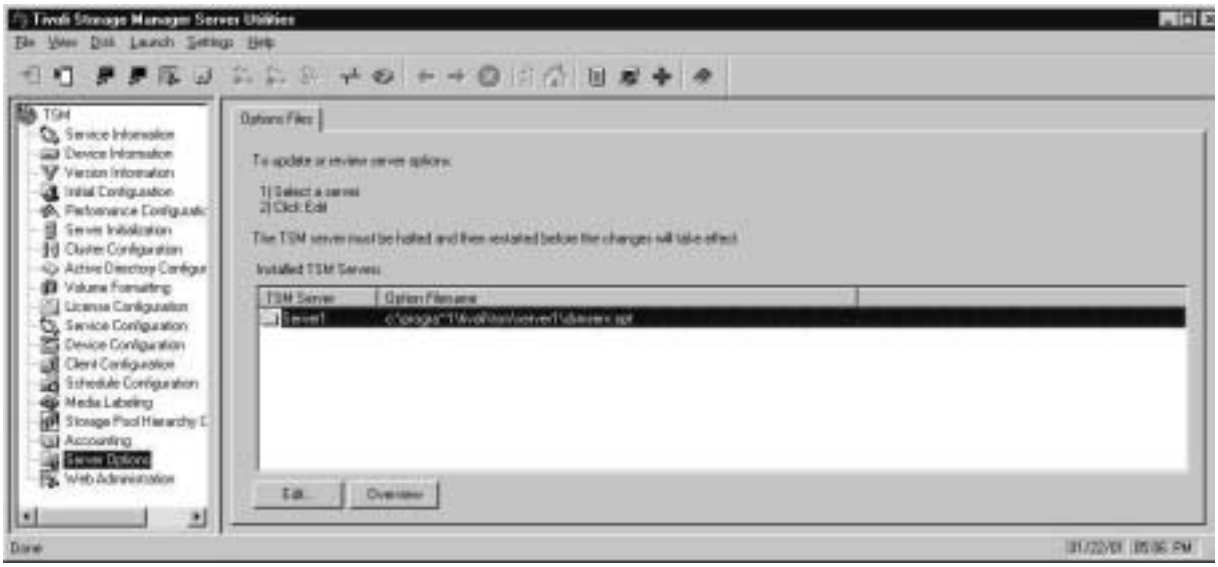
- Windows NT 4.0 with Service Pack 6
- 64MB RAM

Procedure

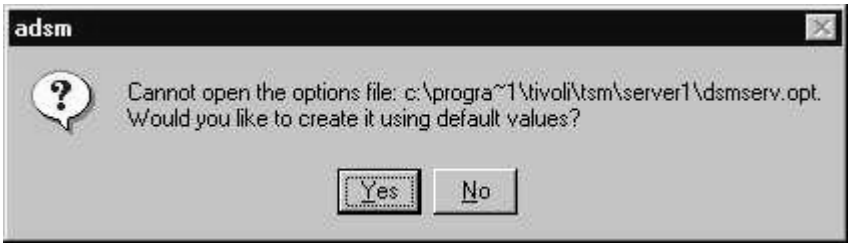
After installing TSM and running the wizards as outlined in the Installation Procedure, perform the following functions to configure TSM for the lab environment.

NOTE: The web-based interface is the easiest way to perform these tasks; therefore, all instructions in this procedure will refer to the web-based commands.

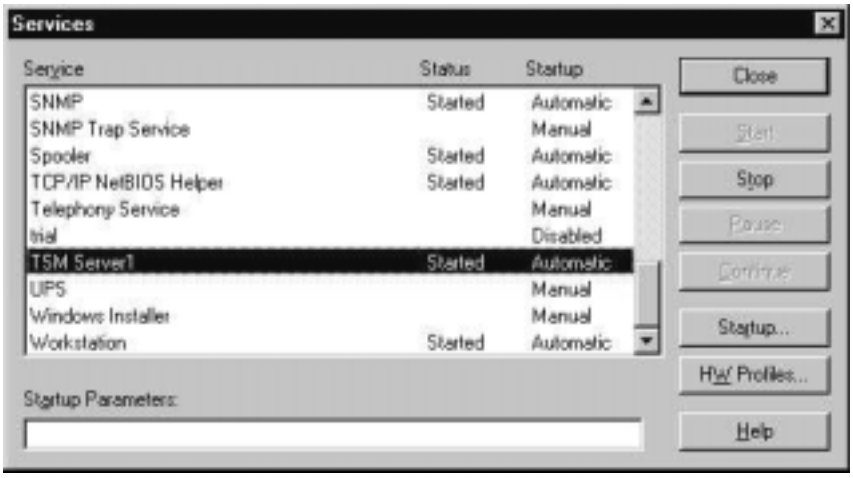
1. Open the Tivoli Storage Manager Server Utilities by clicking on the desktop shortcut.



2. Click on Server Options and then click on Edit.



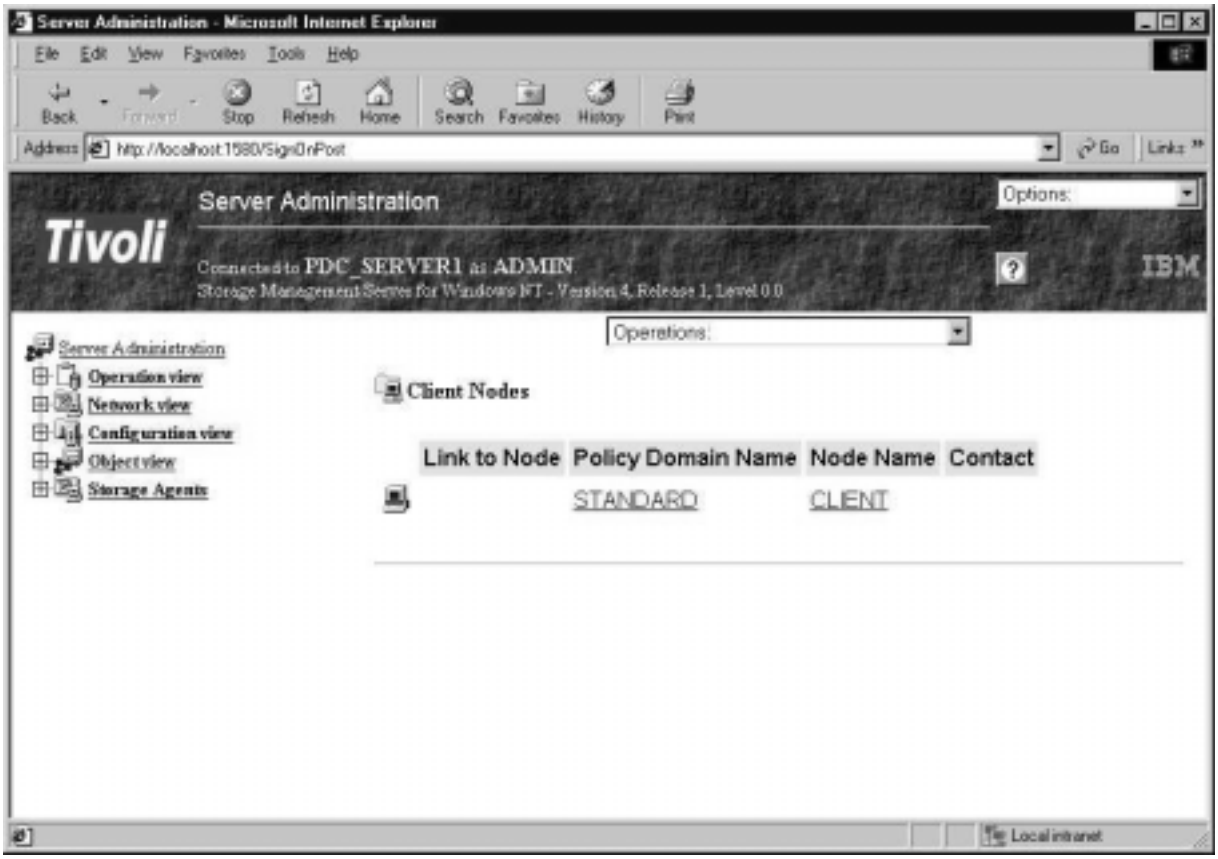
3. Click on Yes to create the options file.



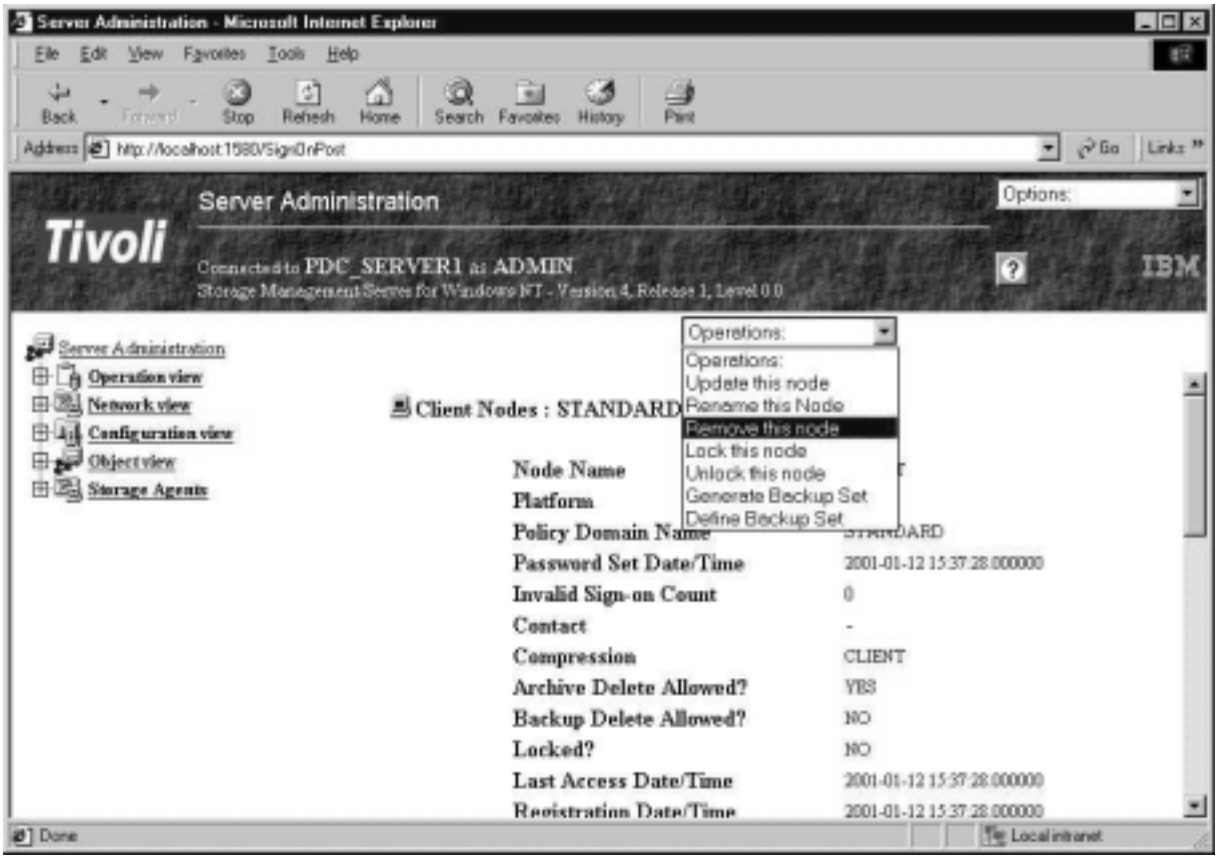
4. In order for changes to take effect, stop and restart the TSM Server service in the Control Panel > Services.

5. Open the browser and bring up the admin page of http://localhost:1580 . Log in as admin, password admin.

6. Click on Object View.



7. Click on Clients. Then Click on Client Nodes.
8. The default client will be the only Client Node listed. This node must be deleted to enable the deletion of the default policy domain later. Click on the default client.



9. From the pull-down menu, choose Delete client node.
10. Next, return to Object View. Click on Server, then Server Status.
11. Choose the server. From the pull-down menu, perform the following status changes:

    Server name (eliminate the "_SERVER1" on the end)

    IP address

    Port # (1500)

    URL (http://<server>:1580)

    Password (admin)

    Crossdefine (on)

    Password expiration (900)

    Web Administration Time Out (0)

    Activity Log Retention (7)

LIBRARY SETUP

Library Manager procedure: NOTE: This is only performed on one TSM server, namely the Library Manager.

1. Go to Object View, then Server Storage, then Libraries and Drives, then Automated Libraries.
2. From the pull-down menu, choose Define Automated Library.
3. Give the library a name.
4. In the Device Name field, put the proper device information as defined in the Device Information window of the TSM Server Utilities console. The library device name should look something like “lb0.1.1.3”.
5. In the Element field, provide the number associated with the robot. This number can be found at the TSM web site by looking under “Requirements and Supported Devices” for TSM. Look up the particular library you are trying to configure. The page will list all the element numbers for the robot and drives within the library. Make a note of these numbers—they will be needed for setting up the automated drives later.
6. After defining the library, the drives must be set up. Go back to Object View, then Server Storage, then Libraries and Drives, then Automated Drives.
7. From the pull-down menu, choose Define Automated Drives.
8. Give the drive a name.
9. Choose the library previously defined.
10. In the Device Name field, put the proper device information as defined in the Device Information window of the TSM Server Utilities console. The drive device name should look something like “mt0.2.1.3”.
11. In the Element field, provide the number associated with the drive IN THE PROPER ORDER within the library. Make sure that the proper element number is associated with the proper device.
12. Repeat the above drive procedure for each drive in the library.
13. Go to Object view > Server Storage > Libraries and Drives > Library Volumes > Operations > Label Library Volume.
14. Make the following changes:

Search Library Yes

Source Barcode

Library Category Scratch

Overwrite Existing Label Yes

Library Client procedure:

Perform this for all TSM servers sharing the library with the TSM library manager. Do not perform this for the TSM library manager.

1. First, connectivity must be established with the library manager. Go to Object View, then Server, and then Other Servers.
2. From the pull-down menu, choose Define Server. Fill in the proper information for the library manager, and set Crossdefine to yes. When communication is established, proceed to library setup.
3. To set up a shared library, go back to Object View, then Server Storage, then Libraries and Drives, then Shared Libraries.
4. From the pull-down menu, choose Define Shared Library.
5. Fill in the library name as defined on the library manager. Fill in the name of the library manager in the Primary Library Manager field.
6. To set up shared drives, go back to Object View, then Server Storage, then Libraries and Drives, then Shared Drives.
7. From the pull-down menu, choose Define Shared Drive.
8. Fill in the name of the drive as defined on the library manager.
9. Choose the shared library previously defined.
10. In the Device Name field, put the proper device information as defined in the Device Information window of the TSM Server Utilities console. The drive device name should look something like “mt0.2.1.3”. NOTE: The device name information may be different from that on the library manager—this information is defined as how the operating system sees the drives.
11. Repeat this procedure for all drives in the shared library.

Policy Domain Setup

This procedure is to be performed at each TSM server.

1. Now set up the policy domain. Go back to Object View, then Policy Domain.
2. Choose the default domain and, using the pull-down menu, delete the domain.
3. From the pull-down menu, choose Define Policy Domain.
4. Give the domain a name that applies to the library that will be associated with it. Leave all other defaults.
5. The new domain should be listed. Choose it and then click on Policy Sets at the bottom of the page.
6. From the pull-down menu, choose Define Policy Set.
7. Give the policy set a name that corresponds with the domain. Leave all other defaults.
8. The new policy set should be listed. Choose it and then click on Management Classes at the bottom of the page.
9. From the pull-down menu, choose Define Management Class.
10. Give the management class a name that corresponds with the policy domain and set. Leave all defaults.
11. The new management class should be listed. Choose it and then use the pull-down menu to choose Assign as Default Management Class. Perform this function.
12. Choose the management class just defined and click on Backup Copy Group at the bottom of the page.
13. In the backup copy group fields, define the following:

    Copy Destination (DISKPOOL)

    Versions Exists (nolimit)

    Versions Deleted (nolimit)

    Retain Extra (nolimit)

    Retain Only (nolimit)

    Copy Mode (ABSOLUTE) This will allow full backups.

Do not define an archive copy group. This is unnecessary for testing purposes.

14. Go back to Policy Set. Choose the previously defined set.
15. From the pull-down menu, choose Validate Policy Set. The screen will show a message warning that an archive destination has not been set. This is because an archive copy group will not be defined. A second message should say that the set is ready for activation.
16. From the pull-down menu, choose Activate Policy Set. The screen will again show the warning about not having an archive destination. A second message should say that the set has been activated.
17. Go back to Object View, then Server Storage, and then Device Classes.

18. From the pull-down menu, choose Define Device Class.
19. Give the class an appropriate name. Leave all other defaults, except make Mount Retention = 2
20. Go back to Object View, then Server Storage, then Storage Pools, and then Sequential Access Storage Pools.
21. From the pull-down menu, choose Define Sequential Access Storage Pool.
22. Give the pool an appropriate name. Leave all defaults, except make Maximum Scratch Volumes Allowed = 500.
23. Go back to Storage Pools, then Disk Storage Pools.
24. Delete ARCHIVEPOOL and BACKUPPOOL using the pull-down menu.
25. Choose DISKPOOL.
26. From the pull-down menu, choose Update Disk Storage Pool.
27. In the Next Storage Pool window, choose the sequential access storage pool previously defined.
28. Leave all other defaults, except make Low Migration Threshold = 10. This will allow the migration procedure to almost completely move data from disk to tape before resuming a backup job.
29. Finally, a client node must be defined for the server in the policy domain.
30. Go to Object View, then Policy Domain. Choose the policy domain.
31. At the bottom of the page, choose Client Nodes.
32. From the pull-down menu, choose Define Client Node.
33. Define the following:

    Name (server name)

    Password (client)

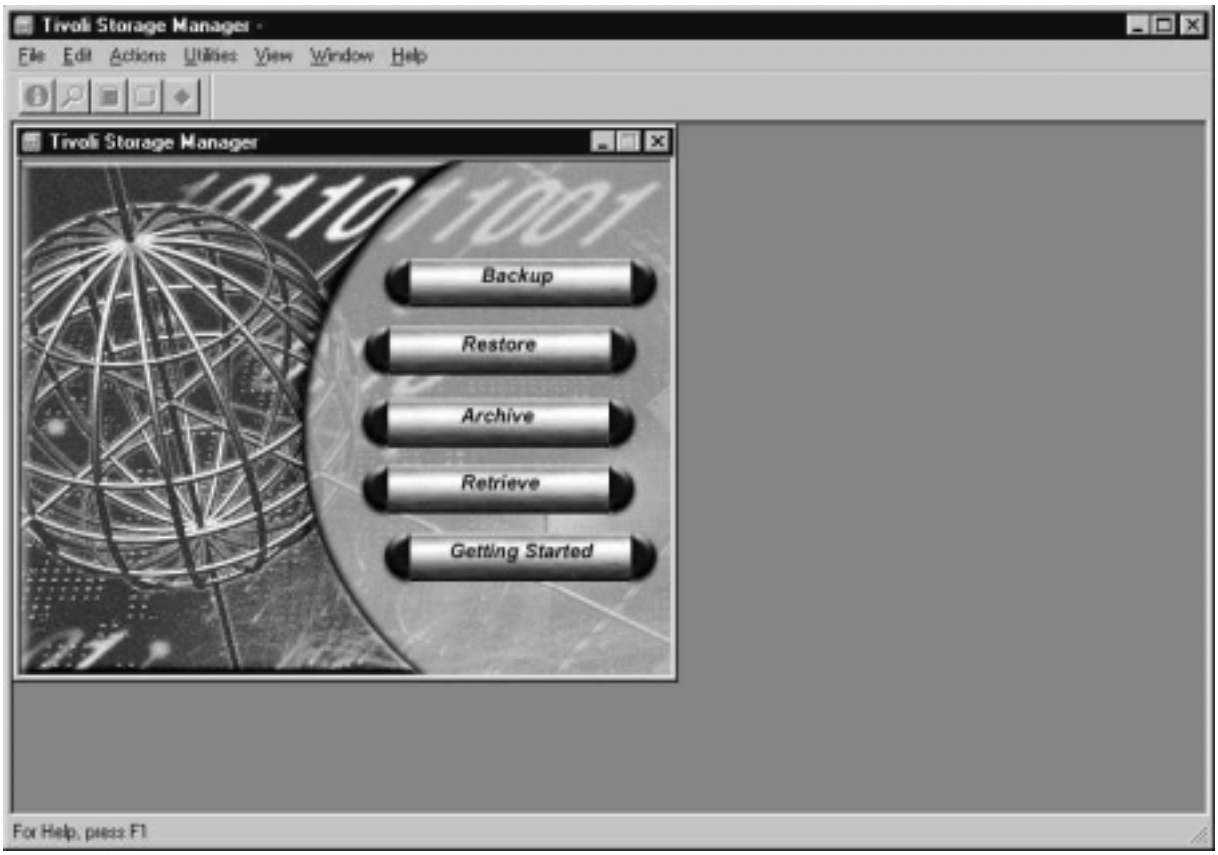
    Policy Domain (domain previously created)

    Maximum Mount Points (1)

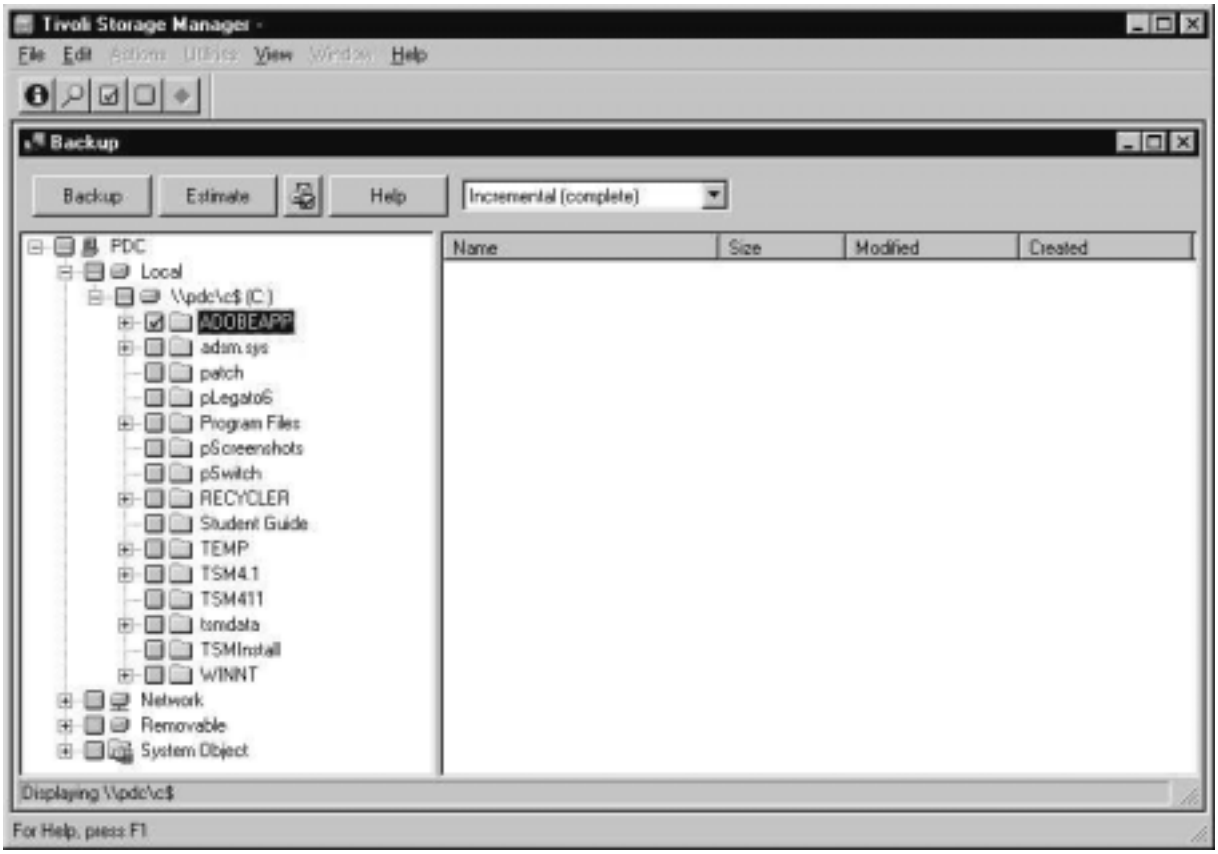
    Leave all other defaults.

The TSM server is now configured.

Backup of TSM server



1. To use the Backup/Archive GUI to run a backup, go to Start > Programs > Tivoli > Backup/Archive GUI



2. Pick a directory to backup. Click on Backup.

Installing and Configuring Legato NetWorker 6.0.1 for Tru64 5.1

Appendix M: Module 6 – Lab 1

Objective:

To install and configure Legato NetWorker 6.0.1 for Tru64 5.1 and to backup and restore files.

Requirements:

- AlphaServer
- KGPSA-BC or KGPSA-CA host bus adapter

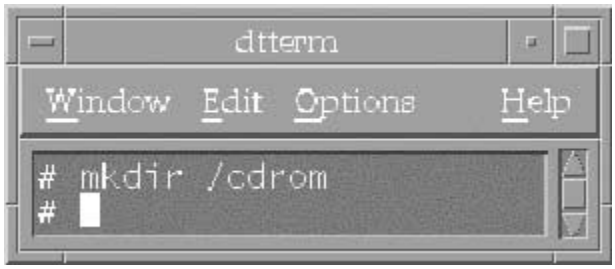
Step 1
Copying the Patch-Kit-3 Patch

Note: The Tru64 UNIX operating system has patches that are released between major revisions. These patches either fix bugs or add enhancements. Tru64 5.1 patch kit 3 is a bundle of patches that are required and/or recommended as of today for Tru64 5.1. New patch kits are released as needed (usually quarterly). Patch kit 3 has a required enhancement for NetWorker 6.0.1. **If running Legato in a cluster, use Patch Kit 2.**

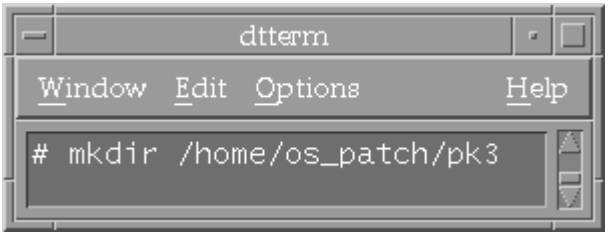
1. Turn the Alpha server on. At the system prompt P000>> type *b* and hit *Enter*

2. Log in as *root* with the password the appropriate password.

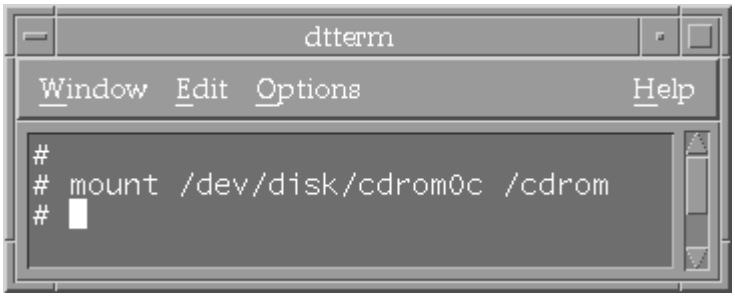
3. Open a *Terminal* window and create a *CDROM* directory.



4. Create a directory called *home/os_patch/pk3*



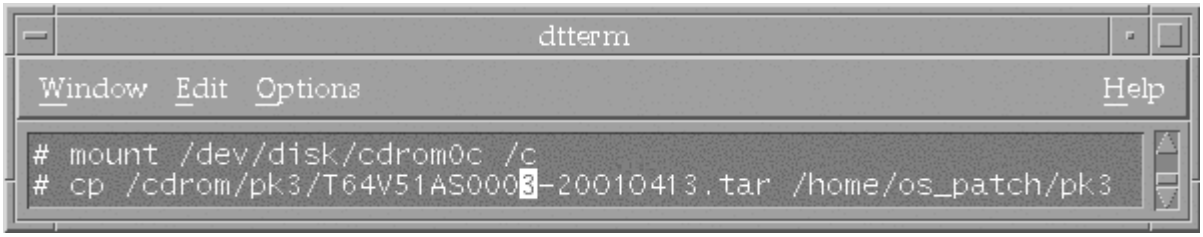
5. Insert the *Patch Kit 3 CD* into the CDROM and mount it.


dtterm
Window Edit Options Help
#
mount /dev/disk/cdrom0c /cdrom
#

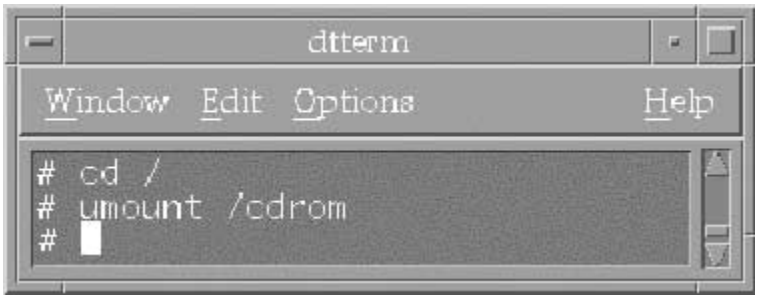
6. Copy the *Patch Kit 3* file to */home/os_patch/pk3* directory.

   At the command prompt, #, type

   cp /cdrom/pk3/T64V51AS0003-20010413.tar home/os_patch/pk3



7. Unmount the *CDROM*, remove the *Patch Kit 3 CD* from the *CDROM* drive.



This completes the copying of the Patch Kit 3 file to the hard drive.

Step 2

Installing the Patch Kit 3 Patch

8. Take the system into *Single User Mode*.

   At the system prompt, #, type *init s* and hit *Enter*.

9. Display the hard drive space in kilobytes.

   At the system prompt, #, type *df –k* and hit *Enter*.

10. Mount all volumes of the hard drive.

    At the system prompt, #, type *mount –a* and hit *Enter*.

11. Go into the *home/os_patch/pk3* directory.

    At the system prompt, #, type *cd /home/os_patch/pk3* and hit *Enter*.

12. Next run the *T64V51AS0003-20010413.tar* file.

    At the system prompt, # type tar xvf *T64V51AS0003-20010413.tar*

13. Go into the patch kit subdirectory

14. Run the Patch file.

    At the system prompt, # type *./dupatch*

15. When asked for the path to the top of the patch distribution, type in */home/os_patch/pk3/patch_kit*

16. The system will ask *Which option you would like to install?* Choose *Option 1, Patch install*. Type *1* and hit *Enter*.

    Note: Throughout the installation of the patch, the system will notify you on what is happening. It will then prompt you to hit *Enter* to continue. You may want to take the time to read the screen to get a better understanding on what is going on, if not, just hit *Enter* each time.

17. The system will also prompt you again, for which option you would like to choose. For this lab, choose *option 2, Check and Install*. Type *2* and hit *Enter*.

    Note: In a real life environment, you would choose *Option 1* first, once that completes and passes, then choose *Option 2*.

18. The system will ask if you want to allow the volume to be reversible, state yes. Type *yes* and hit *Enter*.

    Note: Stating yes will allow you and or the customer to uninstall *Patch Kit 3 Patch*. This however, takes up a lot of disk space. Your customer may not want to do this.

19. The system will *request* a *name*. Type in *your name* and hit *Enter*.

20. The system will then ask for comment. You may want to type something in to the effect of *I installed this patch kit to get the enhancements required for NetBackup 3.4* and hit *Enter*.

---

21. The system will list all the patches it has to offer. Scroll down to the bottom and select the *number* to *install all patches*. Type the *number* in and hit *Enter*.

    Note: If the system finds a patch that it cannot install, tell it to continue with out it.

22. The system will ask *Do you have a pre-existing configuration file?* Type *yes* and hit *Enter*.

23. The system will request for you to *Enter the name of the pre-existing configuration file or hit return to you "your server name"*. Mine was *ALPHASEVEN*. Hit *Enter* to continue.

24. The system will ask *Do you want to edit the configuration file.* Type *n* and hit *Enter*.

25. The system will ask *do you want to reboot now?* Type *y* and hit *Enter*.

26. Once the system reboots, it will take you back to the Log in prompt.

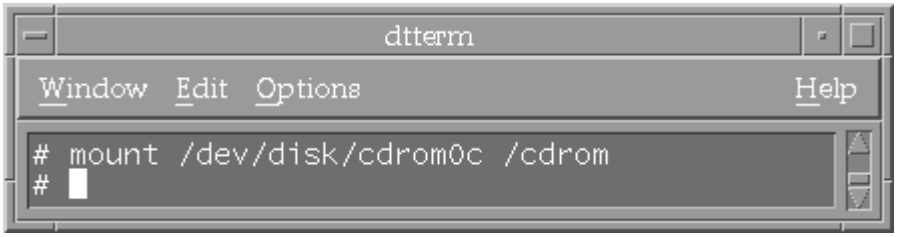
This completes the installation of the Patch Kit 3 Patch portion of the lab.

Step 3
NetWorker 6.0.1 Initial Installation Process

27. Insert the NetWorker 6.0.1 CD into the CD-ROM and mount it.

    At the command prompt, #, type the command below and hit *Enter*.

    Note: If there is not a /cdrom directory already made, then you will need to make one.

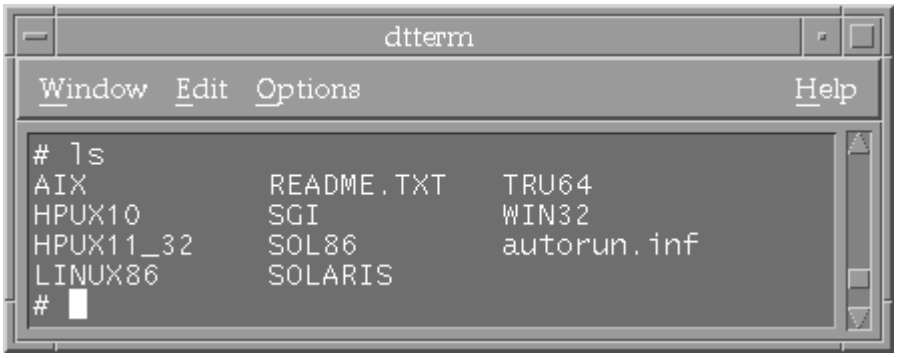


28. Go into the CDROM directory

    At the command prompt, #, type the command below and hit *Enter*.

29. List the files to verify that there is a TRU64 directory

    At the command prompt, #, type the command below and hit *Enter*.



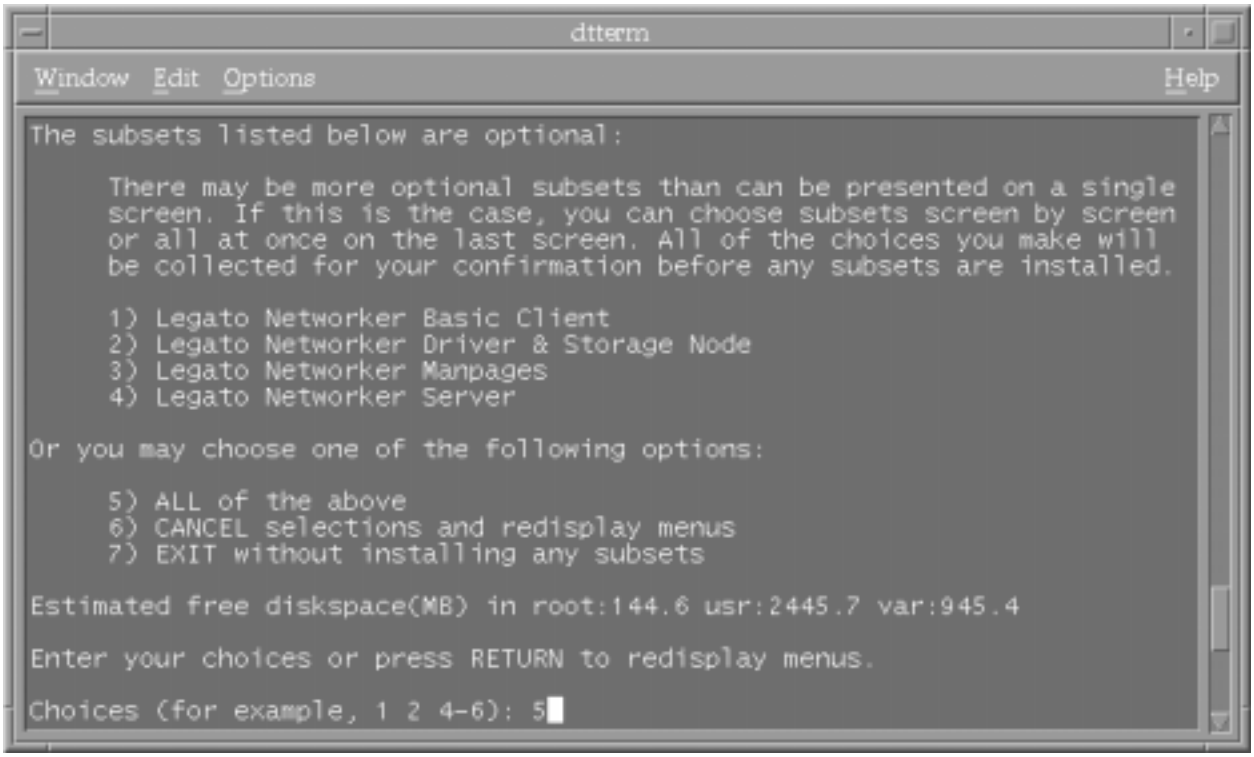
30. Go into the *TRU64* directory.

    At the command prompt, #, type the command below and hit *Enter*.

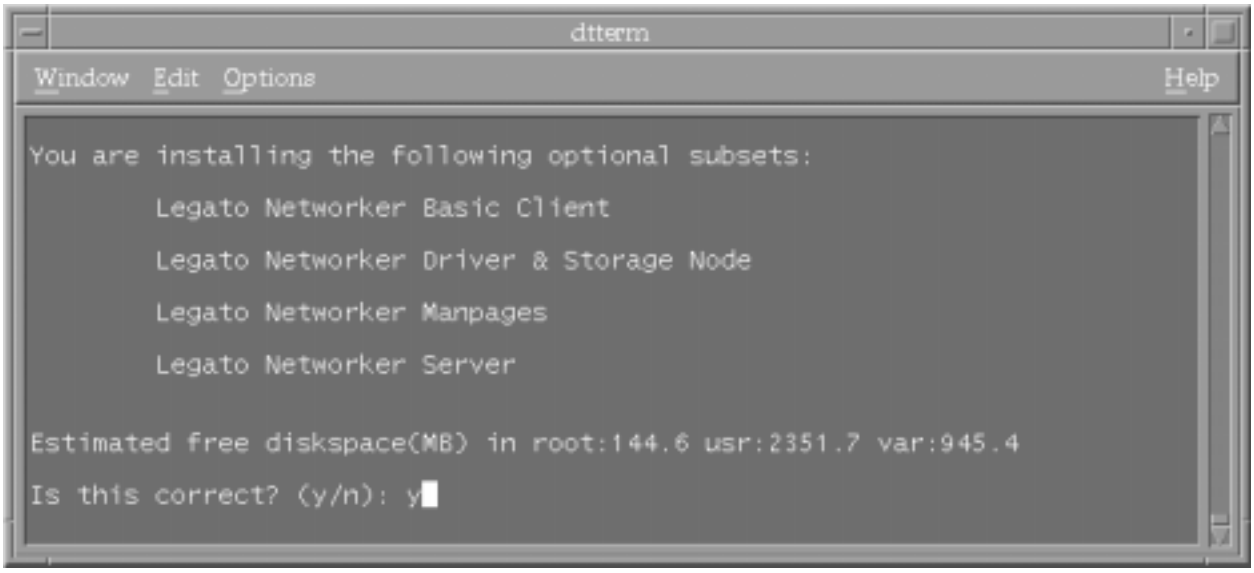
31. Install Legato NetWorker 6.0

    At the command prompt, #, type the below command and hit *Enter*.

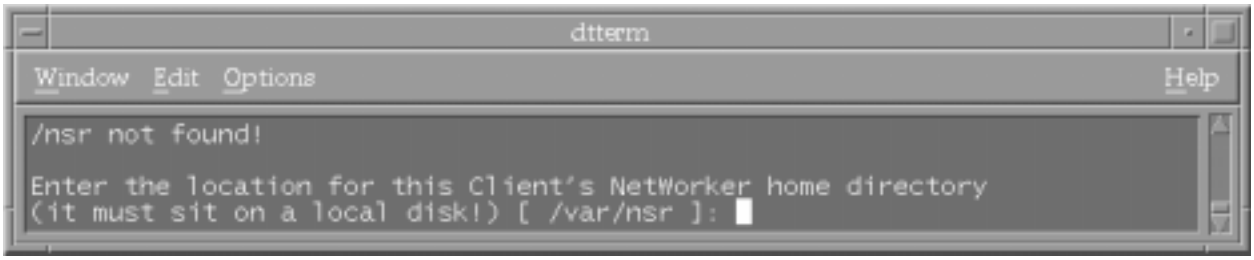
32. The below information appears, type *5* and hit *Enter*.


dtterm
Window Edit Options Help
The subsets listed below are optional:
There may be more optional subsets than can be presented on a single screen. If this is the case, you can choose subsets screen by screen or all at once on the last screen. All of the choices you make will be collected for your confirmation before any subsets are installed.
1) Legato Networker Basic Client
2) Legato Networker Driver & Storage Node
3) Legato Networker Manpages
4) Legato Networker Server
Or you may choose one of the following options:
5) ALL of the above
6) CANCEL selections and redisplay menus
7) EXIT without installing any subsets
Estimated free diskspace(MB) in root:144.6 usr:2445.7 var:945.4
Enter your choices or press RETURN to redisplay menus.
Choices (for example, 1 2 4-6): 5

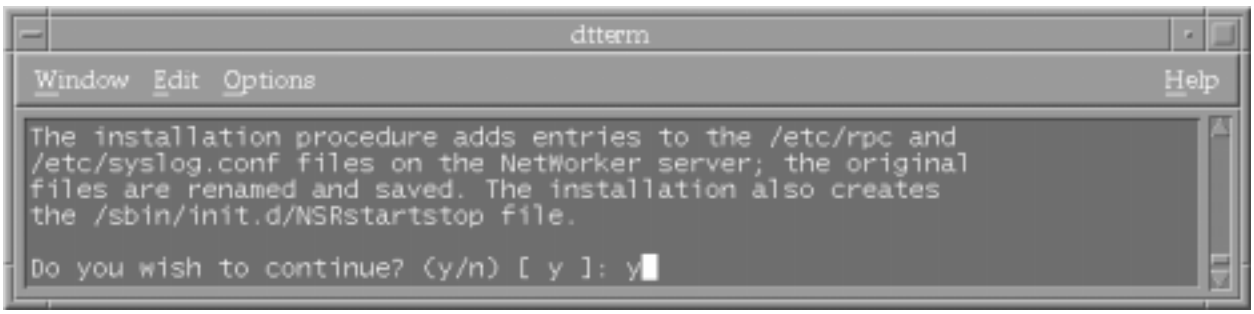
33. The below information appears type *y* and hit *Enter*.



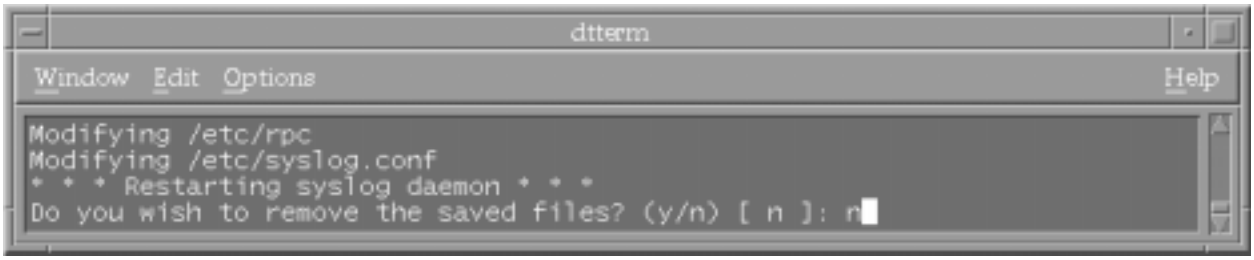
34. You may receive the below information, if you do, hit *Enter* then continue to step 9. If not, continue to step 9.



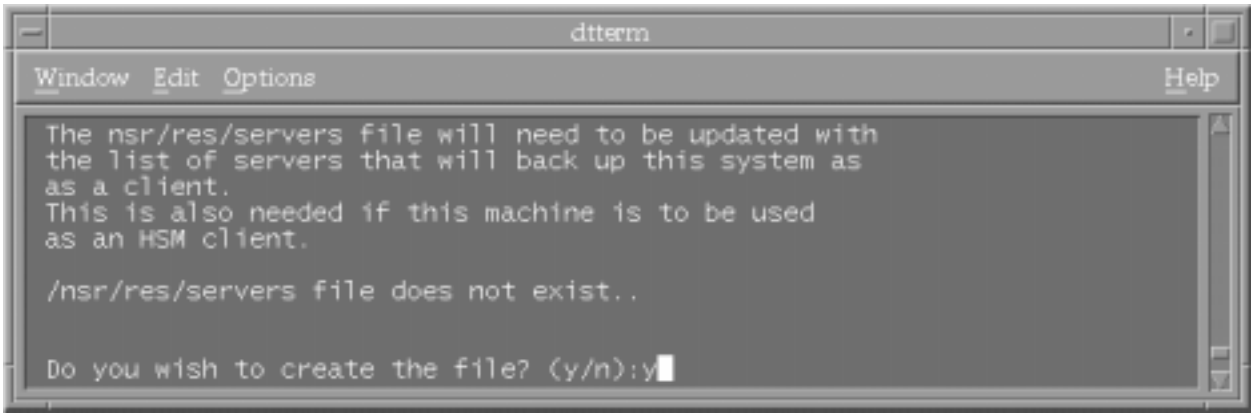
35. The below information will then appear, type *y* and hit *Enter*.



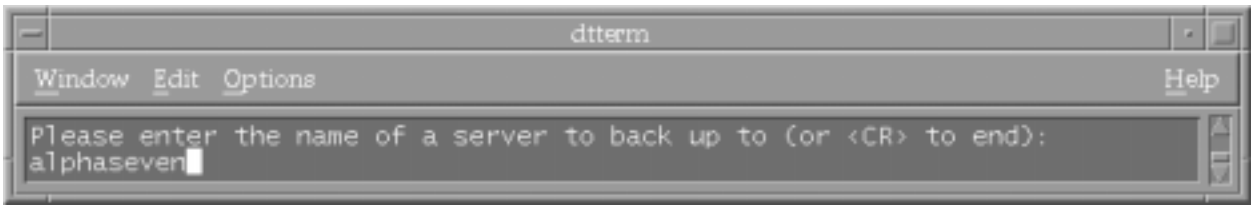
36. The below information will then appear, type *n* and hit *Enter*.



37. You may receive the below information. If so, type *y* and hit *Enter* then continue to *step 26*. If not, continue to *step 26*.

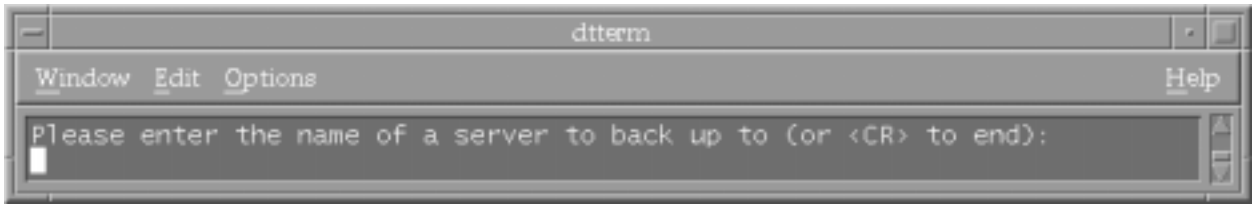


38. The below information appears, type in your specific *server name* and hit *Enter*.

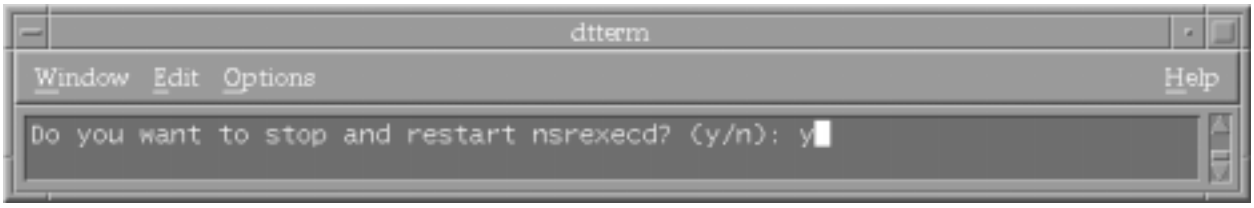


39. It will ask you to do the same thing, enter <*CR*> and hit *Enter*

    Note: CR = Carriage Return = Enter key

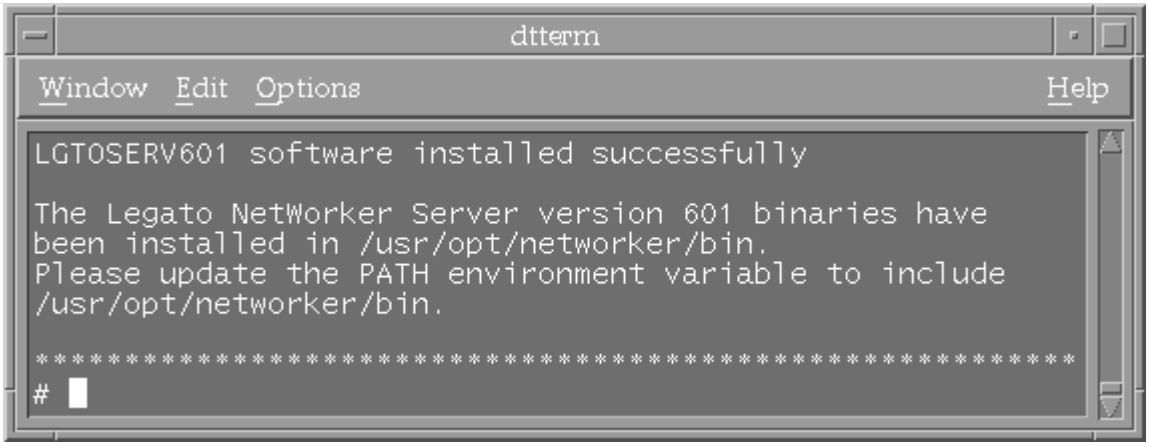

dtterm
Window Edit Options Help
Please enter the name of a server to back up to (or <CR> to end):

40. The below information will appear, type *y* and hit *Enter*.



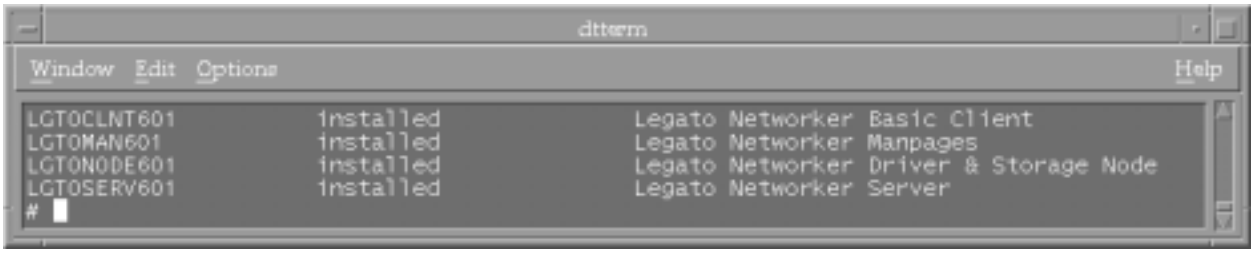
41. Once the installation is complete the system will take you to the system prompt, #, and show you the following information.

    Note: you will need to write down the path information for you will need it in the next section.



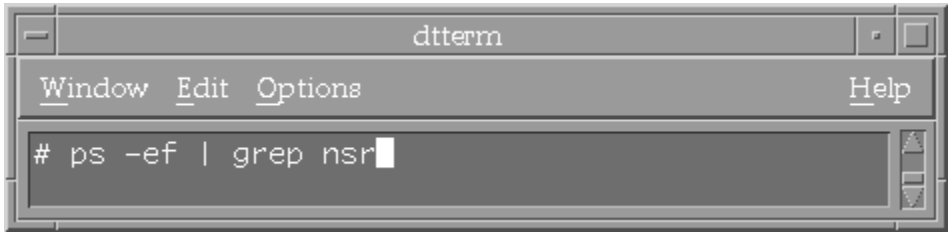
42. At the system prompt type the below command and hit *Enter*.

The below information should appear:

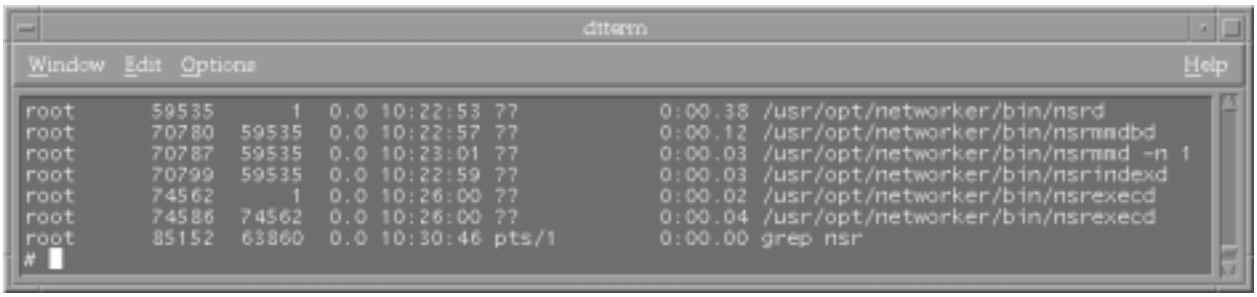

dtterm
Window Edit Options Help
LGTOCLNT601 installed Legato Networker Basic Client
LGTOMAN601 installed Legato Networker Manpages
LGTONODE601 installed Legato Networker Driver & Storage Node
LGTOSERV601 installed Legato Networker Server
#

43. Verify that the *NetWorker daemons* are running.

    At the system prompt, #, enter the below command and hit *Enter*.

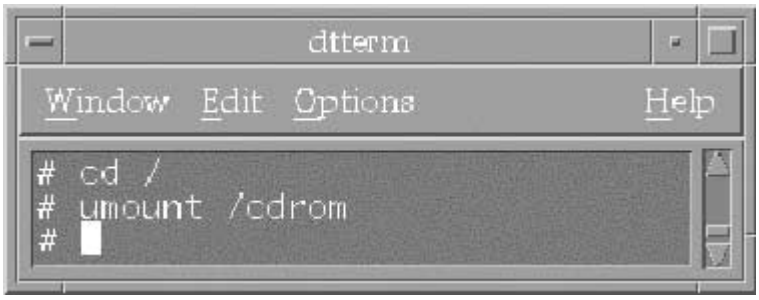


The following information should appear:



44. Change back to the root directory, unmount the *CDROM*, remove the *NetWorker 6.0.1 CD* from the *CDROM* drive.

    At the system prompt, #, enter the below command and hit *Enter*.



This completes the initial installation of Legato.

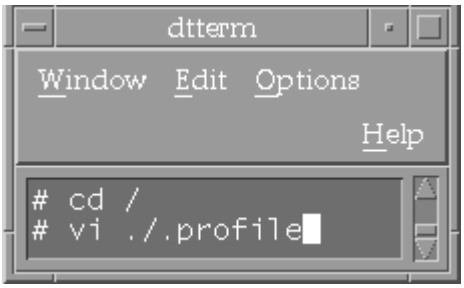
Step 4
Configuring the Profile

45. Change to the root directory and edit the profile.

    At the system prompt, #, type,

    cd / and hit *Enter*.

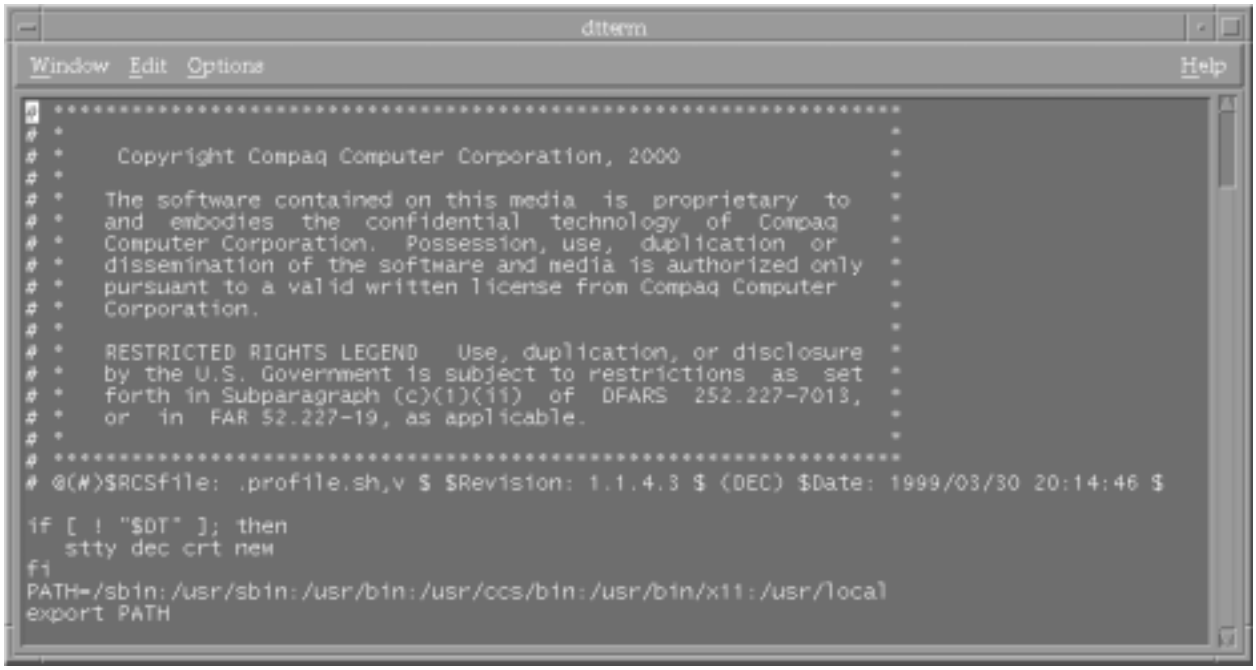
    vi ./.profile and hit *Enter*.



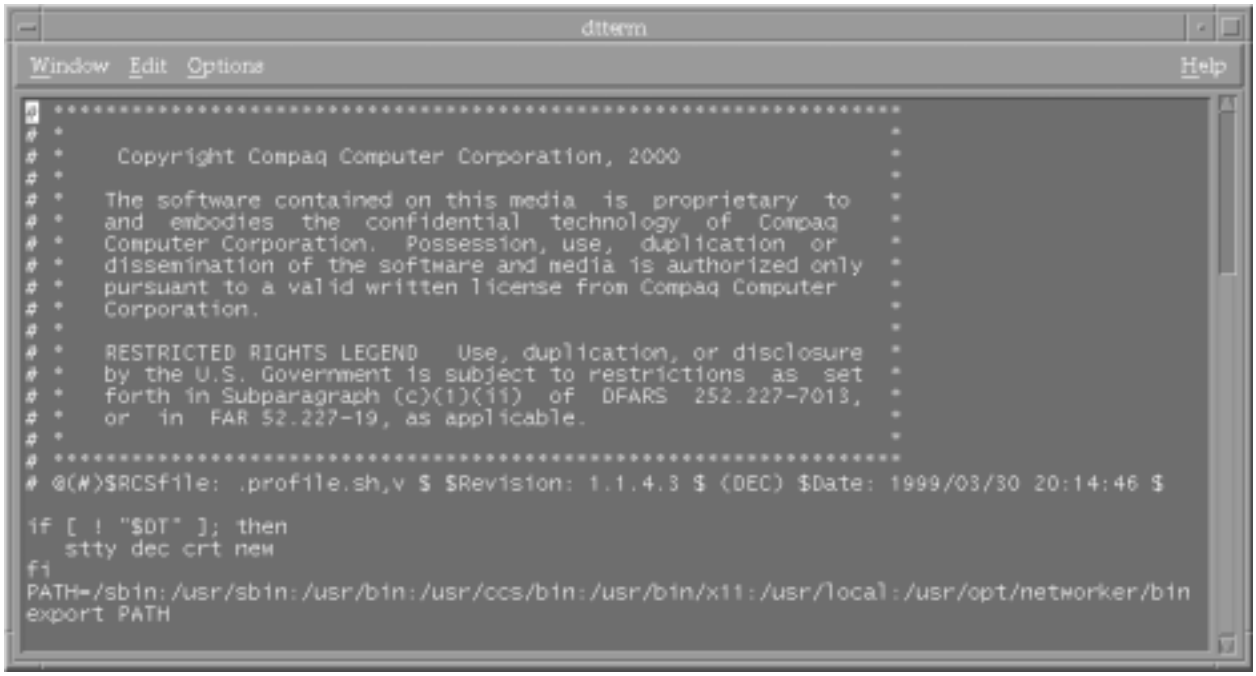
46. The profile window appears.

    Arrow down to the end of the path statement, next, hit the *a* key, and input the below information.

    :/usr/opt/networker/bin



47. Once entered, the completed path statement should look like what is shown below. Hit the Esc key to stop editing. Next, press the Shift key down and hit the z key twice. This will save the changes and close the vi session.



48. Close all windows and *logout* and *re-login* to the system. This will invoke the changes you have made.

This completes the configuration of the profile.

Step 5
Removing the Default Tape device from the NetWorker Administration GUI

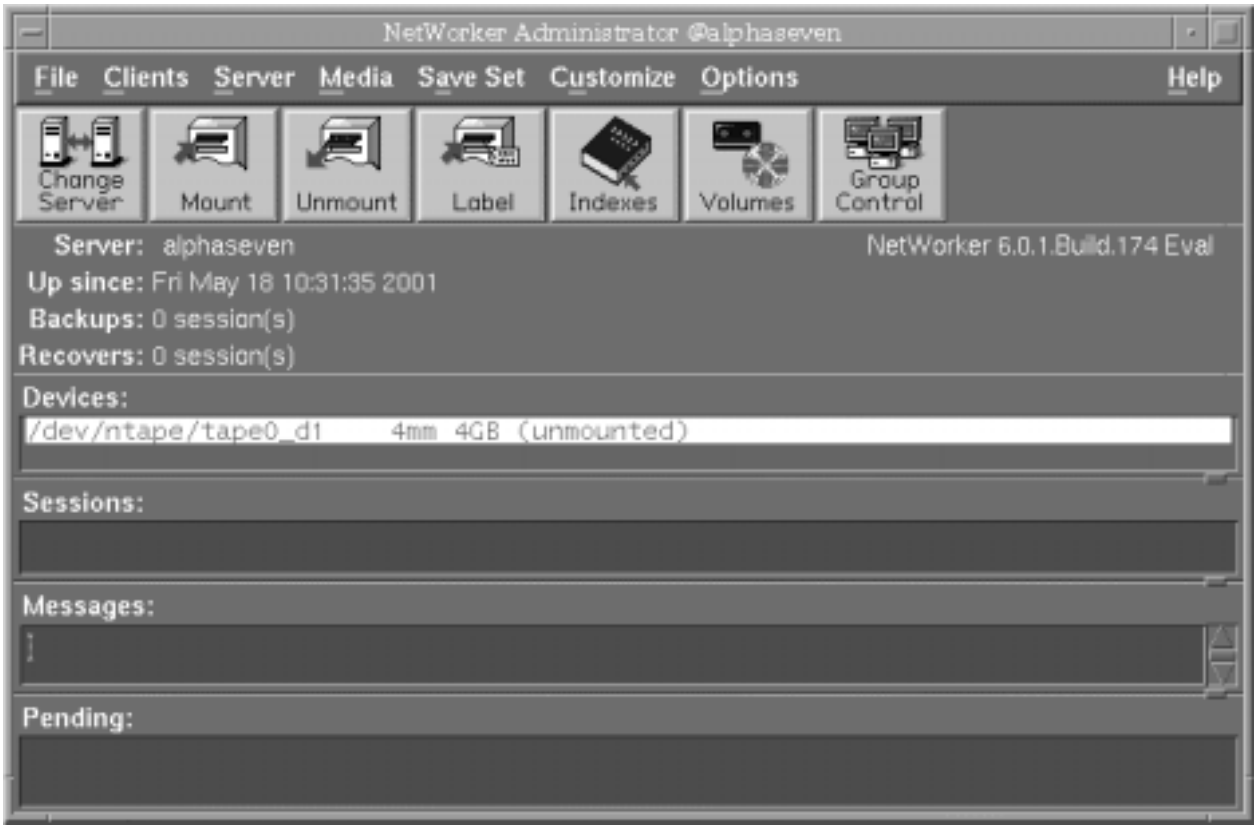
49. Log back into the server, again using *root* as the *User ID* and *Password*. Next, open a *Terminal* window and load the *NetWorker Administration GUI*.

    At the system prompt, #, type the below command and hit the *Enter* key.

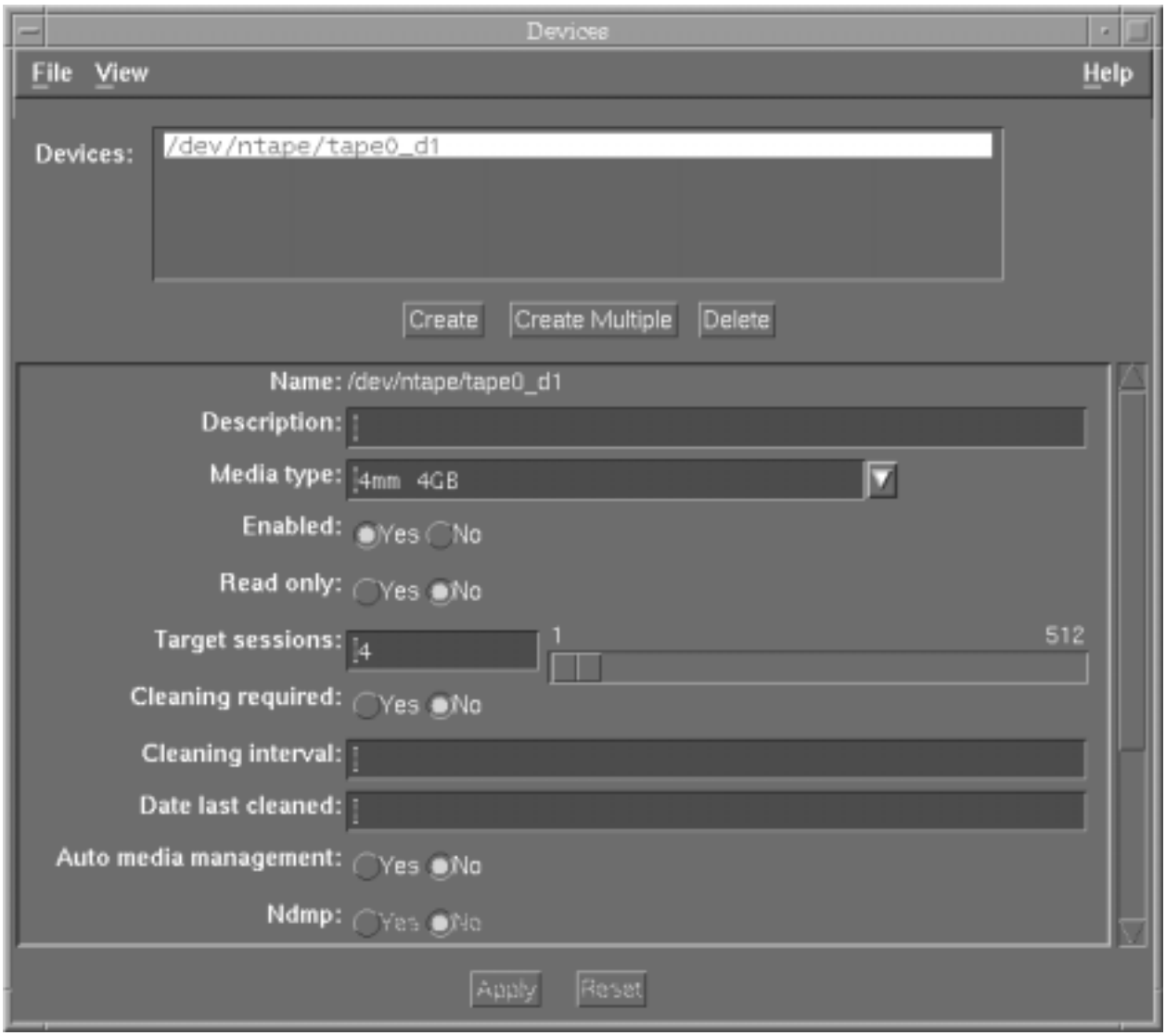
50. The *NetWorker Administration GUI* appears.

    Click on *Media*, then *Devices* on the task bar.

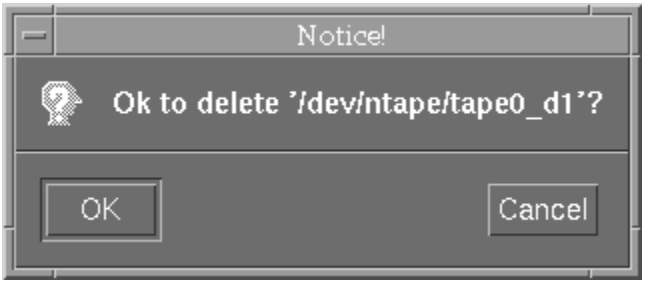
    Note: Under devices, there is a device already listed. This is the default device. This device will need to be removed before configuring the tape drives.


NetWorker Administrator @alphaseven
File
Clients
Server
Media
Save Set
Customize
Options
Help
Change Server
Mount
Unmount
Label
Indexes
Volumes
Group Control
Server: alphaseven
NetWorker 6.0.1.Build.174 Eval
Up since: Fri May 18 10:31:35 2001
Backups: 0 session(s)
Recovers: 0 session(s)
Devices:
/dev/ntape/tape0_d1 4mm 4GB (unmounted)
Sessions:
Messages:
Pending:

51. The *Devices* window appears. Click on the *device* listed below and then click on *Delete*.

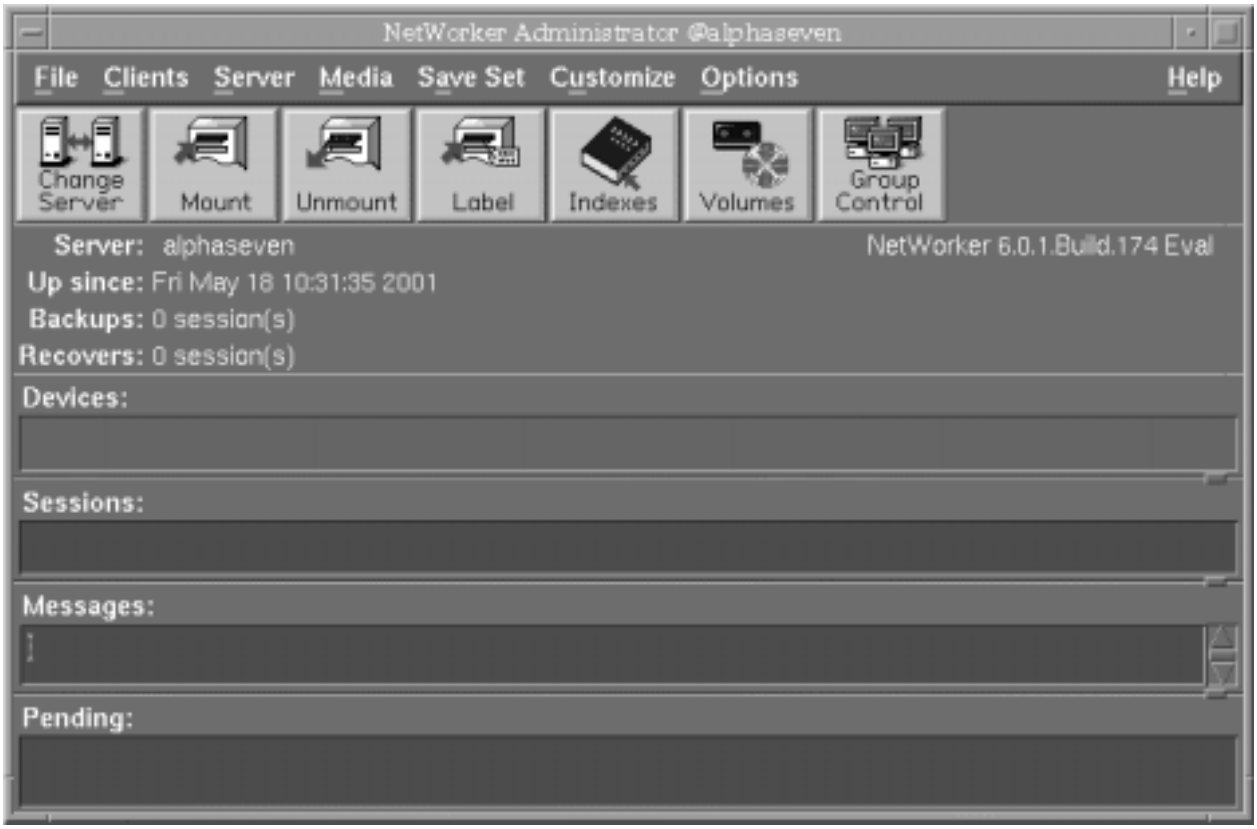


52. The *Notice* window appears, click *OK*.



53. The *Devices* window appears once again. This time the *Devices* section is blank. Click on *File* and then *Exit* on the *task bar*.

54. The *NetWorker Administration GUI* appears once more. It too shows that the device has been removed. Click on *File* then *Exit* on the *task bar* to close the window. This will take you back to the system prompt, #.



This completes the removal of the default device in the NetWorker Administration GUI

Step 6
Tape Drive Configuration Process

55. Run the *Juke Box Configuration* file.

    At the system prompt, #, type the below command and hit *Enter*.

57

56. The below information will appear type *2* and hit *Enter*.

58

57. The below information will appear type *1* and hit *Enter*.

    Note: The TL891 /TL892 is seen as TL800 series and TL895 is seen as TL810 series.

59

58. The below information will appear, type in a *name* and hit *Enter*.

    Note: The naming convention that I use is the actual description of the device.

60

59. The below information will appear, hit *Enter*.

61

60. The below information will appear, hit *Enter*.

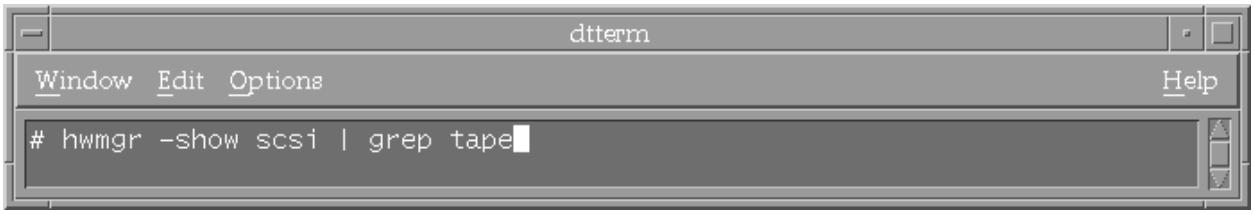
62

61. The below information appears, type *yes* and hit *Enter*.

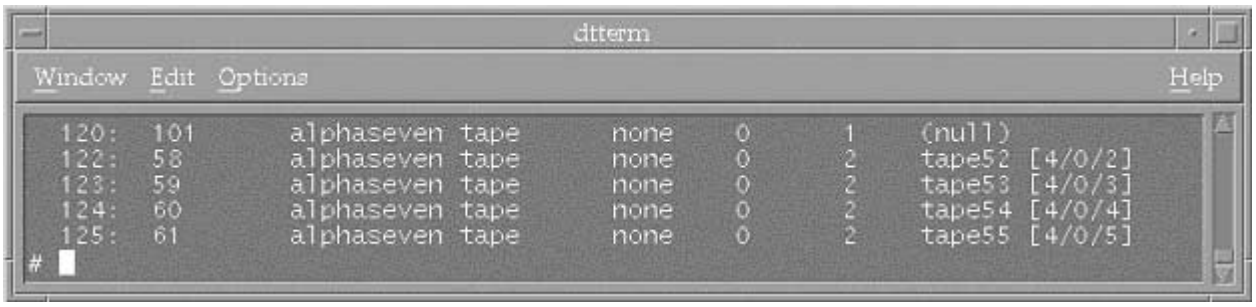
63

62. If you do not know what the device name of your tape drives are, follow the next steps. If you already know, skip to step 67.

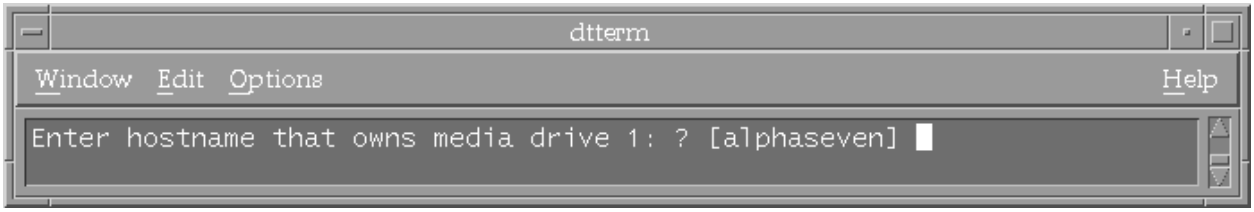
63. Minimize your current *terminal* window and open another *terminal* window. Next, run the command listed below.



64. The below information will show. Find your tape drive information and write it down, close the terminal and continue to step 67.



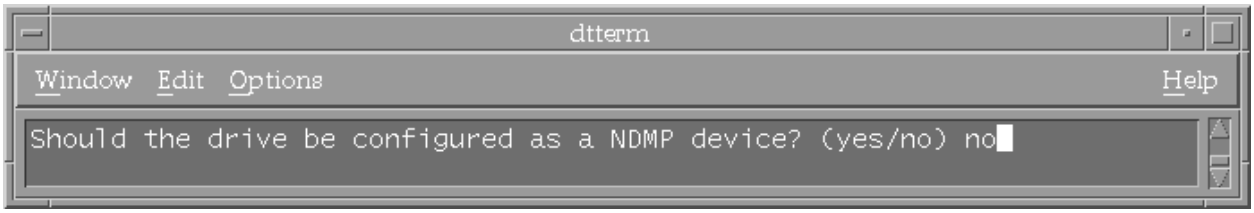
65. The below information appears, hit *Enter*.



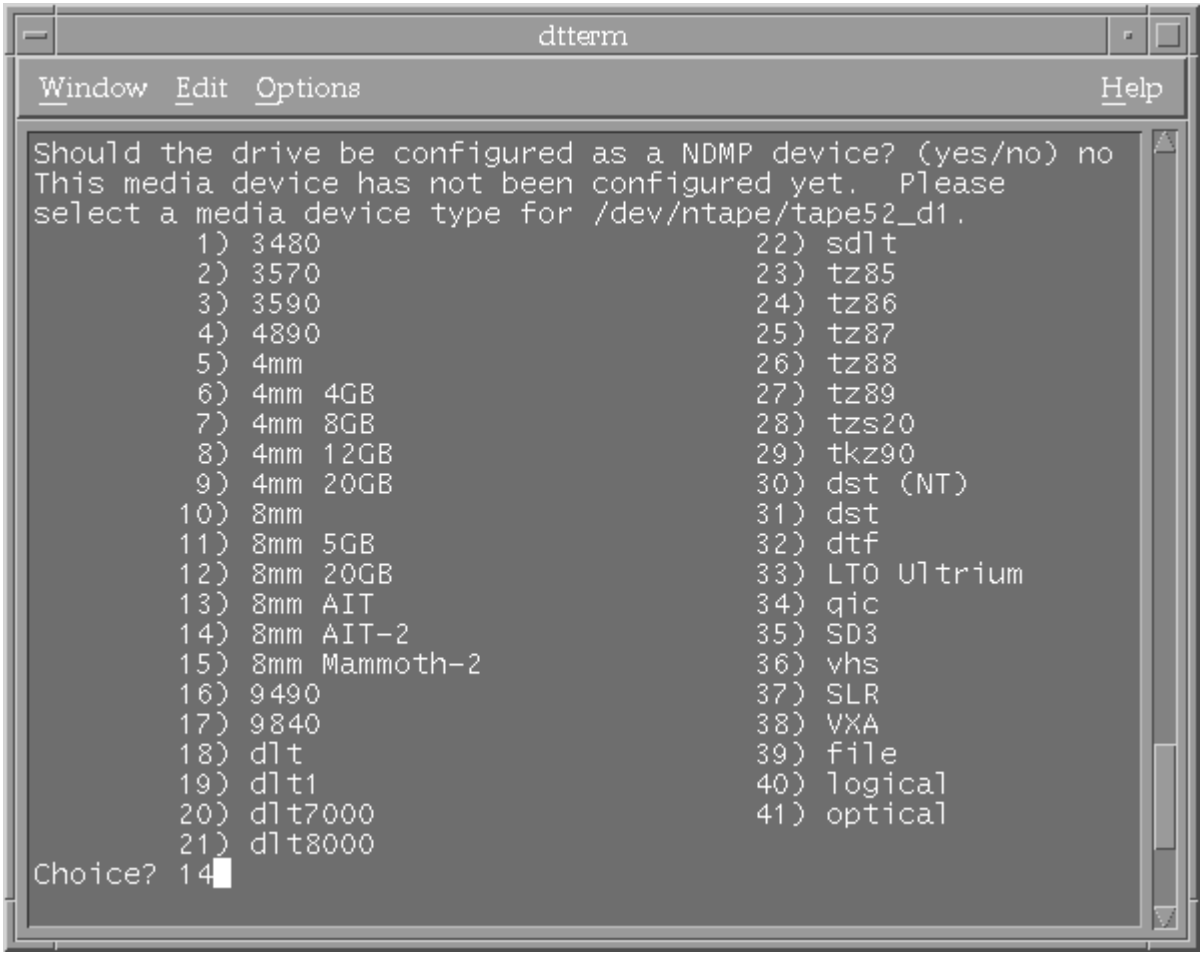
66. The below information appears, type */dev/ntape/tape??_d1* and hit *Enter*.

Note: Your information may vary. Refer back to the information you wrote down on step 66.

67. The below information will appear, type *no* and hit *Enter*.


dtterm
Window Edit Options Help
Should the drive be configured as a NDMP device? (yes/no) no

68. The below information appears, type *14* and hit *Enter*.

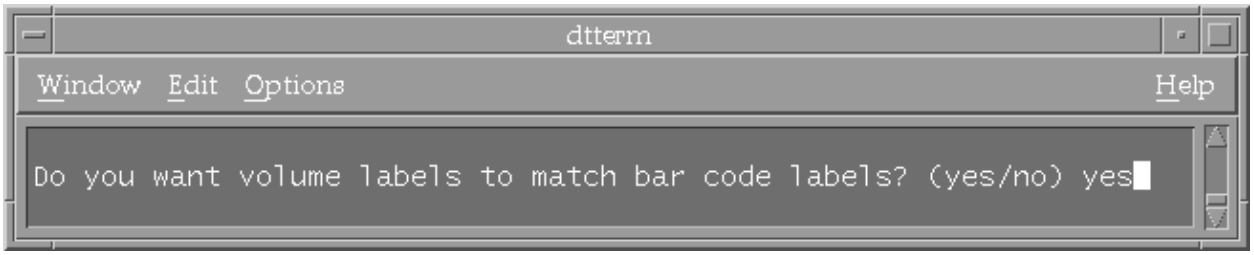


Repeat steps 67 – 70 for any additional tape drives. Make sure you change the tape number at the end of tape "/dev/ntape/tape**??**_d1 each time.

When no more drives appear, continue to step 71.

69. Once all drives are configured, the below information appears. Type *yes* and hit *Enter*.

70. The below information appears, type *yes* and hit the *Enter* key.



71. The below information appears, type *no* and hit the *Enter* key.

    This will take you back to the system prompt, #.

This completes the tape drive configuration process portion of the lab.

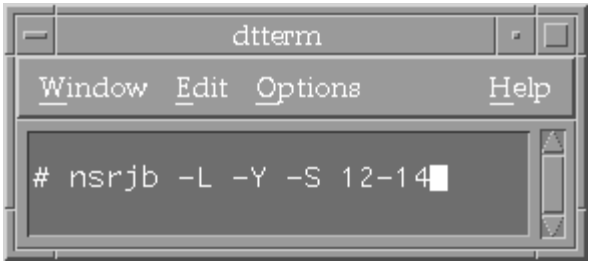
Step 7
Labeling The Tapes

Note: There are two ways to label the tapes. It can be done via a *Terminal* window or from the *Networker Administration GUI*. If you would like to perform to label the tape(s) from a *Terminal* window, continue to step *51*. If you prefer to label tape(s) from the *NetWorker Administrator GUI*, skip to step *52*.

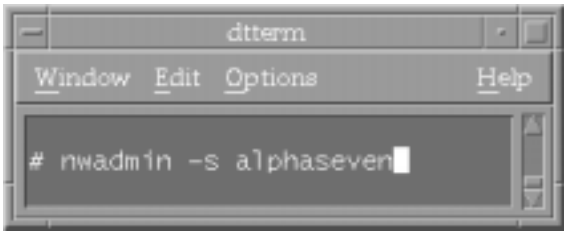
72. Minimize your current terminal window and open another *Terminal* window.

    At the system prompt, #, type *nsrjb –L –Y –S ??-??* and hit *Enter*. Once complete you can close the window and proceed to step *60*.

    Note: The ***??-??*** are the tapes that you want to be labeled. It takes several minutes per tape. You will not be prompted to do anything. Once complete, the system prompt, #, will once again appear. You can go ahead and run the NetWorker GUI to see what is going on. You may need to look to your storage device to find out what tapes are where.



73. Open up another *Terminal* window and log in.

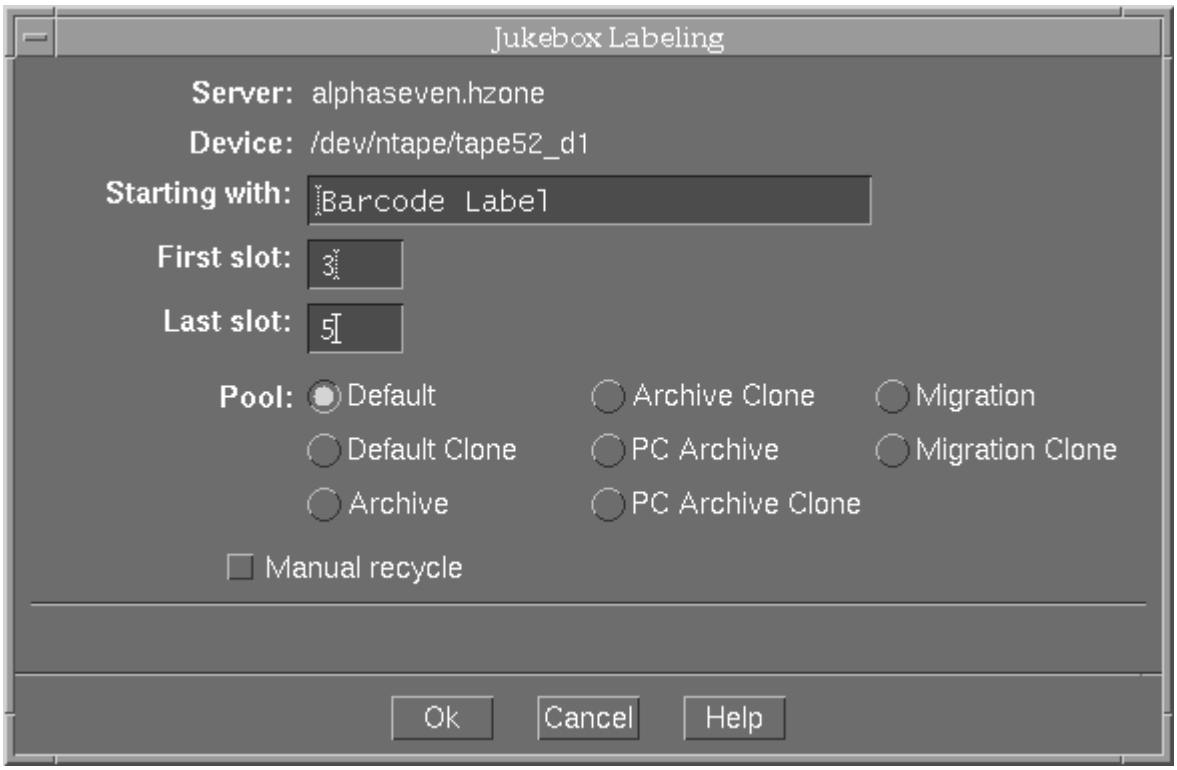


74. The *NetWorker Administration GUI* appears click *Media* and then *Label* from the task bar.

75. The *Jukebox Labeling* window appears.

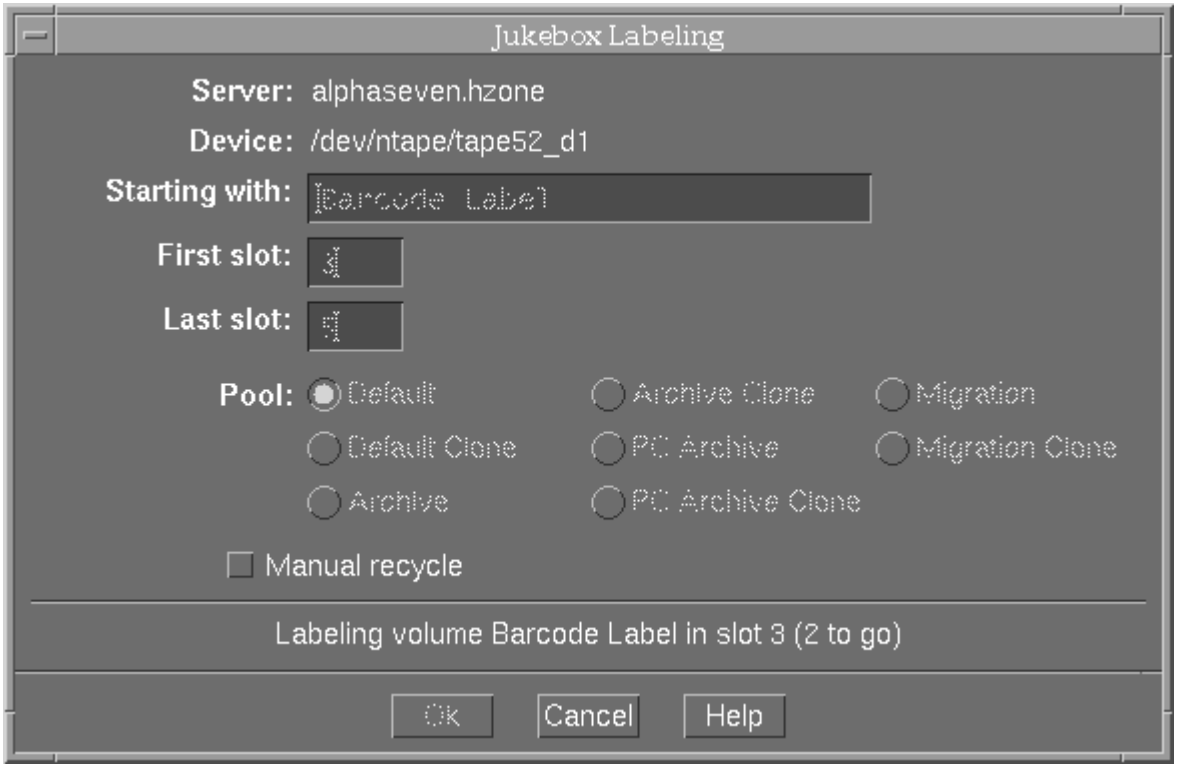
    Enter the *slot beginning number* and the *slot ending number* of where the tapes reside. Leave all default settings and click on *OK*:

    Note: If you go this route, you will be prompted to overwrite the label for each tape.



76. The notice screen appears, clock OK:

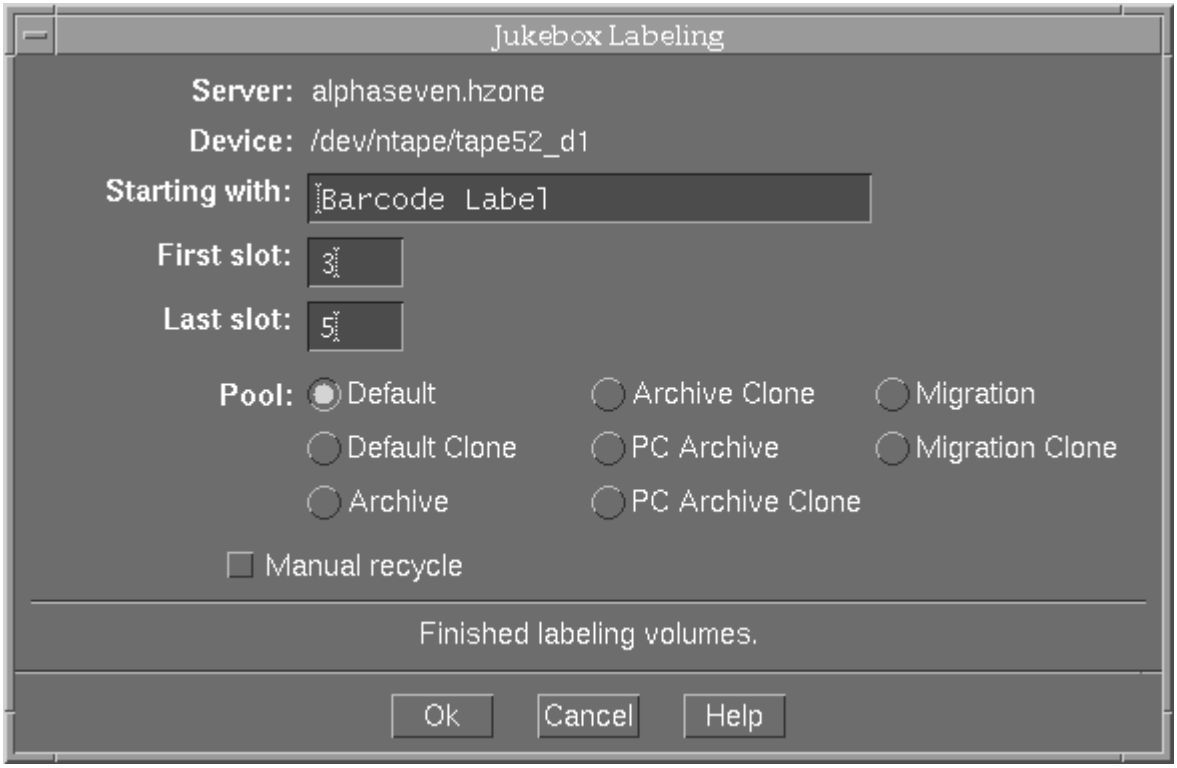
77. The Juke Box Labeling window reappears and it tells you in what stage of the process it is currently in.



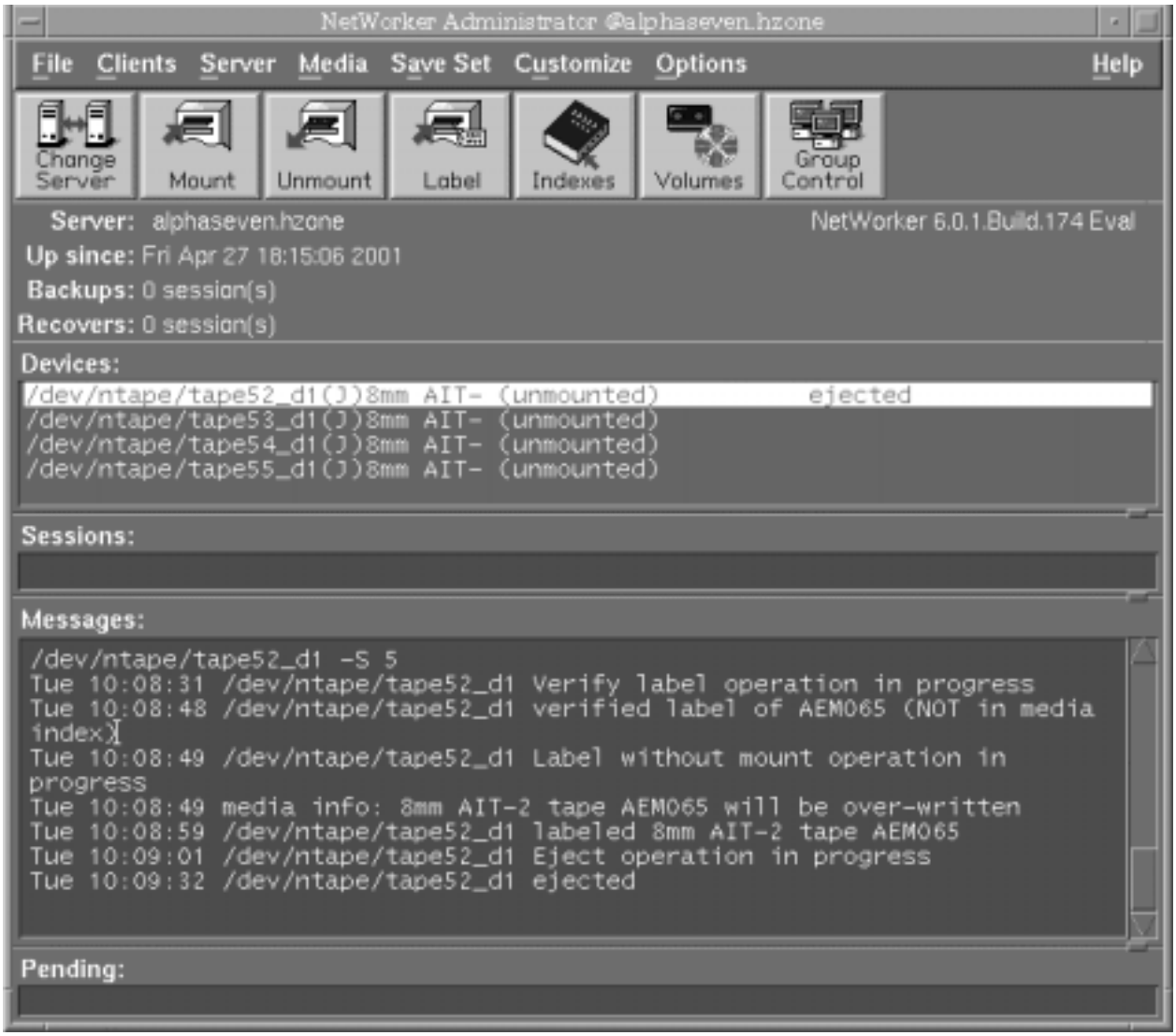
78. The notice window appears, click OK:

Note: you will need to do this for each tape that you label. Close the window when all tapes are labeled.

79. Once the labeling of the tapes is complete, the *Jukebox Labeling* window will show that it is Finished Labeling Volumes. Close the window by clicking on cancel



80. The *NetWorker Administrator GUI* window appears. You may view what transpired during the labeling process under the Messages portion of the window. Close this window by clicking on file and exit on the task bar.

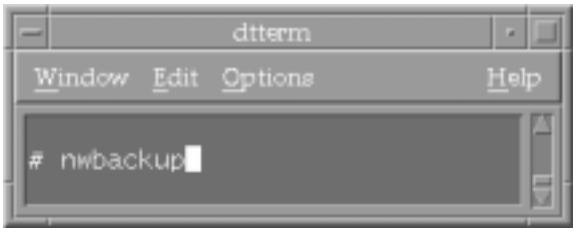


This completes the labeling of the tapes portion of the lab

Step 8
Performing a Selective Backup

81. Bring up the *NetWorker Backup GUI.*

    At the system prompt, #, type the below command and hit Enter.



82. The *NetWorker Backup GUI* appears. It lists all the files and directories. Click on the files and or directories that you want to backup. Then click on the Start button.

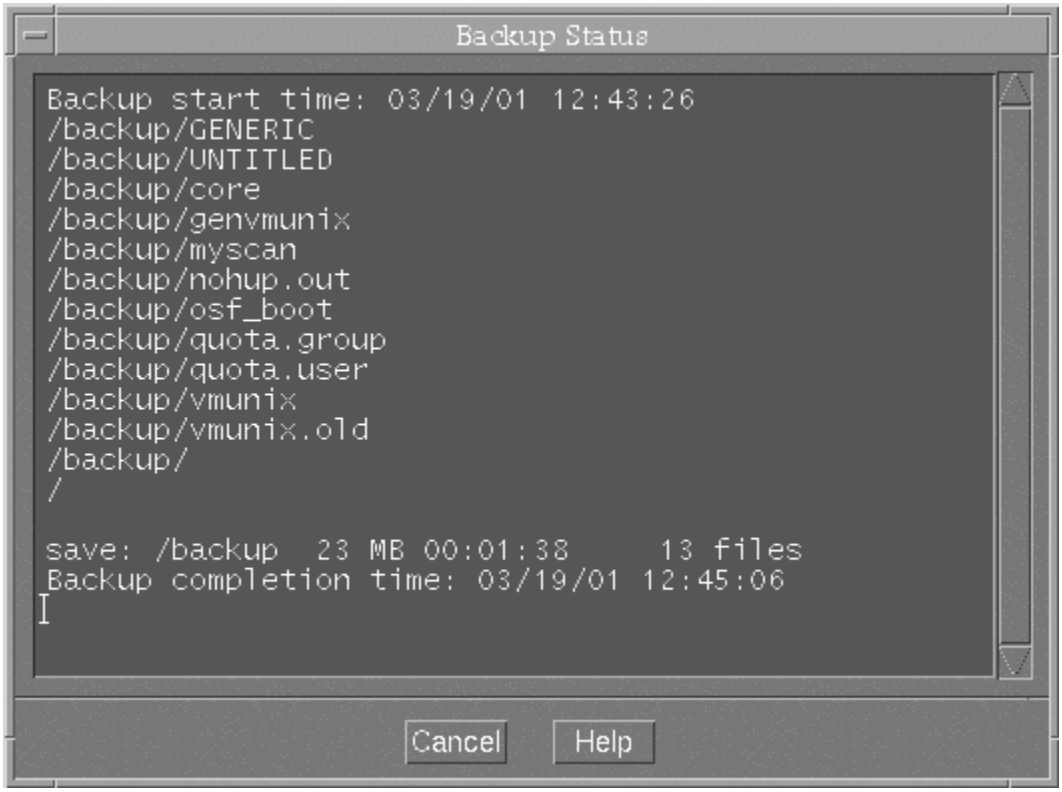
    Note: For this exercise select only the *Backup* directory.


NetWorker Backup
File
Tree
View
Change
Mark
Options
Help
Change Server
Mark
Unmark
Search
Start
Server: alphaseven.hzone
Client: alphaseven.hzone
Selection:
/
.TTauthority
.Xauthority
.cshrc
.dt
.dtprofile
.local..
.login
.mrg...login
.netscape
.new...cshrc
.new...login
.new...profile
.profile
.proto...cshrc
.proto...login
.proto...profile
.rhosts
.sysman
.tags
GENERIC
NW60
SM14
SM141
TT_DB
UNTITLED
XV
backup
backupinfo
bin
boo
cdrom
cluster

83. The *Backup Options* window appears, keep defaults and click *OK*:

84. The *Backup Status* window appears.

This will show you the status of you backup job. Once complete, click *Cancel*.

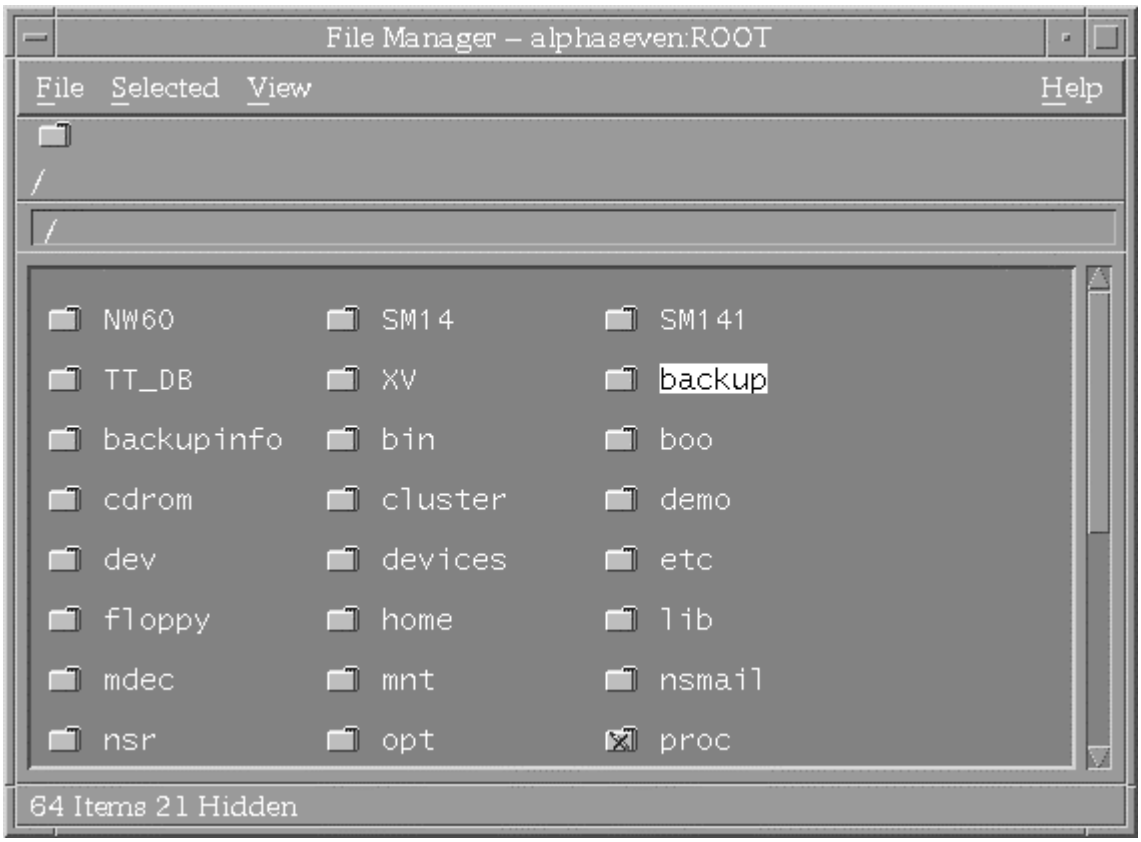


85. The *NetWorker Backup GUI* window appears. Close the *NetWorker Backup GUI* window by clicking on *File* then *Exit* on the task bar.

This completes the selective backing up of files portion of the lab

Step 9
Performing a Selective Restore

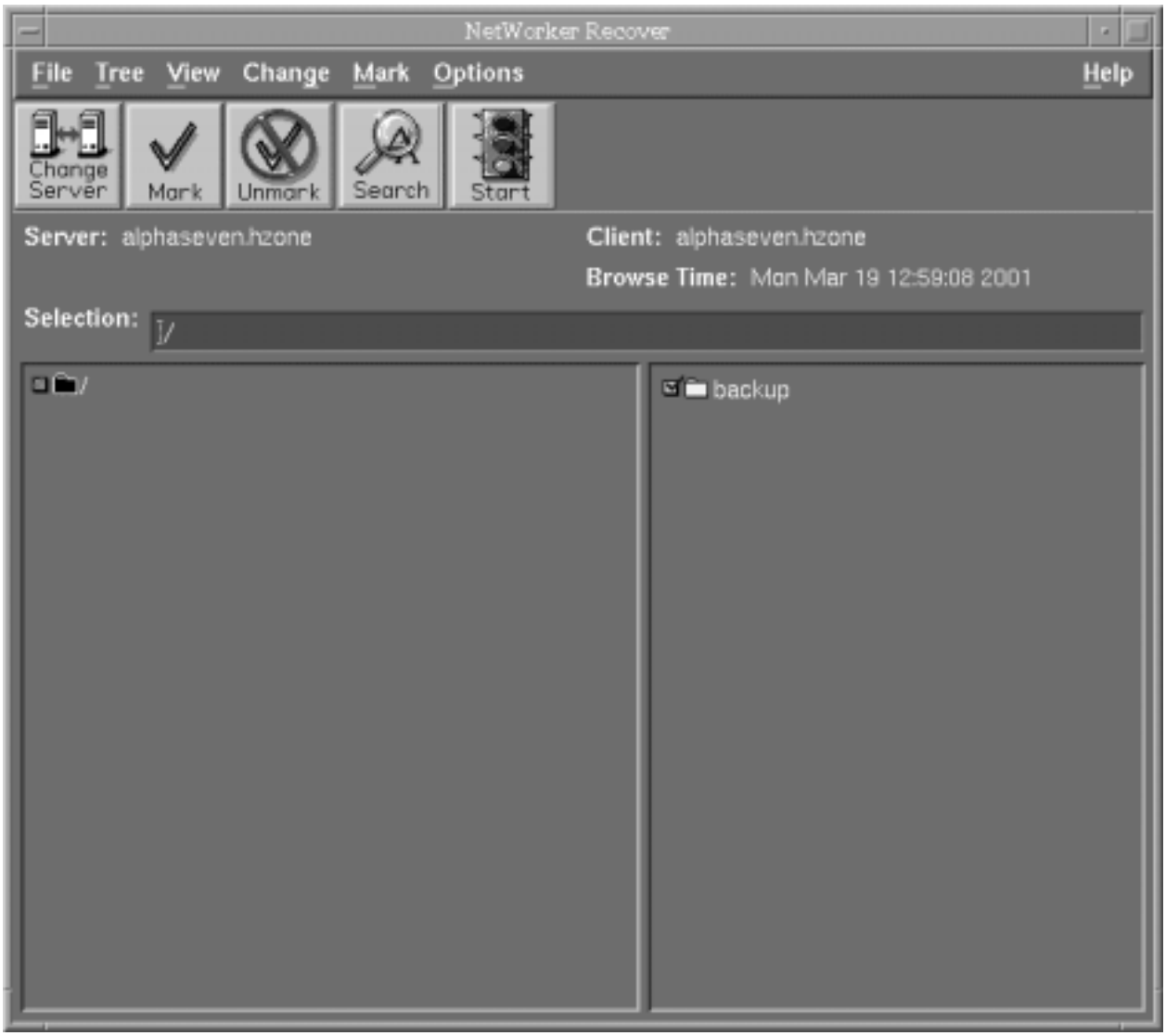
86. First, use *File Manager* to delete the directory. Click on *Selected* then *Put in Trash*, on the task bar. Once deleted, minimize *File Manager*.



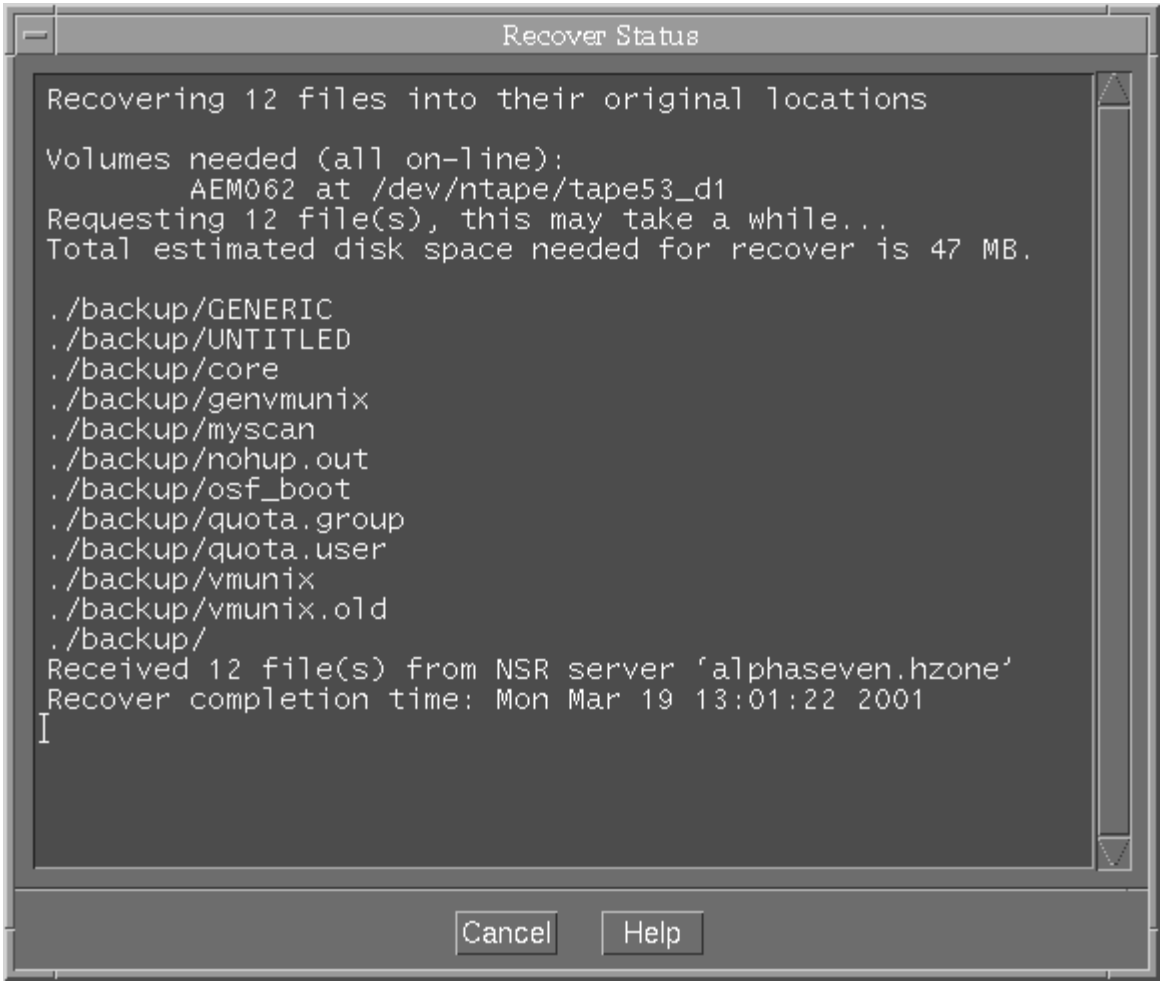
87. Bring up the *NetWorker Recovery* window.

    At the system prompt, #, type the command below and *Enter*.

88. The *NetWorker Recovery* window appears. Leave all defaults and click the *Start* button.

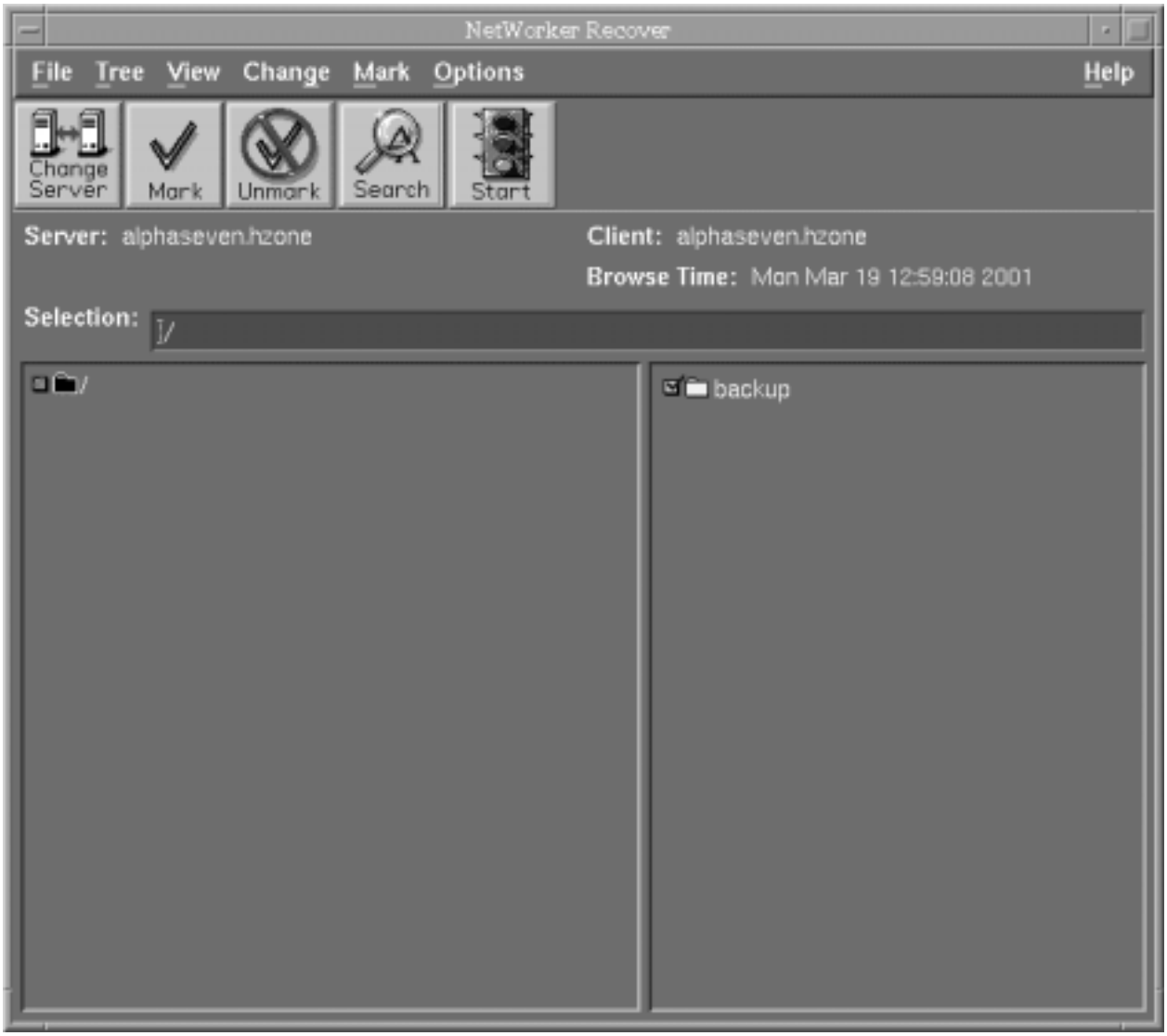


89. The *Recovery Status* window appears. It will show you the status of your recovery. When complete, click *Cancel*.

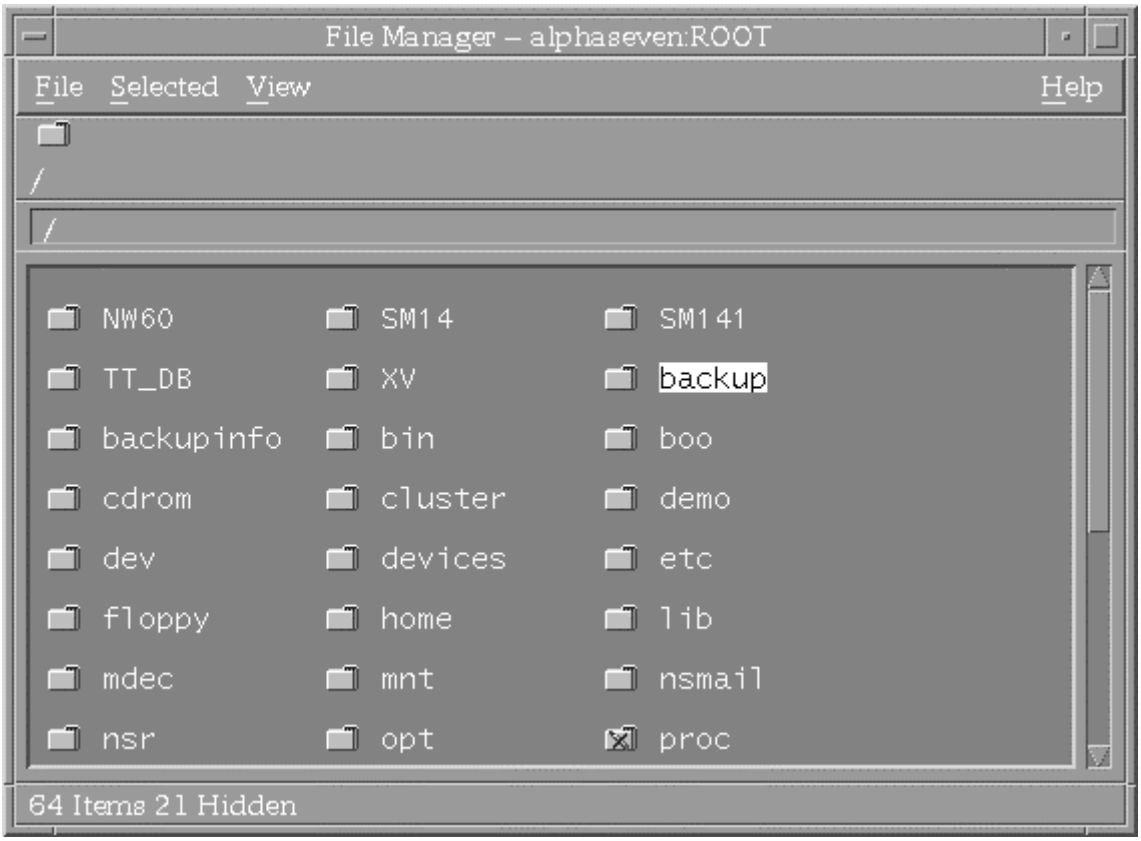


90. Close the *NetWorker Recovery* window.

Click *File* and then *Exit* on the *Task Bar*.



91. Use *File Manager* to verify the directory has been recovered.

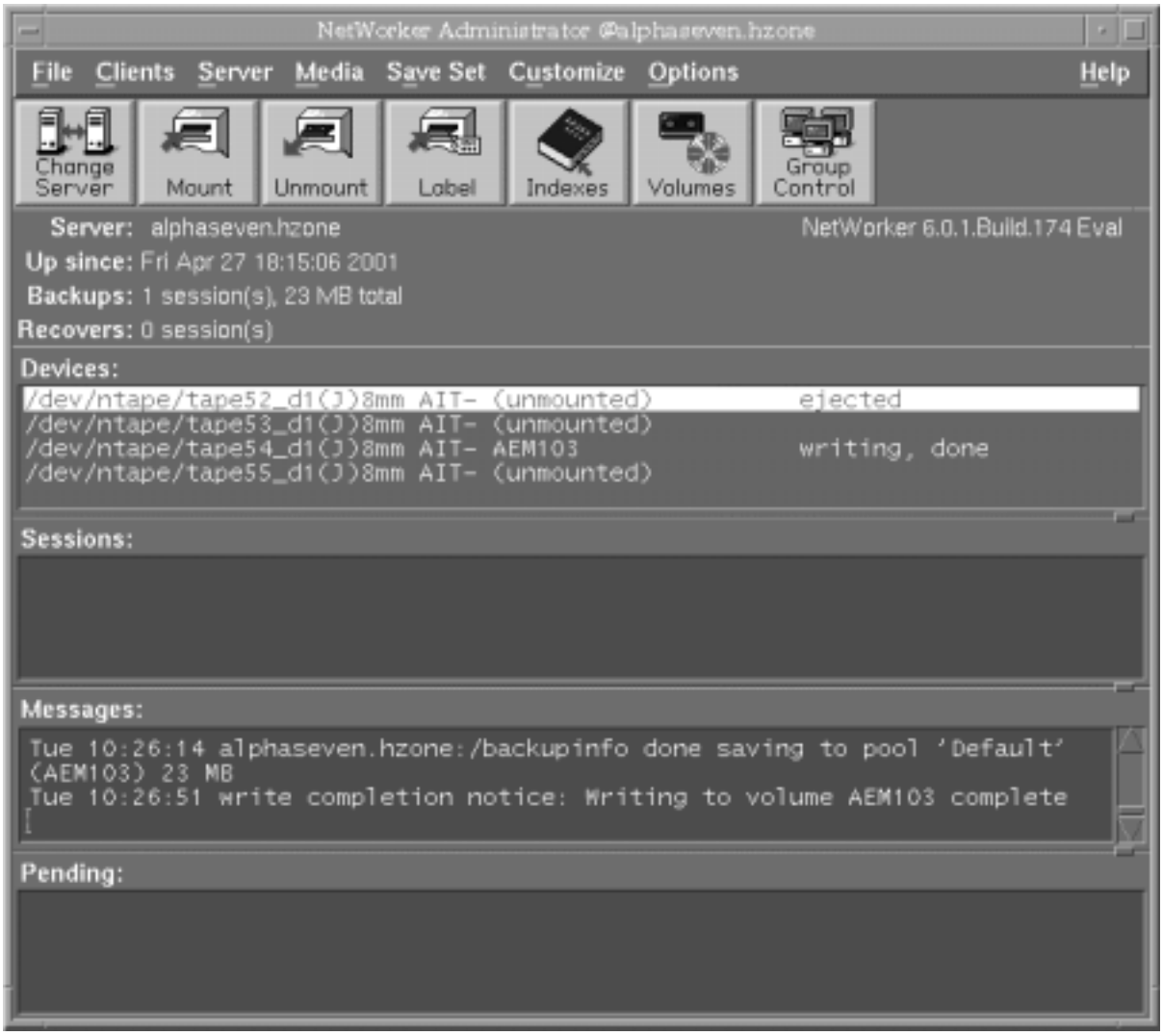


Step 10
Performing a Full Backup

92. Start the *Networker GUI*. If already started, go to step 41.

    At the system prompt, #, type the below command and hit the *Enter* key.

93. The NetWorker GUI appears click *Customize* then *Groups* on the *task bar*.

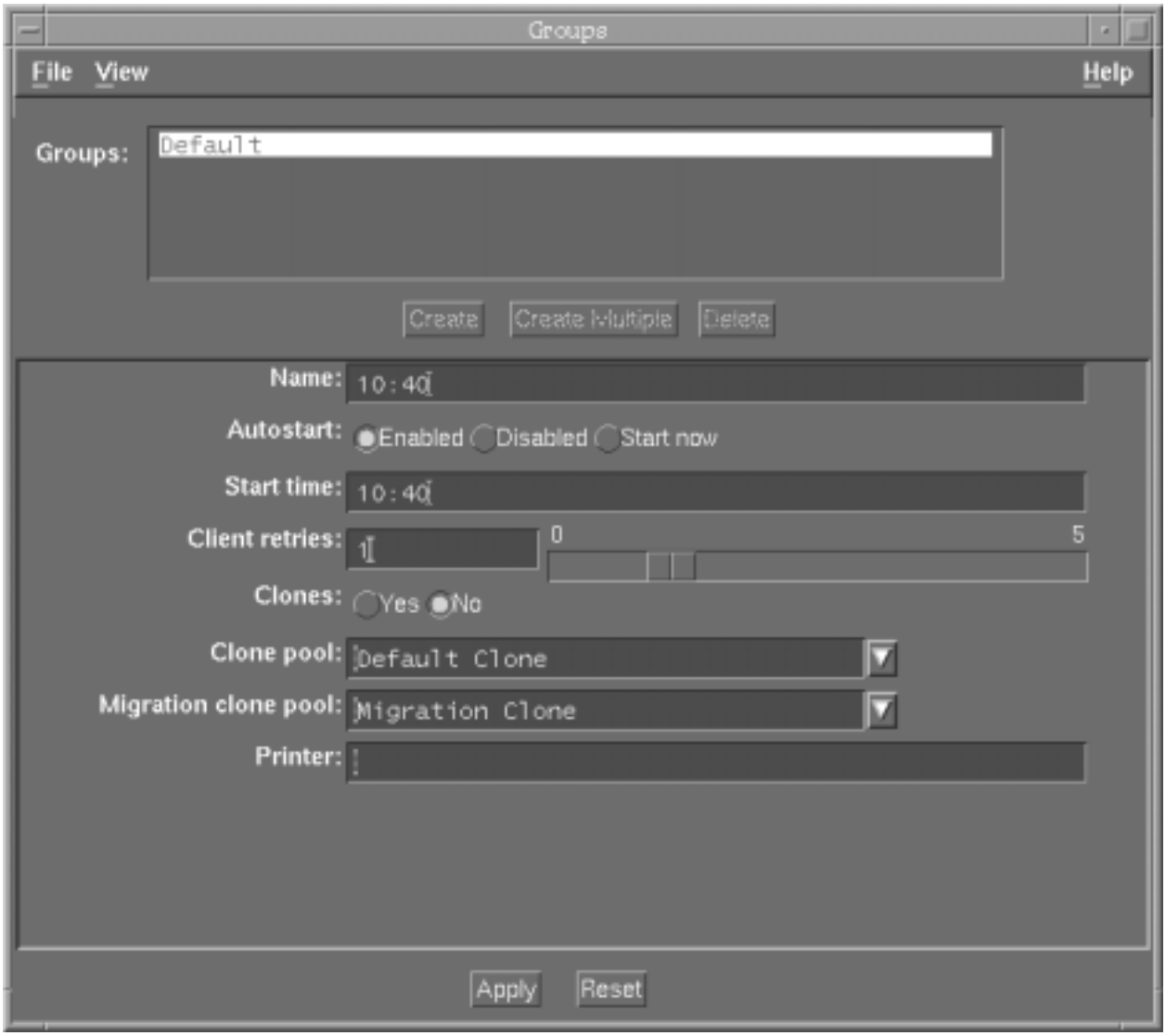


94. The *Groups* window appears click on *Create*. Fill in the below information. Once complete, click on *Apply* at the bottom of the window.

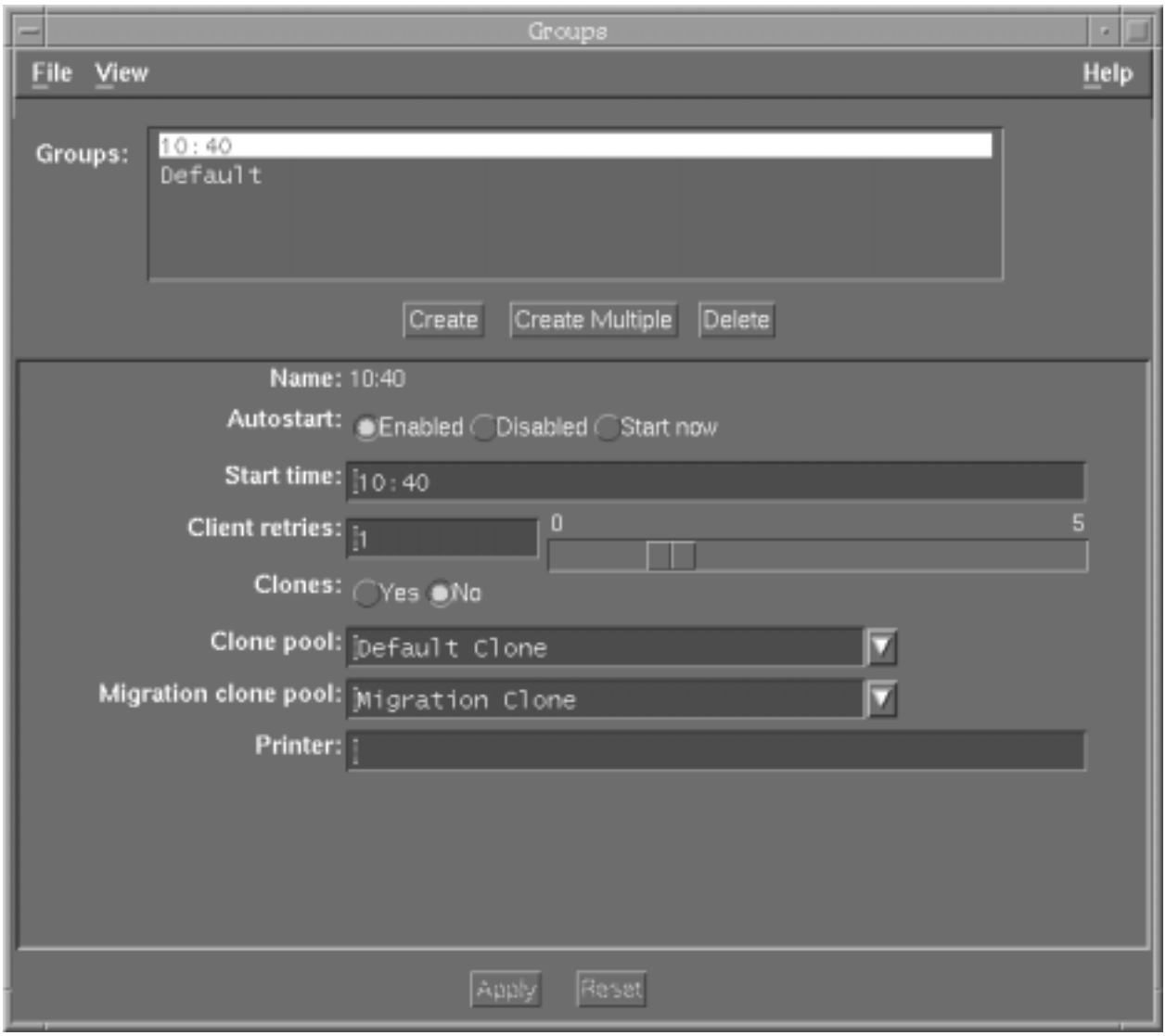
    Name: "I would suggest naming it the start time that you are planning to use"

    Set *Autostart* to *Enable*

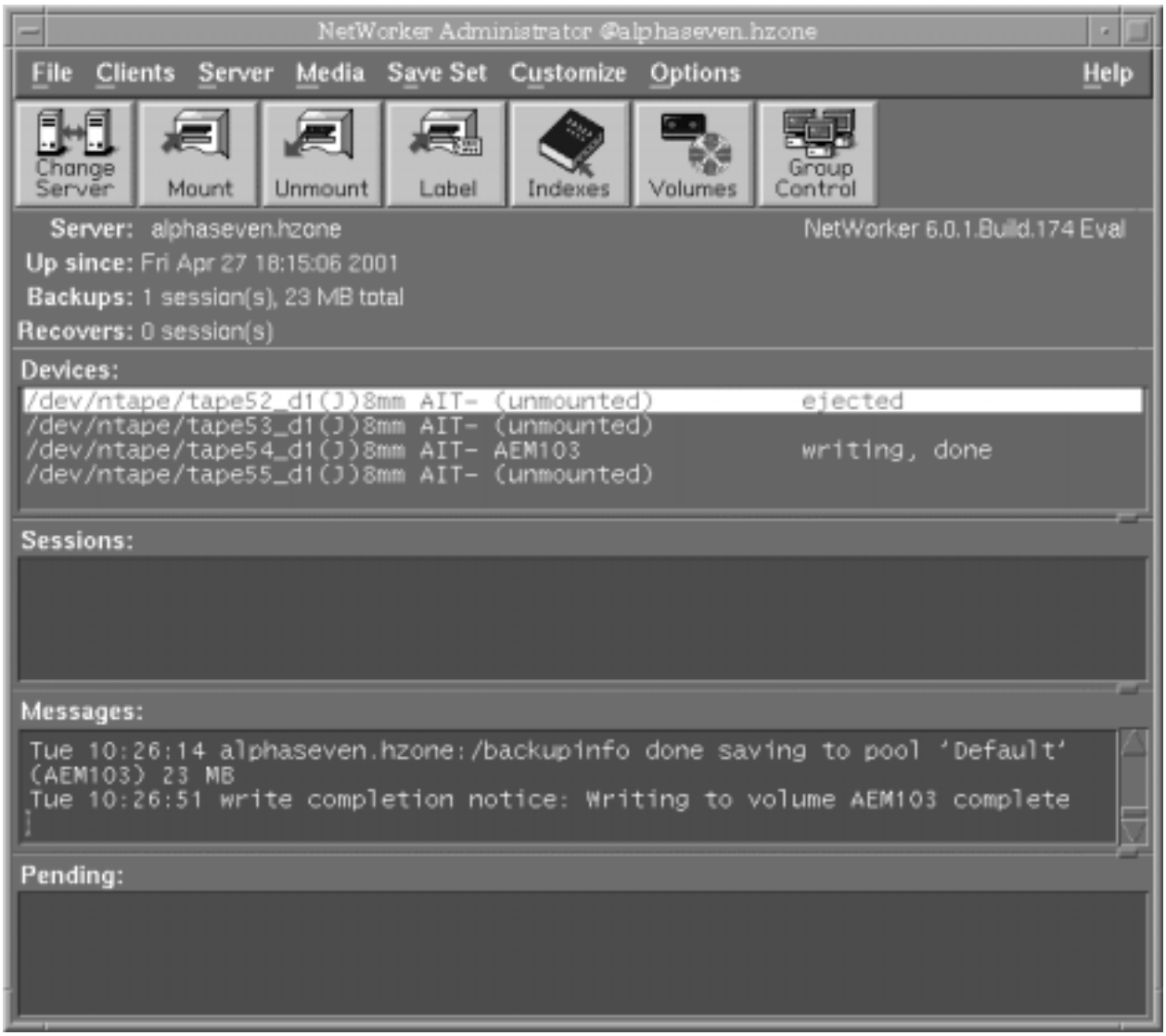
    Enter the *Start Time*


Groups
File
View
Help
Groups:
Default
Create
Create Multiple
Delete
Name:
10:40
Autostart:
Enabled
Disabled
Start now
Start time:
10:40
Client retries:
1
0
5
Clones:
Yes
No
Clone pool:
Default Clone
Migration clone pool:
Migration Clone
Printer:
Apply
Reset

95. The group that you created should now be listed in the Groups window above Default. Click on *File* then *Exit*, on the *task bar* to close the window.



96. The *NetWorker Administrator* window appears, click *Clients* then *Clients Setup* on the *task bar*.



97. The *Clients* window appears, enter the below information and click on *Apply*.

Note: The backup should start automatically if the scheduled time hasn't been past.

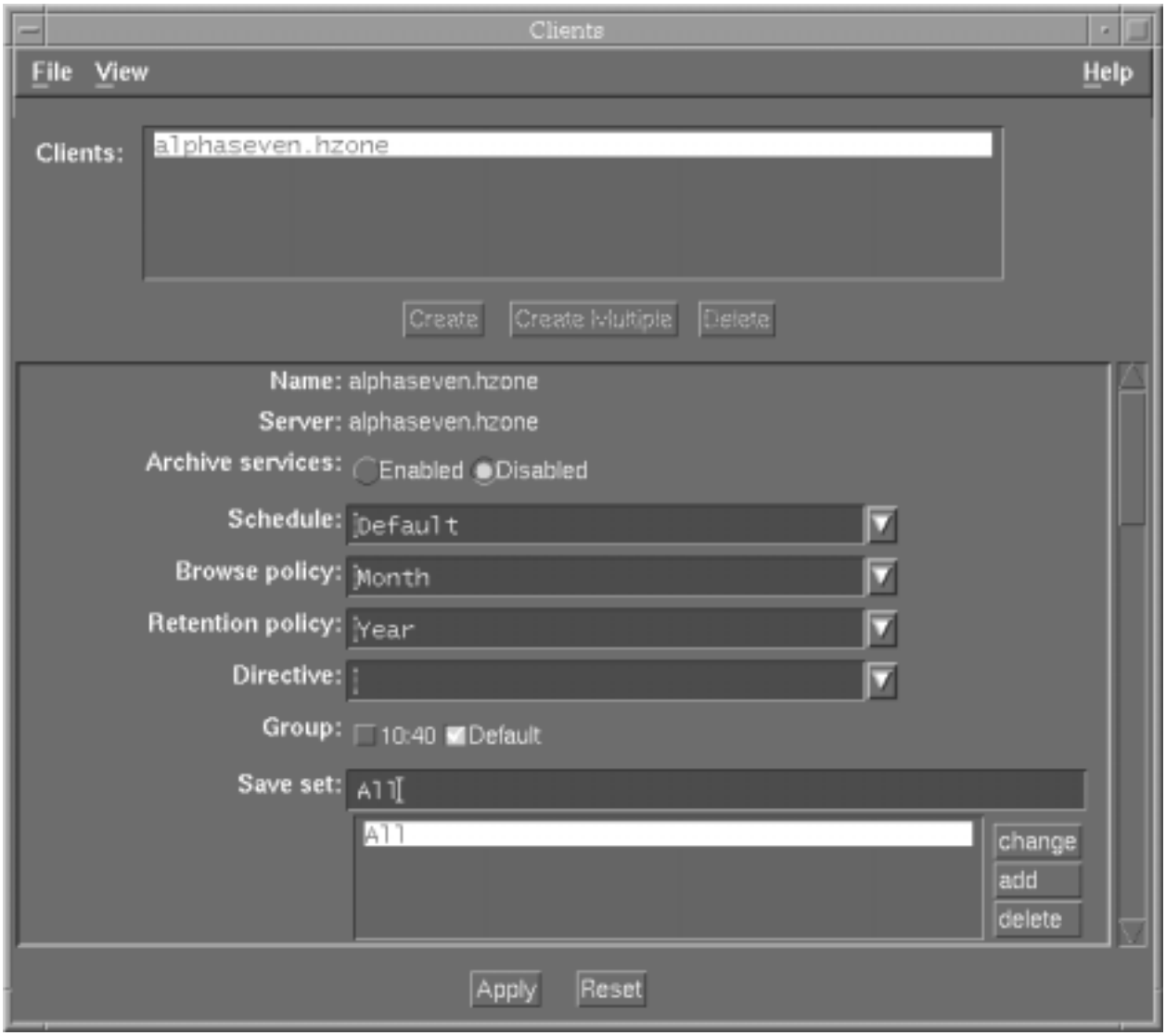
Once complete, go to the Restore Process.

Browse policy – Week

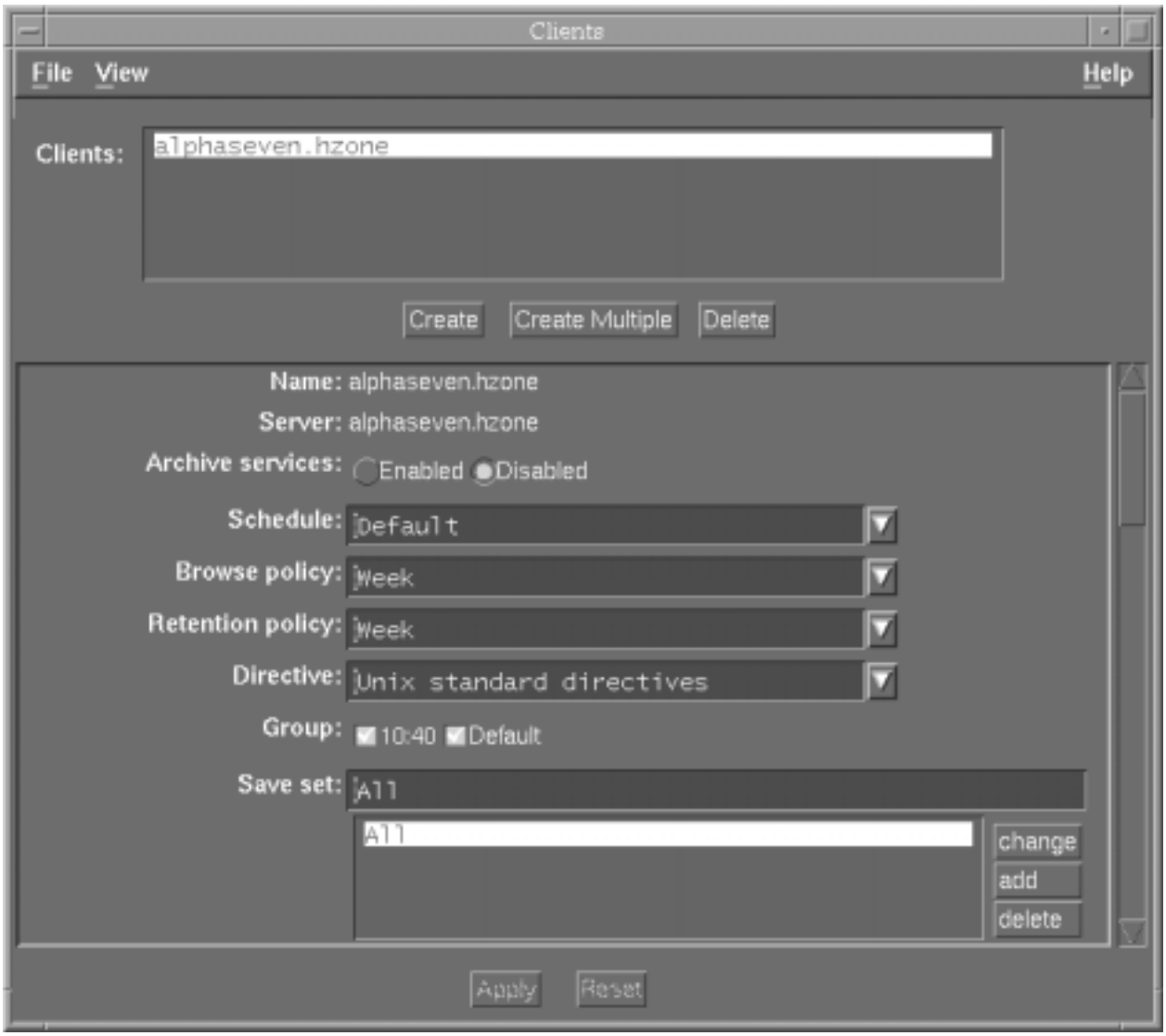
Retention policy – Week

Directive – UNIX Standard Directives

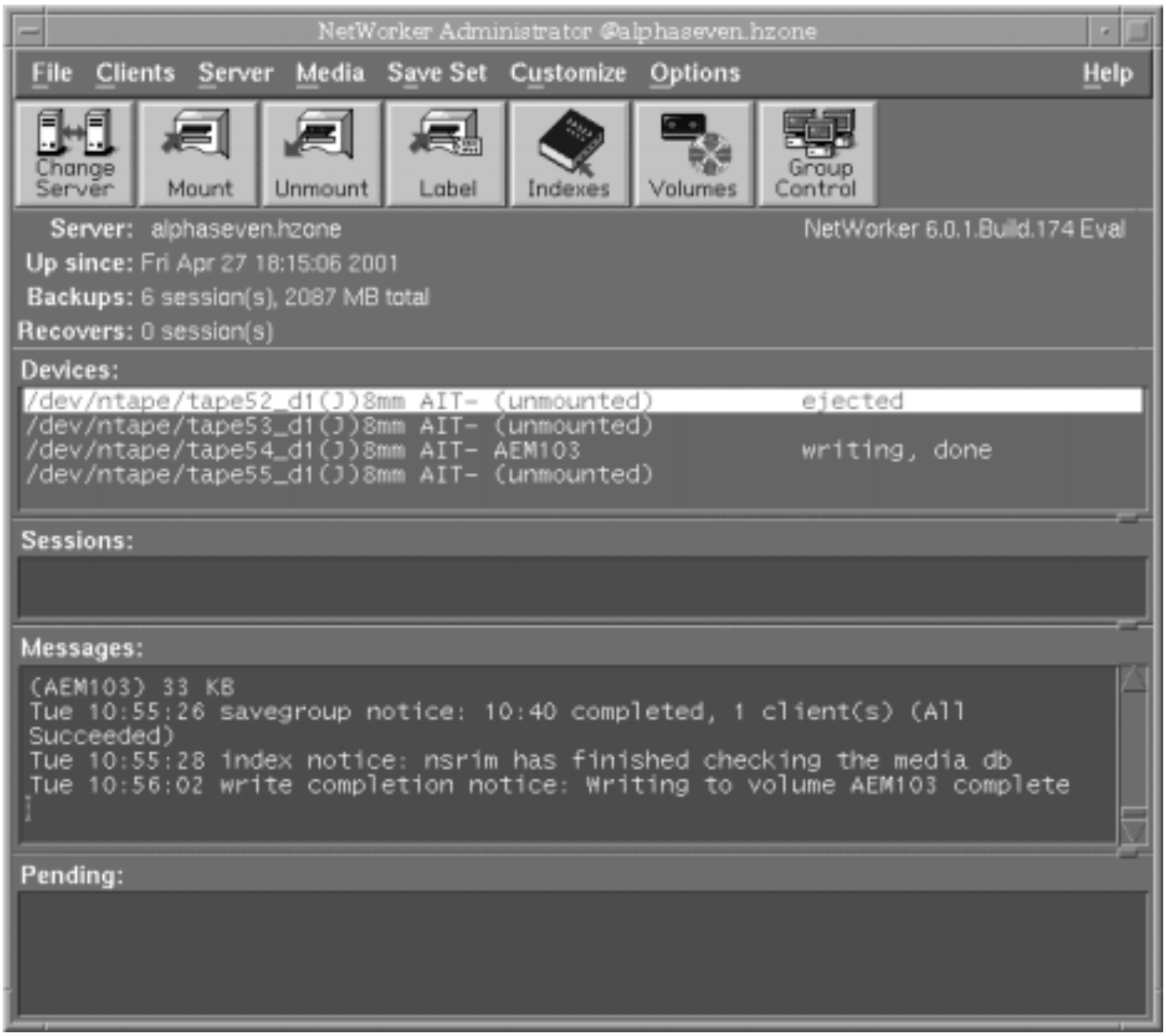
Group – "select your group"



98. Your changes that you made should now be shown. Click on *File* and *Exit* on the *task bar* to close the *Clients* window.



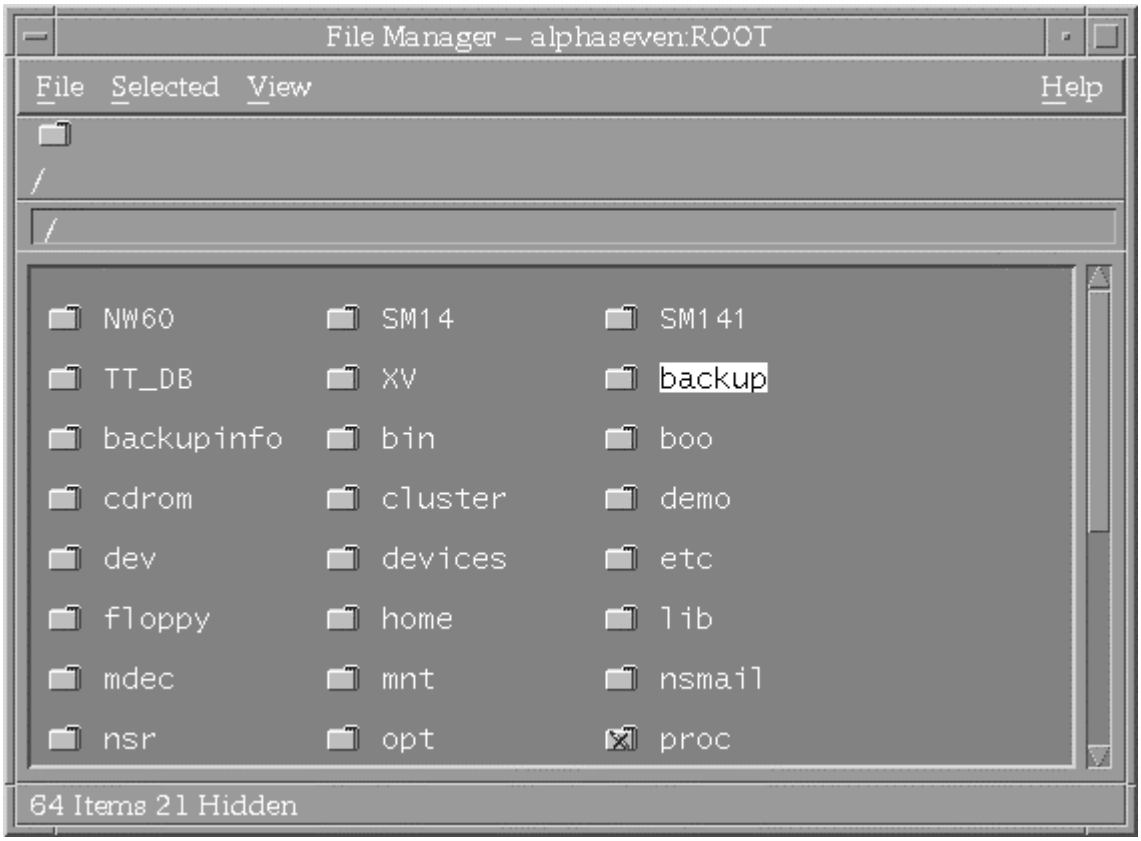
99. The NetWorker Administration GUI window appears. Once again you can view what is going on if you look at the messages section of this window.



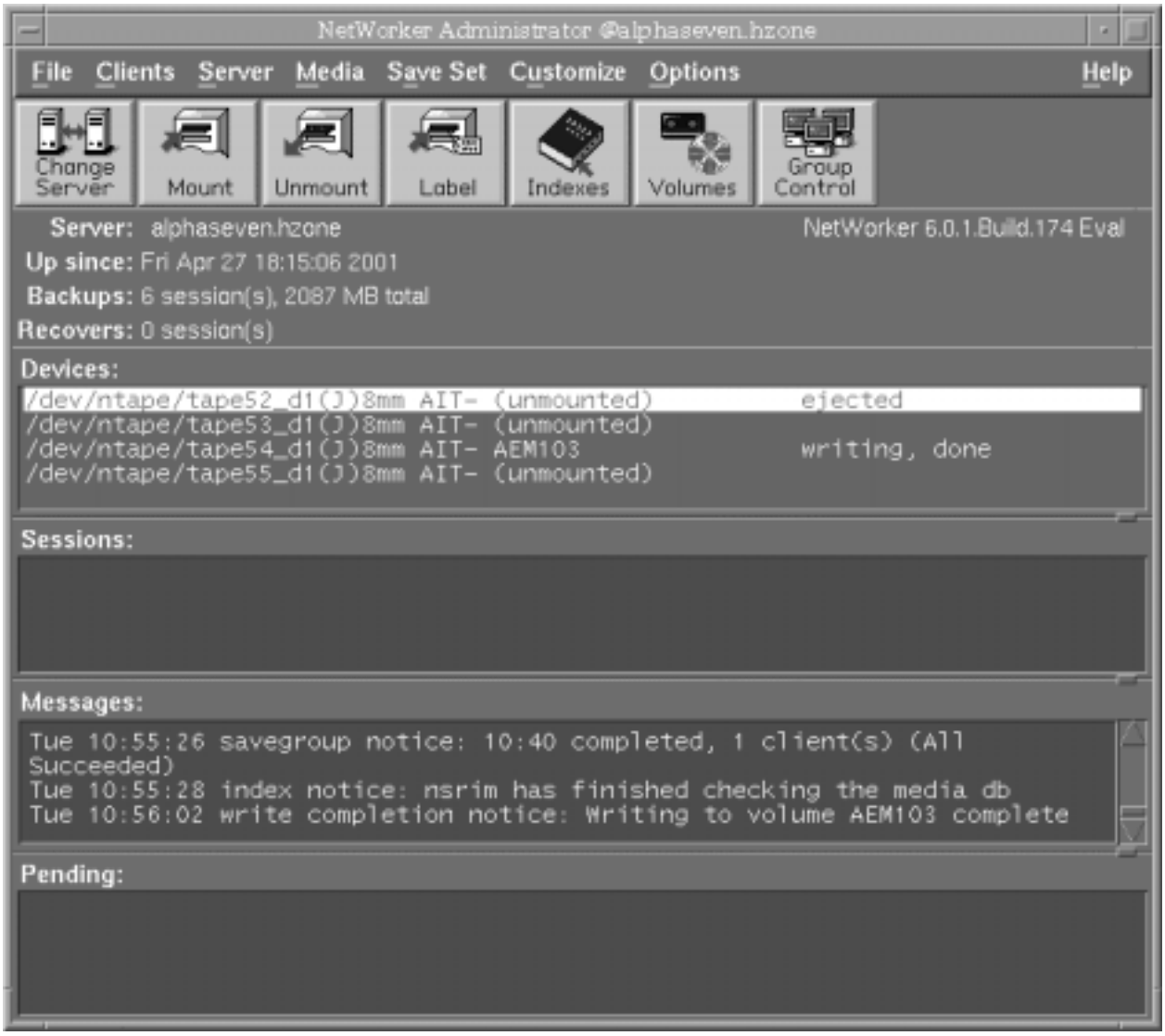
This completes the full backup process of the lab.

Step 11
Performing a Full Restore

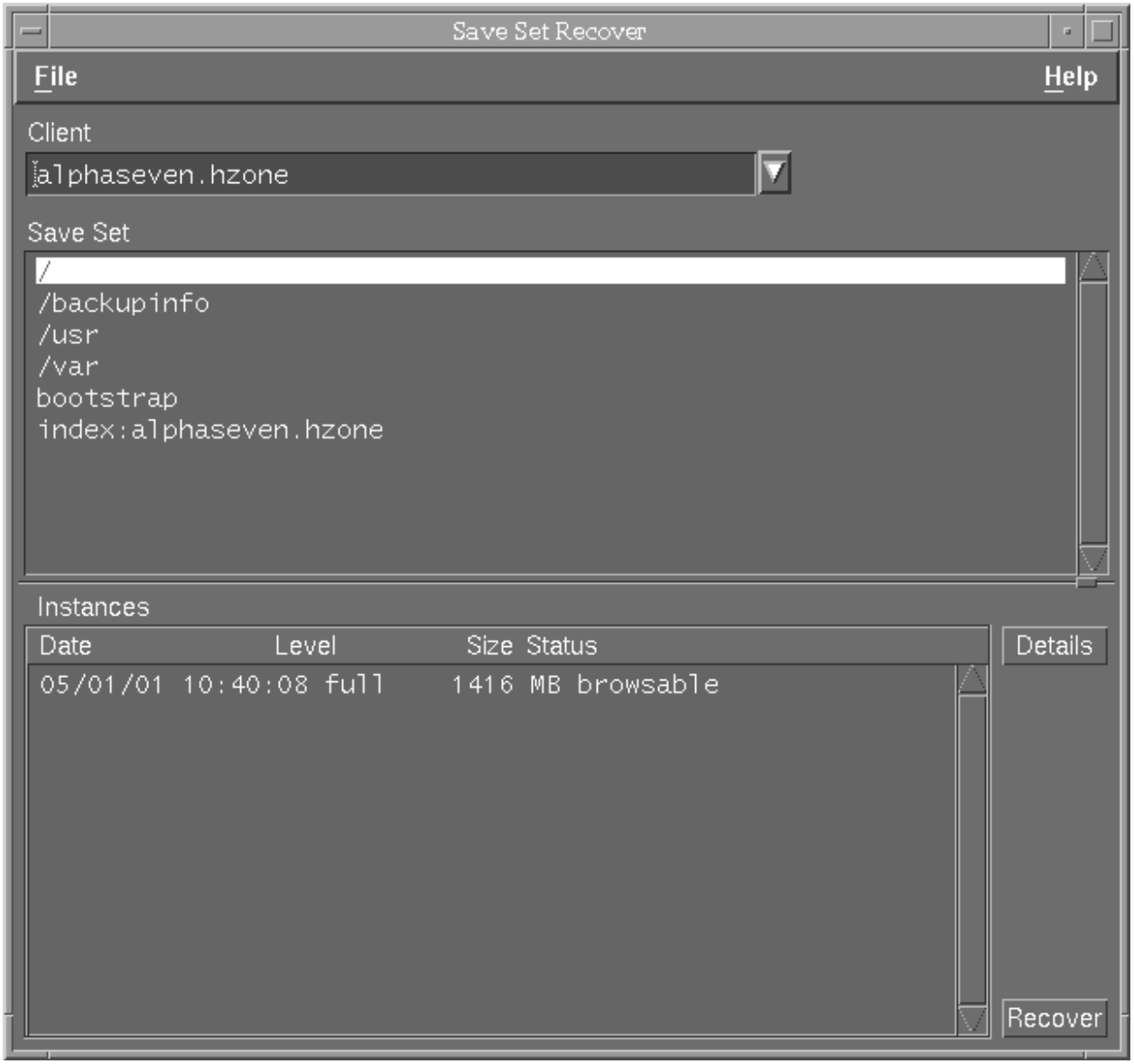
100. First, use *File Manager* and *delete* the *backup directory*. Once deleted, *minimize File Manager*.



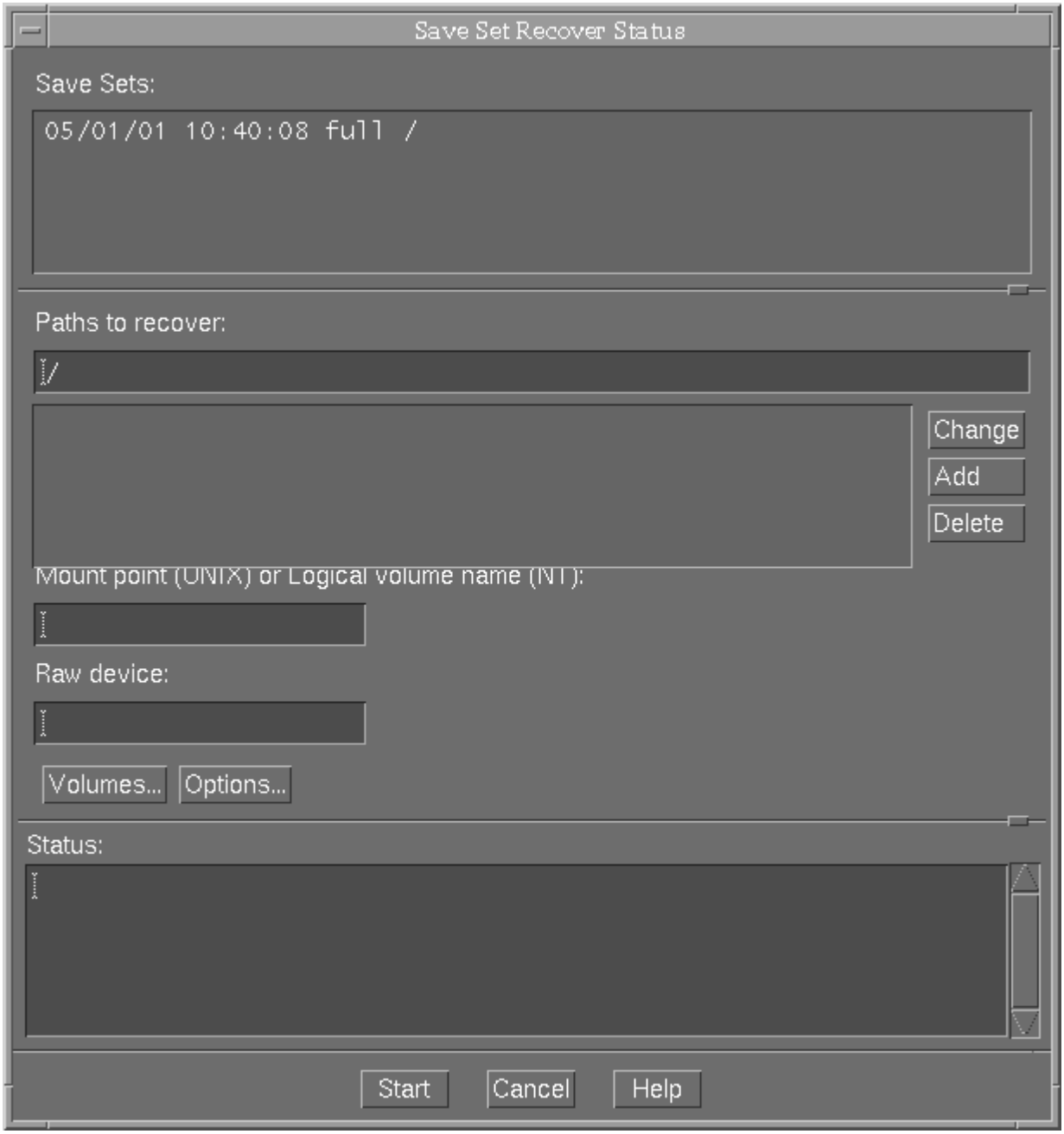
101. On the Task Bar of the NetWorker's Administrator window, click on *Save Sets* then *Recover*.



102. The *Save Set Recover* window appears, click on the set that you want to recover then click on *Recover*.

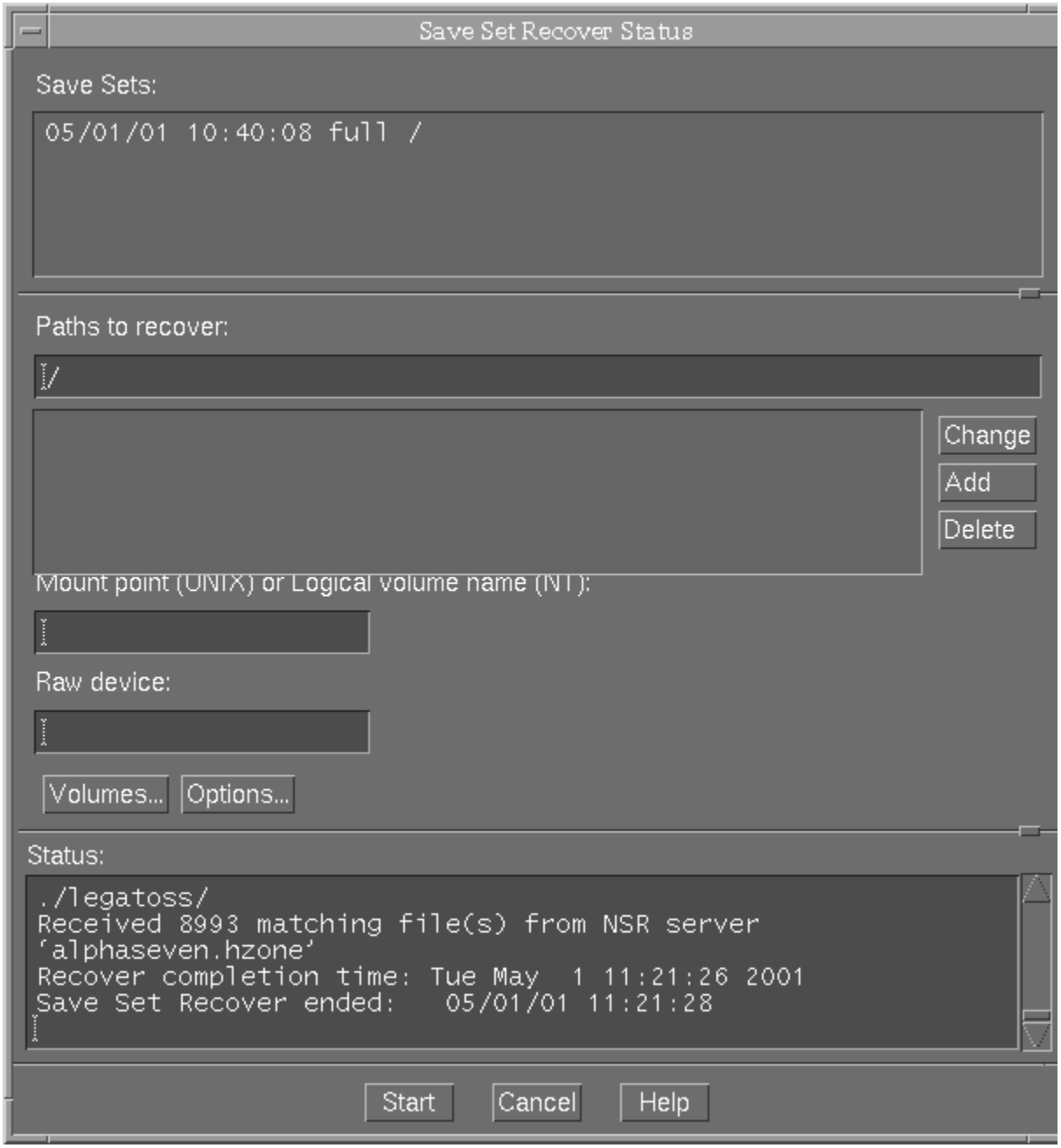


103. The *Save Sets Recover Status* window appears, select your recovery set and click on *Start*.

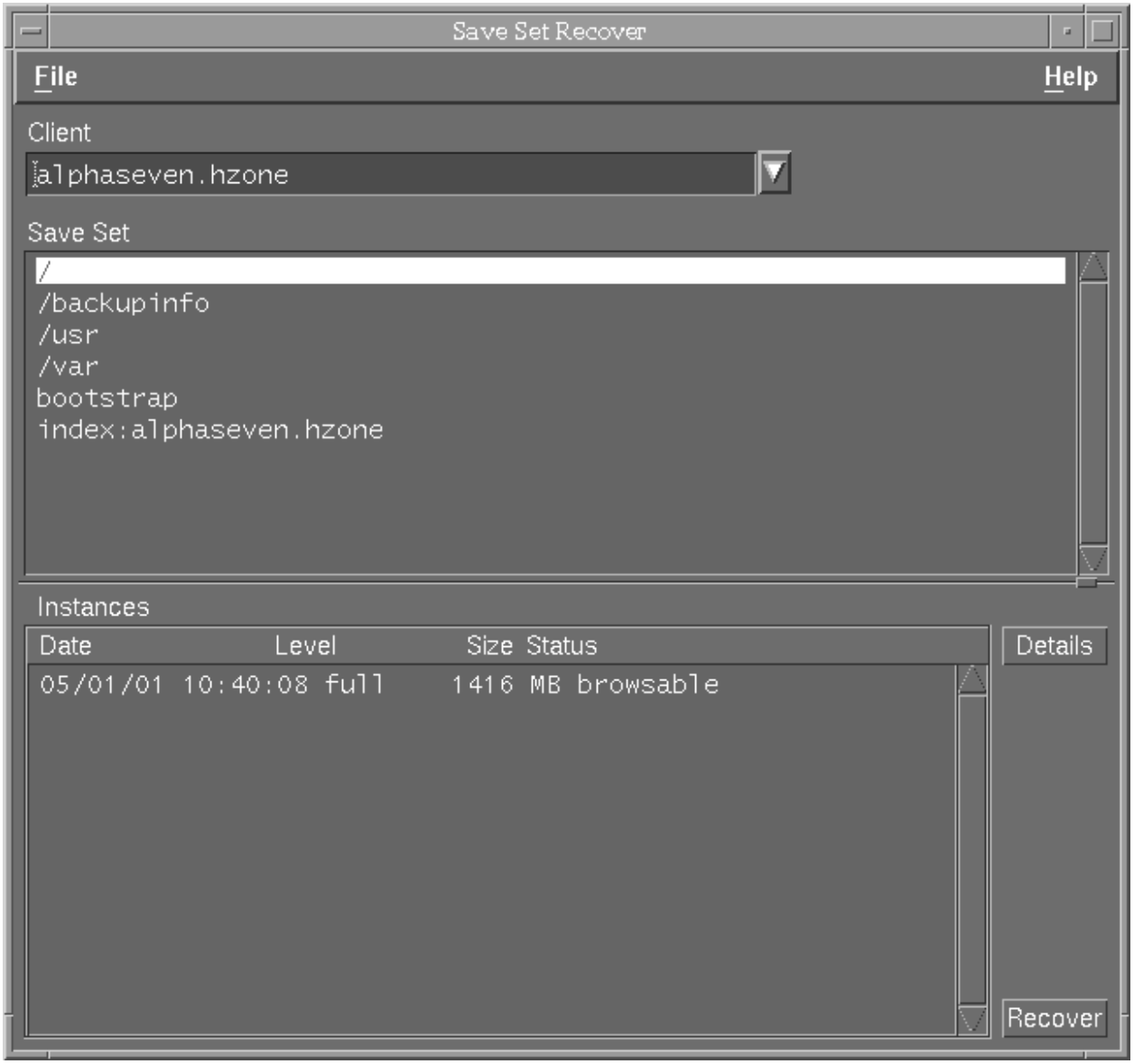


104. The *Save Set Recovery File Conflict* window appears, select *Overwrite existing file* and deselect *prompt on further conflicts*.

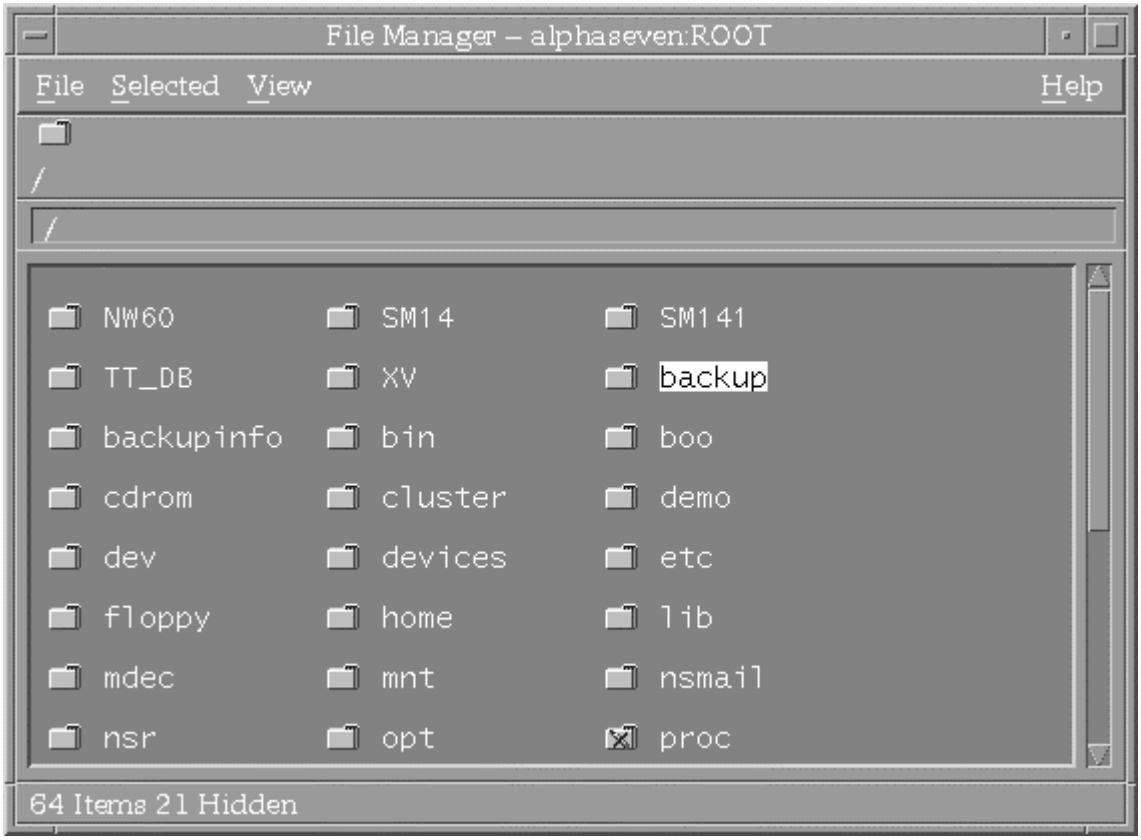
105. The *Save Sets Recovery* window appears. The *Status* section of the window shows what is taking place. Once the restore is complete, *close* the window by clicking on *Cancel*.



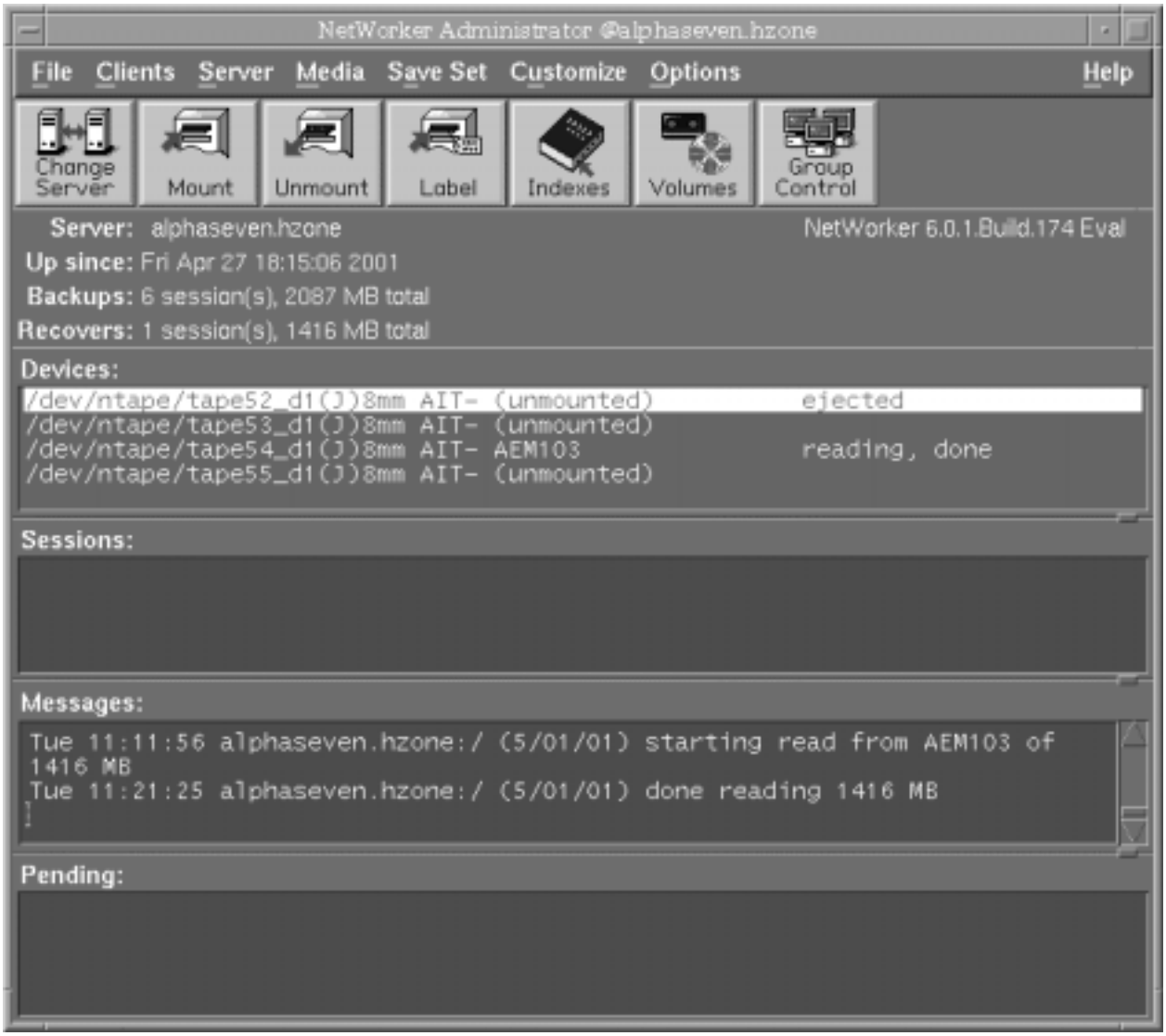
106. *The Save Sets Recovery* window appears, close it by clicking on *File* and *Exit* on the *task bar*.



107. Open up *File Manager* and verify that the *backup* directory has been restored.



108. The *NetWorker Administrator* window appears, click *File* then *Exit* on the *task bar* to close it.



This completes the full restore portion of the lab.

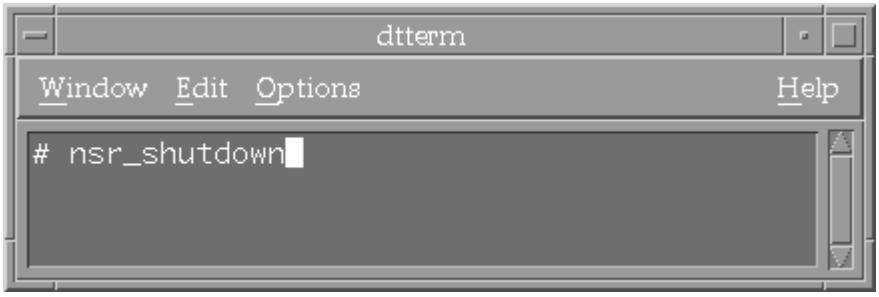
STEP 12
Uninstalling Legato NetWorker Off The Server.

109. Open a Terminal window if needed.

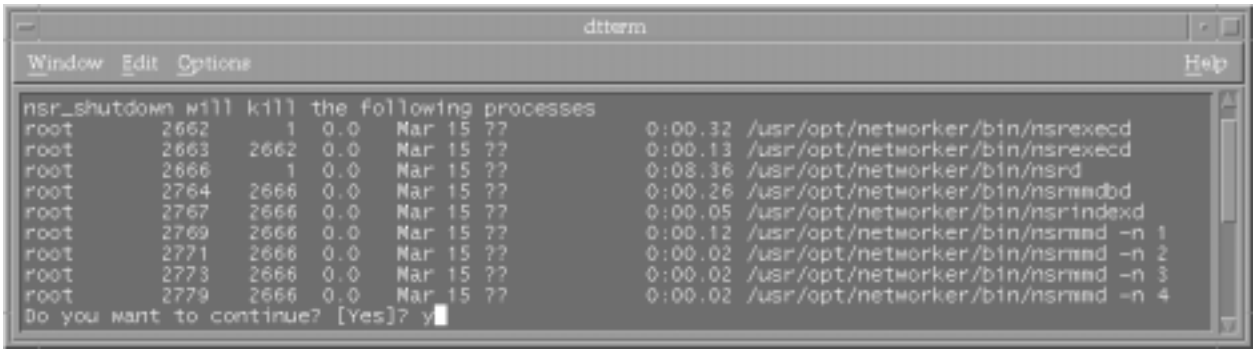
110. Shut down the NetWorker daemons.

At the system prompt, #, type the below command and hit the *Enter* key.

Note: The –aq forces the system to shut down without prompting you for a response.



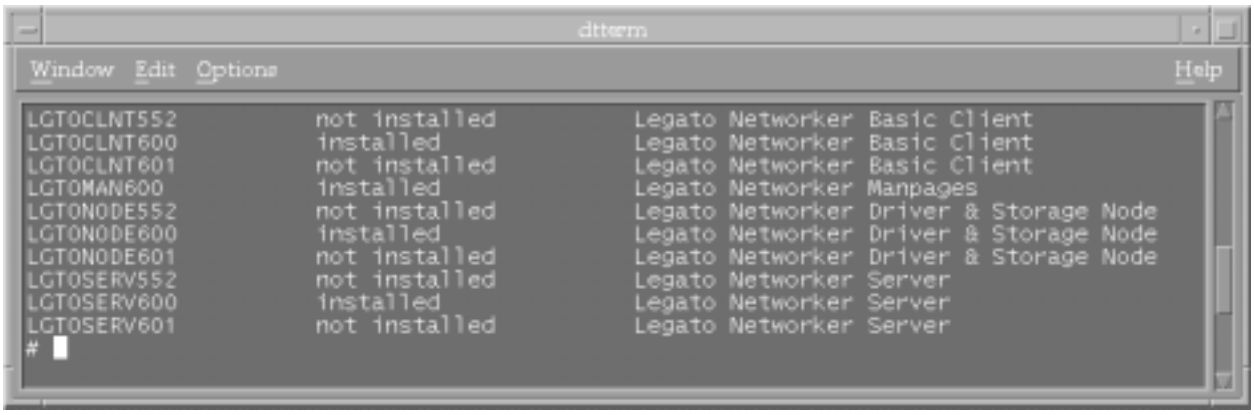
111. The below information appears, type *y* and hit the *Enter* key.


dtterm
Window Edit Options Help
nsr_shutdown will kill the following processes
root 2662 1 0.0 Mar 15 ?? 0:00.32 /usr/opt/networker/bin/nsrexecd
root 2663 2662 0.0 Mar 15 ?? 0:00.13 /usr/opt/networker/bin/nsrexecd
root 2666 1 0.0 Mar 15 ?? 0:08.36 /usr/opt/networker/bin/nsrd
root 2764 2666 0.0 Mar 15 ?? 0:00.26 /usr/opt/networker/bin/nsrmmdbd
root 2767 2666 0.0 Mar 15 ?? 0:00.05 /usr/opt/networker/bin/nsrindexd
root 2769 2666 0.0 Mar 15 ?? 0:00.12 /usr/opt/networker/bin/nsrmmd -n 1
root 2771 2666 0.0 Mar 15 ?? 0:00.02 /usr/opt/networker/bin/nsrmmd -n 2
root 2773 2666 0.0 Mar 15 ?? 0:00.02 /usr/opt/networker/bin/nsrmmd -n 3
root 2779 2666 0.0 Mar 15 ?? 0:00.02 /usr/opt/networker/bin/nsrmmd -n 4
Do you want to continue? [Yes]? y

112. D
etermine the NetWorker Subsets installed on your system.

At the system prompt, #, type the below command and hit the *Enter* key.

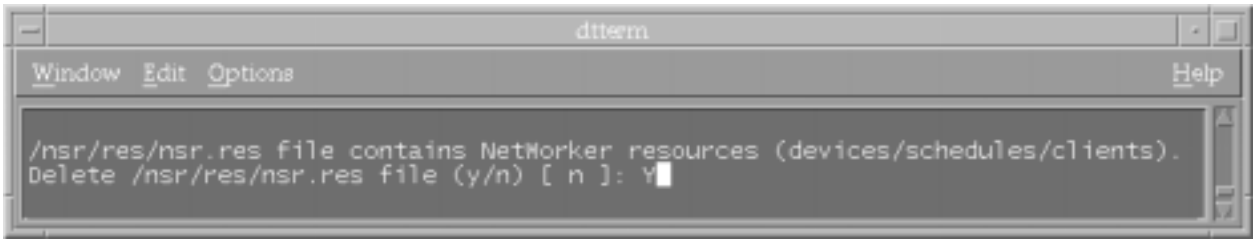
113. T
he following display appears



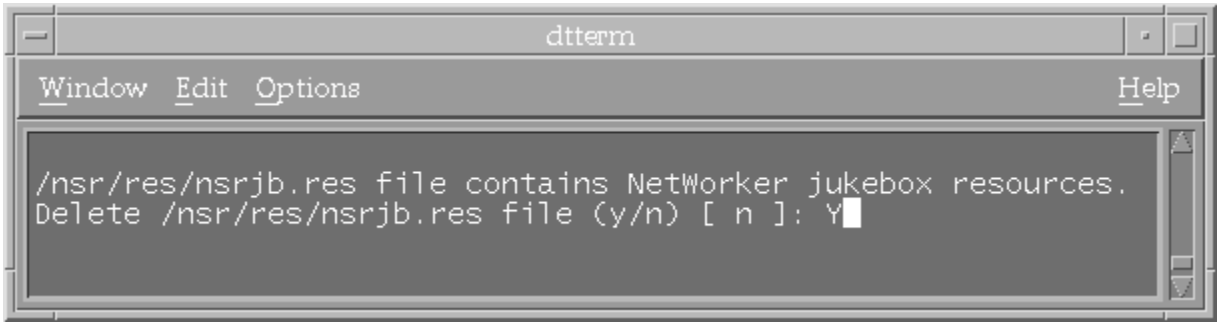
114. R
emove your version of the NetWorker Software.

At the system prompt, #, type the below command and hit the *Enter* key.

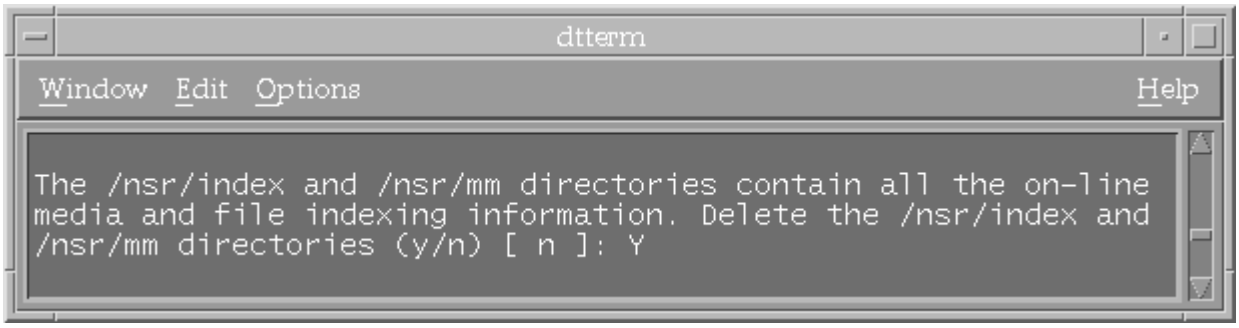
115. T
he below information appears, type y and hit the Enter key.


dtterm
Window Edit Options Help
/nsr/res/nsr.res file contains NetWorker resources (devices/schedules/clients).
Delete /nsr/res/nsr.res file (y/n) [n]: Y

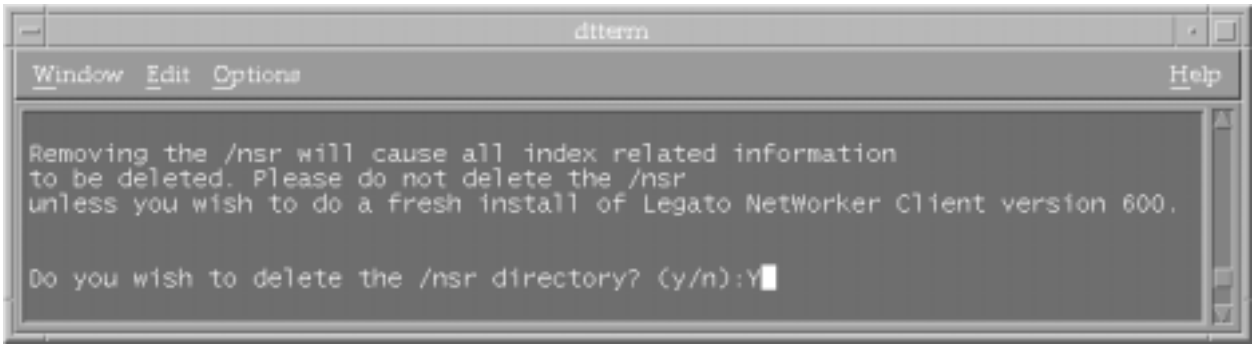
116. T
he below information appears, type y and hit the Enter key.



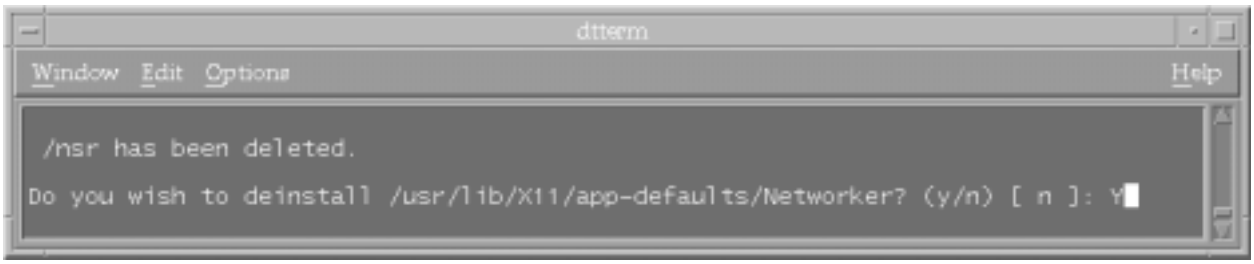
117. T
he below information appears, type y and hit the Enter key.



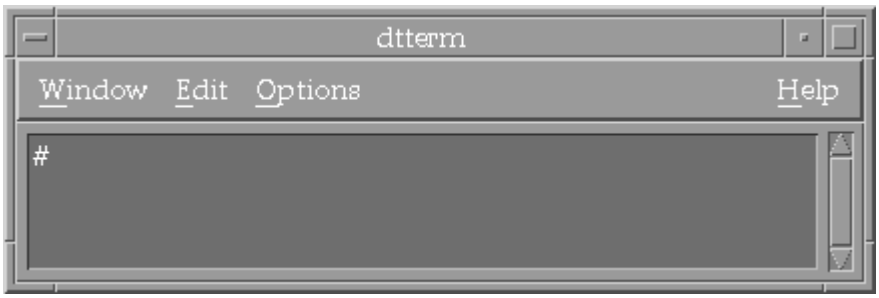
118. T
he below information appears, type y and hit the Enter key.



119. T
he below information appears, type y and hit the Enter key.



120. The system prompt, # now appears.



This completes the removal of Legato NetWorker off the server portion of the lab.

Installing and Configuring VERITAS NetBackup DataCenter 3.4 on Tru64 5.1

Appendix N: Module 6 – Lab 1

Objective:

To install and configure VERITAS NetBackup DataCenter 3.4 on Tru64 5.1 for backup and restore

Requirements:

- AlphaServer
- KGPSA-BC or KGPSA-CA host bus adapter

This install is for a NetBackup master server (which by default is also a media server). If you configure multiple servers in the NetBackup configuration the rest will be media servers.

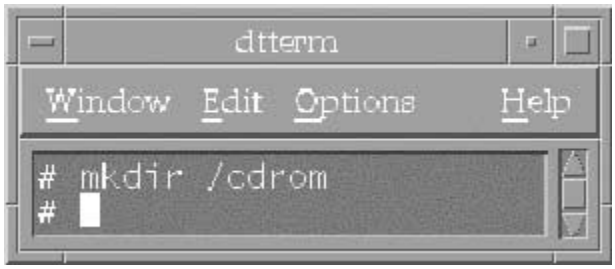
Step 1
Copying the Patch-Kit-3 Patch

Note: The Tru64 UNIX operating system has patches that are released between major revisions. These patches either fix bugs or add enhancements. Tru64 5.1 patch kit 3 is a bundle of patches that are required and/or recommended as of today for Tru64 5.1. New patch kits are released as needed (usually quarterly). Patch kit 3 has a required enhancement for NetBackup 3.4.h

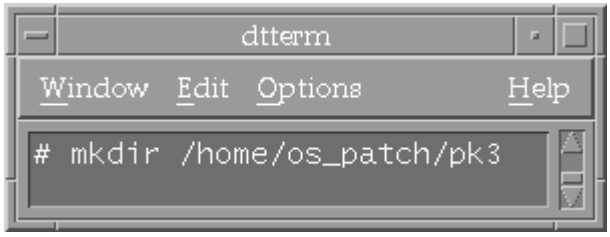
1. Turn the Alpha server on. At the system prompt P000>> type *b* and hit *Enter*

2. Log in as *root* with the password of *root.*

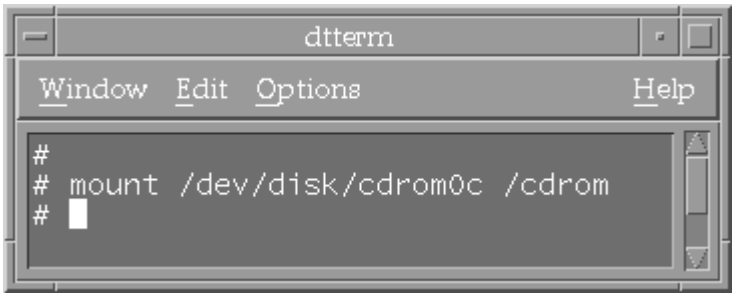
3. Open a *Terminal* window and create a *CDROM* directory.



4. Create a directory called *home/os_patch/pk3*



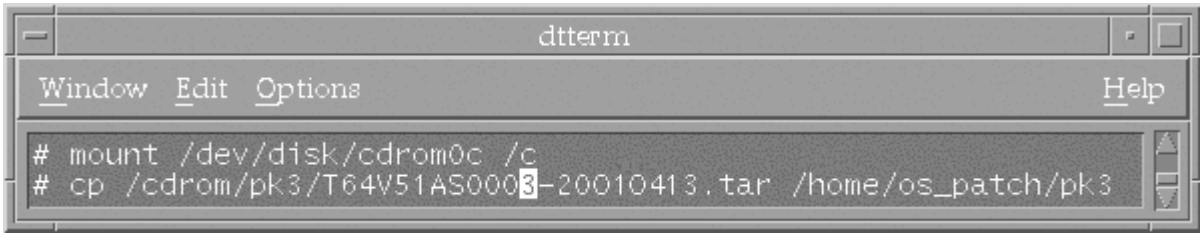
5. Insert the *Patch Kit 3 CD* into the CDROM and mount it.


dtterm
Window Edit Options Help
#
mount /dev/disk/cdrom0c /cdrom
#

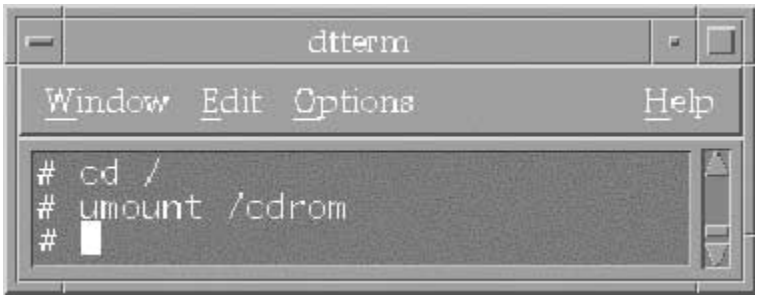
6. Copy the *Patch Kit 3* file to */home/os_patch/pk3* directory.

   At the command prompt, #, type

   cp /cdrom/pk3/T64V51AS0003-20010413.tar home/os_patch/pk3



7. Unmount the *CDROM*, remove the *Patch Kit 3 CD* from the *CDROM* drive.



This completes the copying of the Patch Kit 3 file to the hard drive.

Step 2
Installing the Patch Kit 3 Patch

8. Take the system into *Single User Mode*.

   At the system prompt, #, type *init s* and hit *Enter*.

9. Display the hard drive space in kilobytes.

   At the system prompt, #, type *df –k* and hit *Enter*.

10. Mount all volumes of the hard drive.

    At the system prompt, #, type *mount –a* and hit *Enter*.

11. Go into the *home/os_patch/pk3* directory.

    At the system prompt, #, type *cd /home/os_patch/pk3* and hit *Enter*.

12. Tar the file.

    At the system prompt, #, type *tar xvf T64**

13. Go into the patch_kit subdirectory.

    cd patch_kit

14. Run the dupatch file

    At the system prompt, #, type *./dupatch*

14. Type the path where the patch_kit files are located.

/home/os_patch/pk3/patch_kit

15. The system will ask *Which option you would like to install?* Choose *Option 1, Patch install*. Type *1* and hit *Enter*.

    Note: Throughout the installation of the patch, the system will notify you on what is happening. It will then prompt you to hit *Enter* to continue. You may want to take the time to read the screen to get a better understanding on what is going on, if not, just hit *Enter* each time.

16. The system will also prompt you again, for which option you would like to choose. For this lab, choose *option 2, Check and Install*. Type *2* and hit *Enter*.

    Note: In a real life environment, you would choose *Option 1* first, once that completes and passes, then choose *Option 2*.

17. The system will ask if you want to allow the volume to be reversible, state yes. Type *yes* and hit *Enter*.

    Note: Stating yes will allow you and or the customer to uninstall *Patch Kit 3 Patch*. This however, takes up a lot of disk space. Your customer may not want to do this.

18. The system will *request* a *name*. Type in *your name* and hit *Enter*.

19. The system will then ask for comment. You may want to type something in to the effect of *I installed this patch kit to get the enhancements required for NetBackup 3.4* and hit *Enter*.

---

20. The system will list all the patches it has to offer. Scroll down to the bottom and select the *number* to *install all patches*. Type the *number* in and hit *Enter*.

    Note: If the system finds a patch that it cannot install, tell it to continue with out it.

21. The system will ask *Do you have a pre-existing configuration file?* Type *yes* and hit *Enter*.

22. The system will request for you to *Enter the name of the pre-existing configuration file or hit return to you "your server name"*. Mine was *ALPHASEVEN*. Hit *Enter* to continue.

23. The system will ask *Do you want to edit the configuration file*. Type *n* and hit *Enter*.

24. The system will ask *do you want to reboot now?* Type *y* and hit *Enter*.

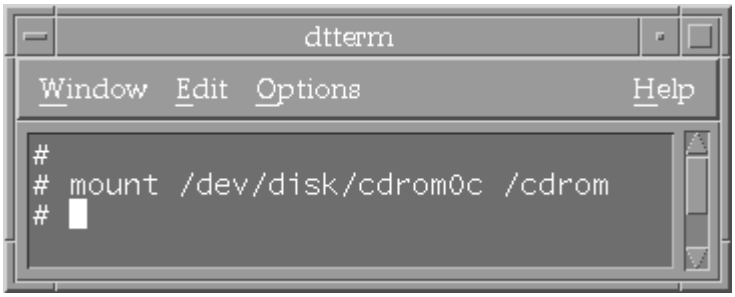
25. Once the system reboots, it will take you back to the Log in prompt.

This completes the installation of the Patch Kit 3 portion of the lab.

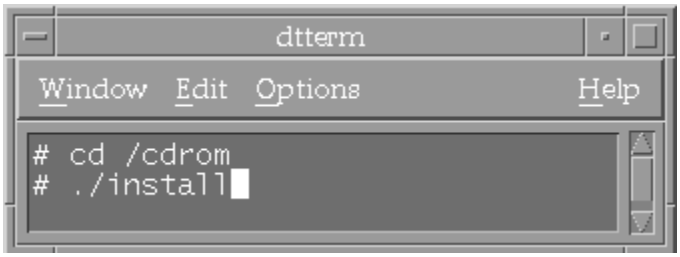
Step 3
NetBackup Installation

26. While at the *Login Prompt*, type *root* for the *User* and *root* for the *password*.

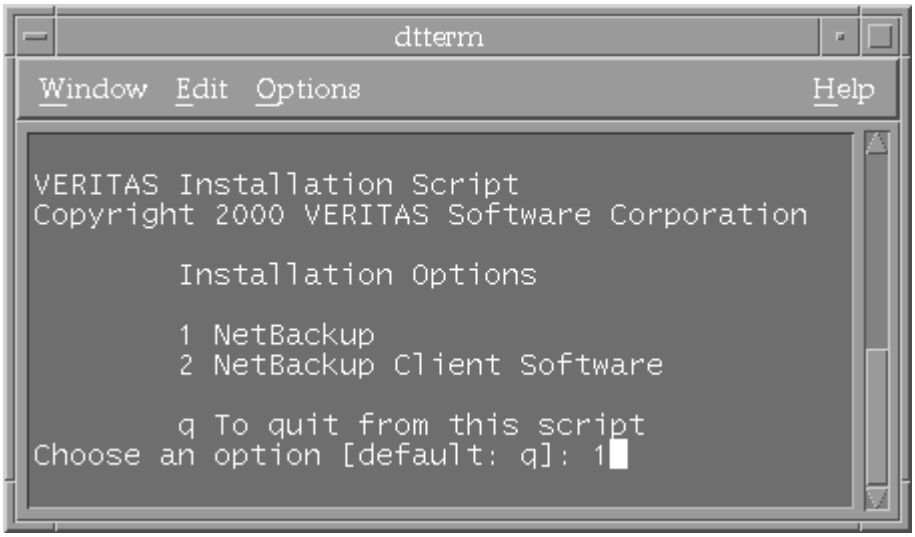
27. Insert the *NetBackup CD* into the cdrom and mount it.



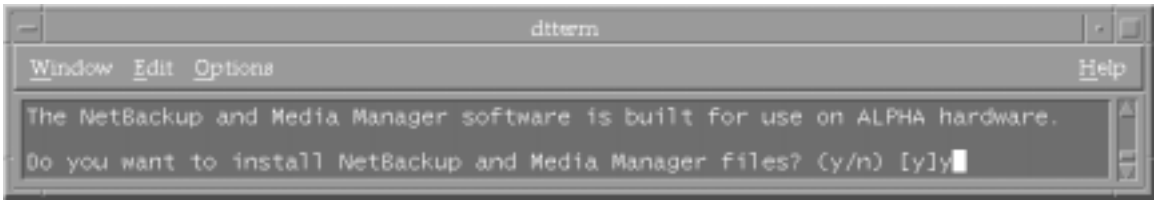
28. Change to the *cdrom* directory and run the *NetBackup Install* script.



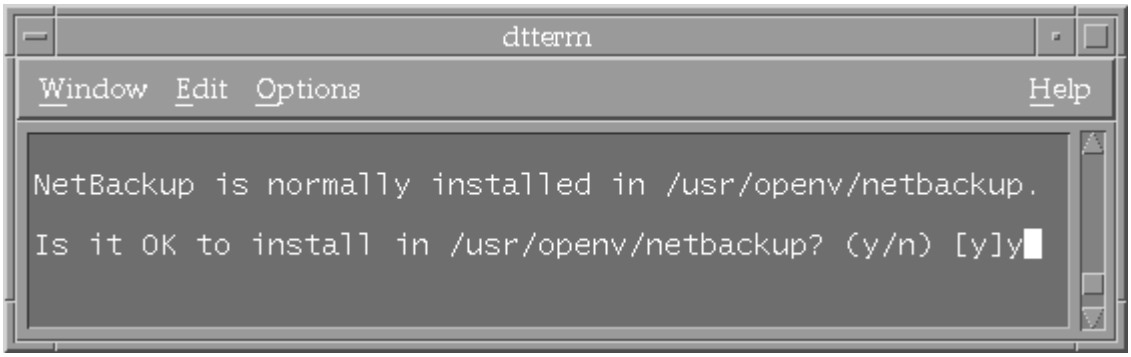
29. The *Veritas Installation Script* appears, select the *NetBackup* option.


dtterm
Window Edit Options Help
VERITAS Installation Script
Copyright 2000 VERITAS Software Corporation
Installation Options
1 NetBackup
2 NetBackup Client Software
q To quit from this script
Choose an option [default: q]: 1

30. Do you want to install *NetBackup Media Manager Files*?



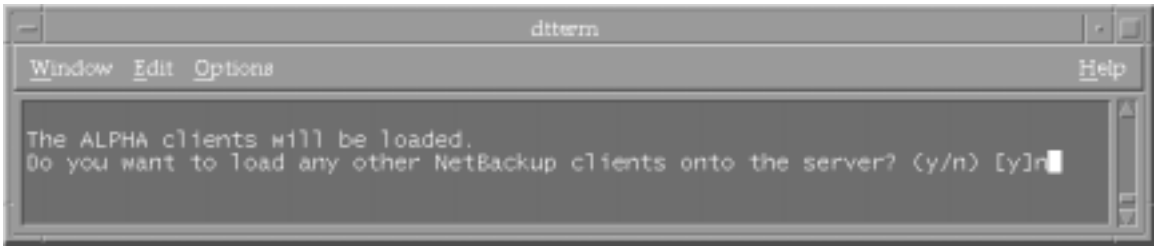
31. Is it okay to install *NetBackup* in */usr/openv/netbackup*?



32. Is it okay to install *Media Manager* in */usr/openv/volmgr*?

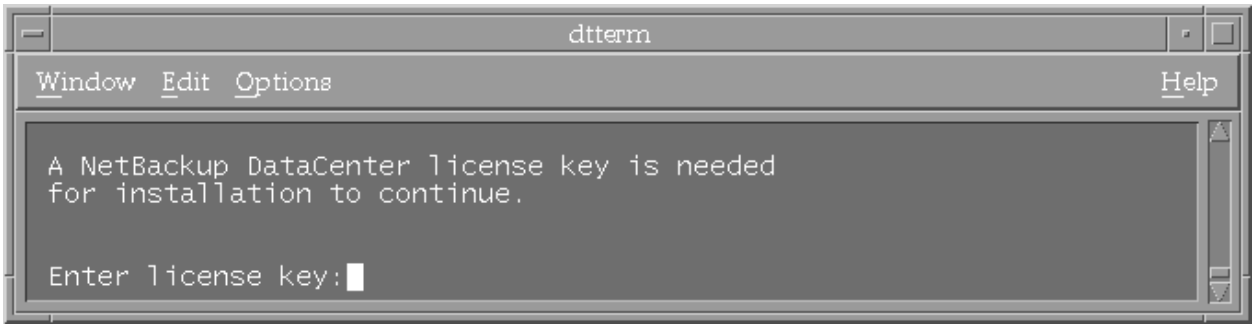
33. Do you want to load any *Other NetBackup Clients* onto the server?

    Note: This is optional the customer may want to install other clients onto the server. For this lab, we will choose *not* to install the clients.


dtterm
Window Edit Options Help
The ALPHA clients will be loaded.
Do you want to load any other NetBackup clients onto the server? (y/n) [y]n

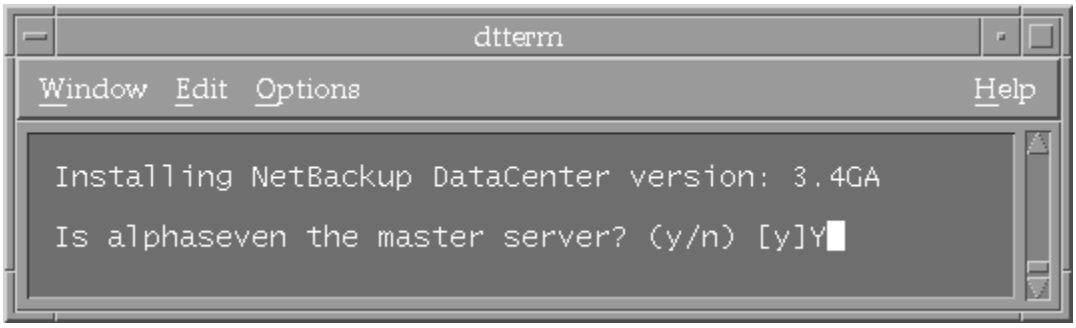
34. Enter the *license key*. You will need to get the license key from the instructor.

    Note: The *license key* is *not case sensitive*.



35. Is *alphaseven* the *master server*?

    Note: *alphaseven* is the example; you will use what ever the name of your server is.

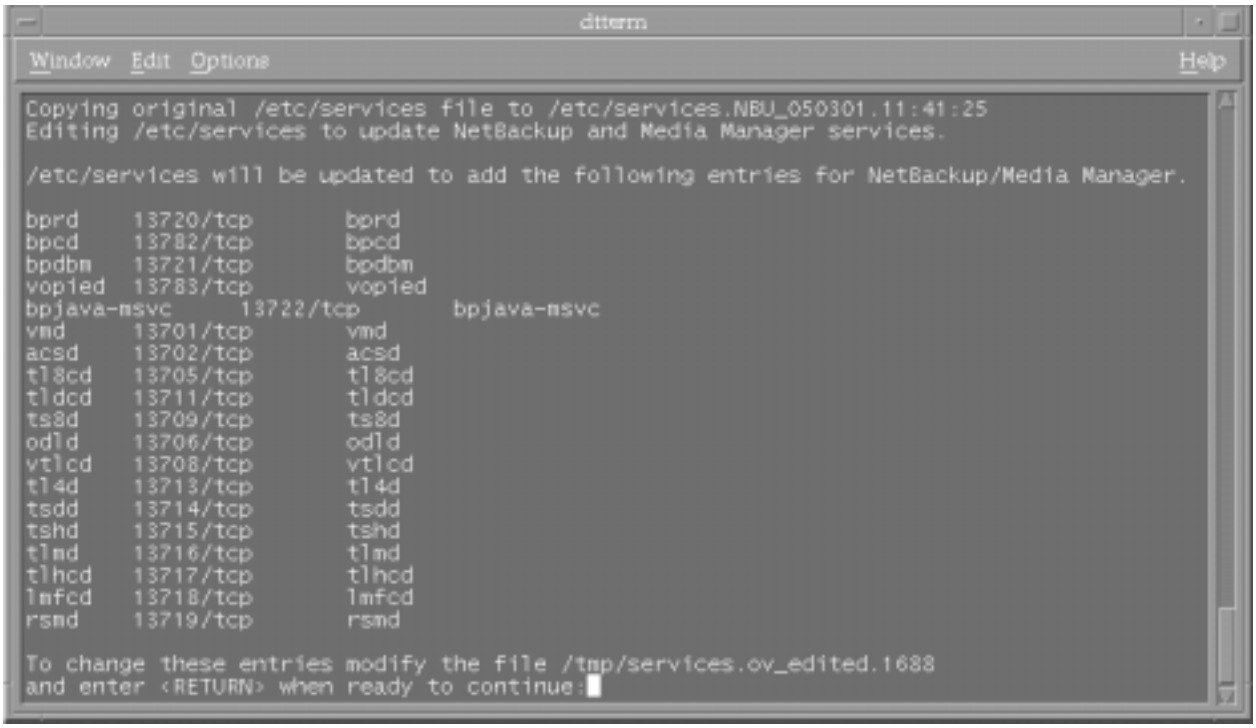


36. Do you have a *media or slave server*?

    Note: There may be a media or slave server in a real life application, for this installation we will say *no*.

37. The system will state

To change theses entries modify the file /tmp/services.ov_edited.1688 and enter <RETURN> when ready to continue. Hit *Enter* to continue.

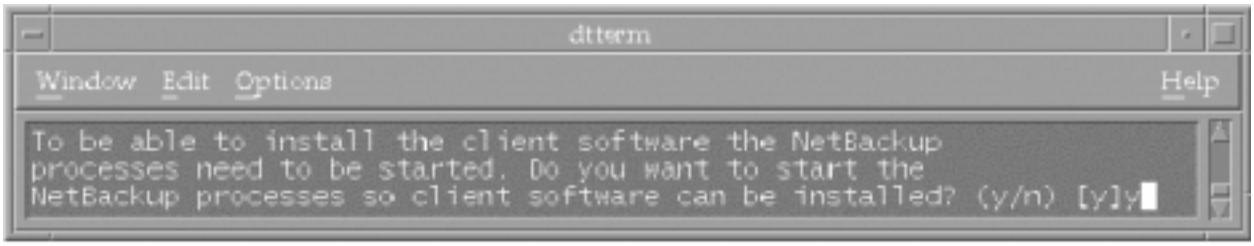


38. Hit *Enter* for *Host global device info*.

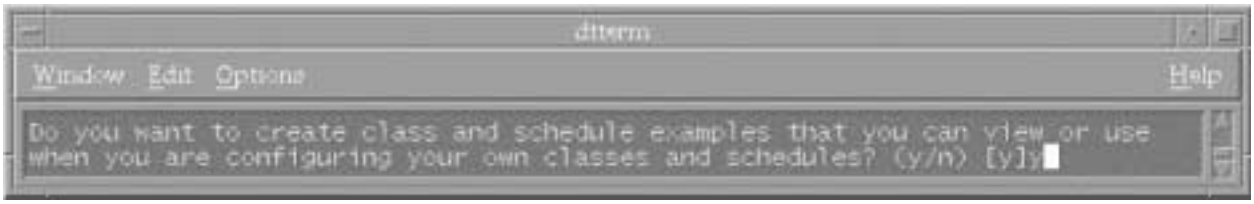
Note: This may fail; if so, you will need to enter it by hand later in the installation procedure. See steps ?? - ?? for the fix. The may be fixed in a later release or patch.


dtterm
Window Edit Options Help
Set global device configuration host failed.

39. Do you want to install *client software*?

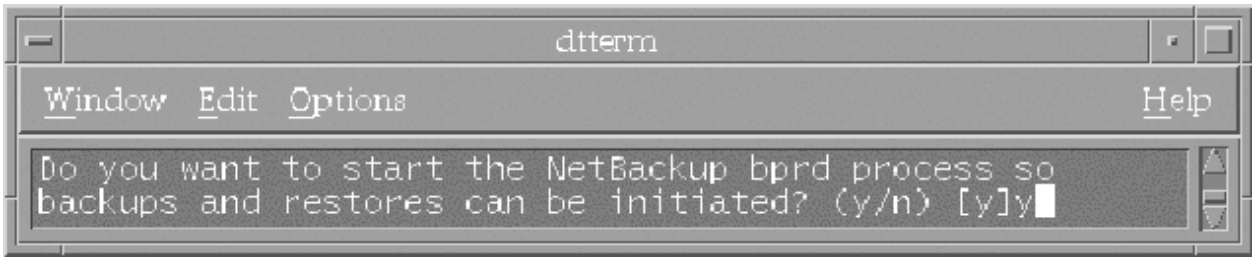


40. Do you want to create *class and schedule*?



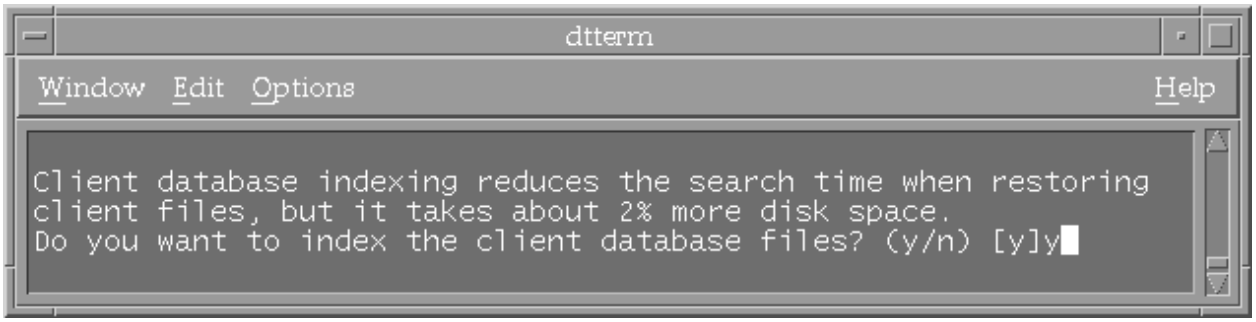
41. Do you want to start *NetBackup BPRD process*? For this lab, we will answer yes to the question.

    Note: It doesn't matter if you answer *yes* or *no* to this step.

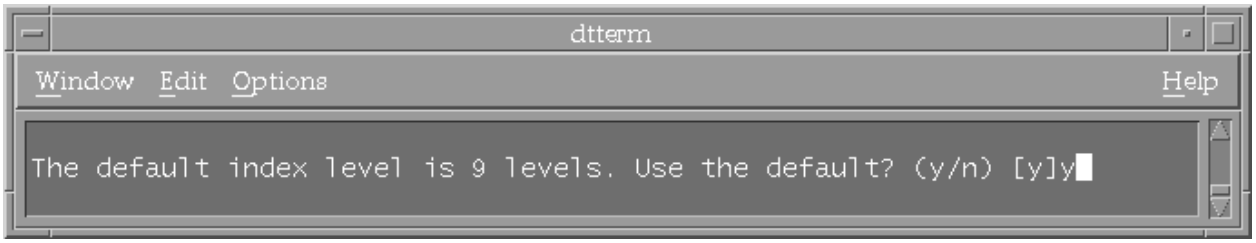


42. Do you want to *index the client database*?

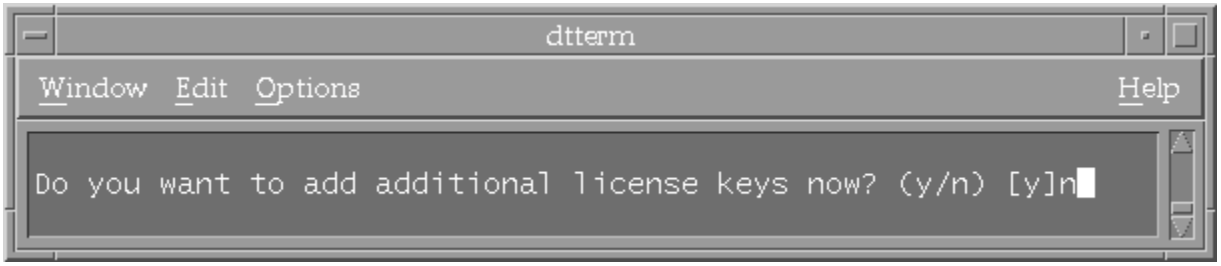
    Note: The index is but a matter of preference. It does take up more space on the hard drive. If you tell it *yes* then continue to step 19. If you tell it *no*, skip to step 20.


dtterm
Window Edit Options Help
Client database indexing reduces the search time when restoring
client files, but it takes about 2% more disk space.
Do you want to index the client database files? (y/n) [y]y

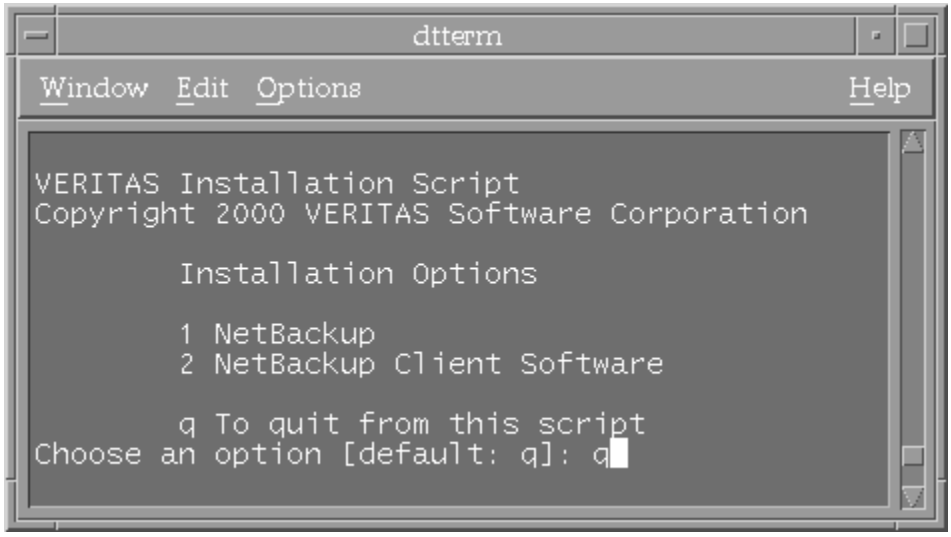
43. Do you want to use the *default index level*?



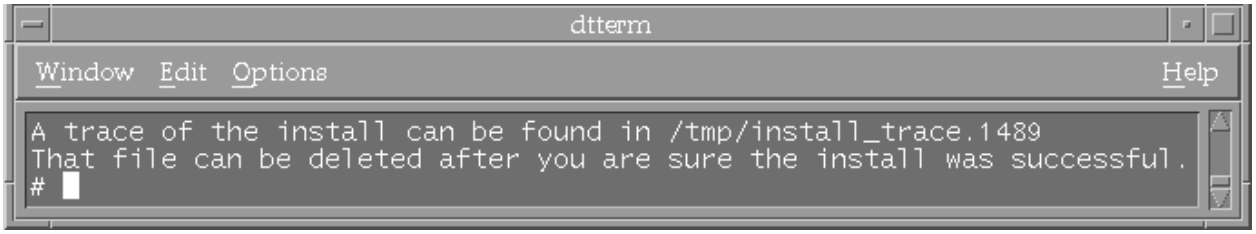
44. Do you want to add *additional license keys* now?



45. Quit *NetBackup Install Script* after the installation completes.



46. **Note:** An install trace can be found under the *tmp* directory. This will show you everything that has transpired during the installation. This may be useful in troubleshooting.

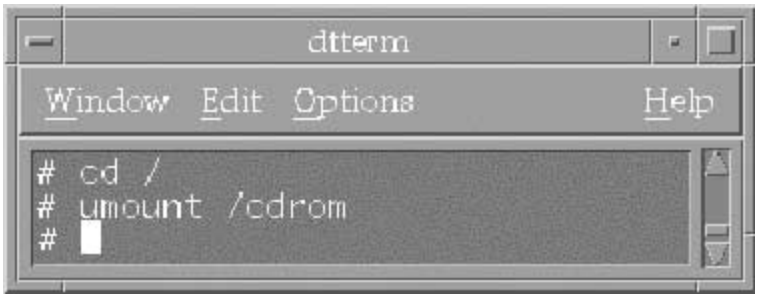


47. Unmount the *CDROM*.

    Type *cd /* and hit *Enter*.

    Type *umount /cdrom* and hit *Enter*.

    Push the *Eject* button on the *CDROM drive* to remove the CDROM.

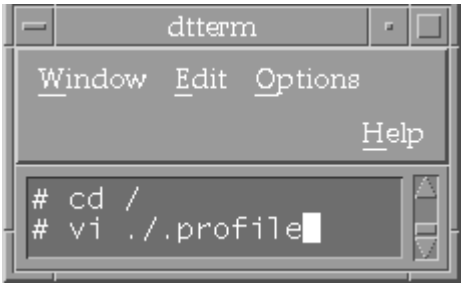


This completes the initial Installation of NetBackup Portion of the Lab.

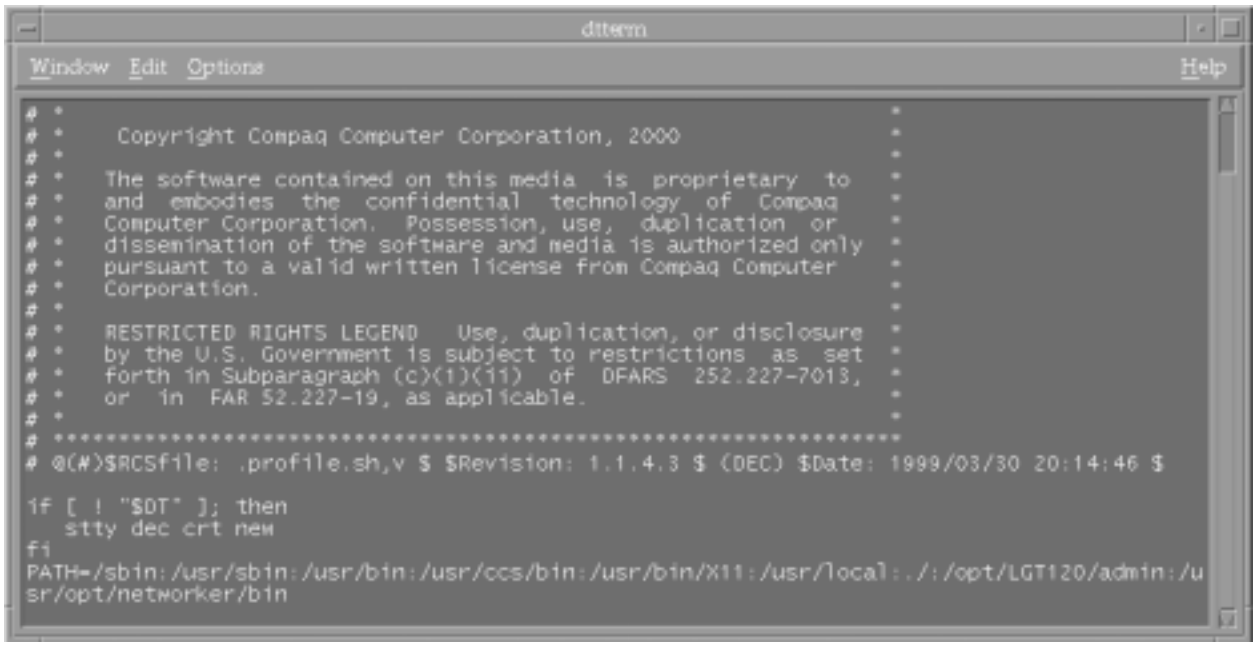
Step 4
Configuring the Profile

48. Add *NetBackup binary directories* to the root user path by adding the following paths to the PATH line of the *../profile* file.

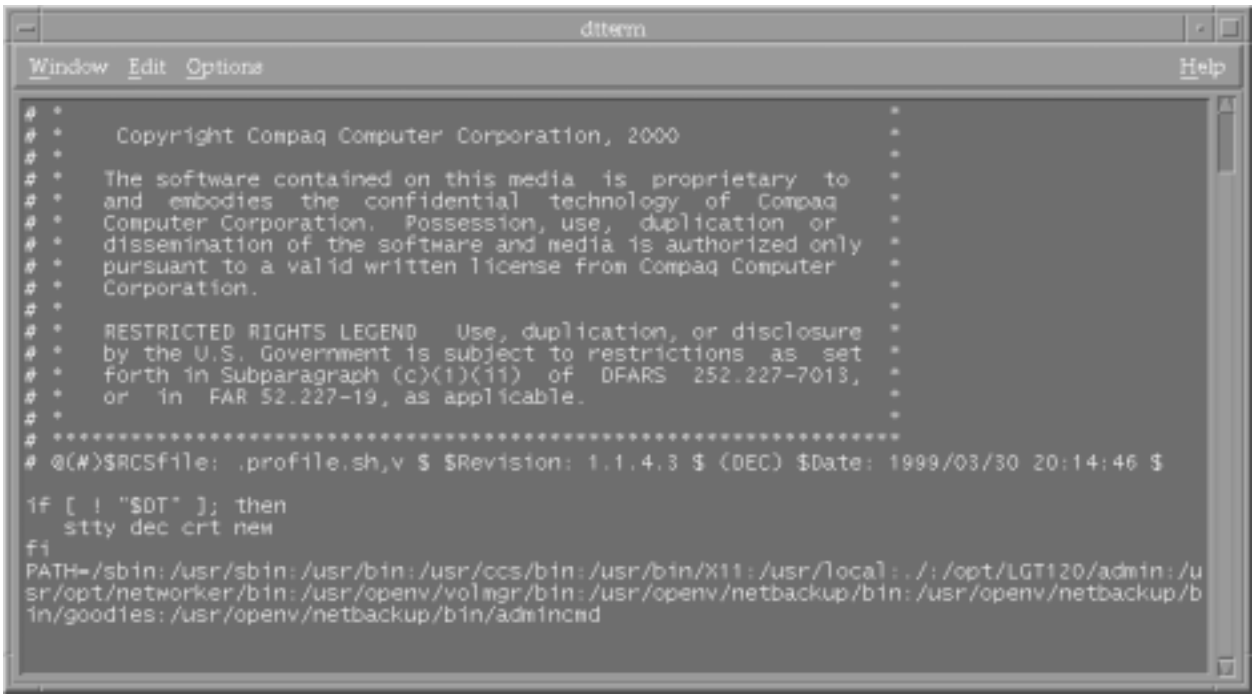
    At the system prompt, #, type, *vi ./.profile* and hit *Enter*.



49. The profile window appears.
    Arrow down to the end of the path statement. Hit the *a* key, input the below information.
    :/usr/openv/volmgr/bin:/usr/openv/netbackup/bin:/usr/openv/netbackup/bin/goodies:/usr/openv/netbackup/bin/admincmd



50. Once entered, the completed *path statement* should look like what is shown below. Hit the *Esc* key to stop editing. Next, press the *Shift* key down and hit the *z* key twice. This will save the changes and close the *vi session*.



51. Close all windows and *logout* and *re-login* to the system. This will invoke the changes you have made.

This completes the Configuration of the Profile portion of the Lab.

Step 5
NetBackup Patch – J0850646 Installation

52. Mount the *NetBackup Patch CDROM* by placing it into the CDROM drive and issuing the *mount* command.

53. Create a patches subdirectory

    Type *mkdir veritas_patches* and hit *Enter*.

54. Copy the *Vrts_patch.install*, *patchJ0850646.alpha.tar.Z*, and the *patchJ0850646.README* from CDROM to */ veritas_patches* directory.

    Type the commands listed below and hit *Enter* after each.

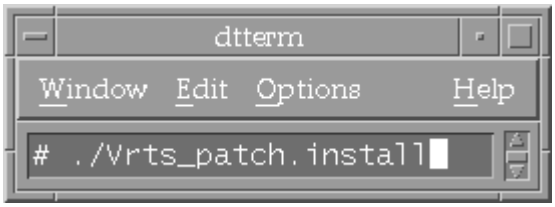
    Note: You may need to copy it off the server. If so, look to *instructor* for information.

55. Go to patches subdirectory.

    Type *cd /veritas_patches* and hit *Enter*.

56. Start the patch installation.

    Type *./Vrts_patch.install* and hit *Enter*.

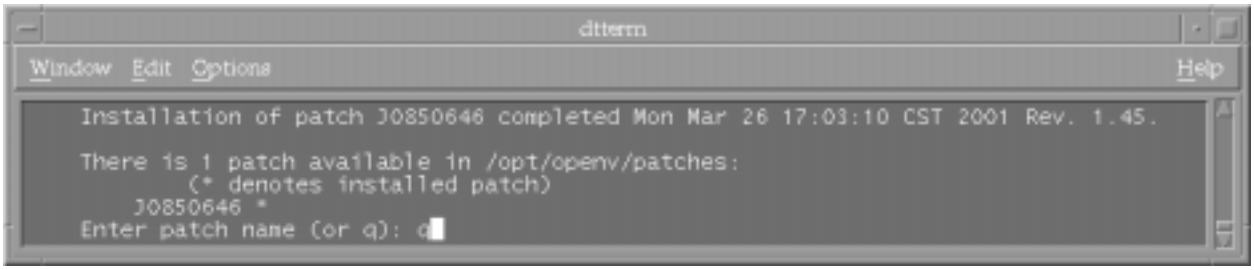


57. Enter the patch name.

    Type *J0850646* and hit *Enter*.

    Note: this initiates the patch installation.

58. The system will ask you once again, which patch you would like to install. The installation is now complete, type *q* and hit *Enter* to exit the installation program. This will take you back to the system prompt, #.


dtterm
Window Edit Options Help
Installation of patch J0850646 completed Mon Mar 26 17:03:10 CST 2001 Rev. 1.45.
There is 1 patch available in /opt/openv/patches:
(* denotes installed patch)
J0850646 *
Enter patch name (or q): q

59. Unmount the *CDROM* and remove the *NetBackup Patch – J0850646 cd*.

    Type *umount /cdrom* and hit *Enter*.

This completes the NetBackup Patch – J0850646 Installation portion of the Lab.

Step 6
Auto-configuration of the system

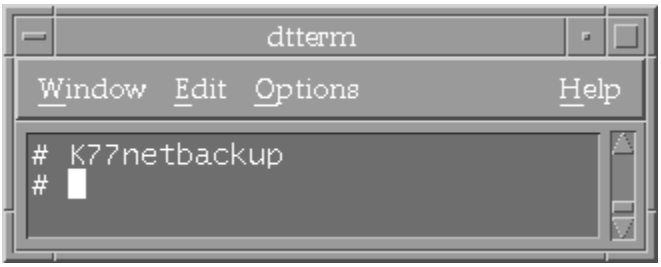
60. Verify which *NetBackup processes* are active.

    Type *bpps -a* and hit *Enter*.

    Note: If *vmd* under *mm Process* is shown, then skip to step *61*. If it is not listed, continue with step *58*.

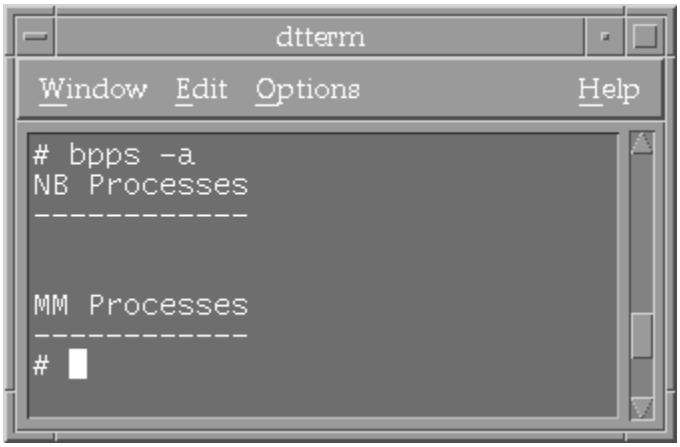
61. *Stop* the *NetBackup application*.

    Type *K77netbackup* and hit *Enter*



62. See what is running.

    Type *bpps –a* and hit *Enter*


dtterm
Window Edit Options Help
bpps -a
NB Processes

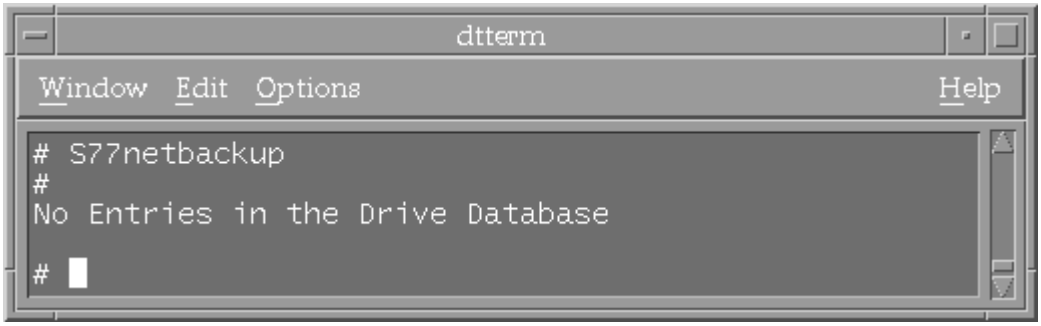
MM Processes

#

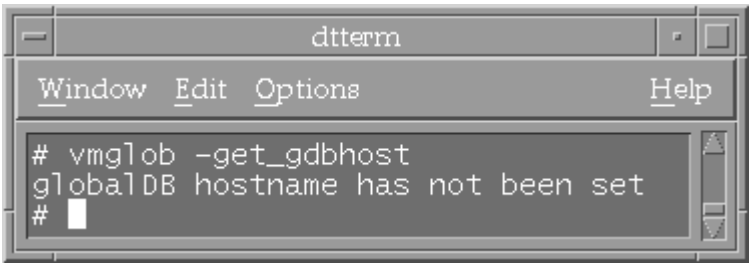
63. Start NetBackup application

    Type *S77netbackup* and hit *Enter*.

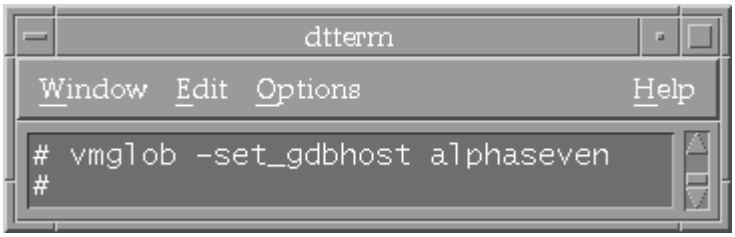
    Note: You will receive the message *No Entries in the Drive Database*. This is normal for none have been set up. You will need to hit the *Enter* key once more to get to the system prompt, #.



64. Check to see if the *Global DB Hostname* has been set. Type the below command and hit *Enter*.

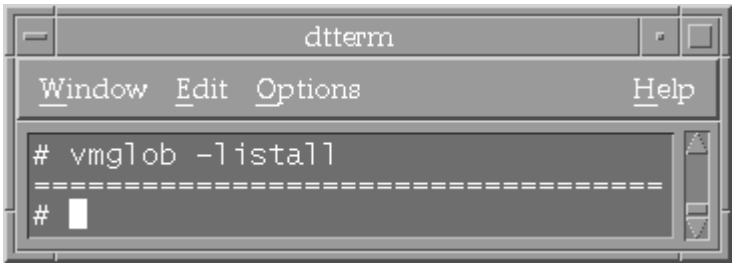


65. Set the *Global DB Hostname*. Type in the below command with the name of your server.



66. vmglob –listall

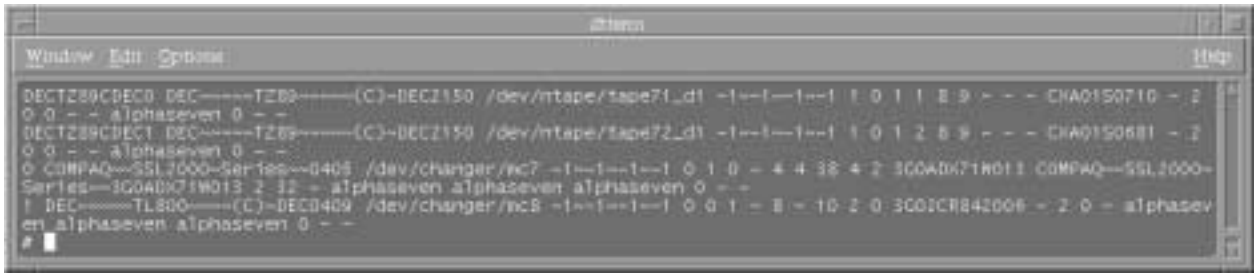
    Note: There shouldn't be anything here, for it hasn't been configured.


dtterm
Window Edit Options Help
vmglob -listall
==========
#

67. Tell the system to auto config its self. Run the below command. Once completed, the bottom portion should look something like what is shown below.

    At the system prompt, #, type *tpautoconf –a –v* and hit *Enter*.

    Note: This may take a while to complete.

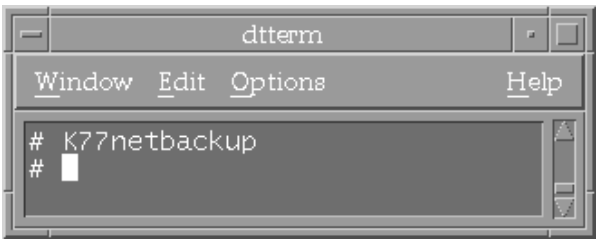


68. Verify which *NetBackup processes* are active.

    Type *bpps -a* and hit *Enter*.

69. *Stop* the *NetBackup application*.

    Type *K77netbackup* and hit *Enter*

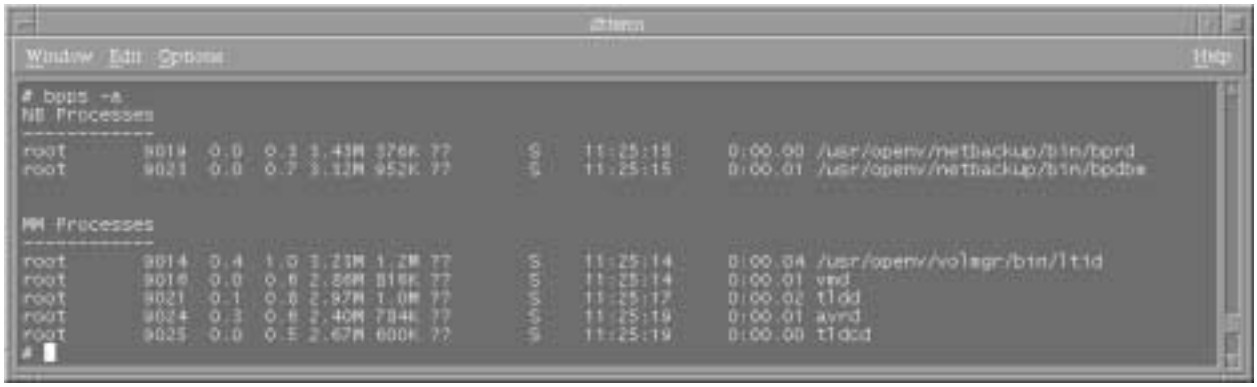


70. Start NetBackup application

    Type *S77netbackup* and hit *Enter*.

71. Check to see which *NetBackup Processes* are now running.

    At the system prompt, #, type *bpps –a* and hit *Enter*.

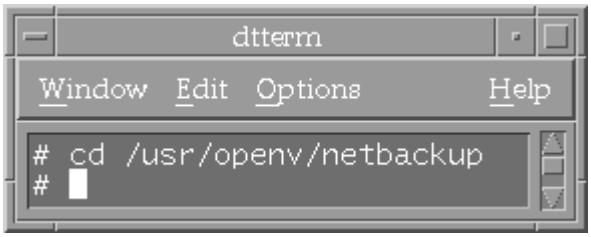


This completes the Auto-Configuration portion of the Lab.

Step 7
Modifying the bp.conf file

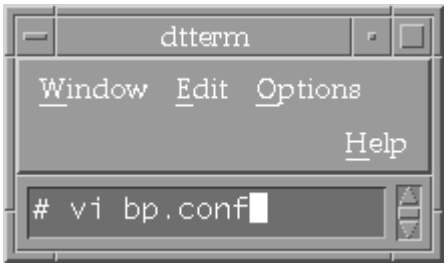
72. Go to the */usr/openv/netbackup* directory.

At the system prompt, *#*, type cd */usr/openv/netbackup* and hit *Enter*.



73. Now *edit* the *bp.conf* file.

At the system prompt, *#*, type *vi bp.conf* and hit *Enter*.



74. The *bp.conf* file appears. Arrow down to the last line and type the letter *a* to append the file. Next, arrow to the end of the line and hit *Enter*. Type the below information in the window.

MUST_USE_LOCAL_DRIVE = YES

ALLOW_MEDIA_OVERWRITE = DBR

ALLOW_MEDIA_OVERWRITE = TAR

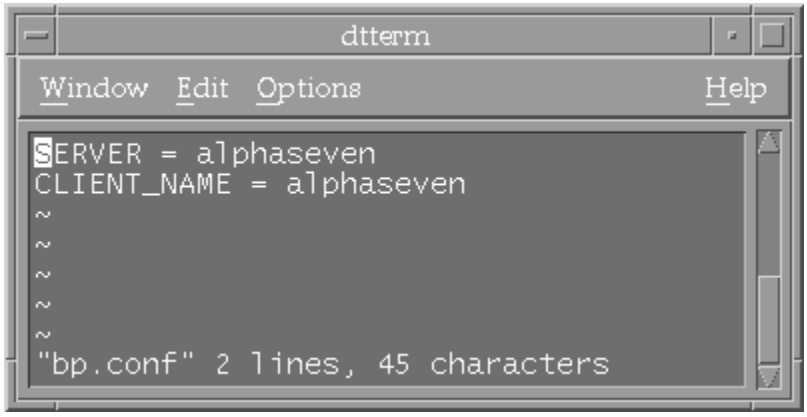
ALLOW_MEDIA_OVERWRITE = CPIO

ALLOW_MEDIA_OVERWRITE = ANSI

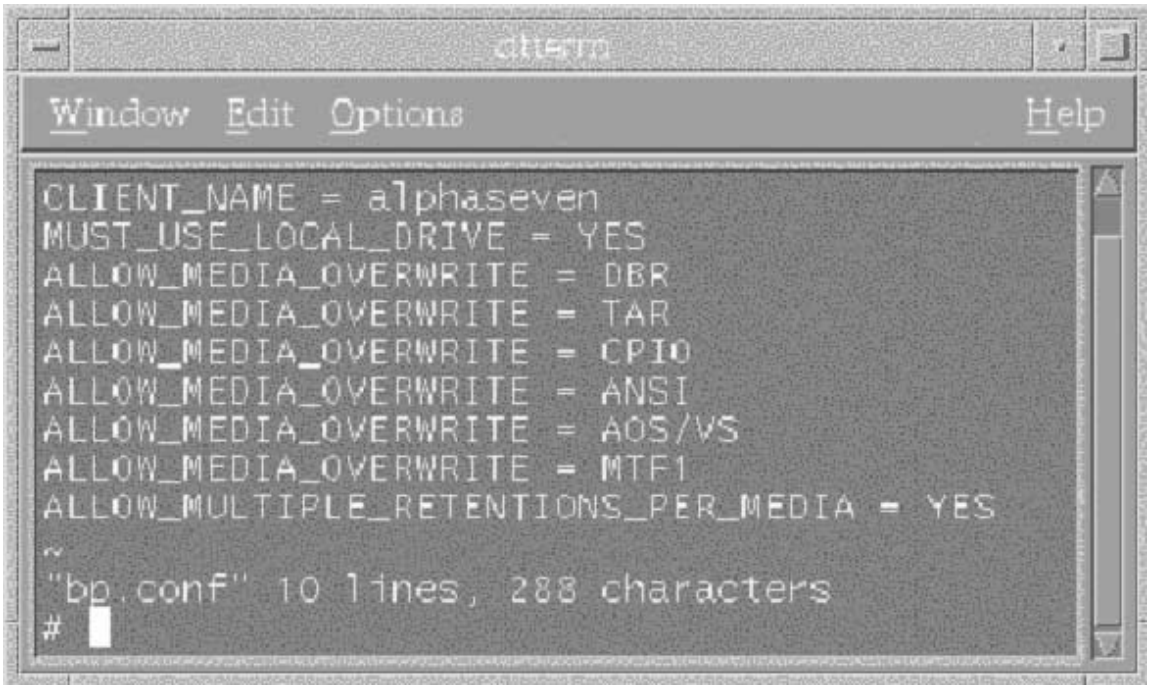
ALLOW_MEDIA_OVERWRITE = AOS/VS

ALLOW_MEDIA_OVERWRITE = MTF1

ALLOW_MULTIPLE_RETENTIONS_PER_MEDIA = YES



75. Once the information has been entered, press the *Shift* key down and hit the letter *z* twice. This will save the modifications, close the file and take you back to a system prompt, *#*.

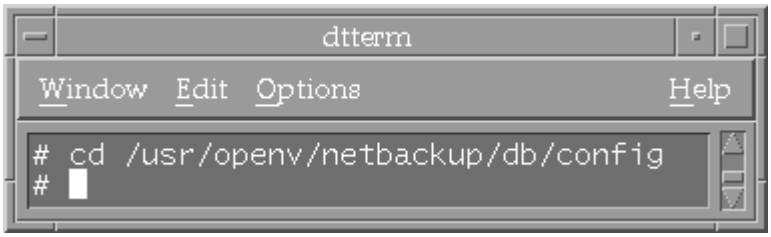


This completes the modifications to the bp.conf file.

Step 8
Creating a Size Data Buffer File

76. Go into the */usr/openv/netbackup/db/config* directory, if not already in there.

    At the system prompt, *#*, *cd /usr/openv/netbackup/db* and hit *Enter*.



77. Create a file *SIZE_DATA_BUFFERS*.

    At the system prompt, *#*, type *vi SIZE_DATA_BUFFERS* and hit *Enter*.

78. The *SIZE_DATA_BUFFERS* appears. There is currently nothing in it. Input the value for 64MB into it.

    At the *cursor*, do the following:

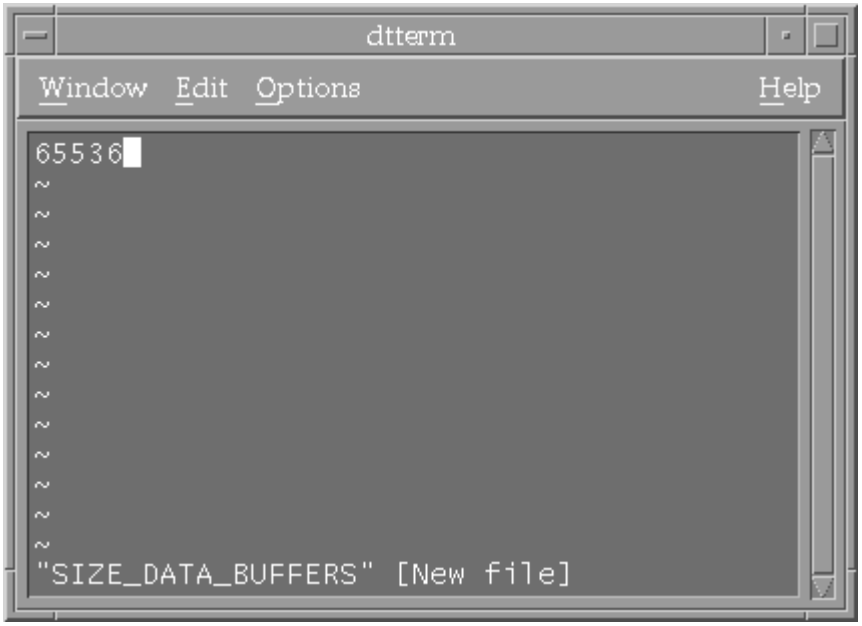
    Hit the letter *a* on the keyboard. This is to edit and append the file.

    Type *65536*

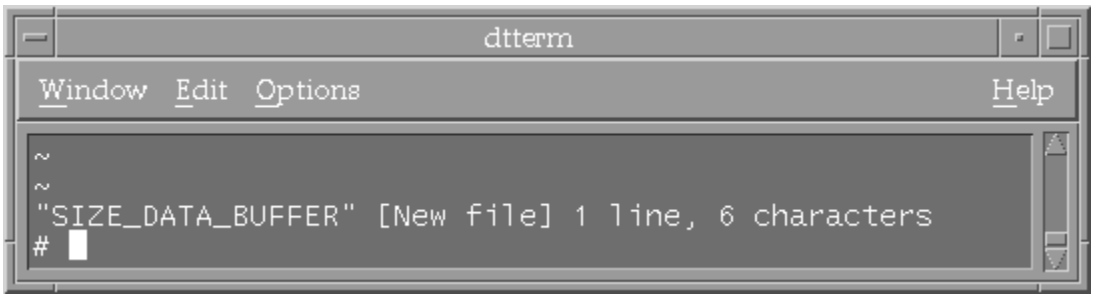
79. The *SIZE_DATA_BUFFERS* file should now show the value of *65536* in it.

    Hit the *Esc* key on the keyboard. This will exit the edit mode. Press the *Shift* key down on the keyboard and hit the letter *z twice*. This will *save* and *exit* the file. Once complete, close the terminal window.

    Note: This will help the system's performance.



80. You will now be at a system prompt, #.



This completes the creation of the Size Data Buffer File portion of the lab

Step 9
Running and Configuring the NetBackup GUI

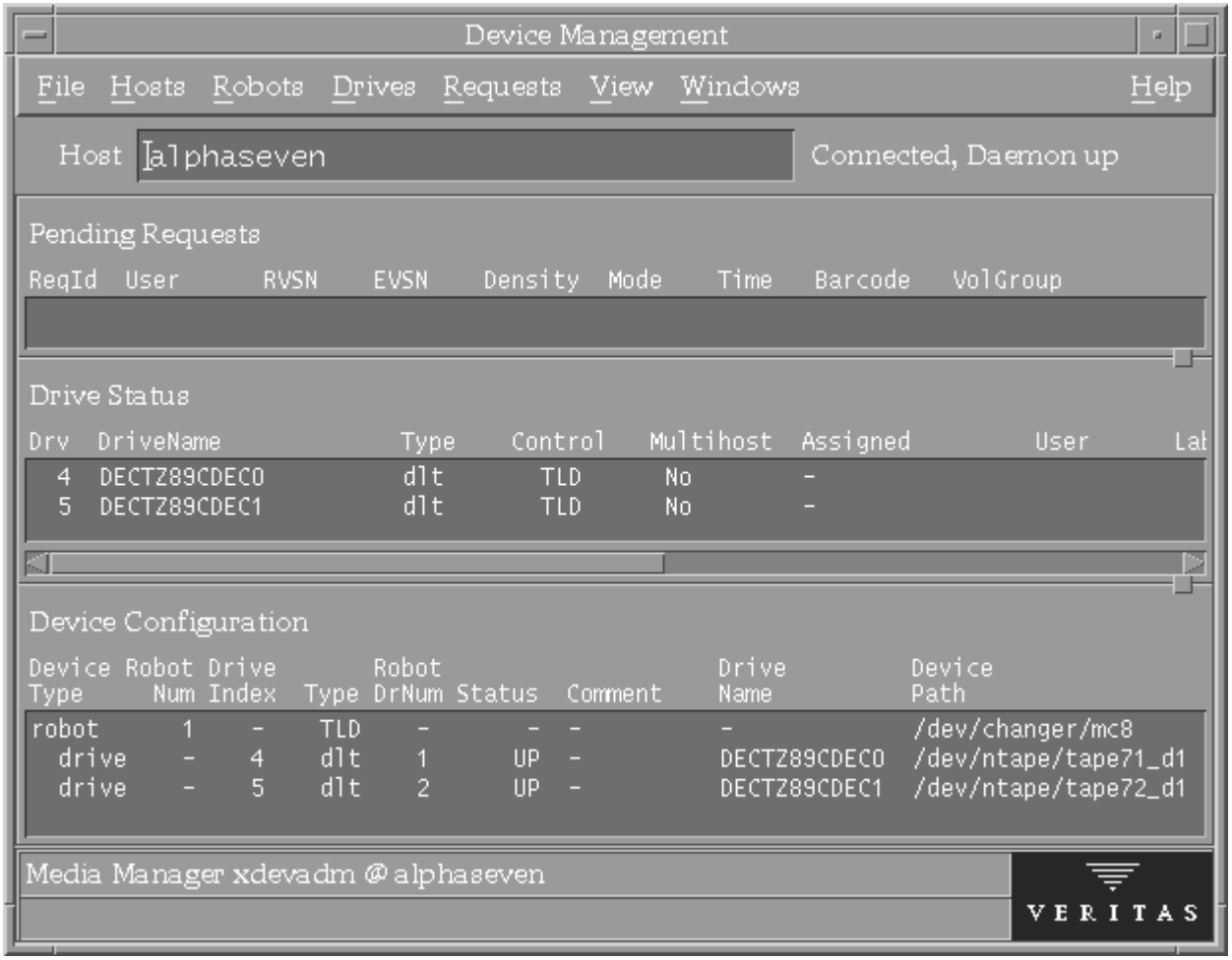
81. Load the *NetBackup GUI*.

    At the system prompt, #, type *xnb $* and hit *Enter*.

82. The *NetBackup GUI* window appears

83. Click on the *Device Management* button.

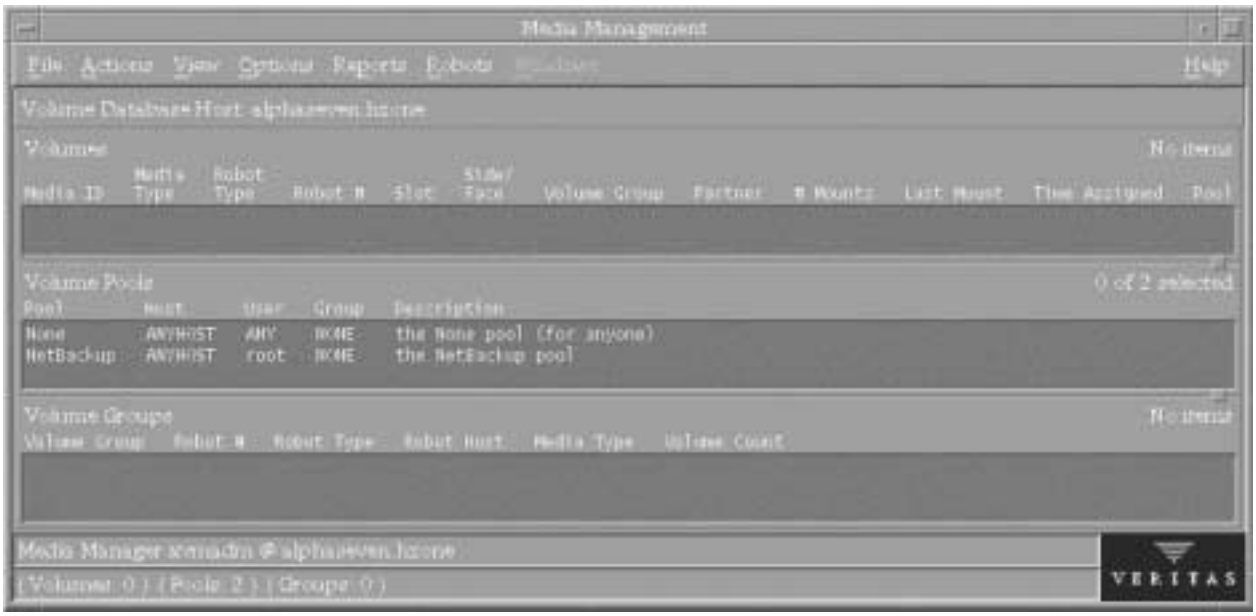
84. The *Device Management* window appears. Verify that your *server*, your *robot*, and your *drives* are shown. Next, close the window by clicking on *File* and *Exit* on the *task bar*.



85. Click on the *Media Management* button.


Media
Management

86. The *Media Management* window appears. Click on *Robots* and then *Barcode Rules* on the *task bar*.



87. The *Barcode Rules* window appears click on *New*.

88. The *Creating Barcode Rules* window appears enter the below information:

    Barcode Tab – *cln*

    Media Type – *DLT cleaning tape*

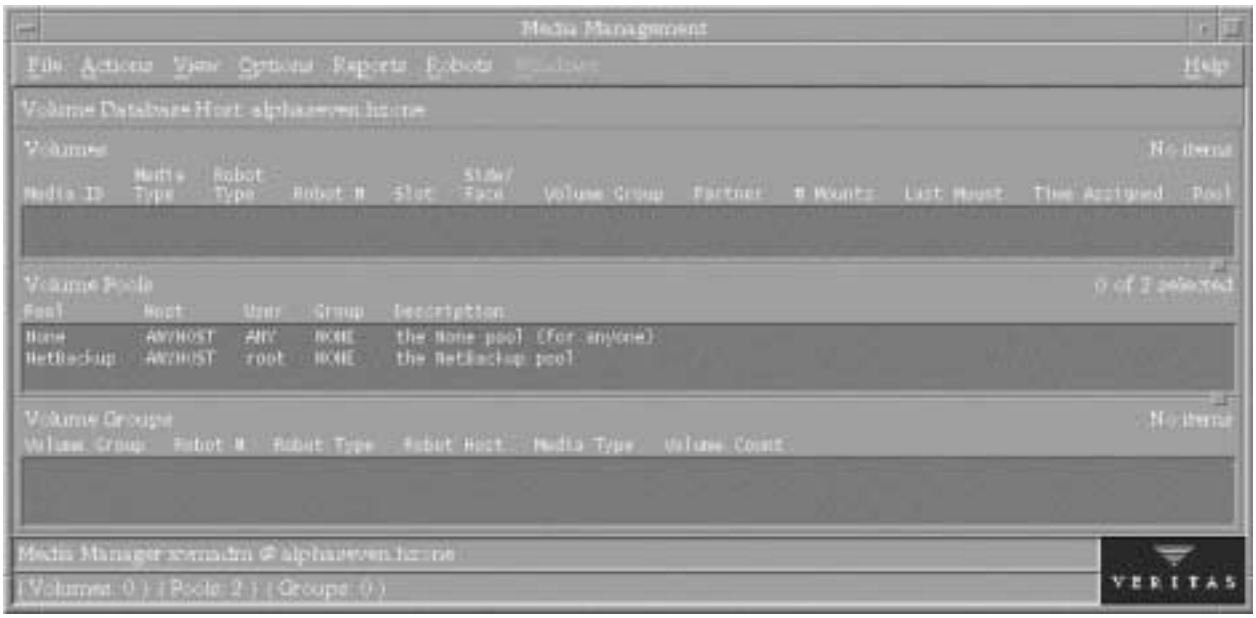
    Cleanings – *25*

    Once the information is entered, click on *OK*.

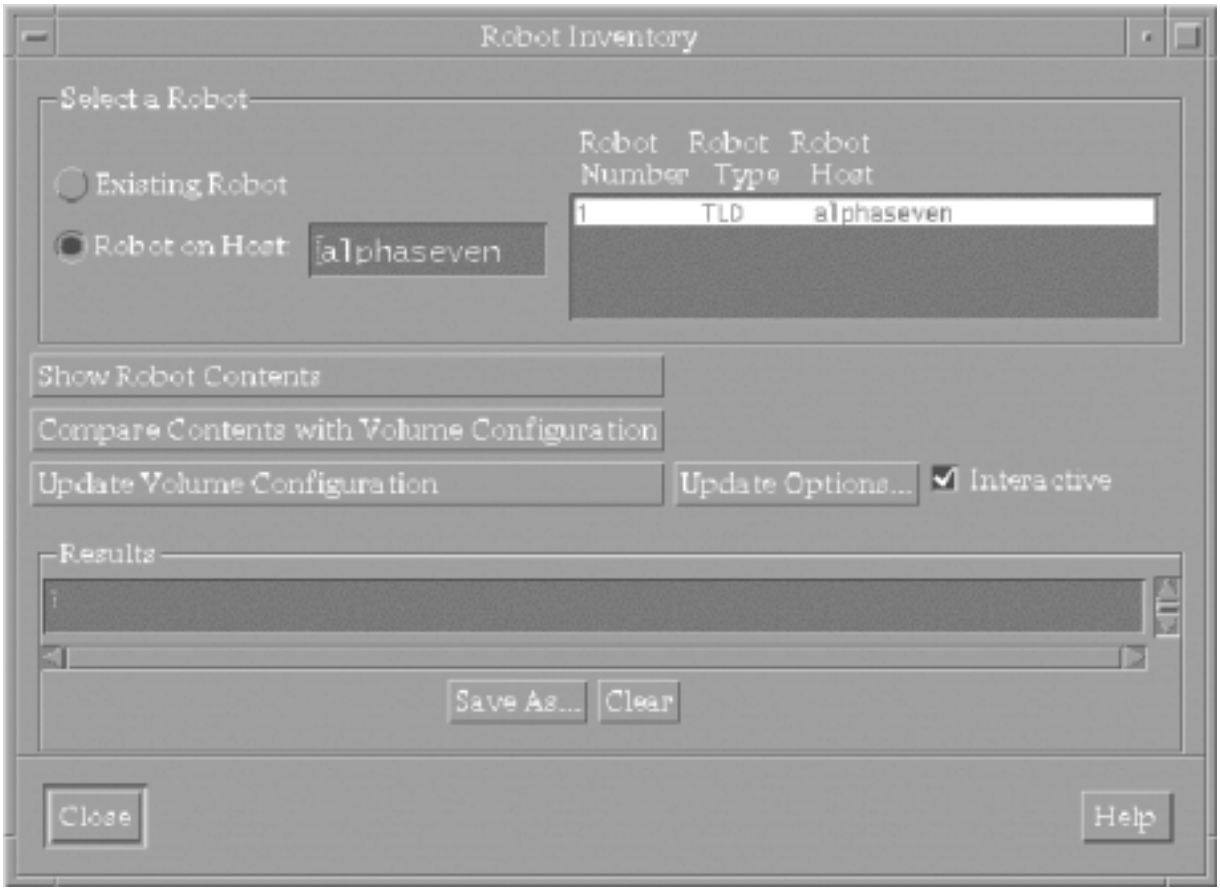
    Note: *DLT7000* is cleaning tape media type *DLT cleaning tape.* *DLT8000* is cleaning tape media type *DLT cleaning tape.*

89. The *Barcode Rules* window appears once more. It shows the information you entered. Click on *Close* to close the window.

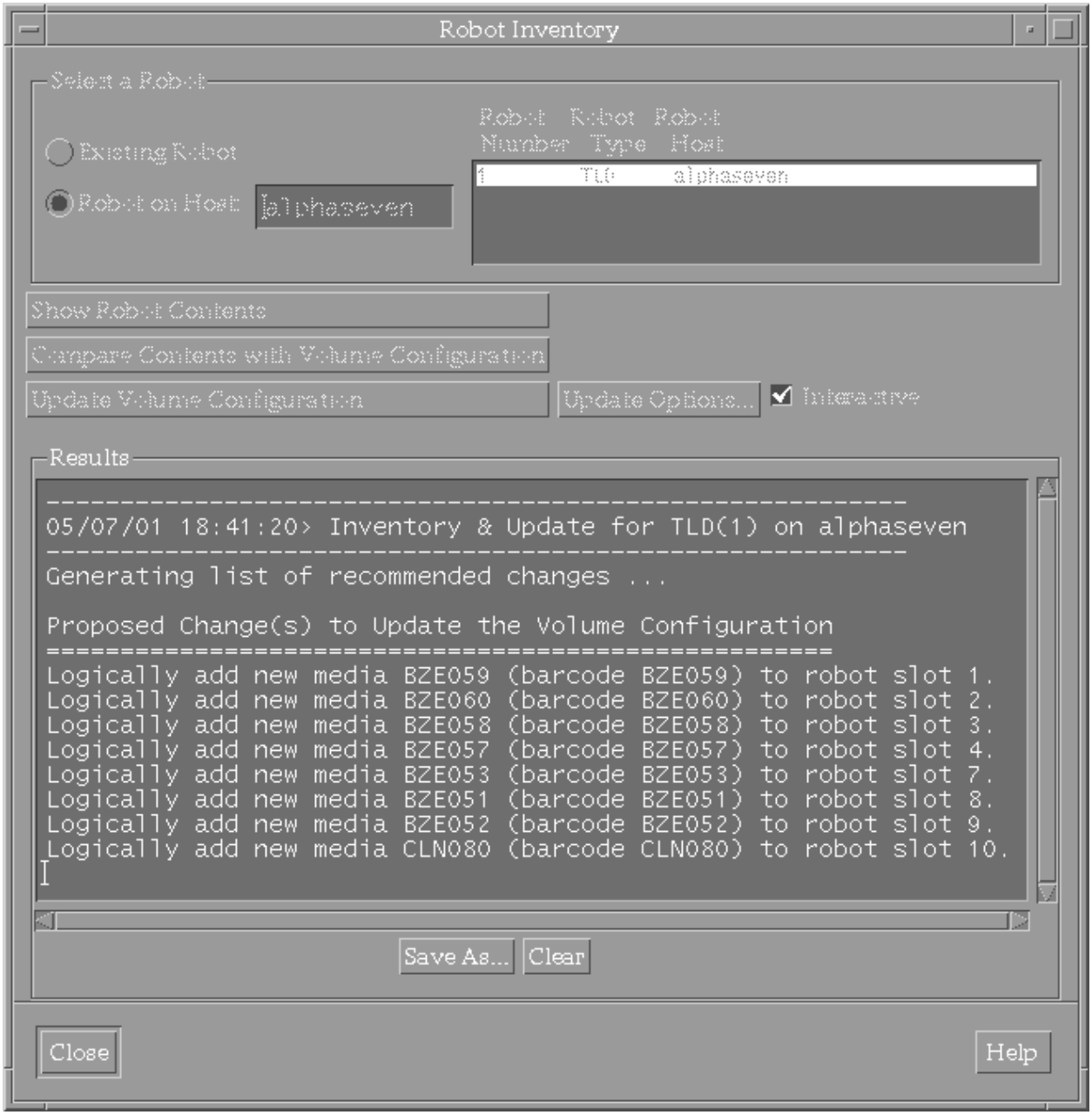
90. The Media Management window appears. Click on *Robots* and then *Use Inventory to update Volume Configuration* on the *task bar*.



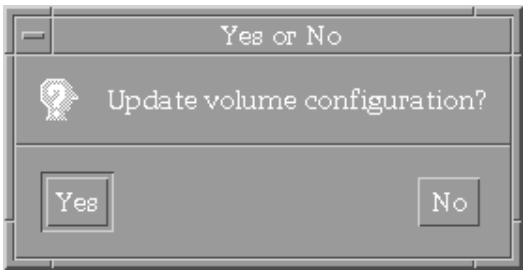
91. The *Robot Inventory* window appears.


Robot Inventory
Select a Robot
Existing Robot
Robot on Host
alphaseven
Robot Number
Robot Type
Robot Host
1
TLD
alphaseven
Show Robot Contents
Compare Contents with Volume Configuration
Update Volume Configuration
Update Options...
Interactive
Results
Save As...
Clear
Close
Help

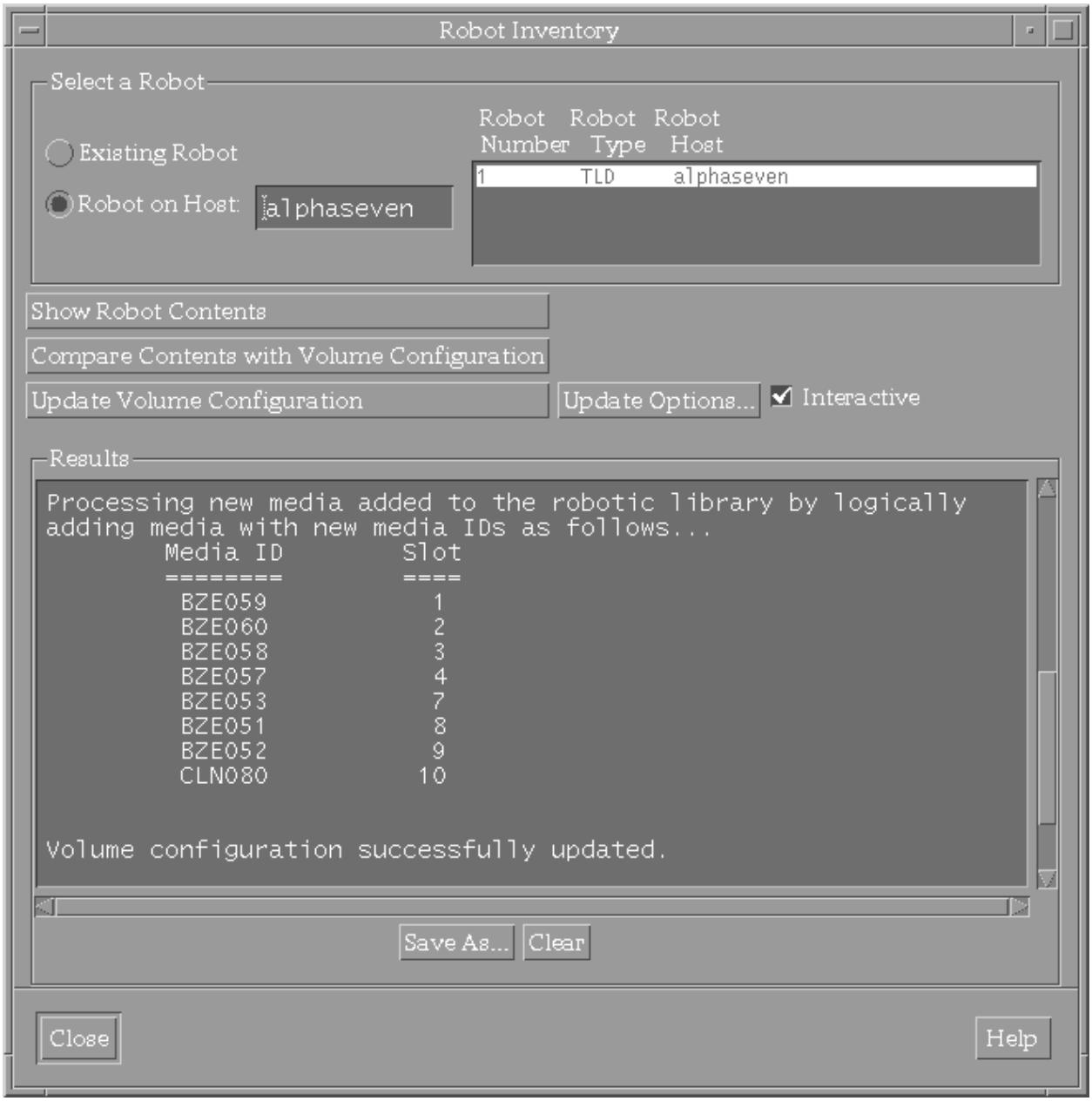
92. Click on *Update Volume Configuration*. The system will start displaying the results under the *Results* portion of the *Robot Inventory* window.



93. The *Yes or No Update Volume Configuration* window appears. Click *Yes*.

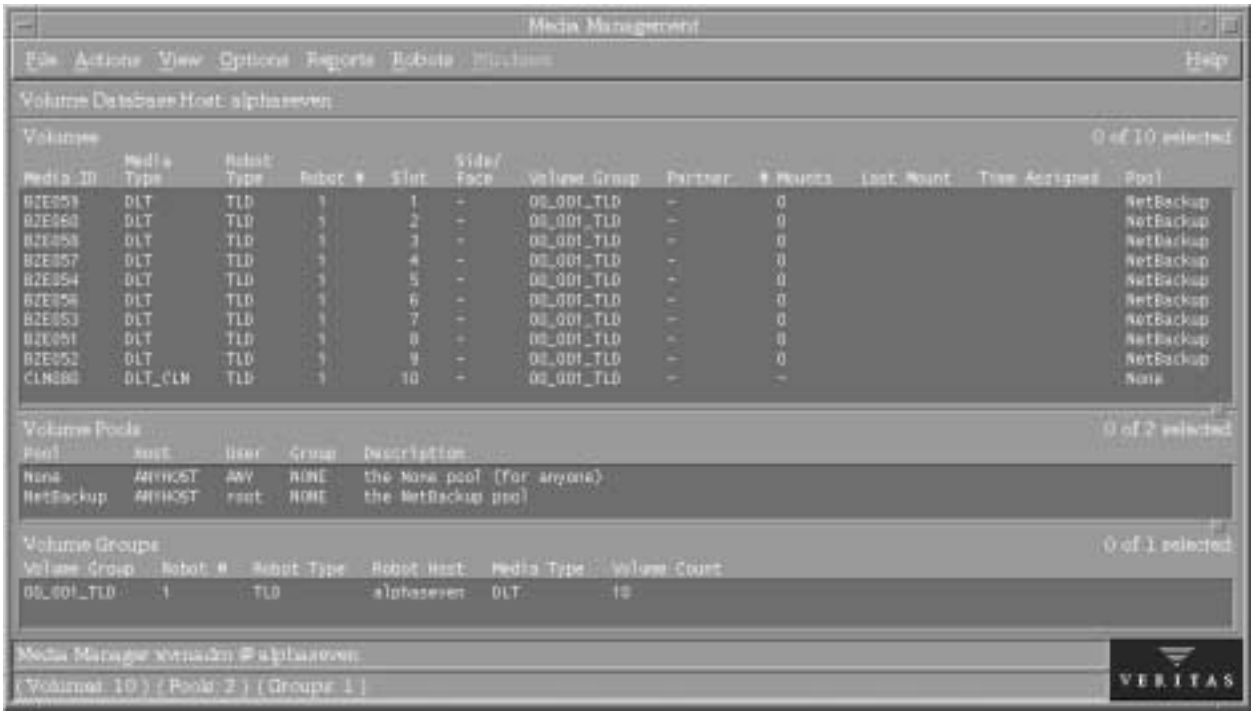


94. The system will then update the *Volume Configuration*. Once complete, click on close.



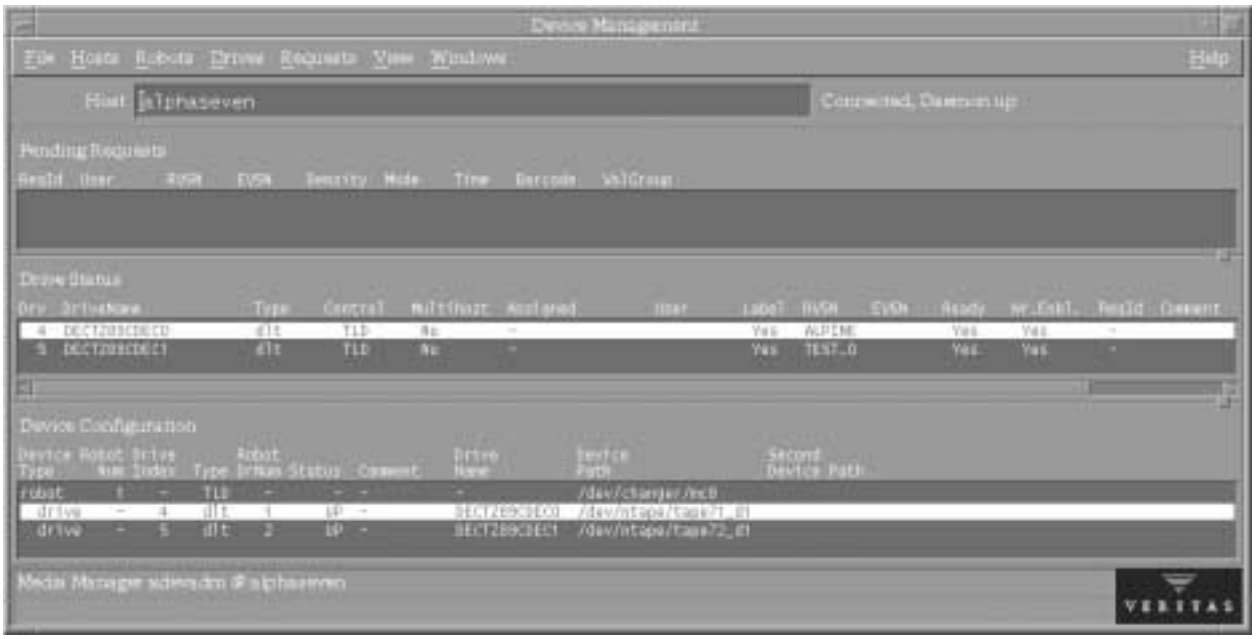
95. The *Media Management* window appears. It now shows the updated *Volume Information*. Click on *File* and then *Exit* on the task bar.

    Note: If you are going to be in a *Multihost Environment* (multiple NetBackup media servers) continue to step *84*, if not, skip to step *88*.

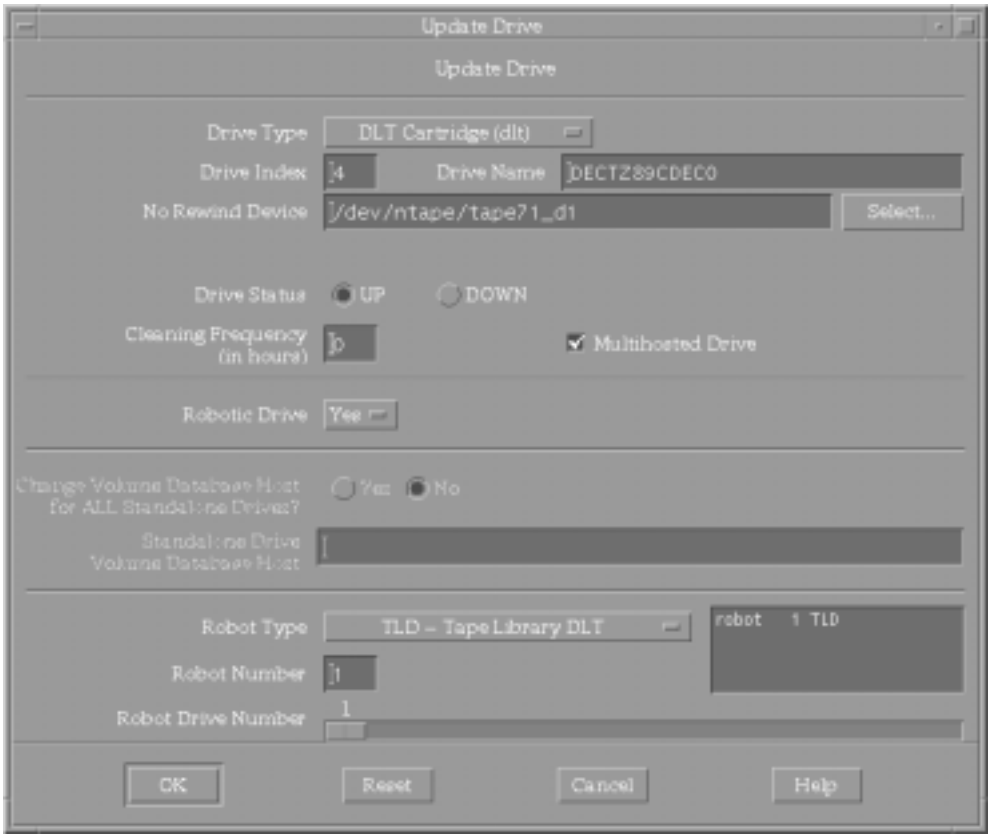


96. Click on the *Device Management* button.

97. The *Device Management* window appears. Look to the lower portion of the split screen and *select a drive* and then *right click* on it. Select *Update Drive*.



98. The *Update Drive* window appears. Find and *select* the *Multihosted* drive option and click on *OK* to accept the setting and close the screen.



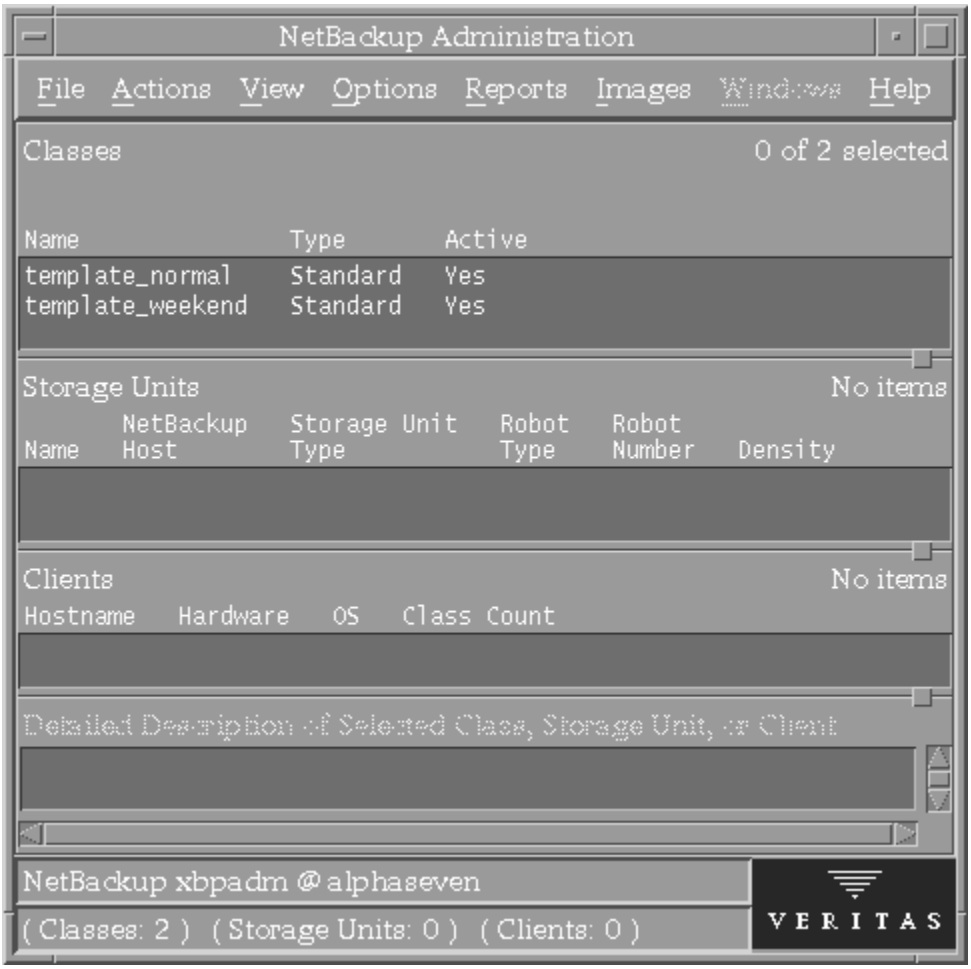
99. The message screen appears, click on *OK*:

    Note: You will need to repeat *Steps 85* through *87* for each drive, once complete click on *File* then *Exit* on the *task bar*.

100. Click on the Backup Management button.


Backup
Management

101.The *NetBackup Administration* window appears. Click on *Actions*, *New*, and *Storage Units*.



102. The *Adding a Storage Unit* window appears. Enter the below information into the window, once complete, click *OK*.

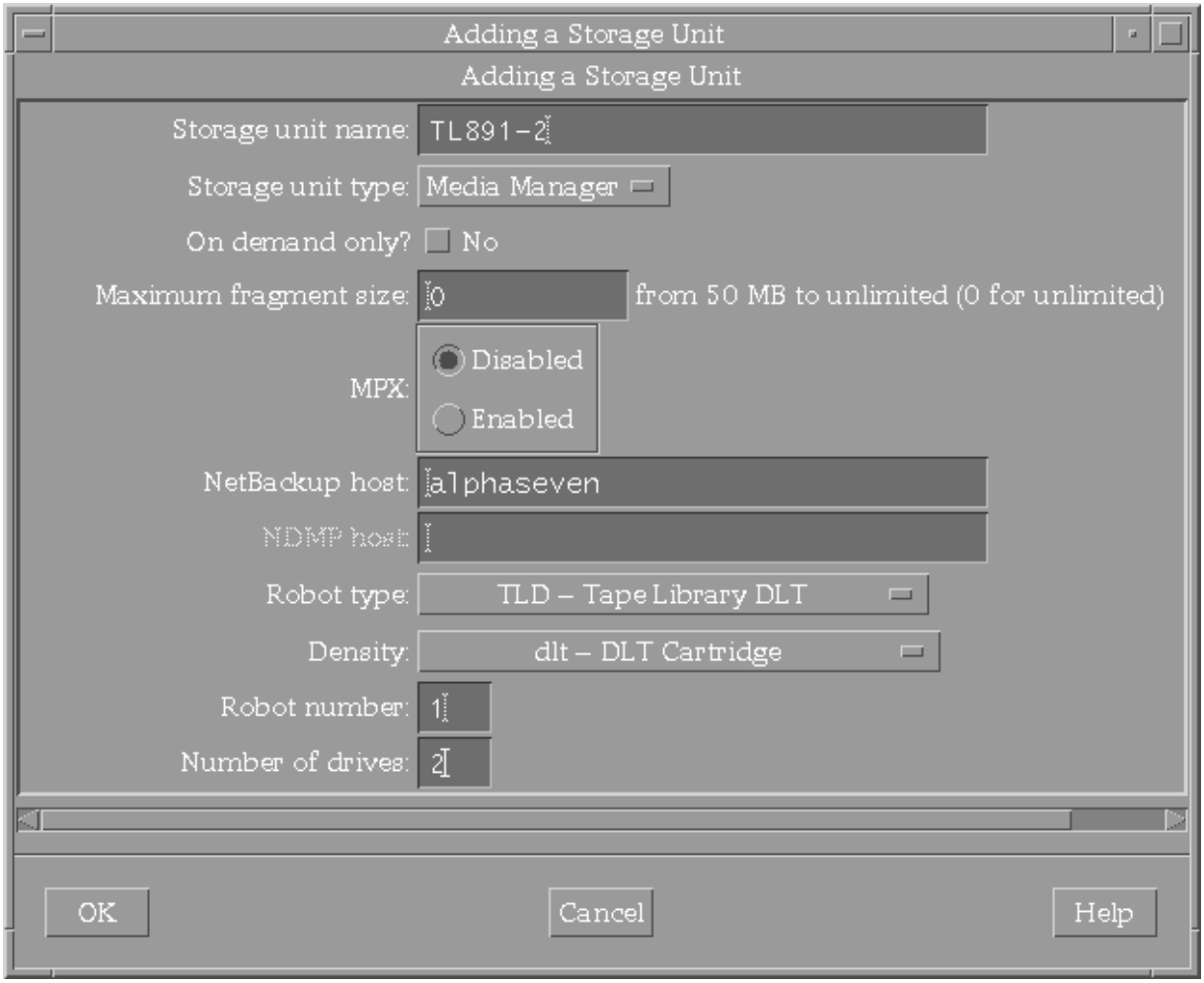
Storage unit Name – *TL891-2* "The name should describe the configuration"

Robot Type – *TLD – Tape Library DLT*

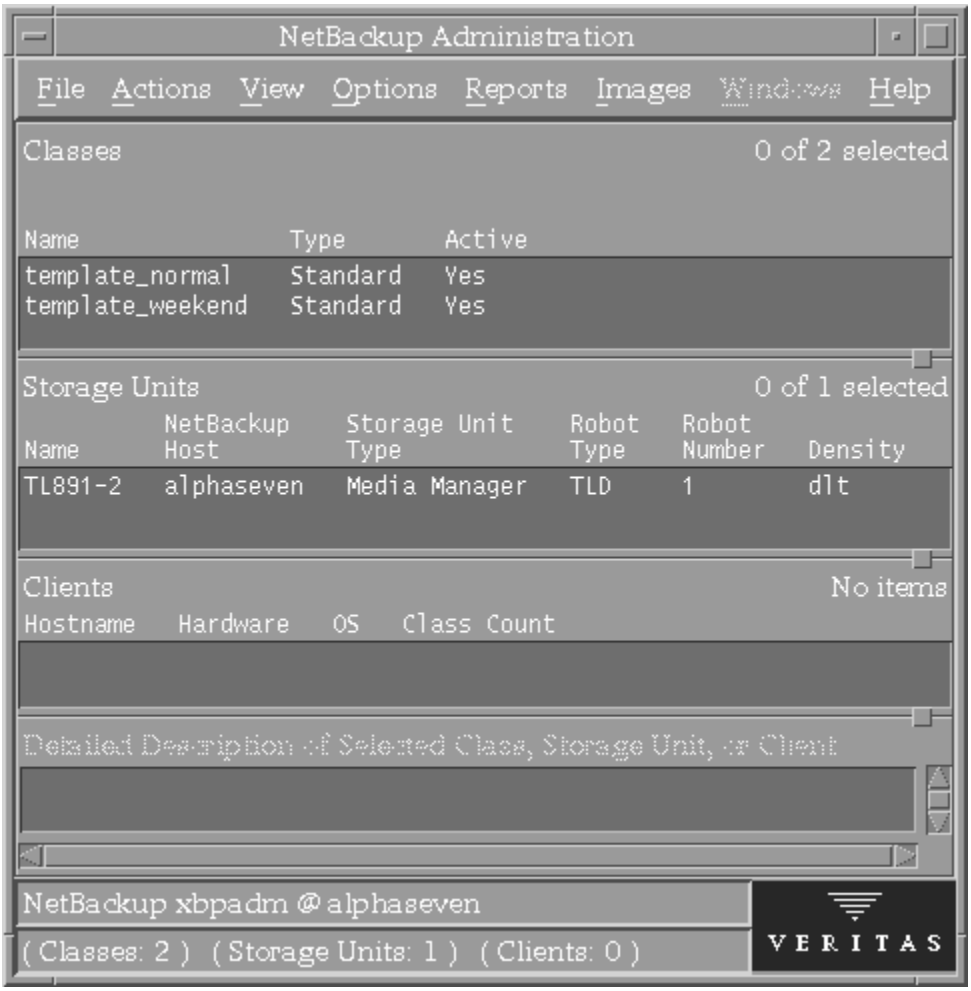
Density – *dlt – DLT Cartridge*

Robot Number – *1*

Number of Drives – *2*

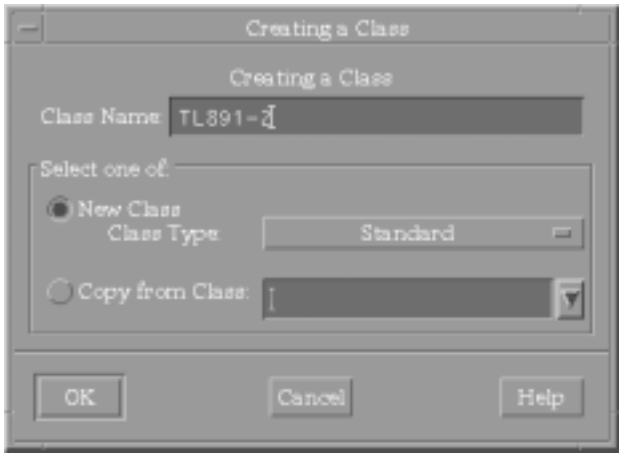


103.The *NetBackup Administration* window appears. Click on *Actions*, *new*, and *Classes*.



104.The *Creating a New Class* window appears. Enter the below information into the window, once complete, click *OK*.

Class Name – *TL89-2* "Your Choice"


Creating a Class
Creating a Class
Class Name:
TL891-2
Select one of:
New Class
Class Type:
Standard
Copy from Class:
OK
Cancel
Help

105. Changing class *TL891-2* window appears. With *Attributes* selected. Enter the below information into the window, once complete, click on *Clients*.

Class Type – *Standard*

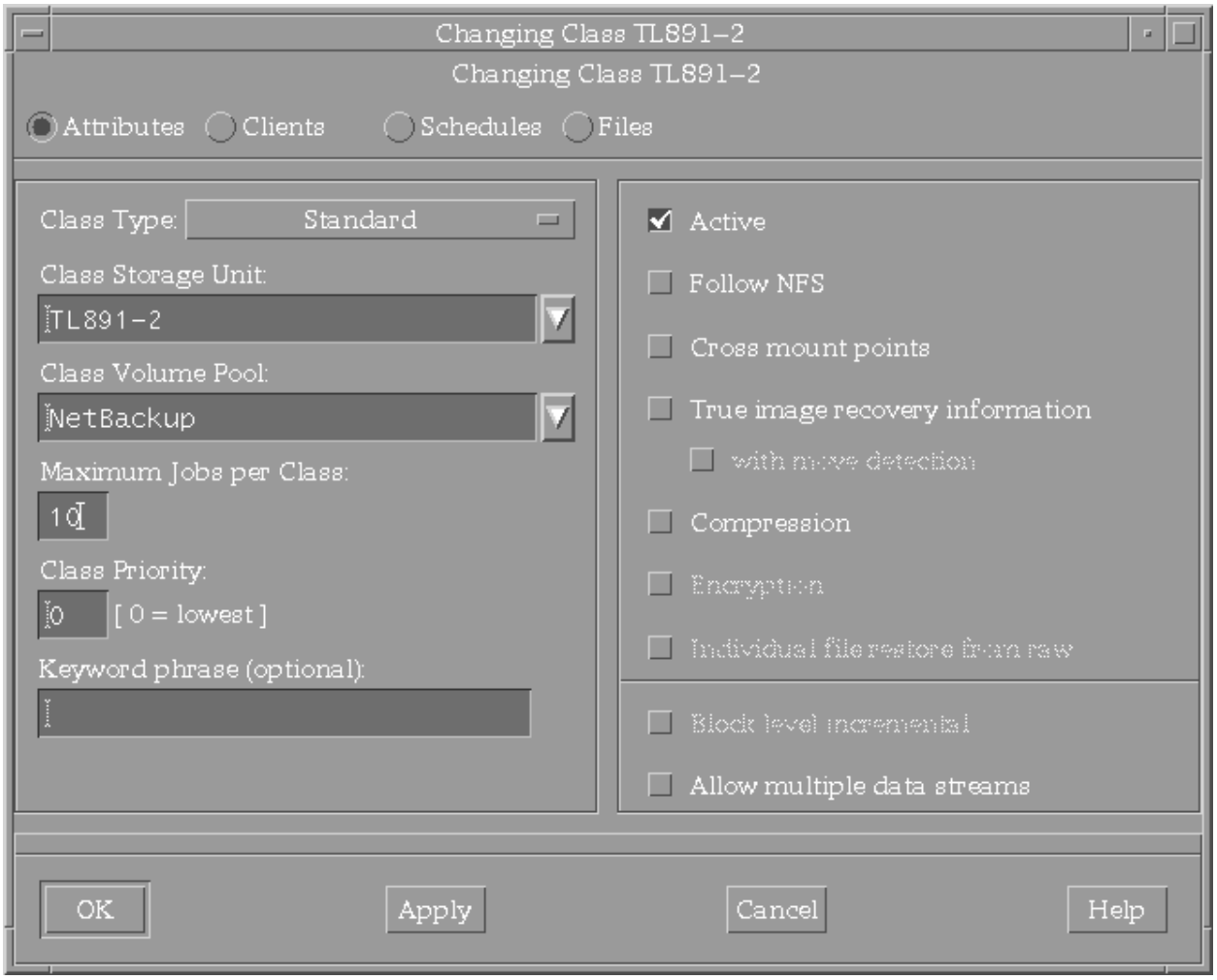
Class Storage Unit – *TL891-2*

Class Volume – *NetBackup*

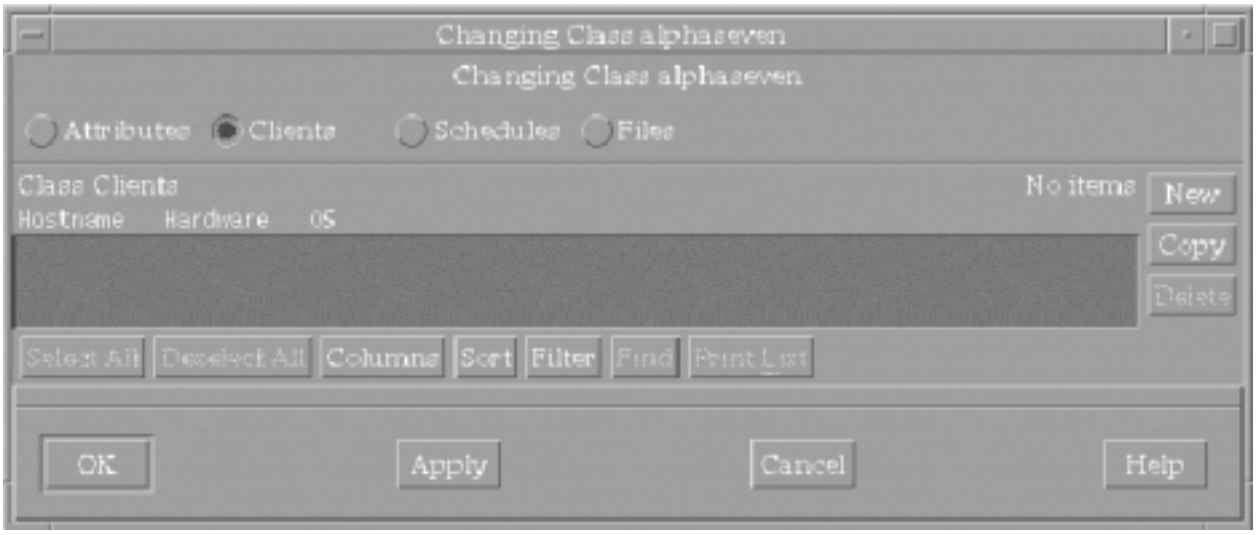
Max Jobs Per Class – *10*

Class Priority – *0*

Make sure *Active* is selected.



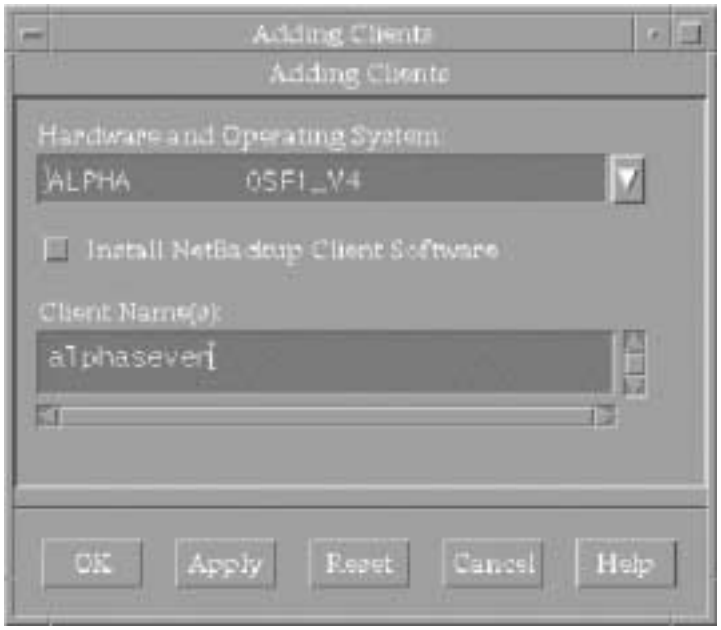
106. The *Clients* window appears. Click on *New*.



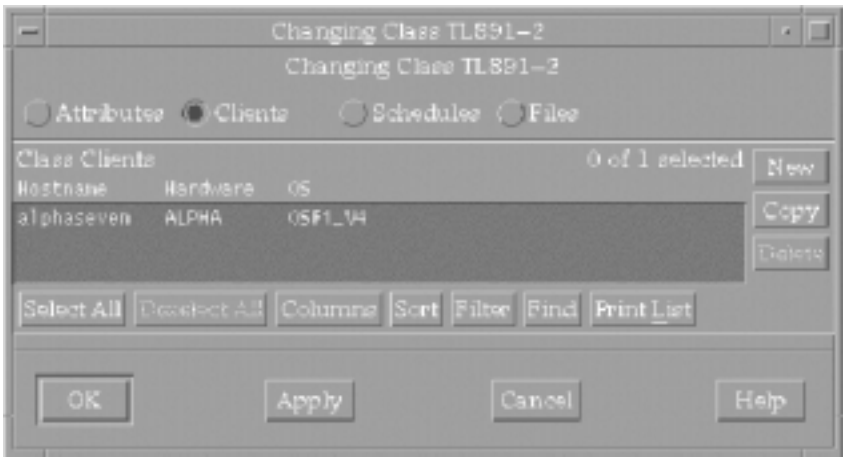
107. The *Adding Clients* window appears. Enter the below information, once complete, click *OK.*

Hardware and Operating System – *Alpha* *OSF1_V4*

Client Names – *alphaseven*



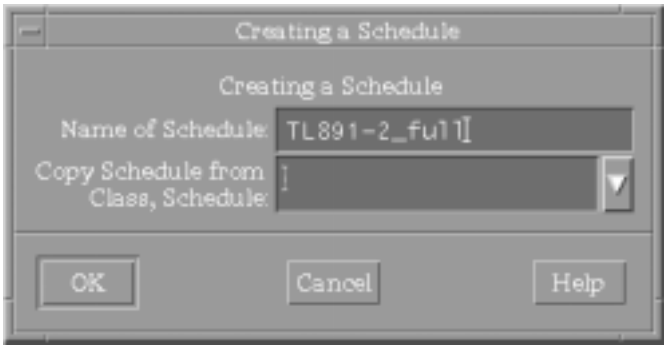
108. The *Changing Class TL891-2* window appears. It now shows the client, *alphaseven*. Now, select *Schedules*.



109. The *Schedules* window appears. Click on *New*.

110. The *Creating a Schedule* window appears. Enter the below information and click *OK*.

Name of Schedule – *TL891-2_full*


Creating a Schedule
Creating a Schedule
Name of Schedule:
TL891-2_full
Copy Schedule from Class, Schedule:
OK
Cancel
Help

111. The *Creating Schedules TL891-2_full of Class alphaseven* window appears. Enter and or select the below information and click *OK*.

Override Class Storage Unit – *No*

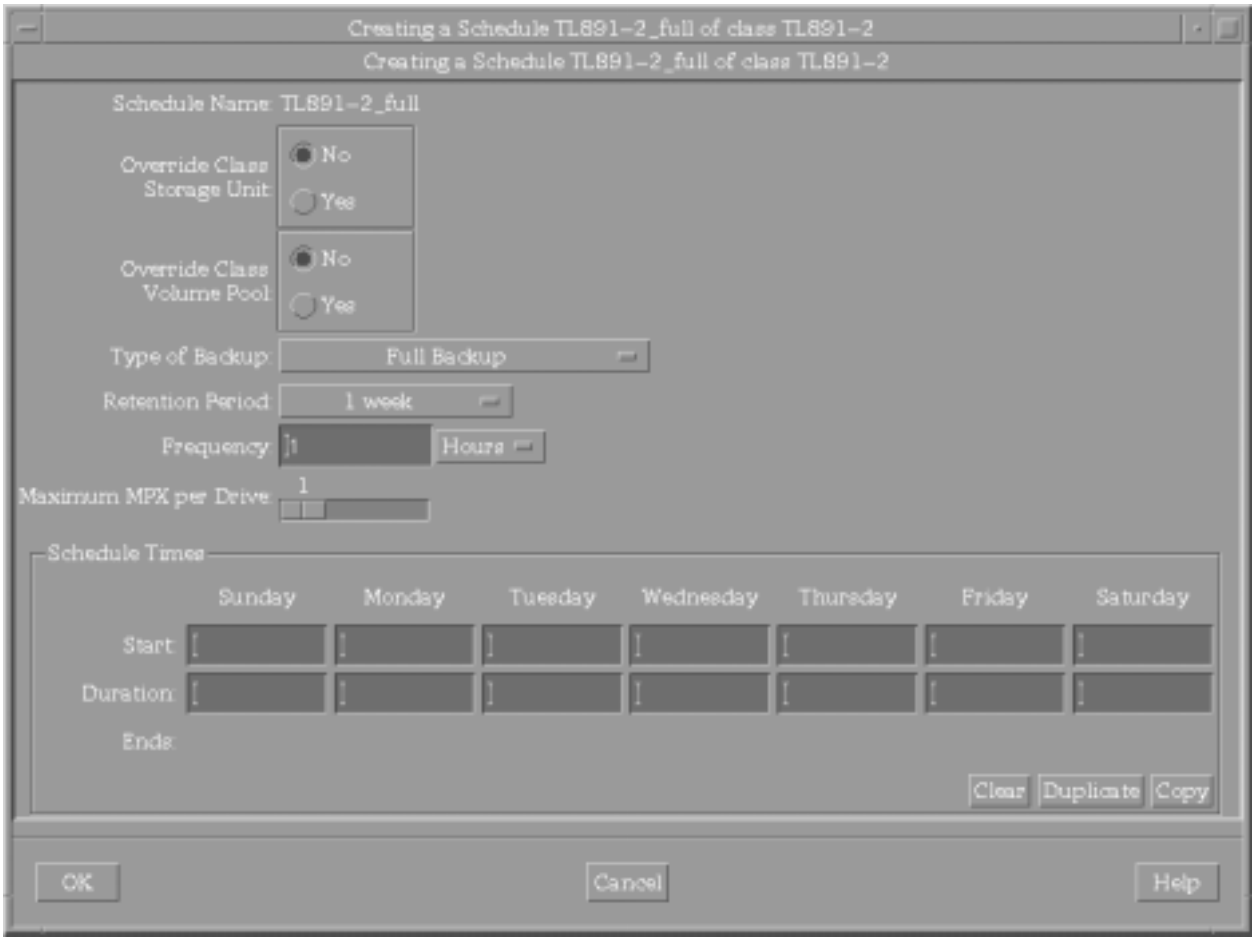
Override Class Volume Pools – *No*

Type of Backup – *Full Backup*

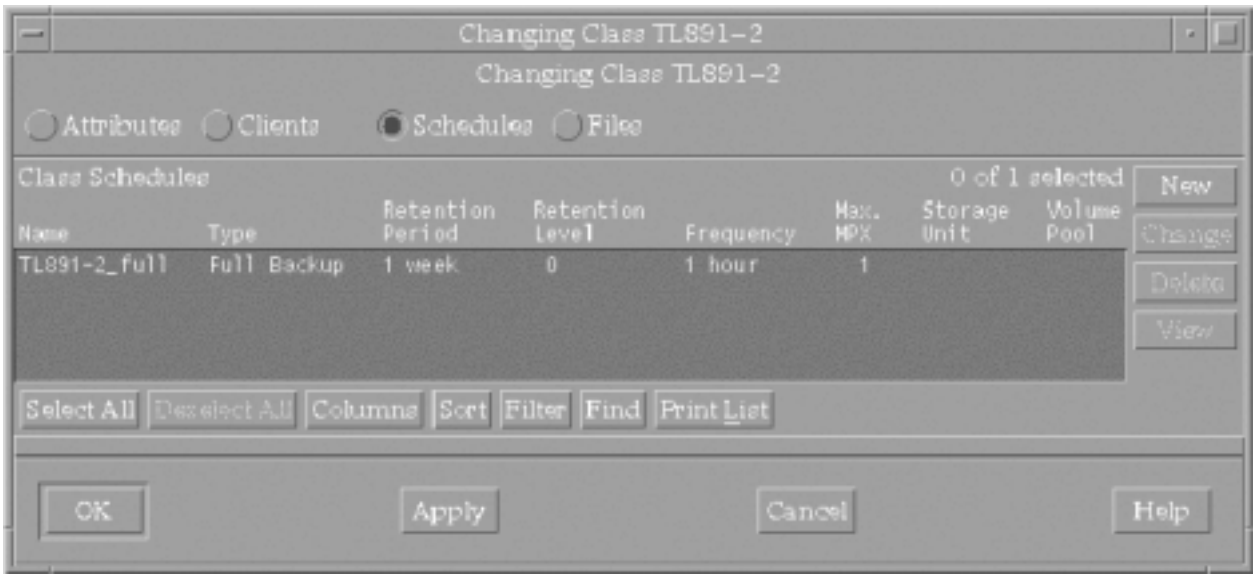
Retention Period – *1 Week*

Frequency – *1 Hours*

Note: These selections may differ in a real live environment.

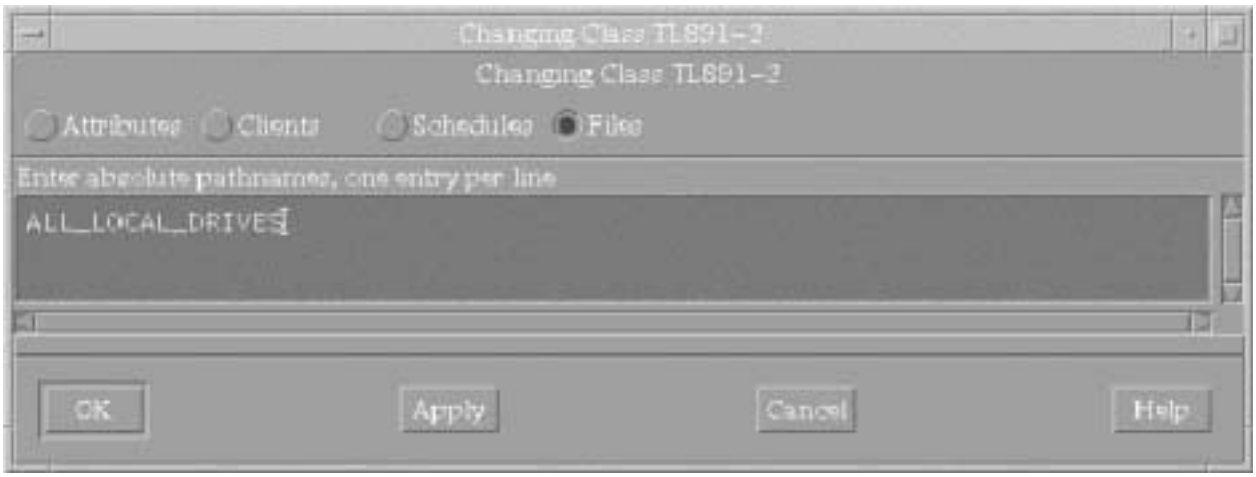


112. The *Changing Class TL891-2* window appears. It now shows the client, *TL891-2_full*, and it's *Schedules*. Click on *Files*.

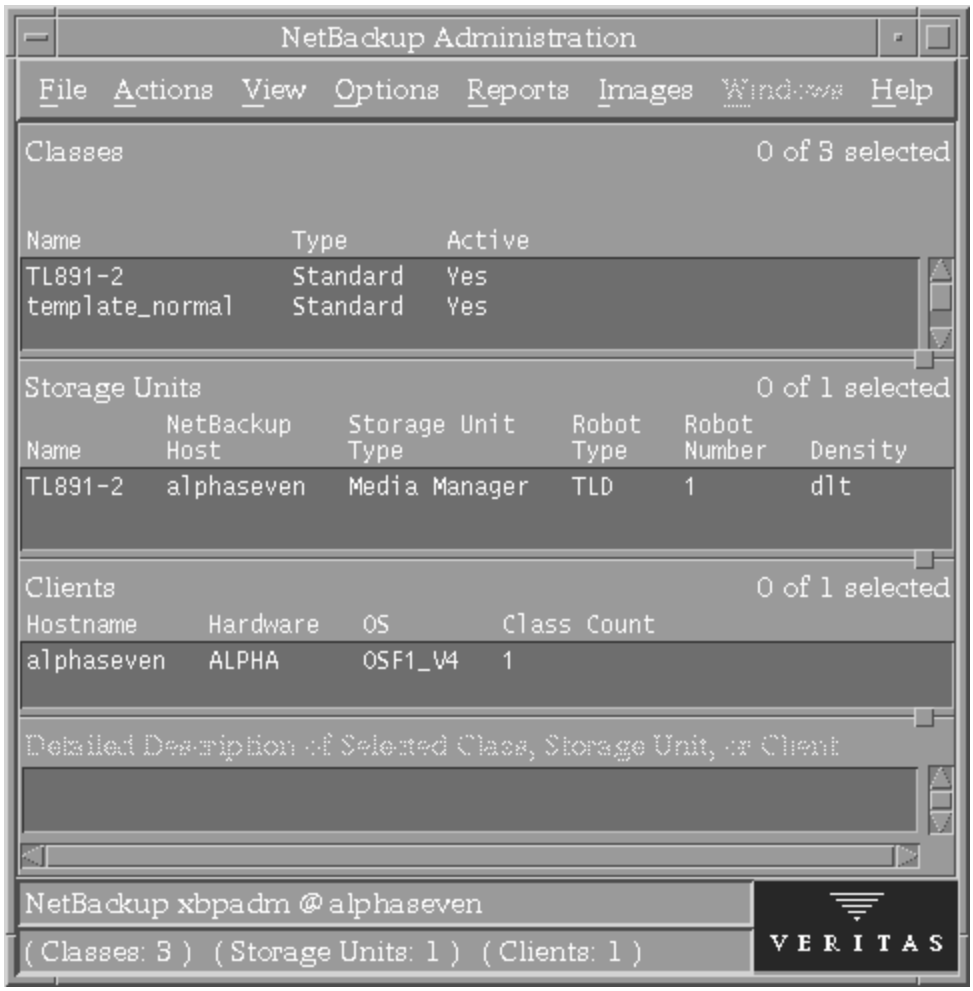


113. The *Files* window appears. Enter *ALL_LOCAL_DRIVES* and click on *OK*.

Note: This tells the client to backup all of the local disk drives.



114. The *NetBackup Administration* window appears. It now displays the information that has been entered. Click on *File* and *Exit* on the *task bar* to close this window.

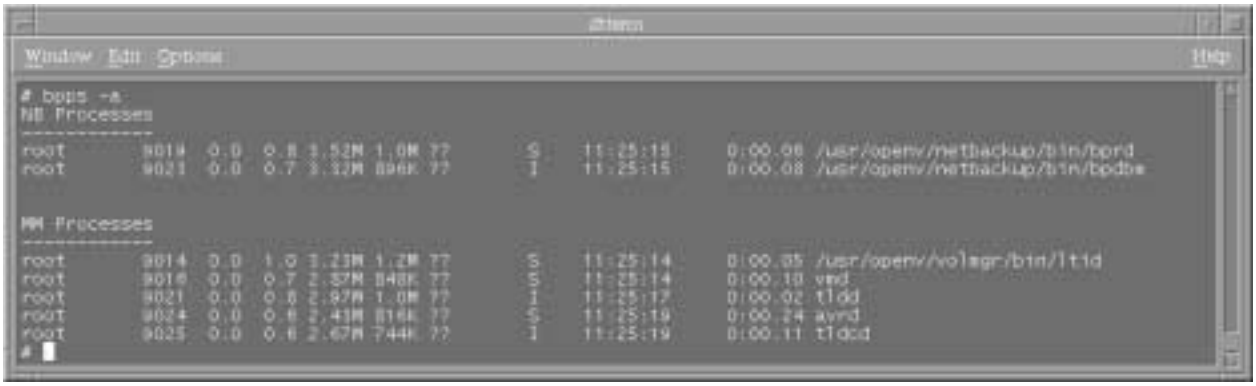


This completes the Running and Configuration of the NetBackup GUI portion of the Lab.

Step 10
Running a Manual Backup

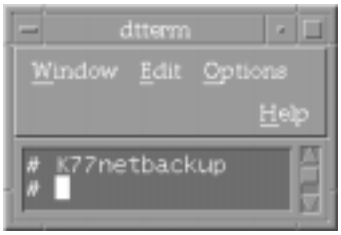
115. The *NetBackup GUI* window appears. Close this application. Click *File* and then *Exit* on the *task bar*.

116. Using the *Terminal* session that was used to launch the *NetBackup GUI*, Check to see which NetBackup Sessions are currently running.



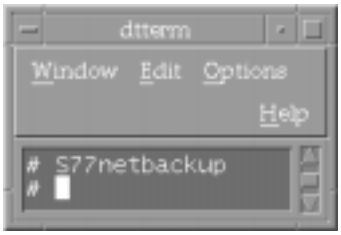
117. *Stop* the *NetBackup sessions.*

At the system prompt, *#*, type *K77netbackup* and hit *Enter*.



118. Start NetBackup

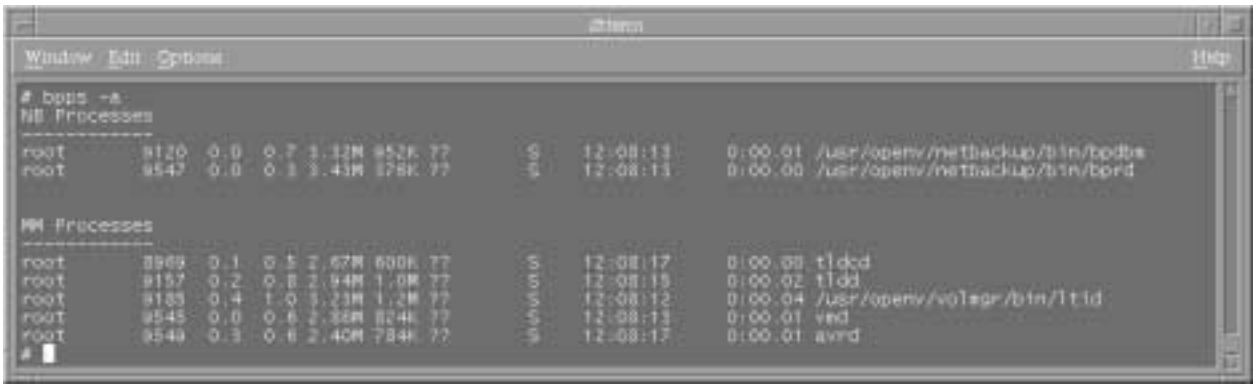
At the system prompt, #, type *S77netbackup* and hit *Enter*.



119. Check to see which *NetBackup Processes* are now running.

At the system prompt, *#*, type *bpps –a* and hit *Enter*.

Note: They should be the same as the ones listed below.



120. Using the same *Terminal session*, start the *NetBackup GUI*. Run the below Command. *xnb $*

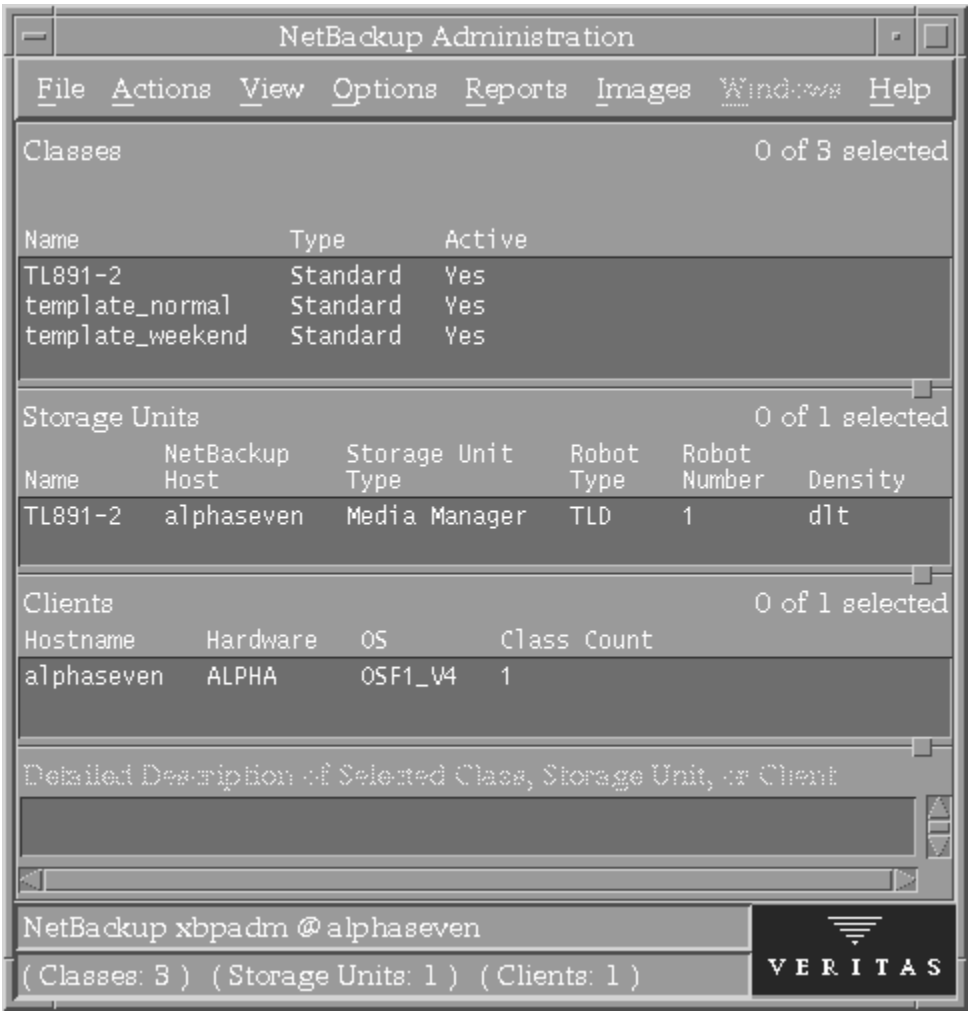

dtterm
Window Edit Options Help
xnb $

121.The *NetBackup GUI* window appears.

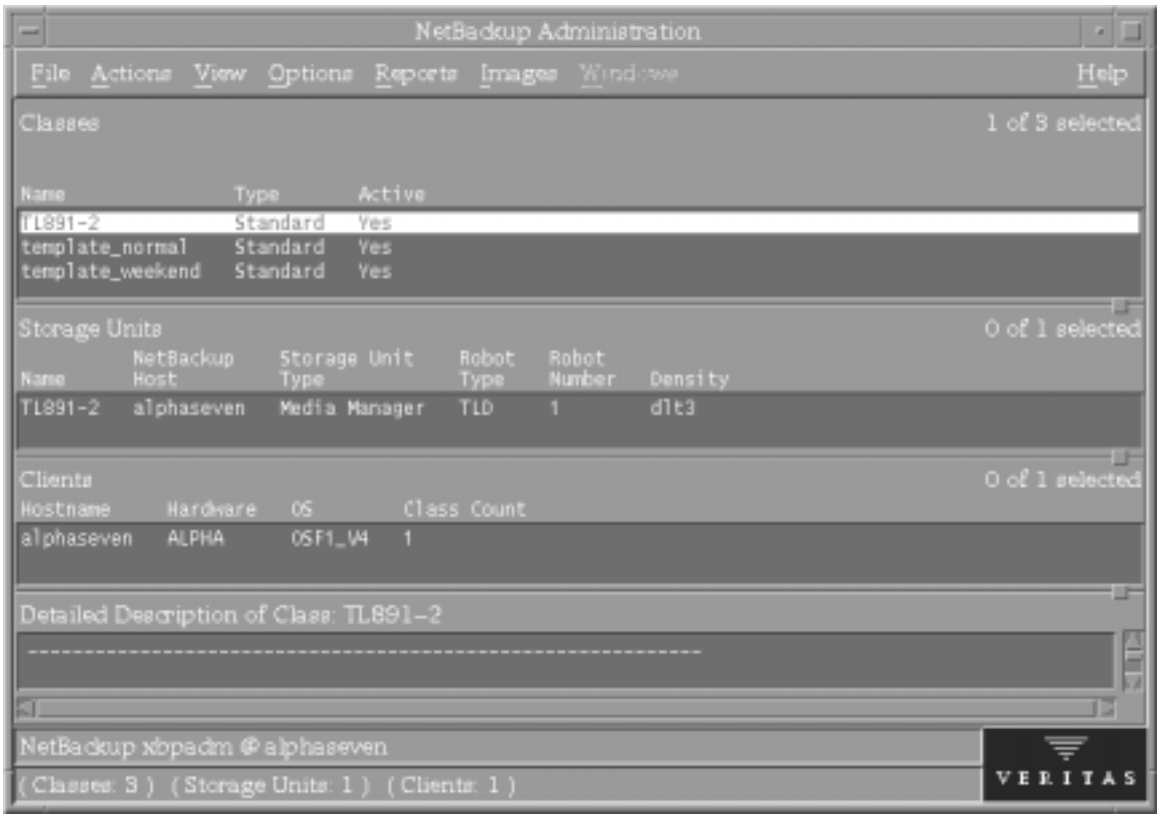
122.Click on the *Backup Management* button on the *NetBackup GUI*.

123. The *NetBackup Administration* window appears.

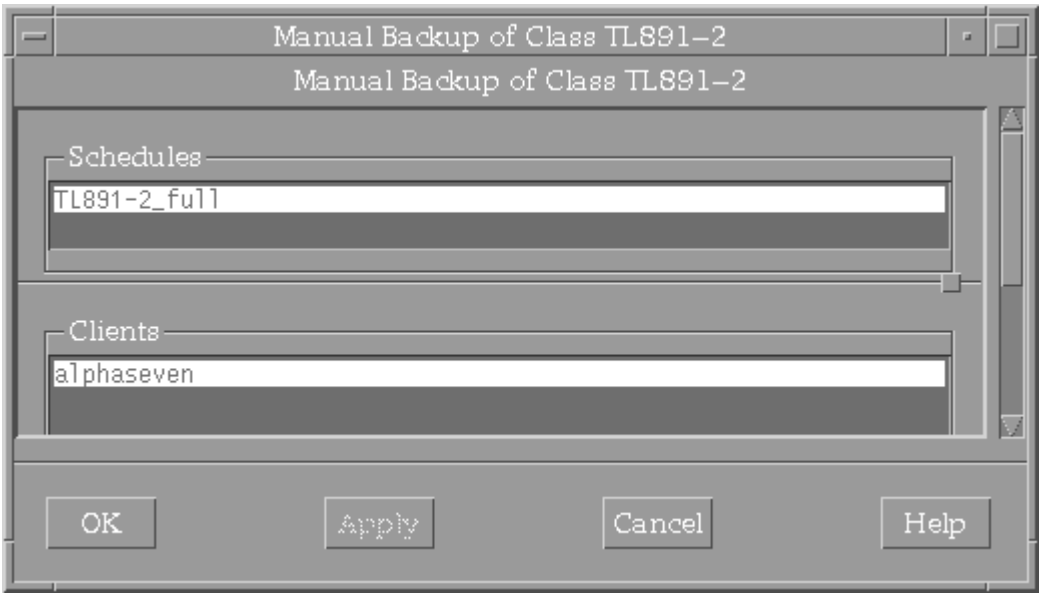
Situate the *NetBackup Administration* window so that you still have access to the *NetBackup GUI*.



124. On the *NetBackup Administration* window, under classes, *Right Click* on the storage device name *TL891-2* you created and click on *Manual Backup*.

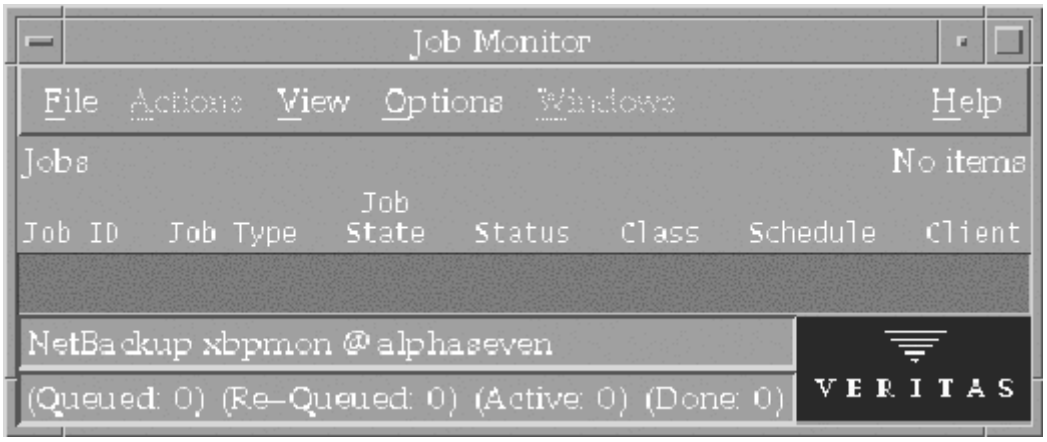


The *Manual Backup of Class TL891-2* window appears. Select the *Schedule* and the *Client* that you want to use click *OK* to start the manual backup.


Manual Backup of Class TL891-2
Manual Backup of Class TL891-2
Schedules
TL891-2_full
Clients
alphaseven
OK
Apply
Cancel
Help

125.Click on the *Activity Monitor* button on the *NetBackup GUI*.

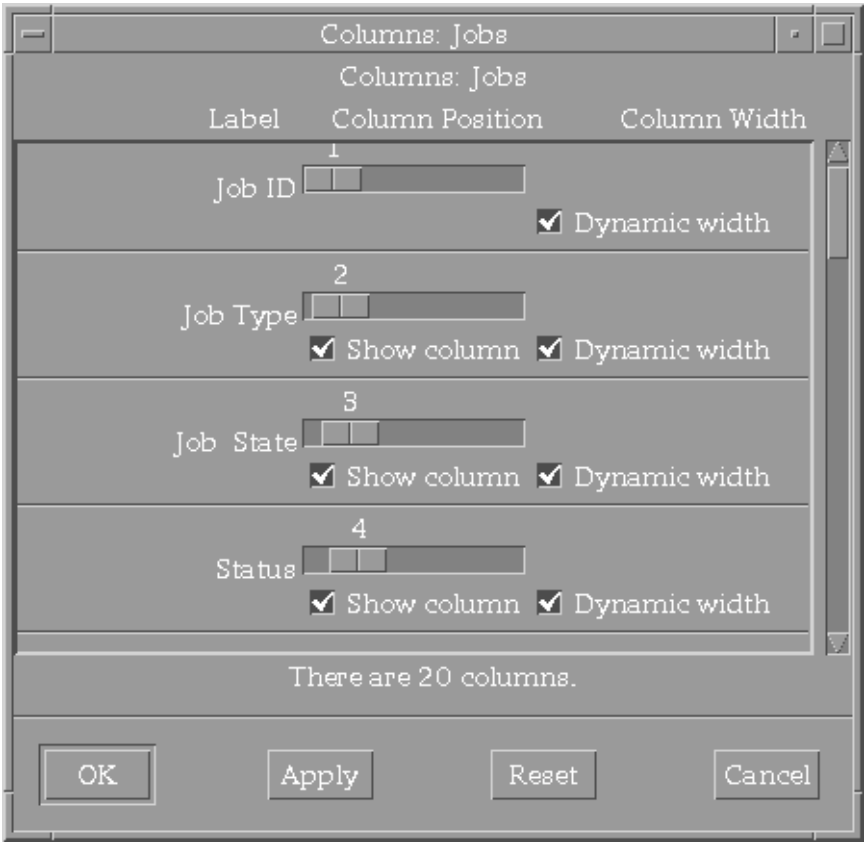
126.The *Job Monitor* window appears. Click on *View* and *Columns*.



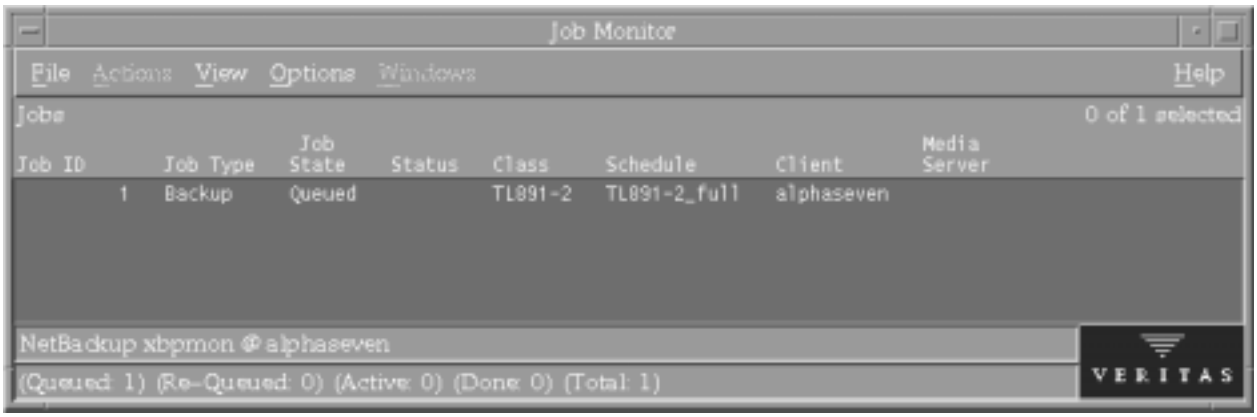
127. The *Columns Jobs* window appears. Select only what is listed below. Once selected, click on *Apply* then *OK*.

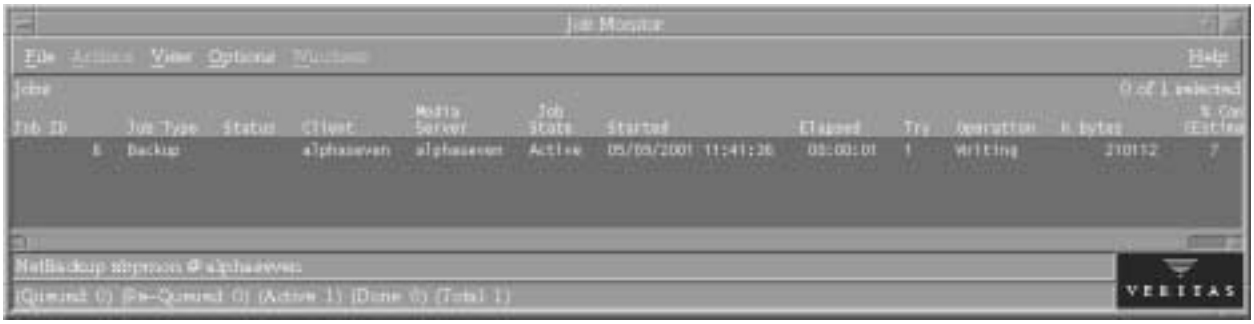
Note: You may need to scroll down and unselect some other items.

Job Type, status, Client, Media Server, Started, Elapsed, Try, Operation, K Bytes, % Complete.



128. The *Job Monitor* will show you the *status* of the *Manual Backup*. Once the backup is complete *close all windows* except for the *NetBackup GUI.*

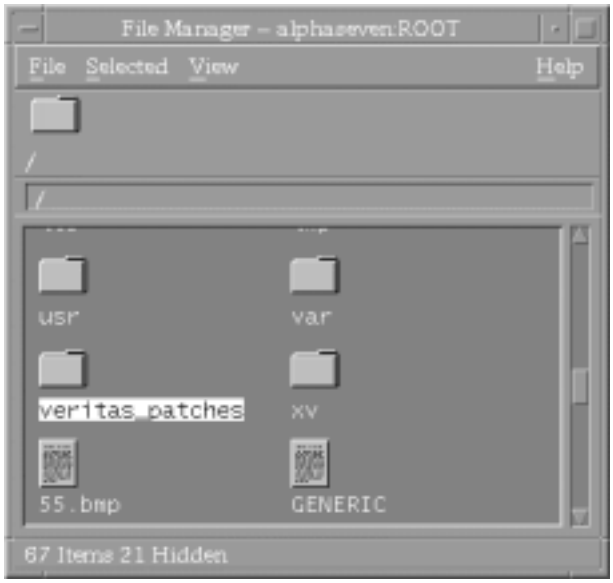




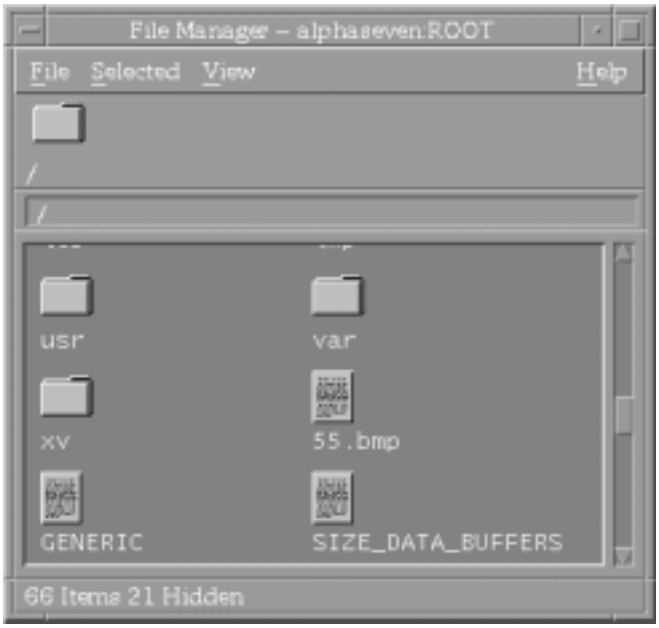
This completes the Manual Backup portion of the lab.

Step 11
Delete the veritas_patches Directory

129. Open a *File Manager* window and find, select, and delete the */veritas_patches* directory. Do this by selecting the */veritas_patches* directory then click on *Selected* and *Put In Trash* on the *task bar*.



130. File Manager will now show that the */veritas_patches* directory is no longer there. Click *File* and then *Close* on the task bar to close *File Manager*.



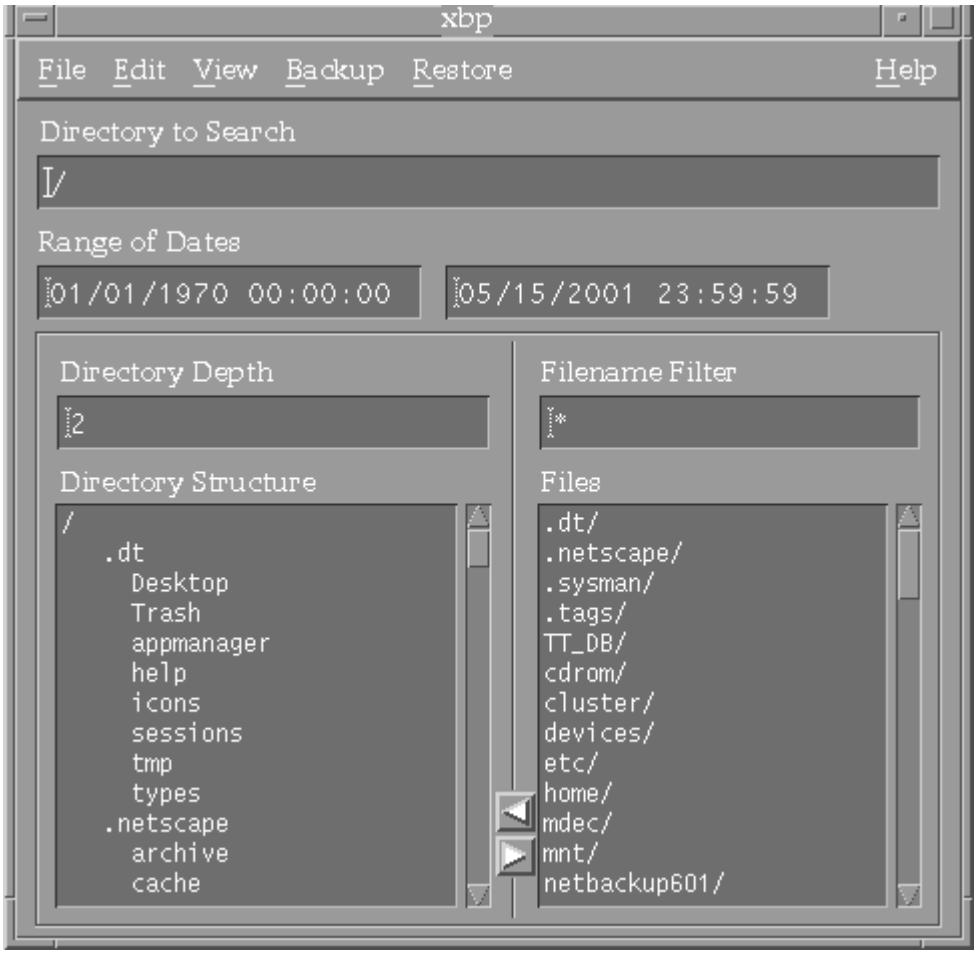
This Completes the Deletion of the veritas_patches directory portion of the lab.

Step 12
Running a Manual Restore

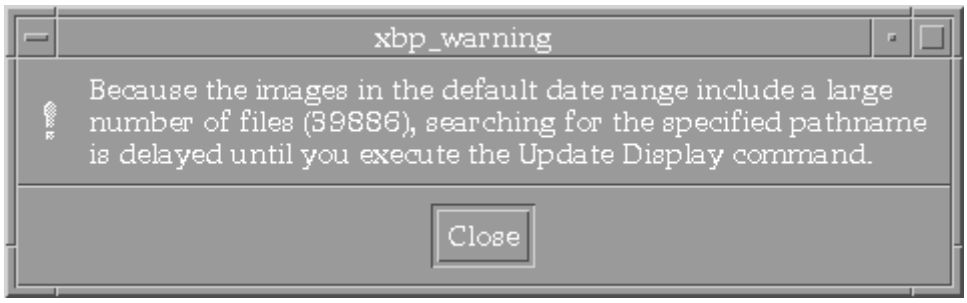
131. Click on the *User Backup and Restore Button* on the *NetBackup GUI*.

132. The *xbp* window appears, click on *file* then *Browse file systems for (Backup or Archive)* on the *task bar*.

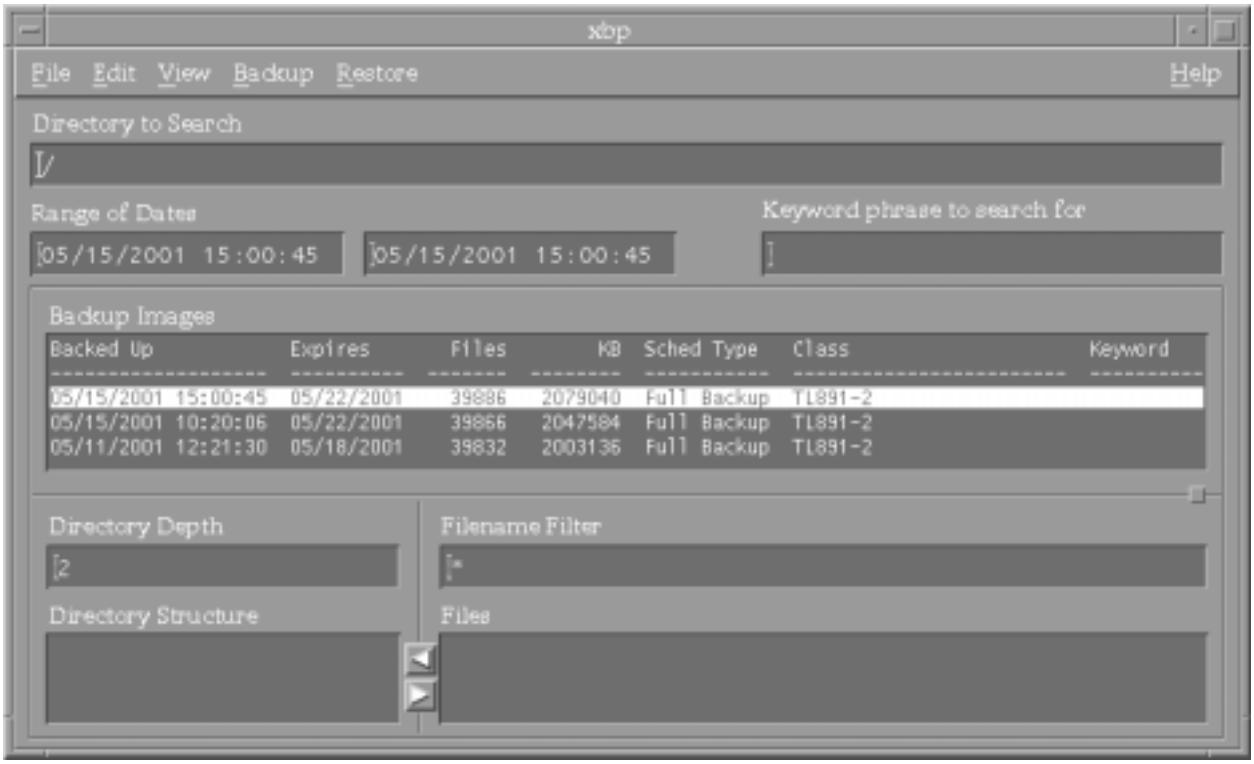
Note: The default directory is whatever directory you were in when you launched the *NetBackup GUI*.



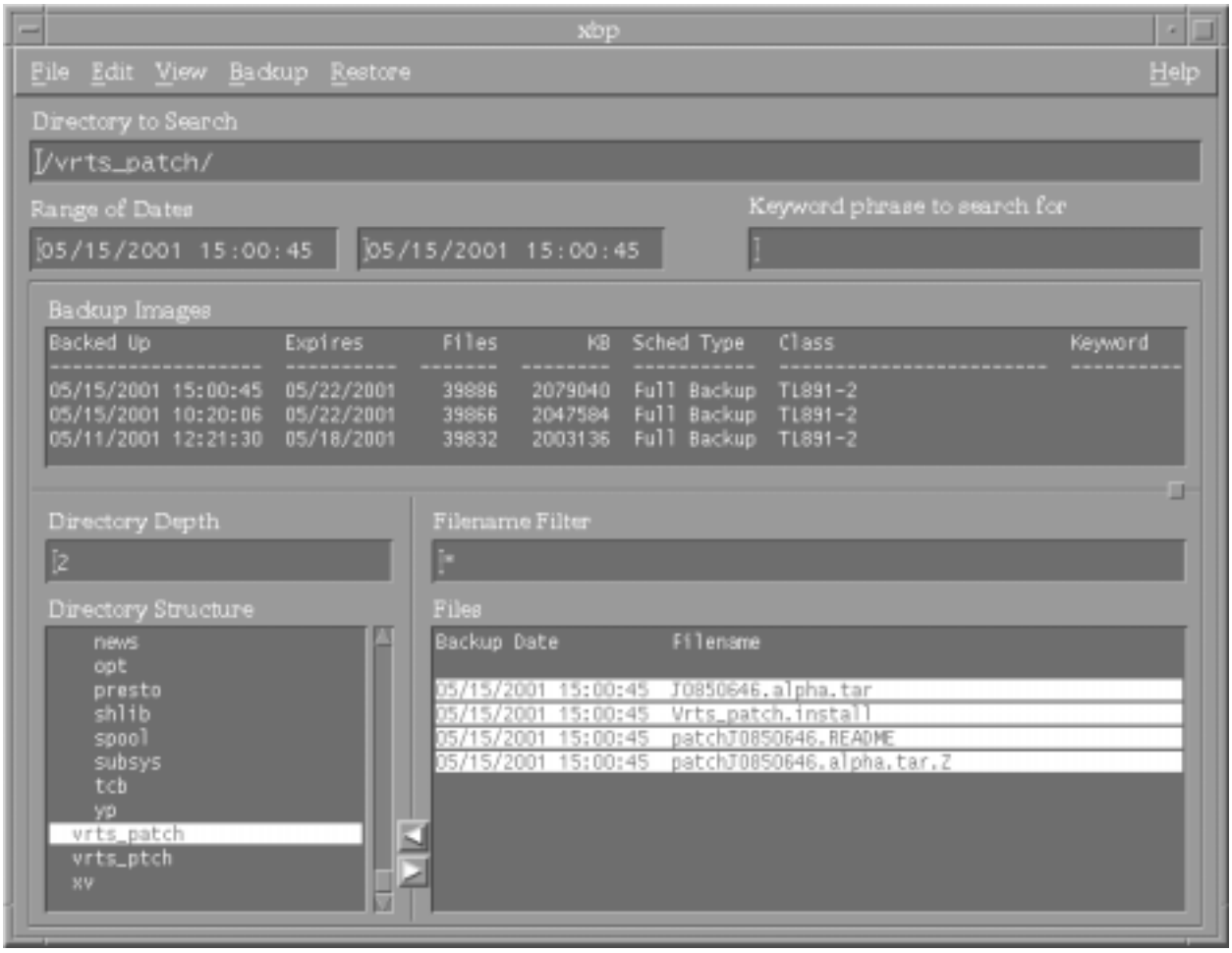
133. You may receive the below message window. If so, click *Close* and proceed to step 132. If not, proceed to step 132.



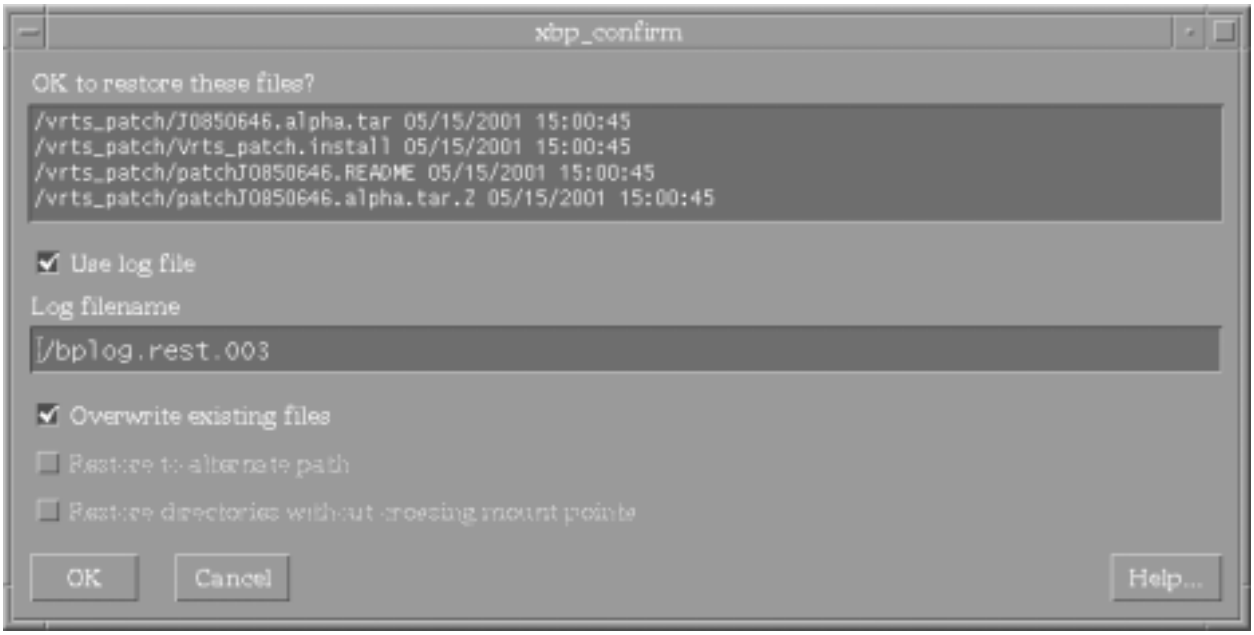
134. The *xbp* window will display all of *backup images* that have been completed. Select the *Backup Image*, under the *Backup Image* portion of the windows, that you want to use and then click on *Edit* and *Update Display*, on the *task bar*, to view the information backed up.



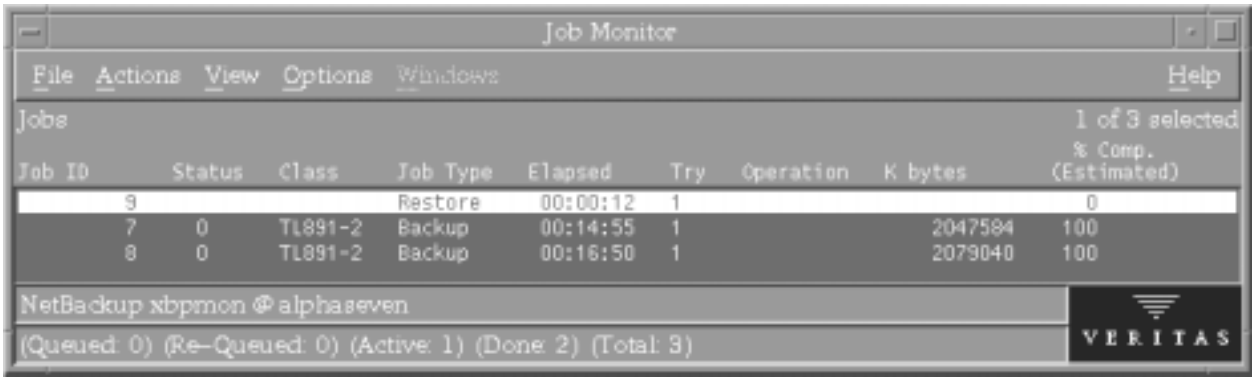
135. The *xbp* window will display all directories and files that have been backed up. *Select* the *directory* and *files* that you want to *restore*. For this lab we will select the */veritas_patches* directory and all the files underneath. Next, click on *Restore* and *Restore Selected Files and Directories* on the *task bar*.



136. The *xbp_Confirm* window appears. It shows what is to be restored. Click *OK*. Depending on the situation, you may or may not want to select *Overwrite the Existing File*.



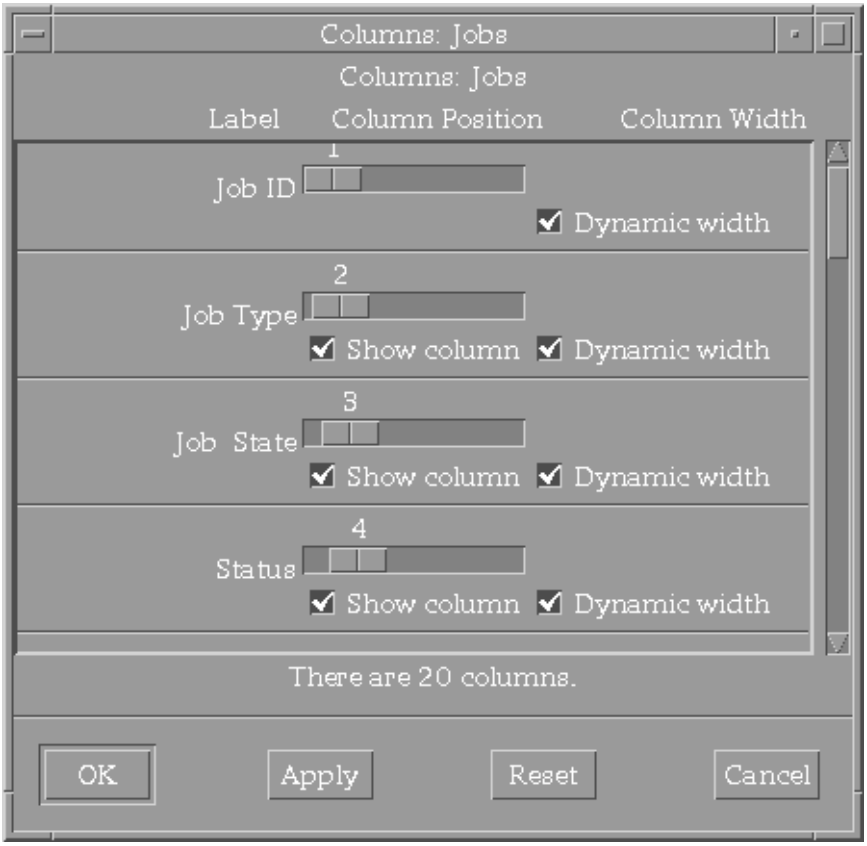
137. If not already opened, open the *Job Monitor* window to check the status of the *Restore Job*. Click on *View* and *Column*.



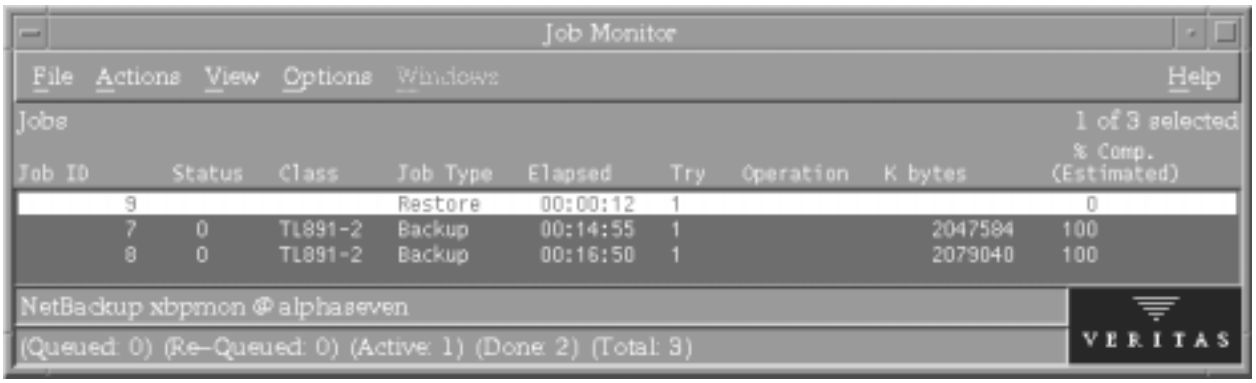
138. You will also need to reinitialize the settings on the *Job Monitor* window. The *Columns Jobs* window appears. Select only what is listed below. Once selected, click on *Apply* then *OK*.

Note: You may need to scroll down and unselect some other items.

Job Type, status, Client, Media Server, Started, Elapsed, Try, Operation, K Bytes, % Complete.



139. You will be back at the *Job Monitor* window. Again, you can observe the status of your *Restore Job* from here. Use *File Manager* to *verify* that the *directory* and *files* are back



This completes the Restore Portion of the Lab.

Step 13
Removing NetBackup From the Server

140. Close all Windows except for an active terminal. Next, stop the active *NetBackup process*.

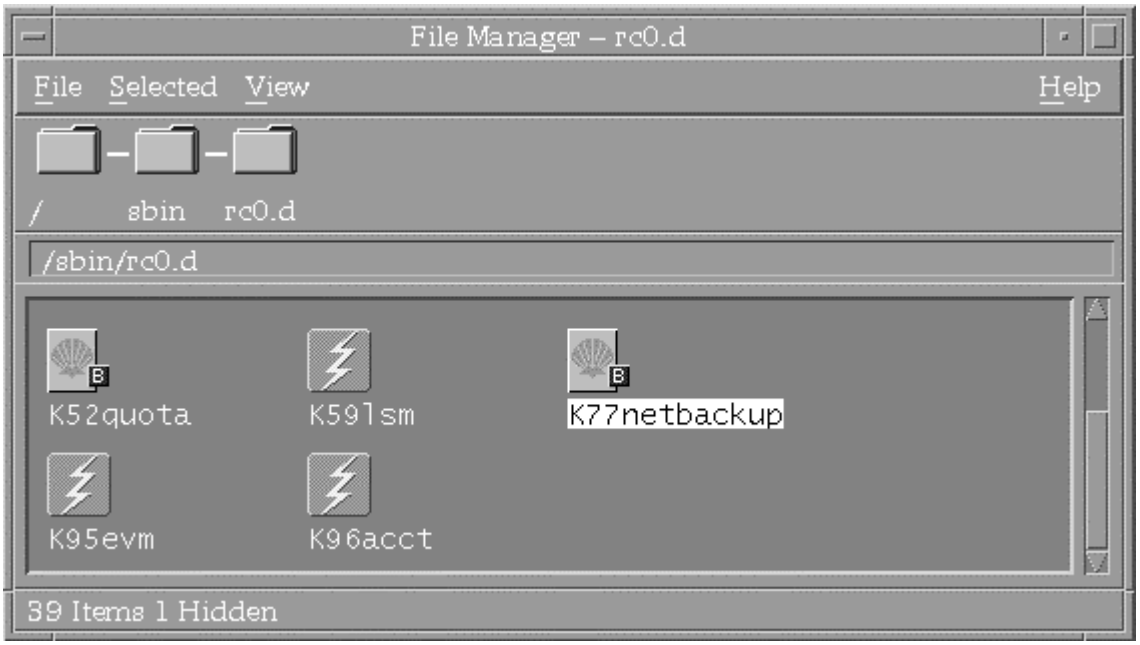
At the system prompt, #, and type *K77netbackup* and hit *Enter*.

141. Open *File Manager* and *remove* the */usr/openv* directory and all its contents (or the directory where you installed *NetBackup*.

142. A warning window will appear. Click *OK*.

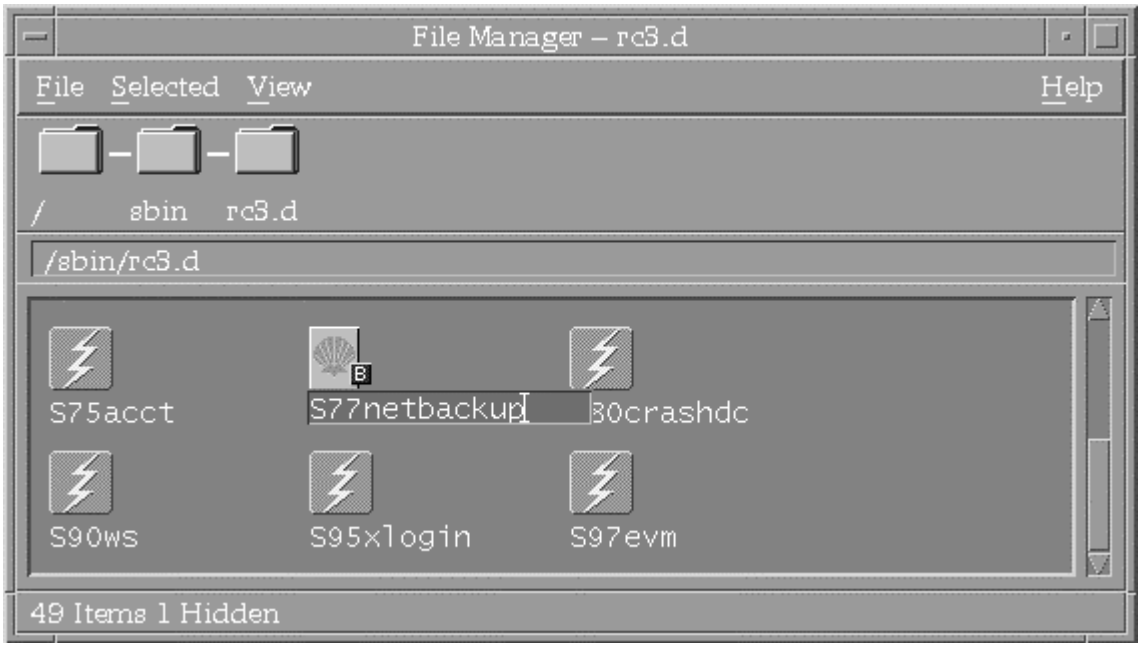
143. Use *File Manager* to find and *remove* the *K77netbackup*.

Note: It can be found under the */sbin/rc0.d/* directory.

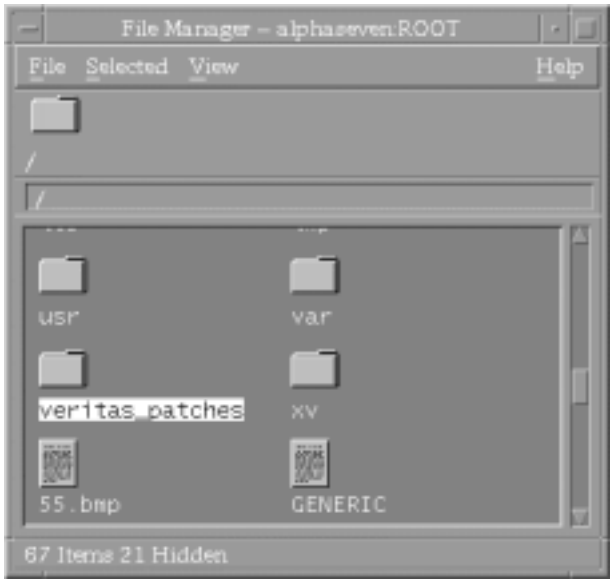


144. Use *File Manager* to find and *remove* the *S77netbackup*.

Note: It can be found under the */sbin/rc3.d/* directory.


File Manager – rc3.d
File
Selected
View
Help
/
sbin
rc3.d
/sbin/rc3.d
S75acct
S77netbackup
80crashdc
S90ws
S95xlogin
S97evm
49 Items 1 Hidden

145. Use *File Manager* to find and *remove* the */veritas_patches* directory.

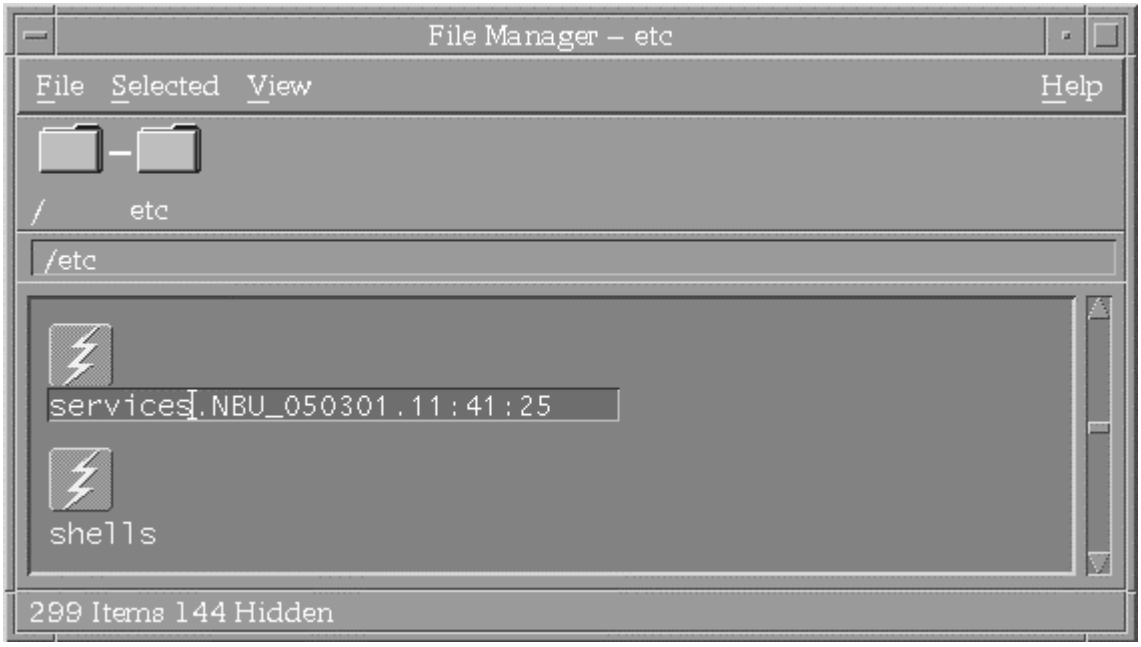


146. Use *File Manager* to find and *remove* the *services file*.

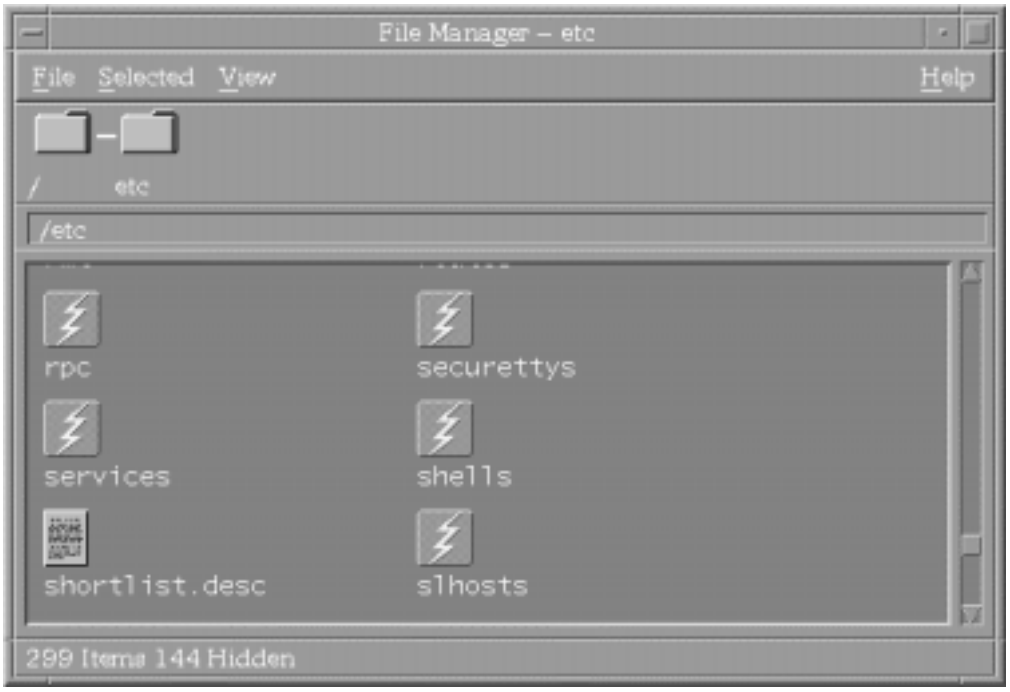
Note: It can be found under the */etc/* directory.

147. Select the *services.NBU_050301_11.41.25* file and click on the wording. Next change the wording to read just *services* and hit *Enter*.

Note: The date may be different. Make sure the saved file is the original without the NetBackup modifications.



The directory should now only show a single *services* file. Once complete, Close *File Manager* along with all other windows and *Log Out* of the system.



This completes the removal of NetBackup off the system.

Installing and Configuring Tivoli Storage Manager 4.1.3 for Solaris 7

Appendix Q: Module 6 – Lab 1

Objective

After completing this module, you will be able to install, configure, perform a backup, perform a restore, and uninstall Legato NetWorker for Solaris.

Requirements

- Tivoli 4.1 and 4.1.3 Patch
- Solaris 2.7 and 7_recommended Patch
- 128MB RAM at least
- 500 MB free disk space for NetWorker software
- Enough free disk space to allow for 5% of total backup data (allow for up to 3 times the index size during software update conversion)

Before you install

Make sure the Solaris operating system sees all hardware.

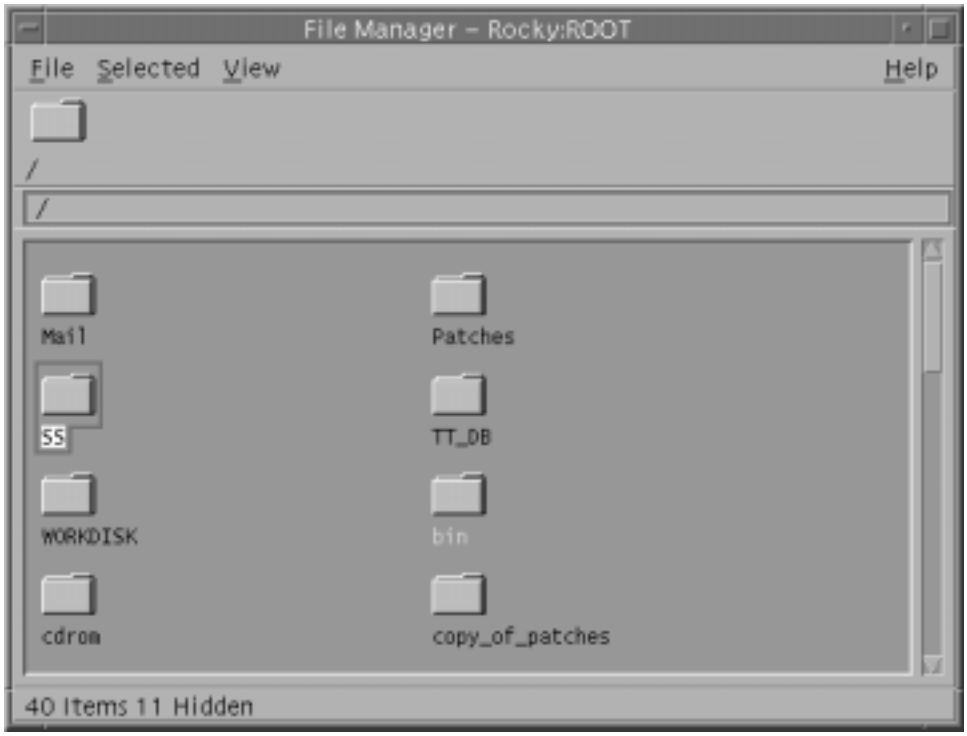
Step 1
Creating the Patches Directory Structure.

1. Turn on your computer, the Sun Solaris program will load and will ask you to enter your *user name*. Type, in lower case, *root*, hit *Enter*.

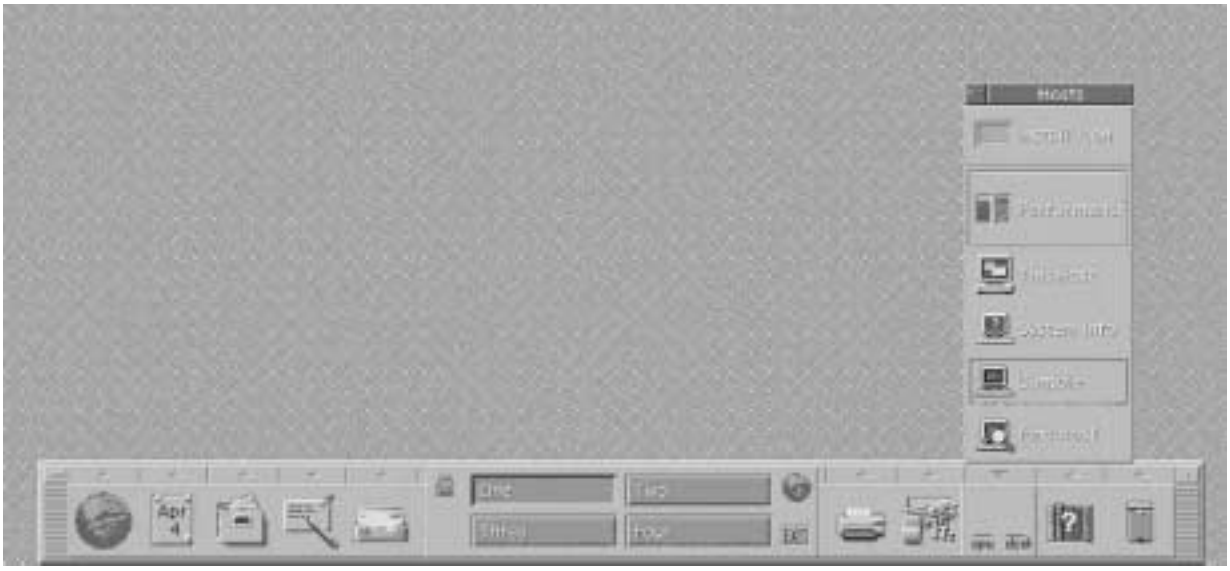
2. The system will then ask you to enter your *password*. Type, in lower case, *root*, hit *Enter*.

3. The *Introducing Your Desktop* window appears, close this window.

4. The *File Manager* window appears, close the *File Manager* window.



5. Open a *Command Console* window.



6. The Command Console window appears. Create a directory called *Patches*.

   At the command prompt, #, type the below command and hit *Enter*

   mkdir Patches

7. Create a *Tivoli*, a *Compaq*, and a *Solaris* subdirectory under the *Patches* directory.

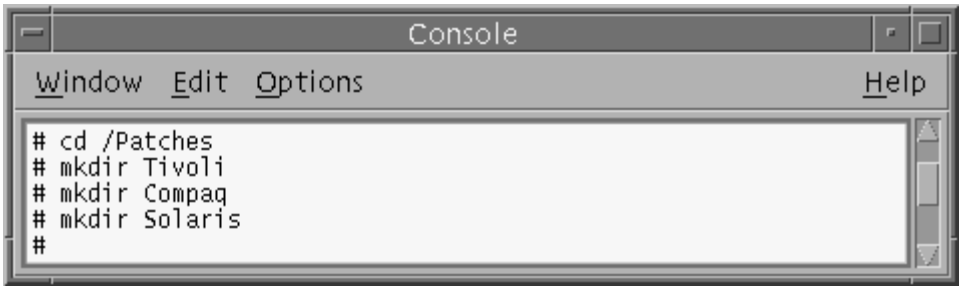
   At the command prompt, #, type:

   cd /Patches and hit the *Enter* key.

   mkdir Tivoli and hit the *Enter* key.

   mkdir Compaq and hit the *Enter* key.

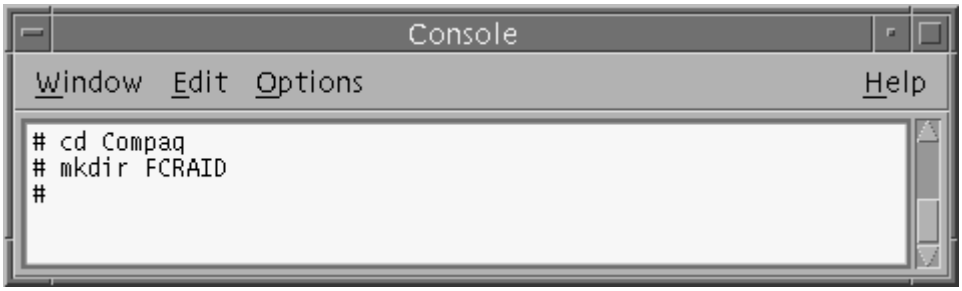
   mkdir Solaris and hit the *Enter* key.



8. Go into the *Compaq* Subdirectory and create a *FCRAID* subdirectory under it.

   At the command prompt, #, type the commands below and hit *Enter* after each.
   cd Compaq

   mkdir FCRAID



9. Go into the Tivoli Subdirectory and create a *Server* and a *Client* subdirectory under it.

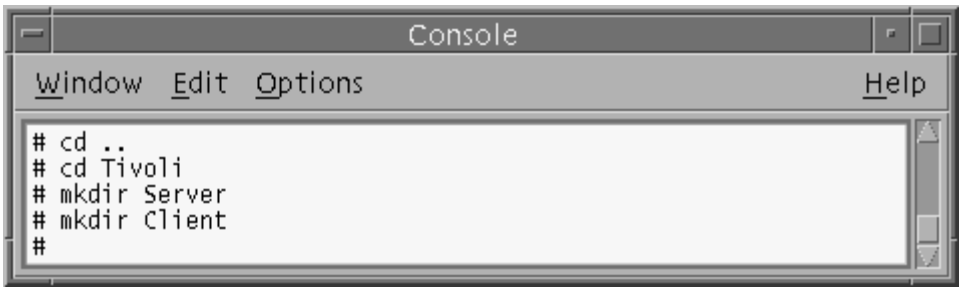
   At the command prompt, #, type the commands below and hit *Enter* after each.

   cd ..

   cd Tivoli

   mkdir Server

   mkdir Client



This completes the creation of the *Patches* directory structure.

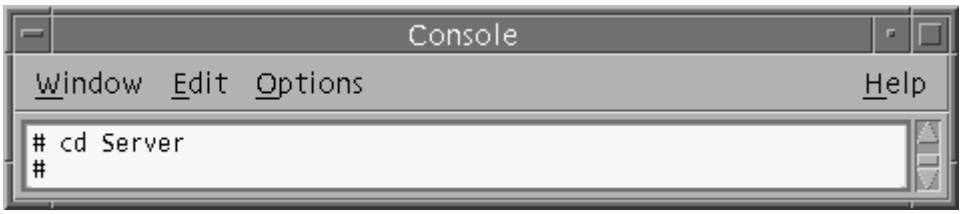
Step 2
Copying over the Patch Files from the Master Server

10. Go into the *Server* subdirectory of *Tivoli*.

    At the command prompt, #, type:

    cd Server and hit the *Enter* key.

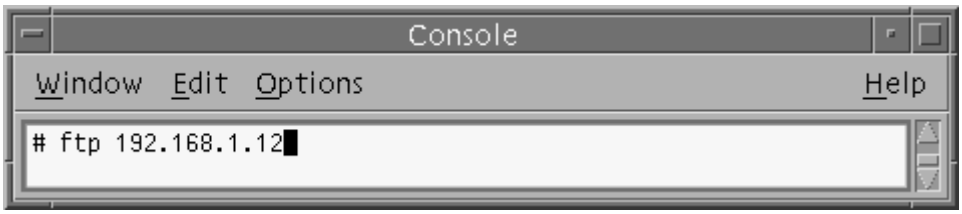
    Note: You are currently in the /Patches/Tivoli directory



11. To connect to the *Master Server* you will need to *FTP* over to it.

    At the command prompt type the below command and hit *Enter*

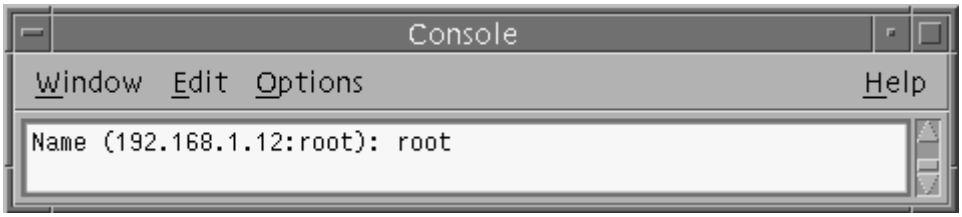
    ftp 192.168.1.12 or the IP address of the master server



12. The system will ask you to log in to the *Master Server*.

    At the Command prompt, *ftp*>, type:

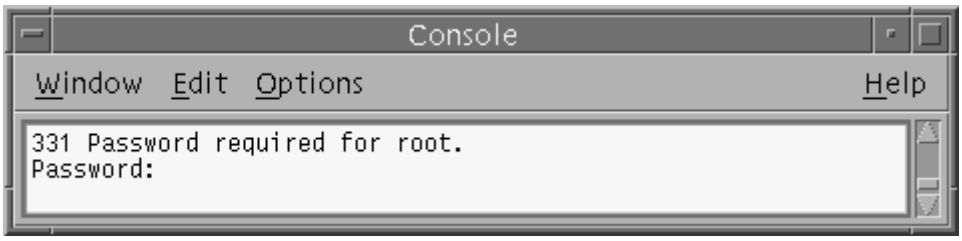
    root and hit the *Enter* key.



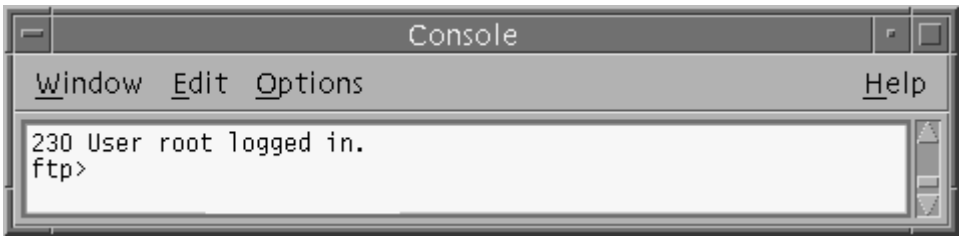
13. The system will ask you for the password.

    At the Command prompt, *ftp>*, type the below command and hit *Enter*

    Root or *the password for root*



14. The *ftp>* prompt now appears.



15. Using your computer, go into the */Patches/Tivoli/Server* directory on the Master Server.

    Note: You are currently on the *Master Server*.

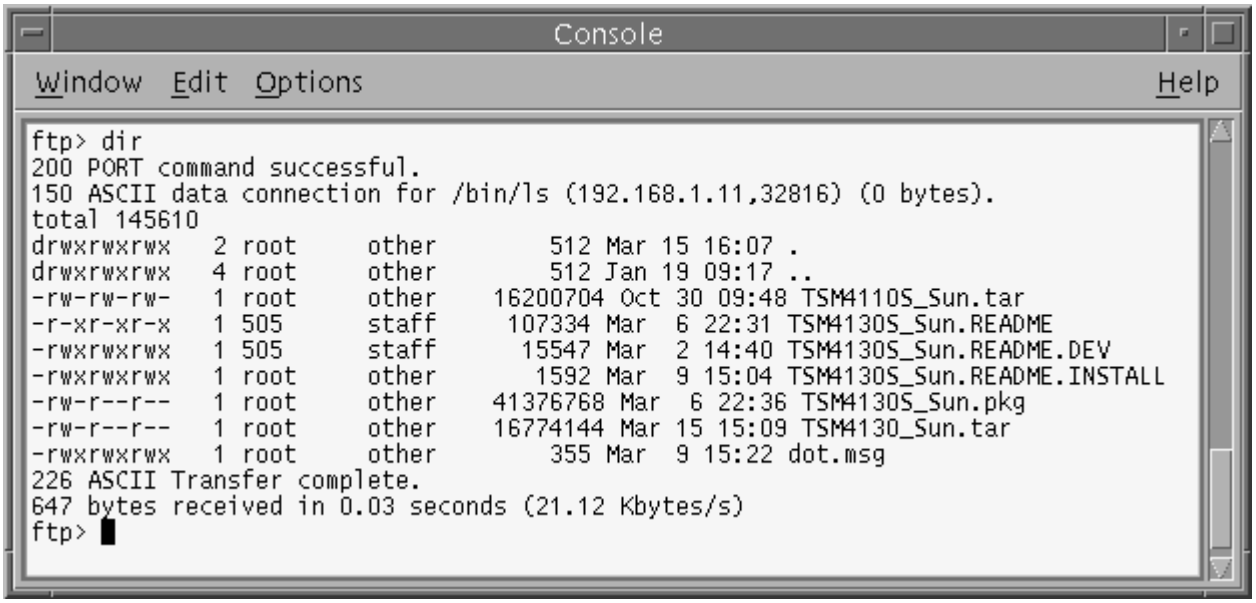
    At the command prompt, *ftp>*, type

    cd /Patches/Tivoli/Server and hit the *Enter* key.

16. Check to see what files are currently in the */Patches/Tivoli/Server* directory on the *Master Server*.

    At the command prompt, *ftp>*, type:

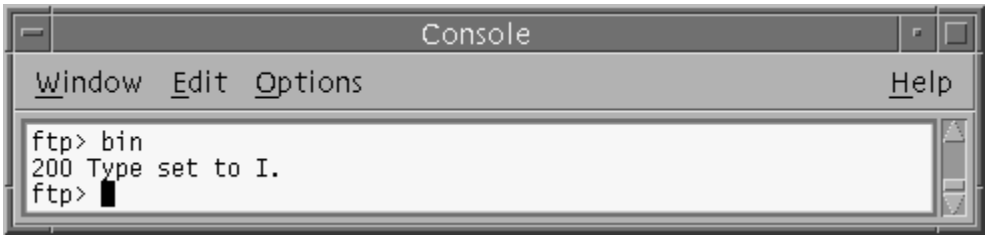
    dir and hit the *Enter* key.



17. Set the system into Binary mode. This is so that it receives the files correctly.

    At the command prompt, *ftp>*, type:

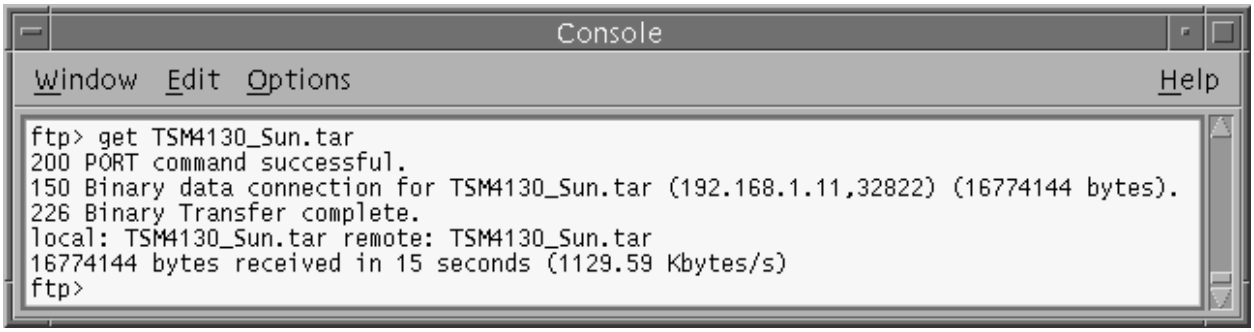
    bin and hit the *Enter* key.



18. Copy the file *TSM4130_Sun.tar*, from the */Patches/Tivoli/Server* directory on the *Master Server*, into the */Patches/Tivoli/Server* directory on your machine.

    At the command prompt, *ftp>*, type:

    get TSM4130_Sun.tar and hit the *Enter* key.



19. Change from the */Patches/Tivoli/Server* directory on your machine to the */Patches/Tivoli* directory.

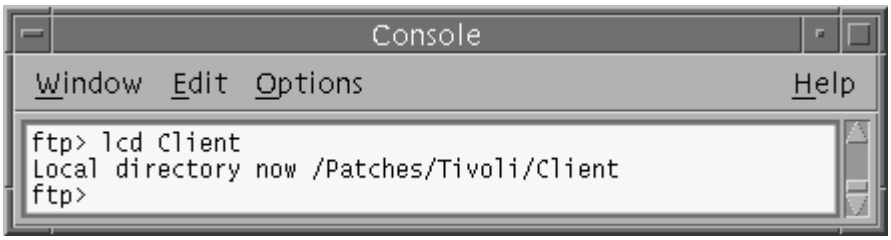
    At the command prompt, *ftp>*, type:

    lcd .. and hit the *Enter* key.

20. Change from the */Patches/Tivoli* directory on your machine to the */Patches/Tivoli/Client* directory.

    At the Command prompt, *ftp>*, type:

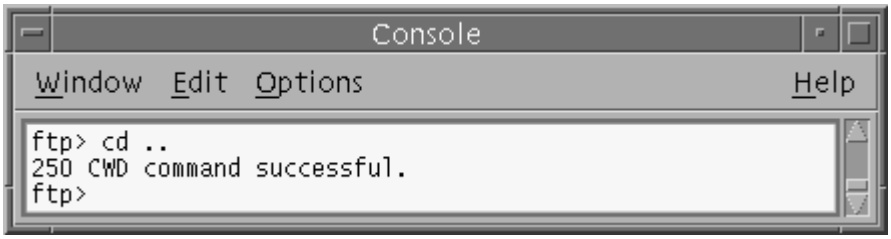
    lcd Client and hit the *Enter* key.



21. Change from the */Patches/Tivoli/Server* directory on the *Master Server* to the */Patches/Tivoli* directory.

    At the Command prompt, *ftp>*, type:

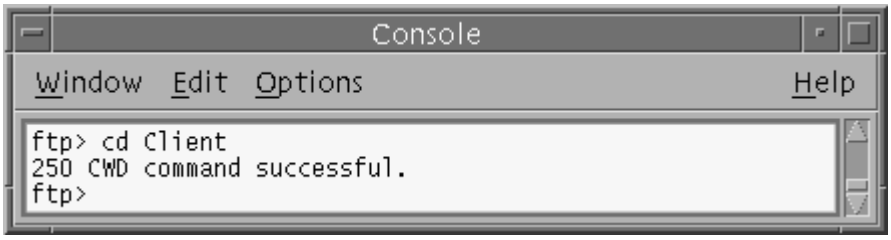
    cd .. and hit the *Enter* key.



22. Change from the */Patches/Tivoli* directory on the *Master Server* to the */Patches/Tivoli/Client* directory.

    At the Command prompt, *ftp>*, type:

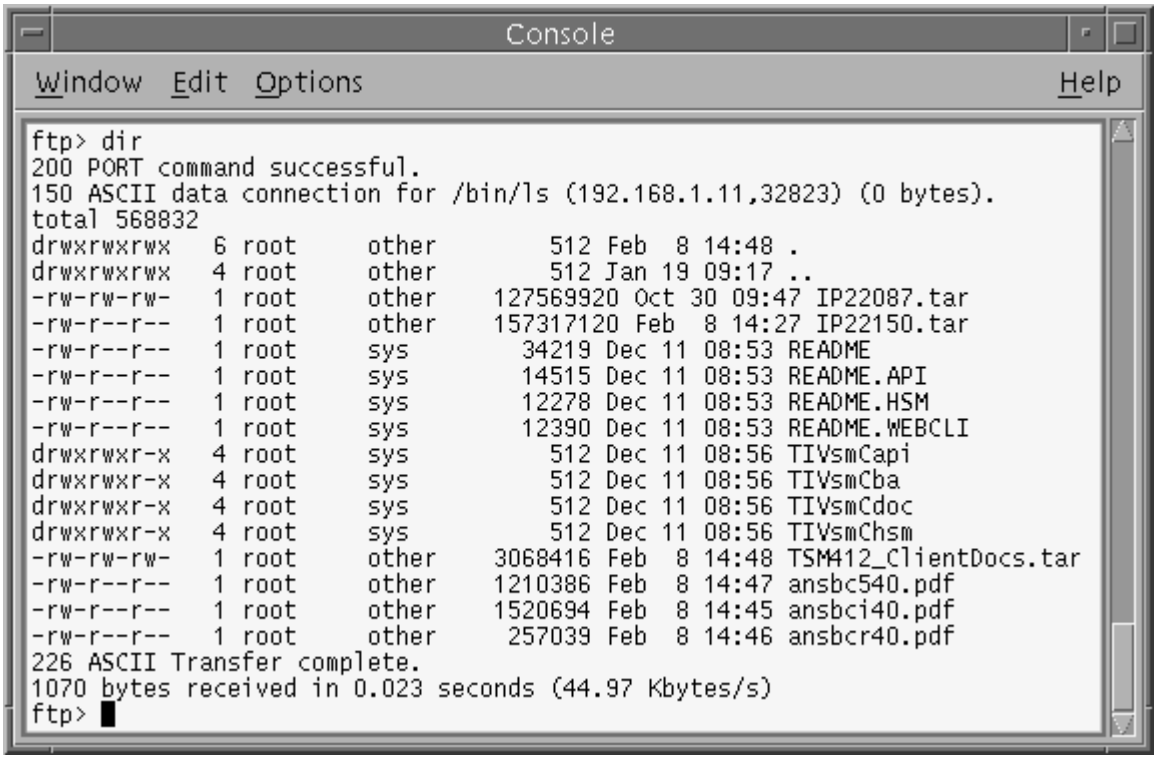
    cd Client and hit the *Enter* key.



23. Check to see what files are currently in the */Patches/Tivoli/Client* directory on the *Master Server*.

    At the Command prompt, *ftp>*, type:

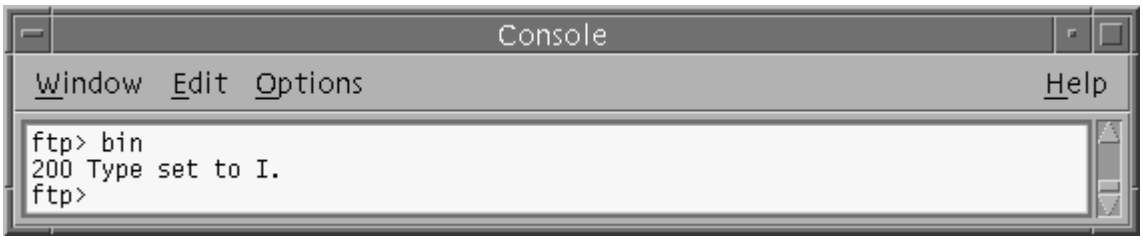
    dir and hit the *Enter* key.



24. Set the system into Binary mode.

    At the Command prompt, *ftp>*, type:

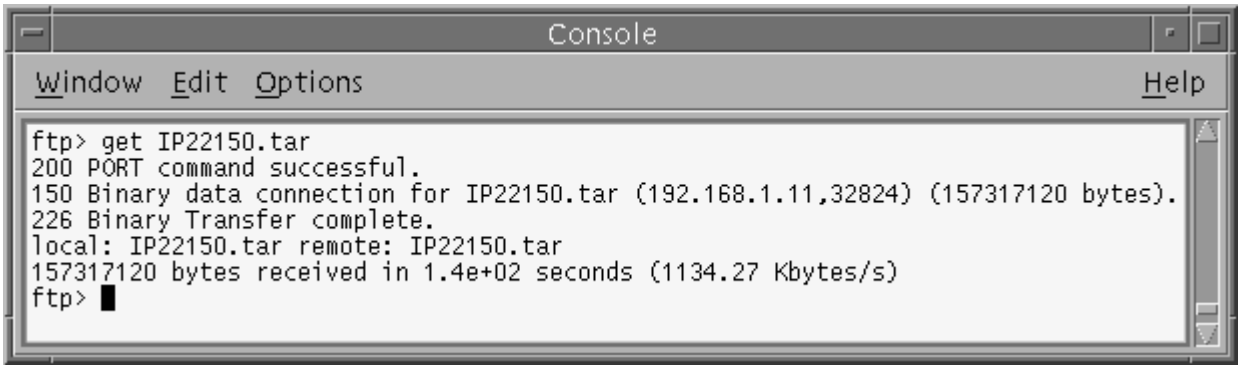
    bin and hit the *Enter* key.



25. Copy over the file *IP22150.TAR*, from the */Patches/Tivoli/Client* directory on the *Master Server*, into the */Patches/Tivoli/Client* directory on your machine.

    At the Command prompt, *ftp>*, type:

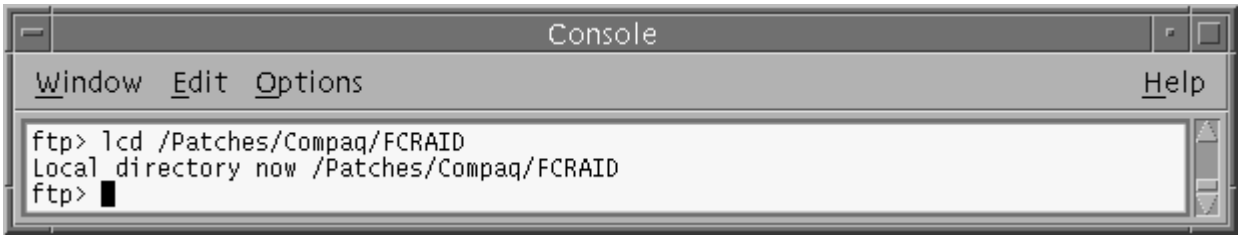
    get IP22150.tar and hit the *Enter* key.



26. Change back to the */Patches/Compaq/FCRAID* directory on your machine.

    At the command prompt, *ftp>*, type:

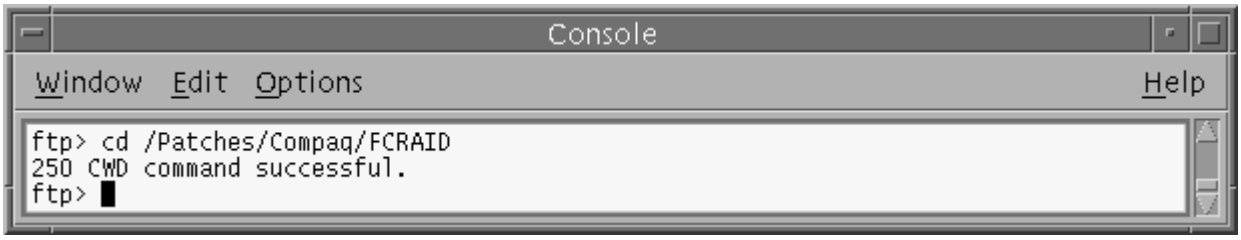
    lcd /Patches/Compaq/FCRAID hit *Enter*.



27. Go into the */Patches/Compaq/FCRAID* directory on the *Master Server*.

    At the command prompt, *ftp>*, type:

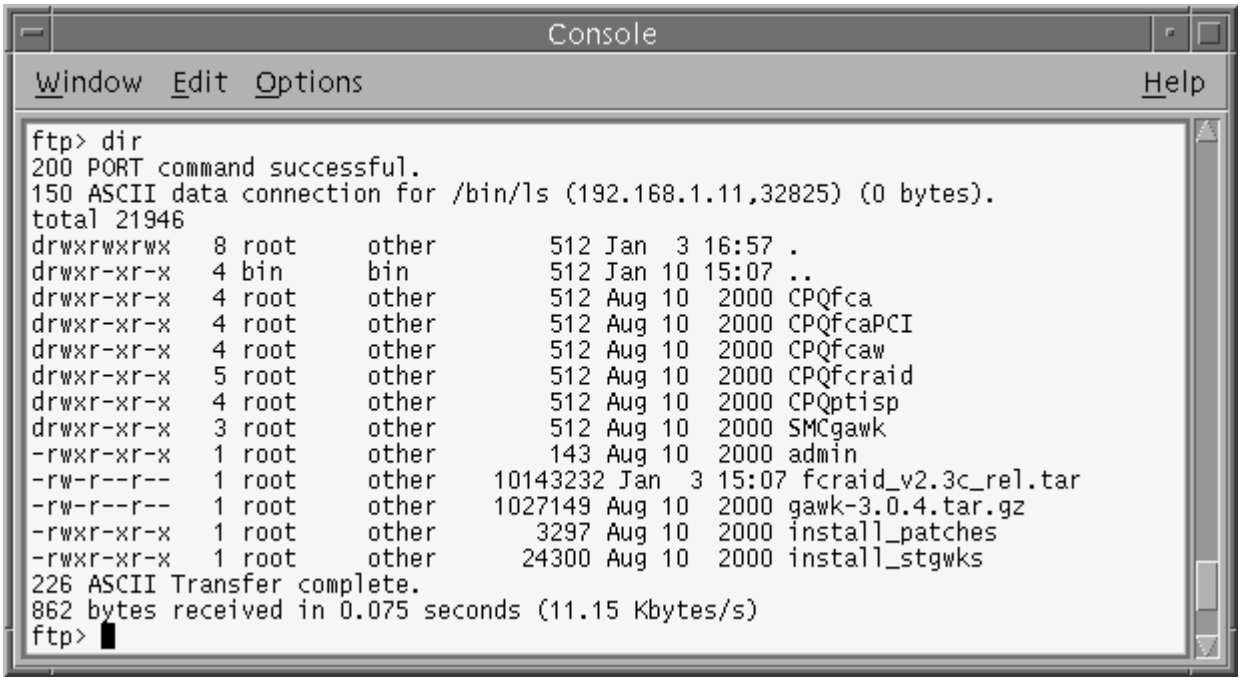
    cd /Patches/Compaq/FCRAID hit *Enter*.



28. Check to see what files are currently in the */Patches/Compaq/FCRAID* directory on the *Master Server*.

    At the Command prompt, *ftp>*, type:

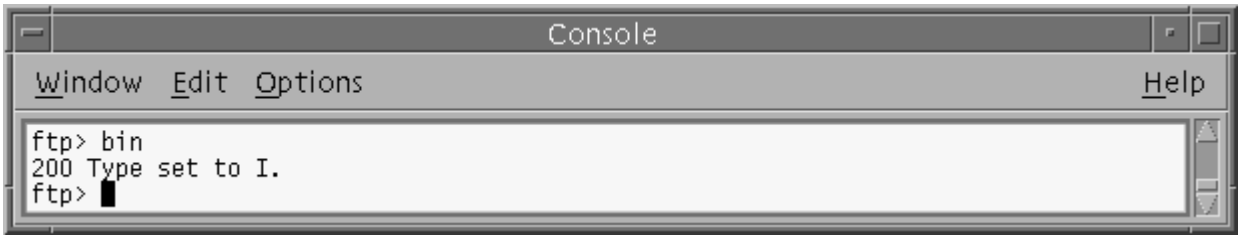
    dir hit *Enter*.



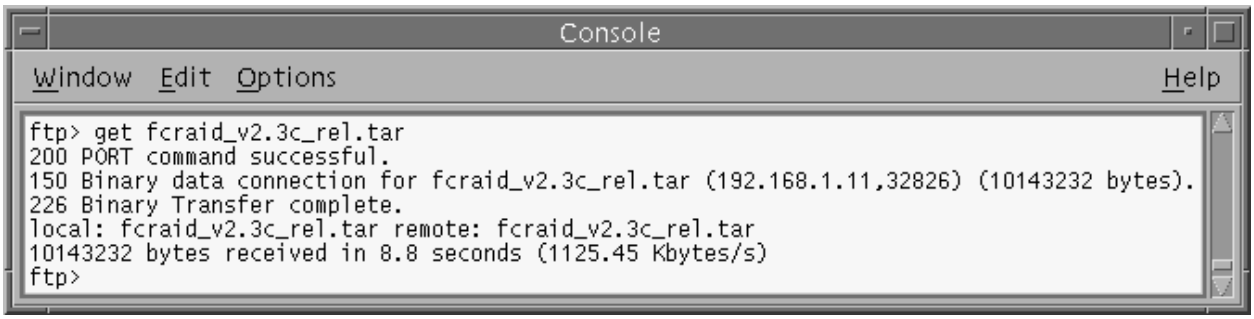
29. Once again make sure the system is in Binary mode.

    At the command prompt, #, type:

    bin and hit the *Enter* key.



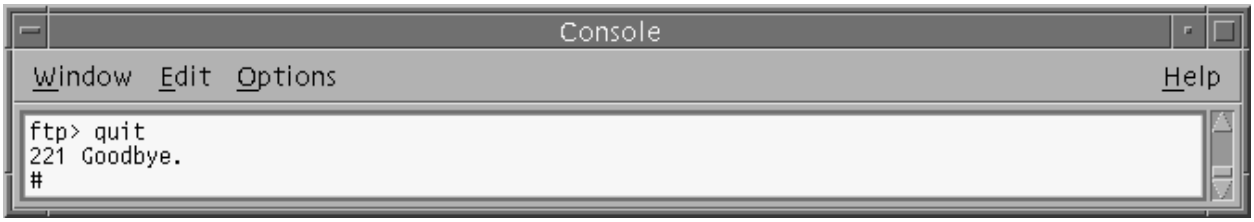
30. Now copy the *fcraid_v2.3c_rel.tar* from the */Patches/Compaq/FCRAID* directory on the *Master Server* to the */Patches/Compaq/FCRAID* on your machine



31. Drop the connection to the *Master Server*.

    At the Command prompt, *ftp>*, type:

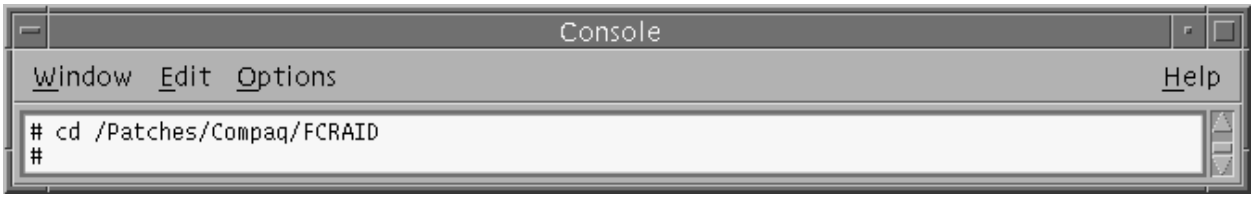
    quit and hit the *Enter* key.



32. Go into the */Patches/Compaq/FCRAID* directory on your machine.

    At the Command prompt, #, type:

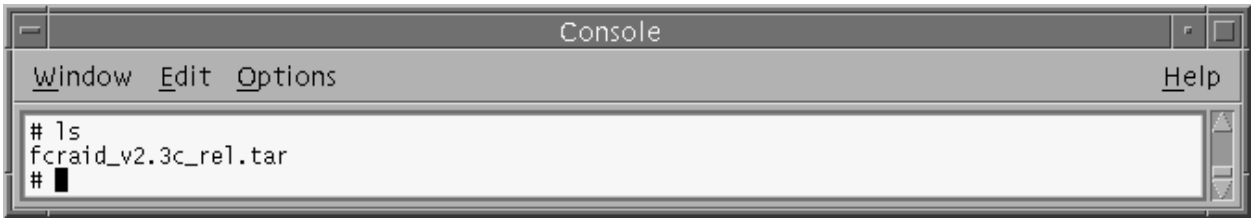
    cd /Patches/Compaq/FCRAID and hit the *Enter* key.



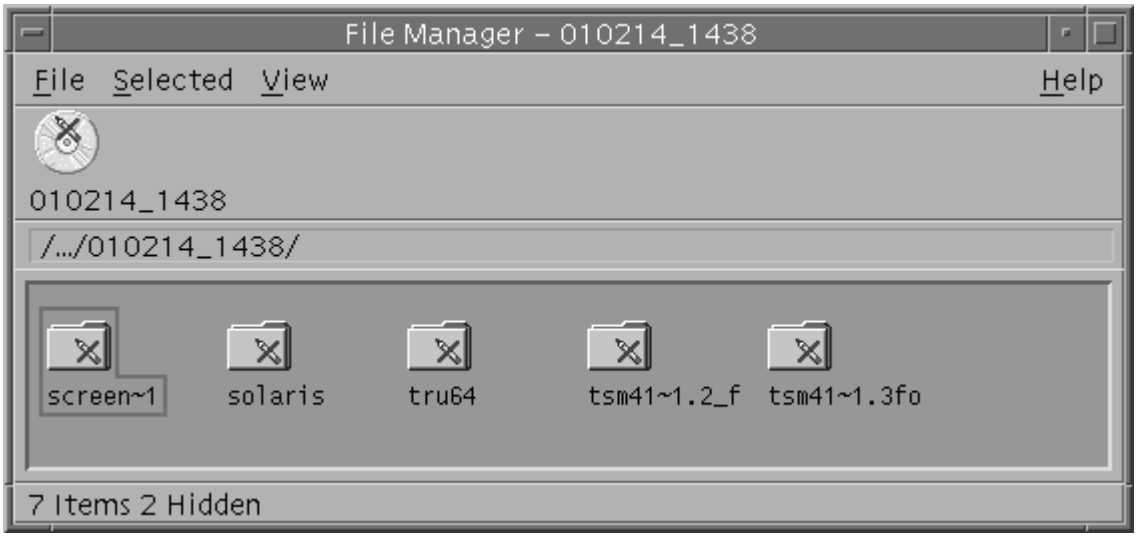
33. Check to see what files are currently in the */Patches/Compaq/FCRAID* directory.

    At the Command prompt, #, type

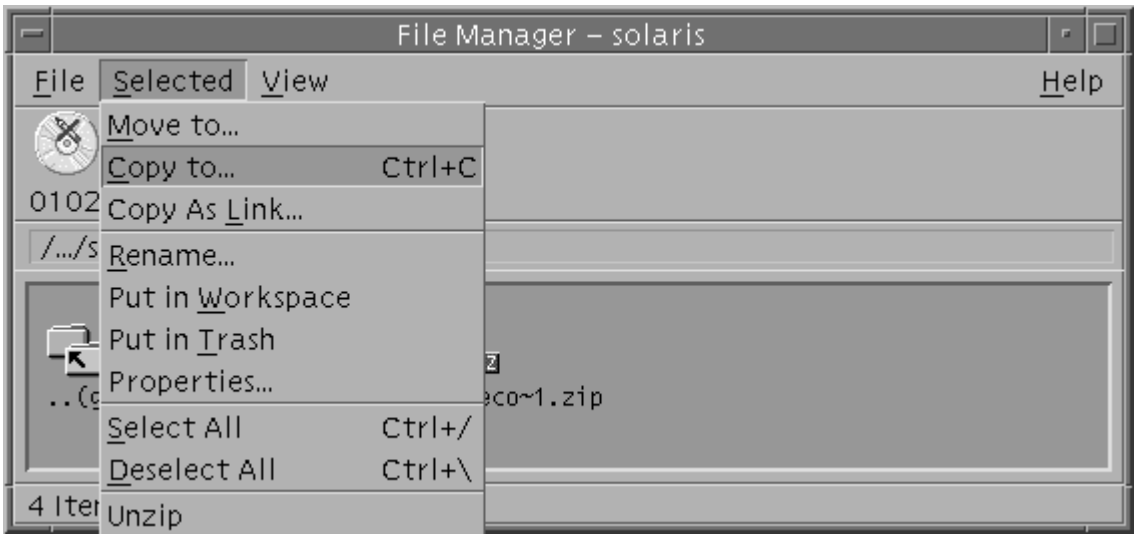
    ls, and hit the *Enter* key.


Console
Window Edit Options Help
ls
fcraid_v2.3c_rel.tar
#

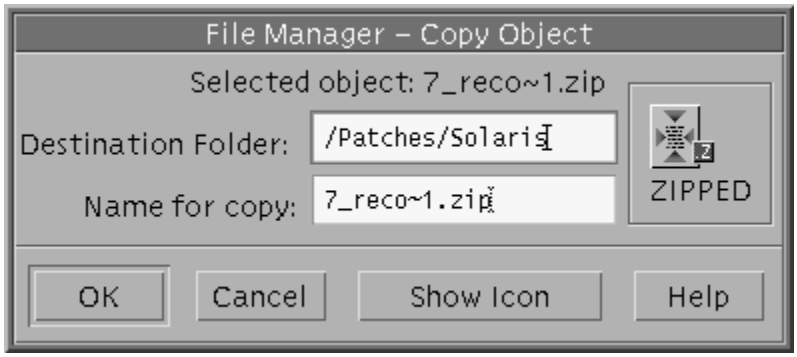
34. Insert the *Patches CD* into the cdrom drive. The *File Manager* window appears.



35. Find the *7_recommended* patch under the */Patches/Solaris* directory on the *Patches CD*. Select it and then click on *Selected and Copy to...*



36. The *Copy Object* window appears. Type in the Path where you want to copy the file and click *OK*.

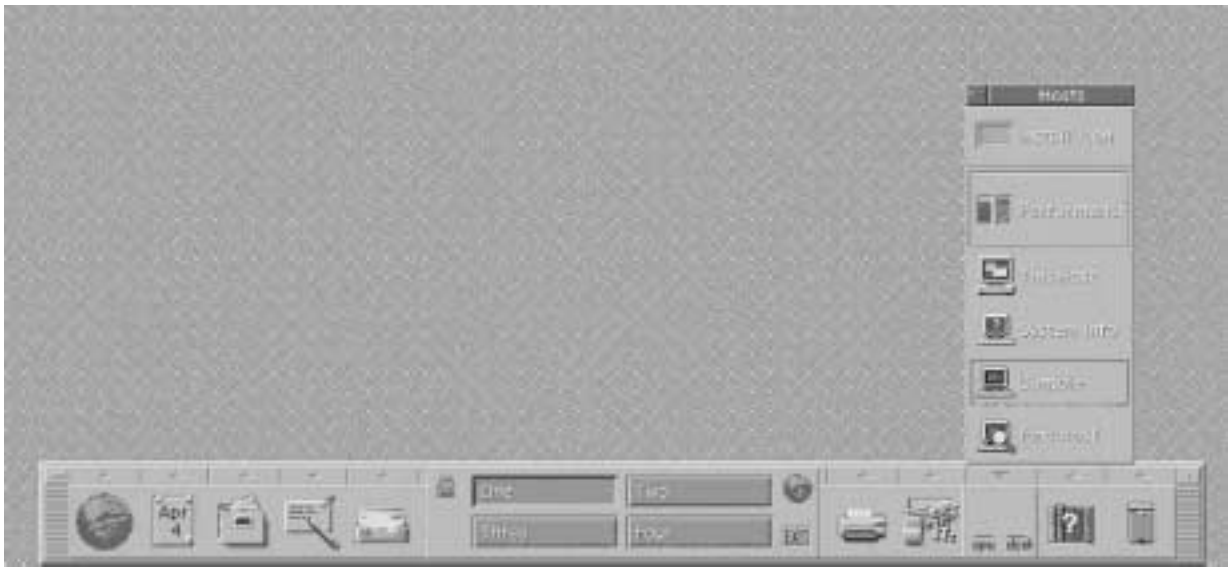


This Completes the Copying over of Patch files into the Patches directories

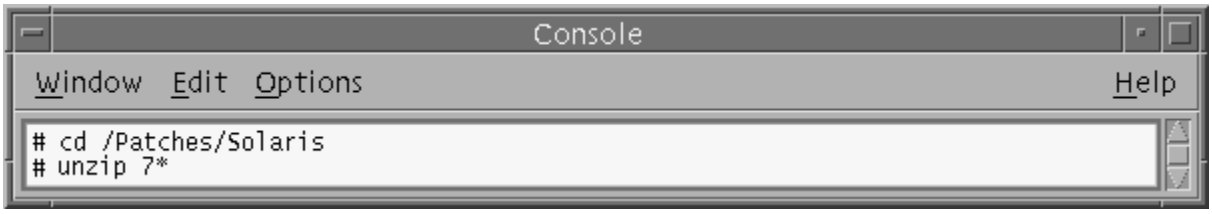
Step 3
Installing the 7_reccomended Patch

37. Open a Console window if one is not available

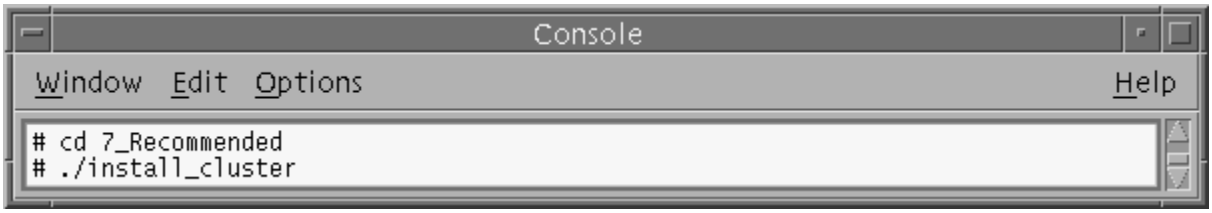
Note: Each Solaris Operating system has its own Patch. Solaris 7 has 7_recommended and Solaris 8 has 8_recommended.



38. The console window appears. Go into the */Patches/Solaris* directory and unzip the 7_recommended.zip file.

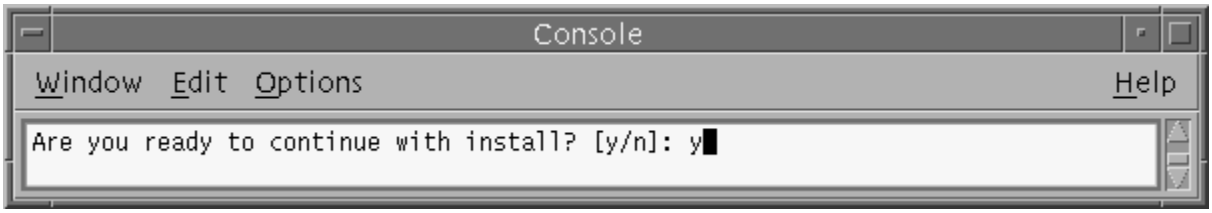


39. Change directories to the 7_Recommended directory and run the Cluster install.

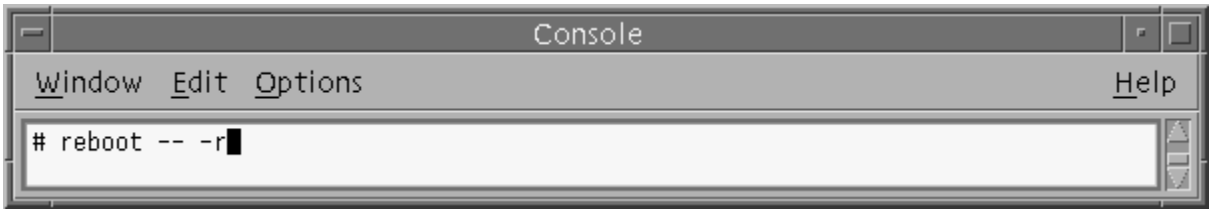


40. The below window appears, type y and hit enter.

Note: You may see errors during the installation. This is normal for the system is looking for software packages that you have not installed or needed to install..



41. Once complete, the system will take you to a system prompt, #. Tell the system to reboot.

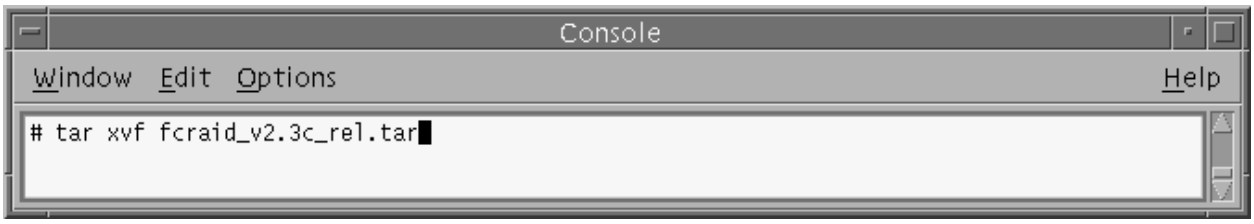


This completes the installation of the 7_recommended patch

Step 4
Installing the HBA driver

42. Go into the */Patches/Compaq/FCRAID* directory on your machine and expand the *fcraid_v2.3c_rel.tar* file.

    At the command prompt, #, type *tar xvf fcraid_v2.3c_rel.tar* and hit the *Enter* key.

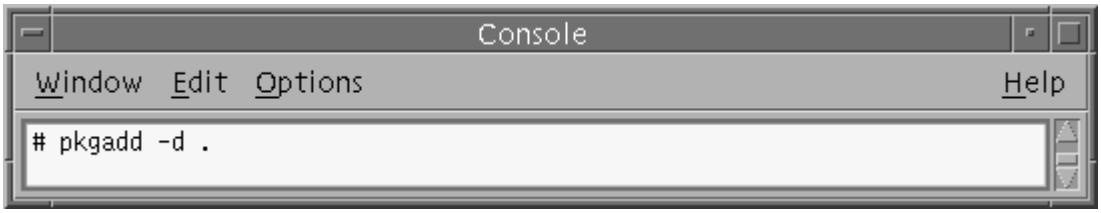


43. Now get a list of the packages available for installation.

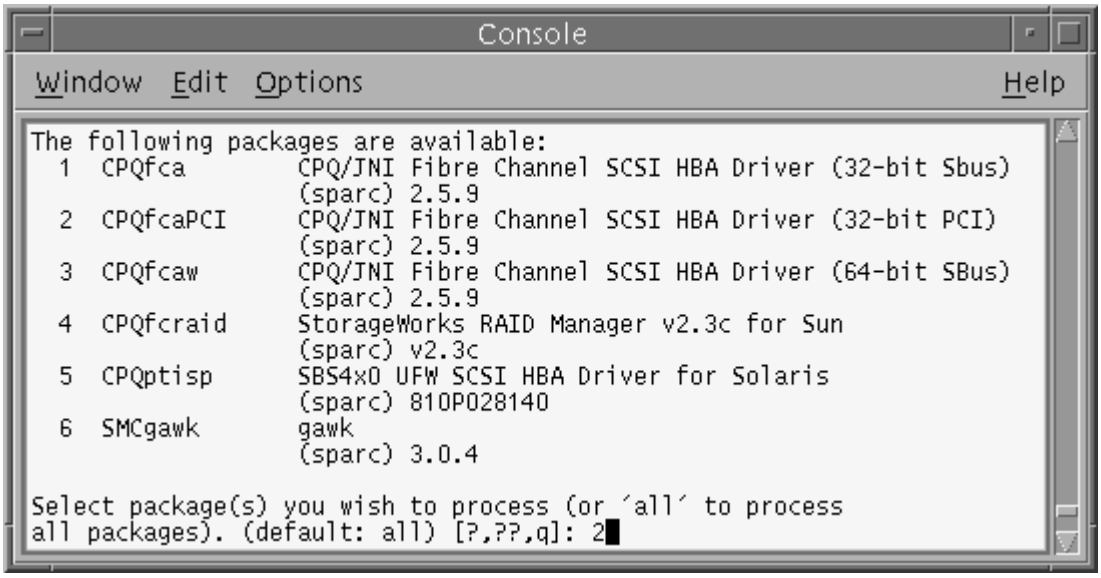
    Note: We are looking for the HBA driver package.

    At the command prompt, #, type:

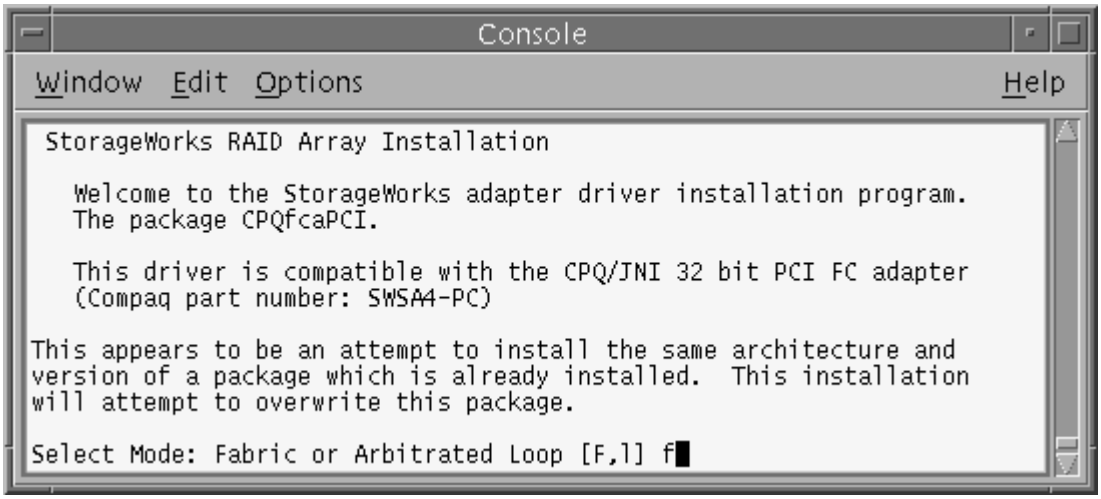
    pkgadd -d . and hit the *Enter* key.



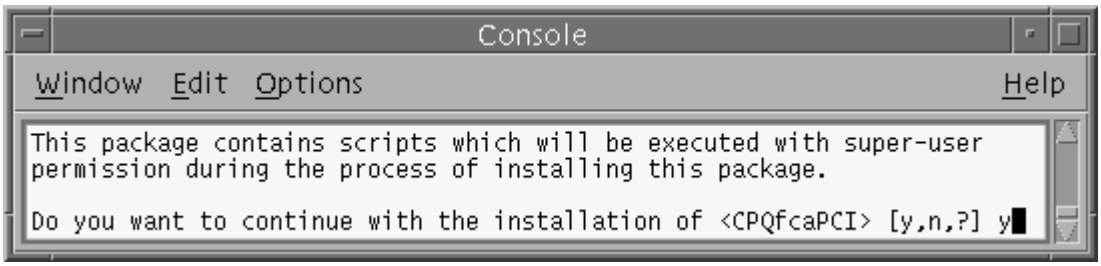
44. The list of available packages appears type *2* and hit the *Enter* Key.


Console
Window Edit Options Help
The following packages are available:
1 CPQfca CPQ/JNI Fibre Channel SCSI HBA Driver (32-bit Sbus)
(sparc) 2.5.9
2 CPQfcaPCI CPQ/JNI Fibre Channel SCSI HBA Driver (32-bit PCI)
(sparc) 2.5.9
3 CPQfcaw CPQ/JNI Fibre Channel SCSI HBA Driver (64-bit SBus)
(sparc) 2.5.9
4 CPQfcraid StorageWorks RAID Manager v2.3c for Sun
(sparc) v2.3c
5 CPQptisp SBS4x0 UFW SCSI HBA Driver for Solaris
(sparc) 810P028140
6 SMCgawk gawk
(sparc) 3.0.4
Select package(s) you wish to process (or ´all´ to process
all packages). (default: all) [?,??,q]: 2

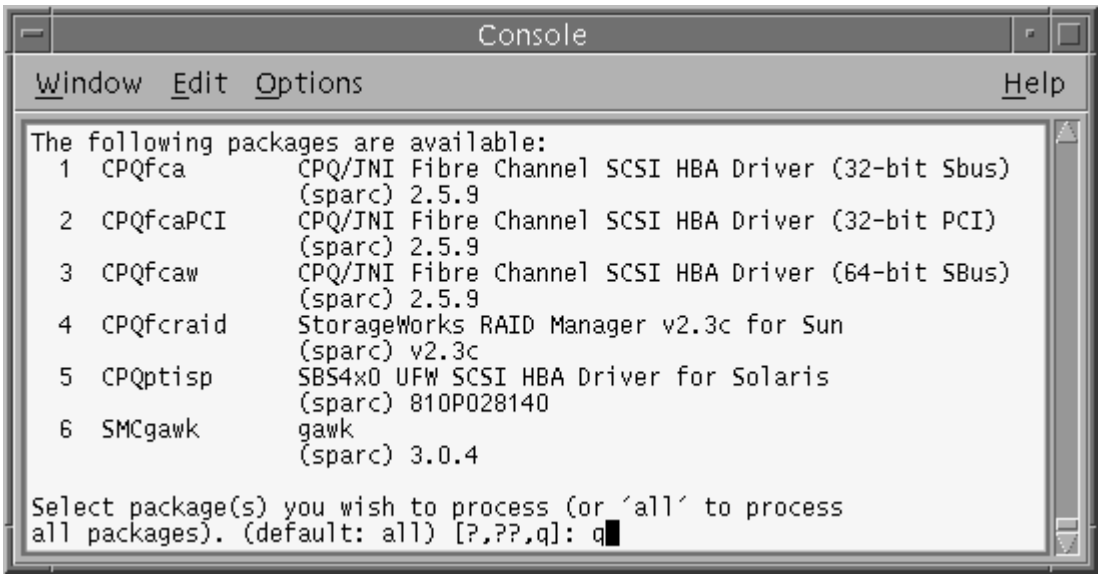
45. The system will then ask you to *Select Mode: Fabric or Arbitrated Loop* type *F* and hit the *Enter* key.



46. The following statement appears, type *y* and hit *Enter*.



47. Once the installation is complete, the system will list the available packages again. Type "*q*" and hit the *Enter* key.



Note: The *TSM4130_Sun.tar* has been copied over to the */Patches/Tivoli/Server* directory, the *IP22150.tar* has been copied to the */Patches/Tivoli/Client* directory, and the *fcraid_v2.3c_rel.tar* has been copied to the */Patches/Compaq/FCRAID* directory and installed.

This Completes Installing the HBA Drivers

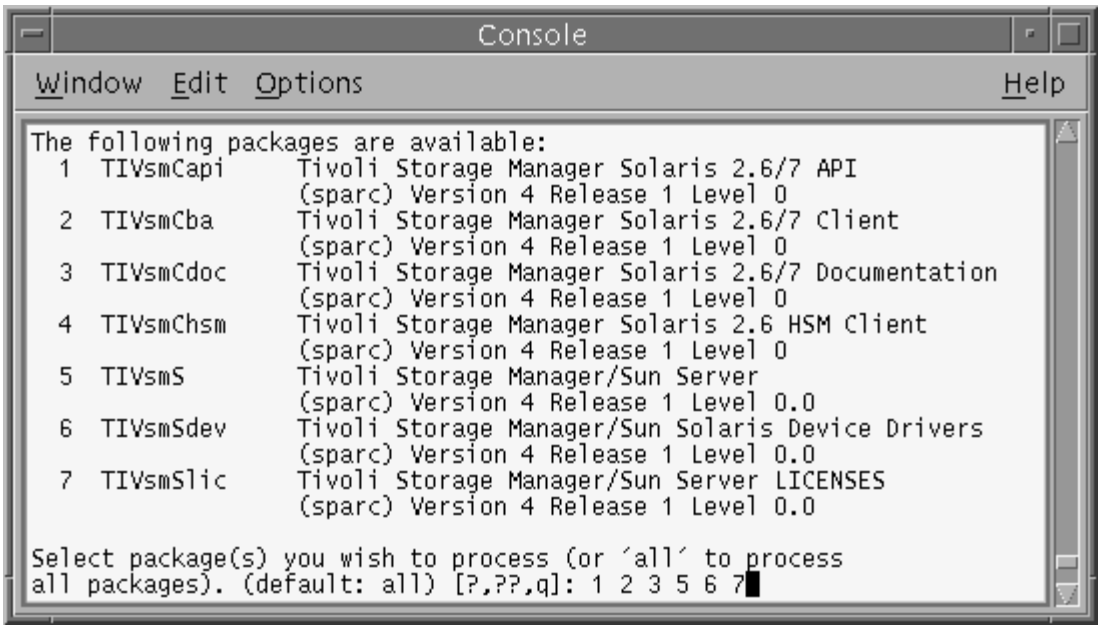
Step 5
Initial Installation of Tivoli 4.1.0

48. Insert the TSM CD into the CDROM drive. In the *Console* window type the following command:

    /usr/sbin/pkgadd –d /cdrom/cdrom0 then hit the *Enter* key.

49. The list of available packages appears. Enter the number that corresponds to the *server packages* that you want to install then hit *Enter*.

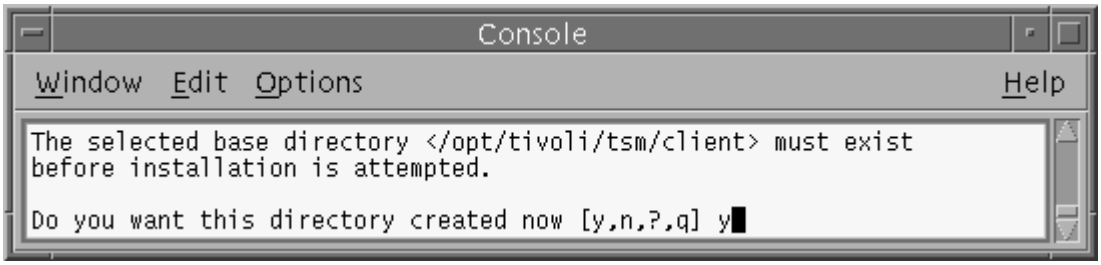
    Note: Install all of the packages except the *TIVsmChsm*. HSM is not currently supported by Compaq.



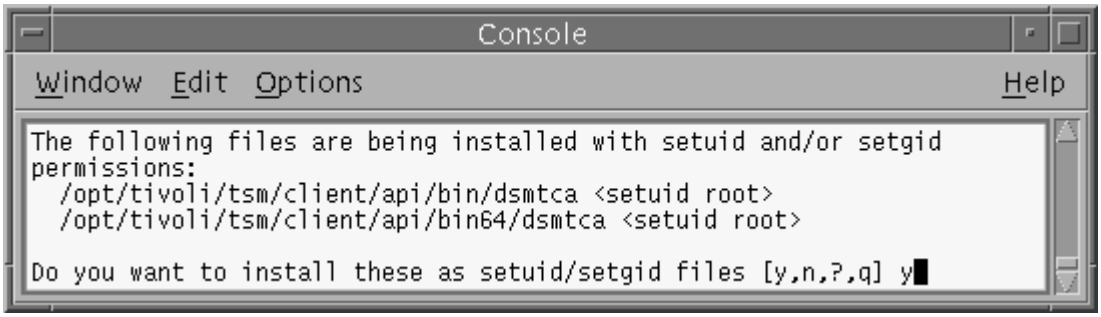
50. The below statement appears, type *y* and hit *Enter*

    Do you want to create the directory?

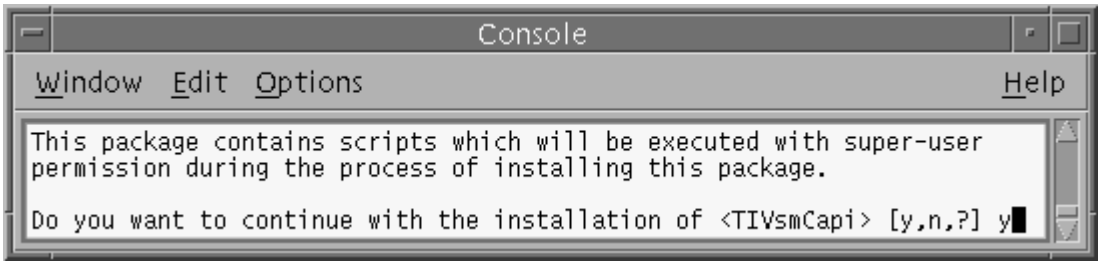
    </opt/tivoli/tsm/client>



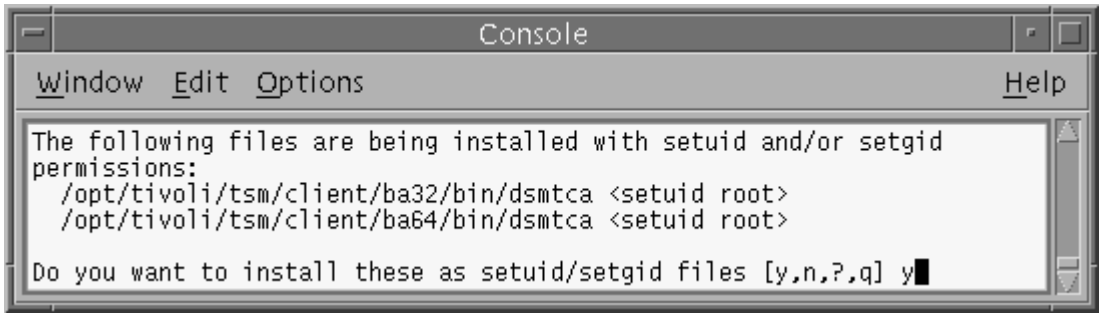
51. The below statement appears, type *y* and hit *Enter*



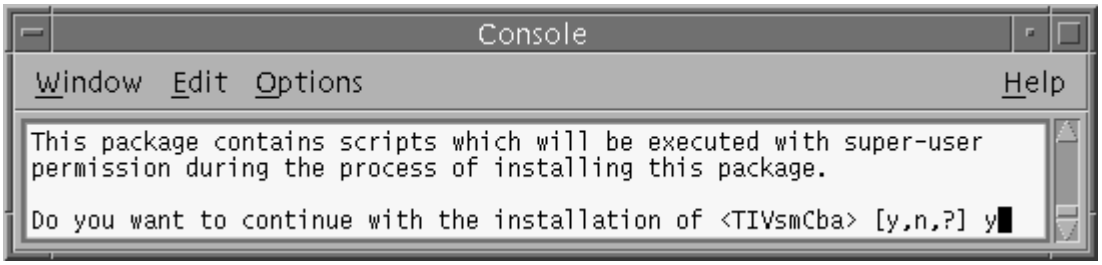
52. The below statement appears, type *y* and hit *Enter*



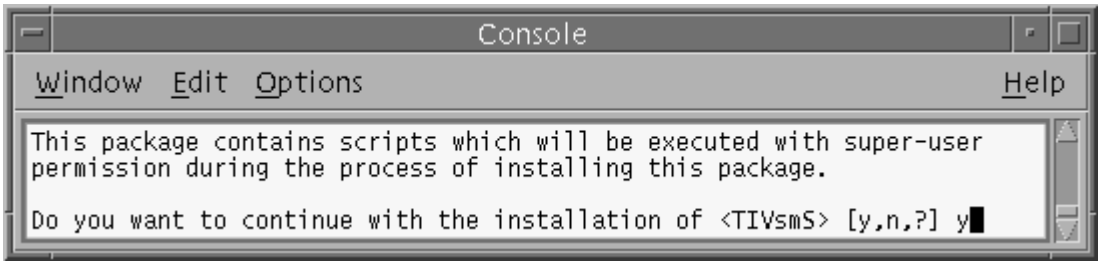
53. The below statement appears, type *y* and hit *Enter*


Console
Window Edit Options Help
The following files are being installed with setuid and/or setgid
permissions:
/opt/tivoli/tsm/client/ba32/bin/dsmtca <setuid root>
/opt/tivoli/tsm/client/ba64/bin/dsmtca <setuid root>
Do you want to install these as setuid/setgid files [y,n,?,q] y

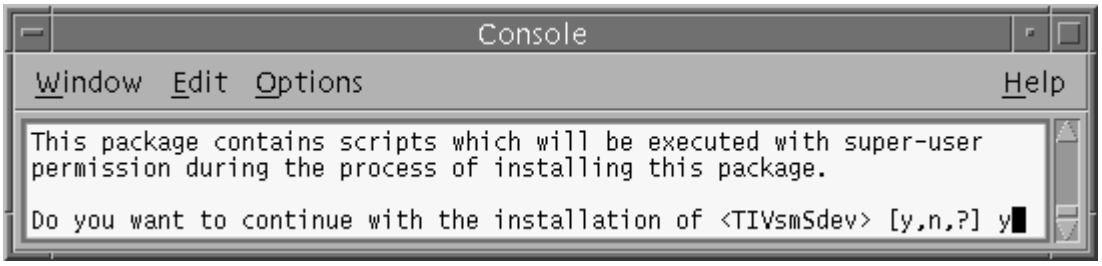
54. The following statement appears, type *y* and hit *Enter*



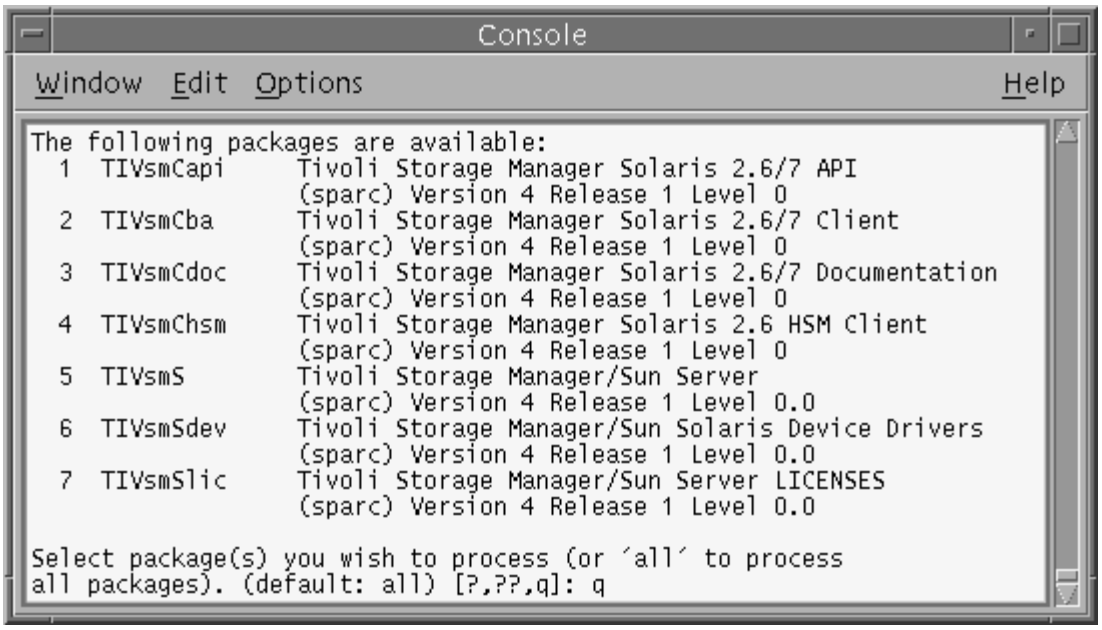
55. The following statement appears, type *y* and hit *Enter*



56. The following statement appears, type *y* and hit *Enter*

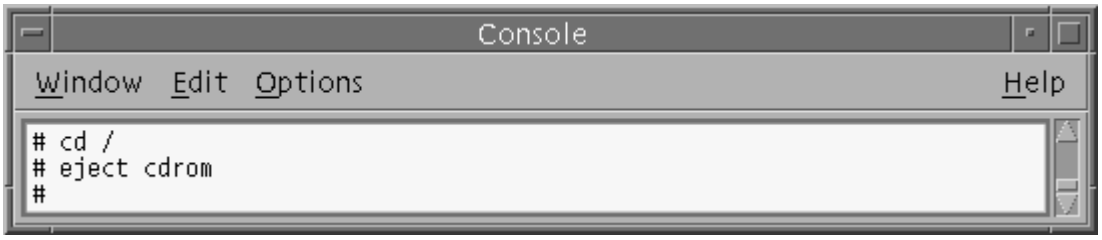


57. Once complete, the system will again ask which packages to install. Type "*q*" hit *Enter*.



58. Eject the CD-ROM and remove the CD from it.

    At the command prompt, #, type the below commands and hit enter after each.



This completes the initial installation of Tivoli

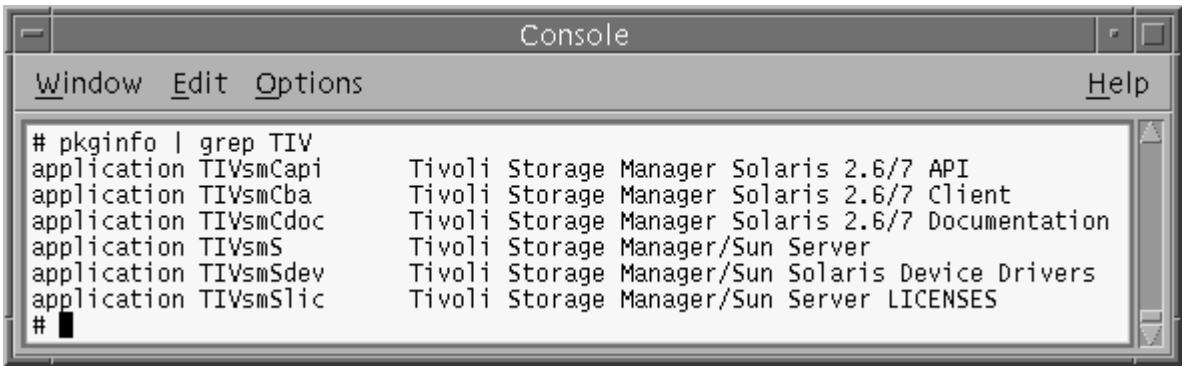
Step 6
Uninstalling Tivoli 4.1.0

59. Check to see which *Tivoli* packages are currently installed.

    At the command prompt, type:

    pkginfo | grep TIV and hit *Enter*.

    Note: The window will display the list of server packages that are installed.

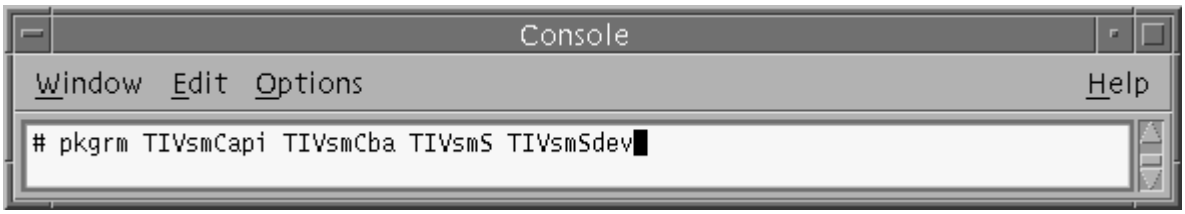


60. Remove everything except *TIVsmCdoc* and *TIVsmSlic*.

    At the command prompt, #, type:

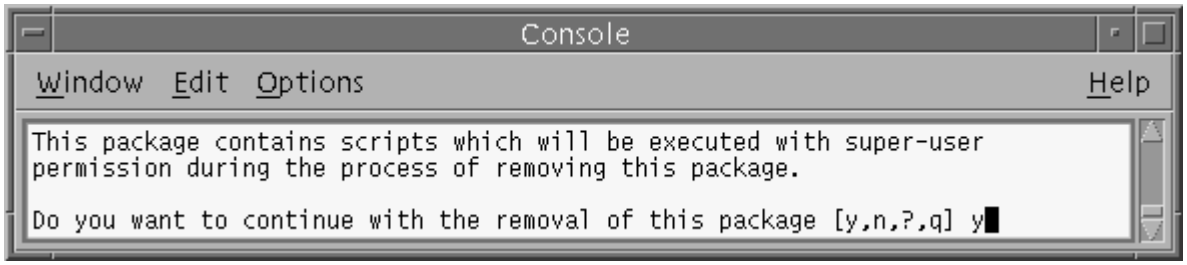
    pkgrm TIVsmCapi TIVsmCba TIVsmS TIVsmSdev and hit *Enter*.

    Note: You can remove one or more server packages at the same time.



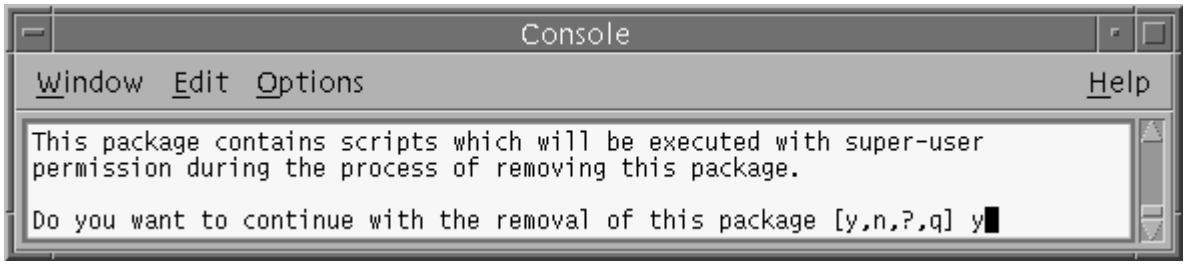
61. The following statement appears, type *y* and hit *Enter*.

62. The following statement appears, type *y* and hit *Enter*.



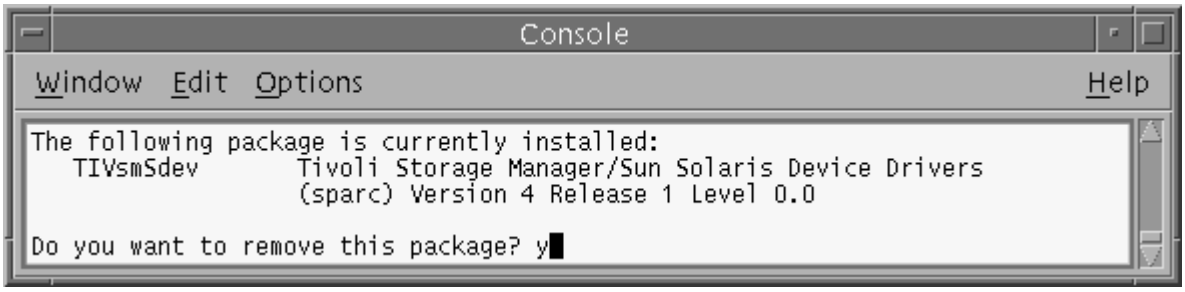
63. The following statement appears type *y* and hit *Enter*.

64. The following statement appears type *y* and hit *Enter*.

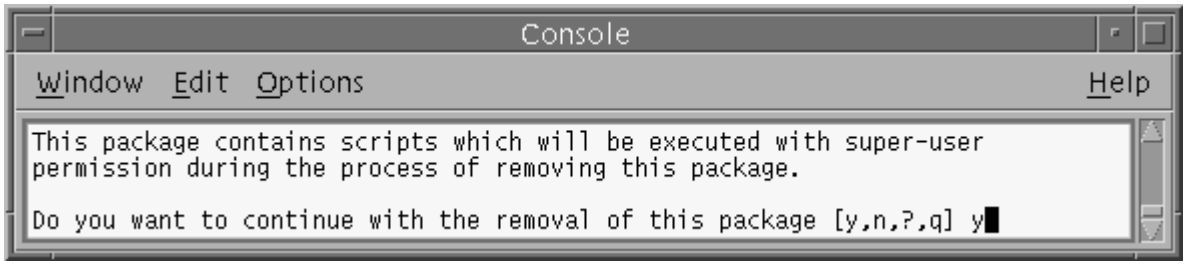


65. The following statement appears type *y* and hit *Enter*.

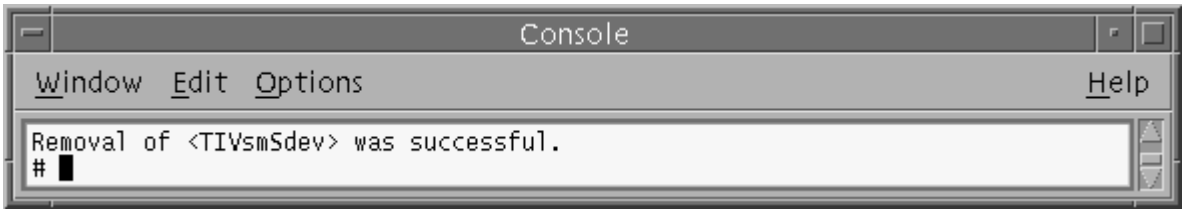
66. The following statement appears type *y* and hit *Enter*.



67. The following statement appears type *y* and hit *Enter*.



68. Once the removals of the packages are complete the system will take you to the command prompt, #.



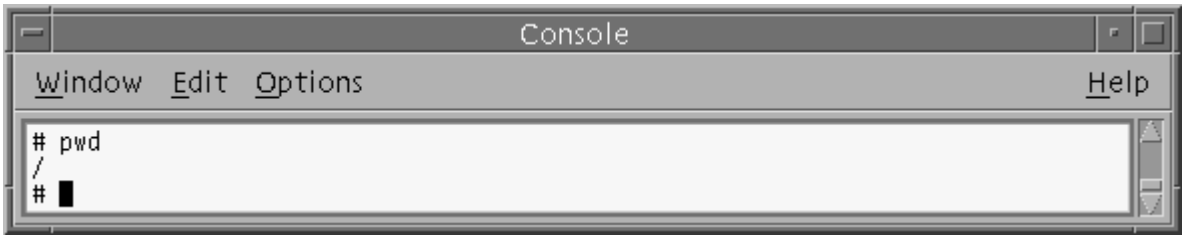
This completes the uninstallation of Tivoli portion of the lab.

Step 7
Installing the Tivoli Patch 4.1.3

69. Check to verify which directory you are currently in.

    At the command prompt, #, type:

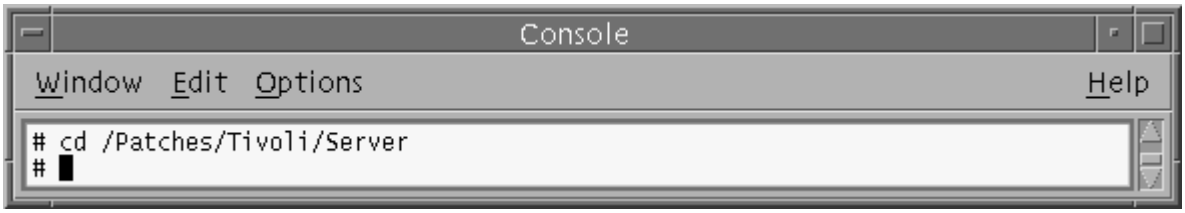
    pwd and hit *Enter*.



70. Go into the */Patches/Tivoli/Server* directory on your computer.

    At the command prompt, #, type:

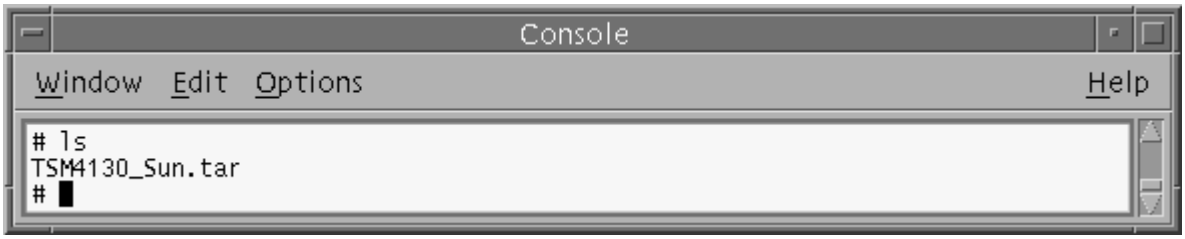
    cd /Patches/Tivoli/Server and hit *Enter*.



71. Check to see what files are currently in the */Patches/Tivoli/Server* directory.

    At the command prompt, #, type:

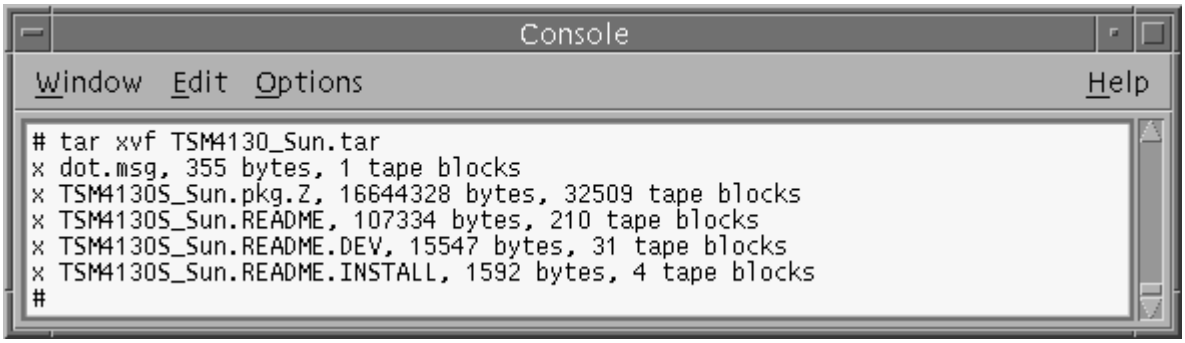
    ls and hit *Enter*.



72. Expand the *TSM4130_Sun.tar* into the */Patches/Tivoli/Server* directory to your computer.

    At the command prompt, #, type:

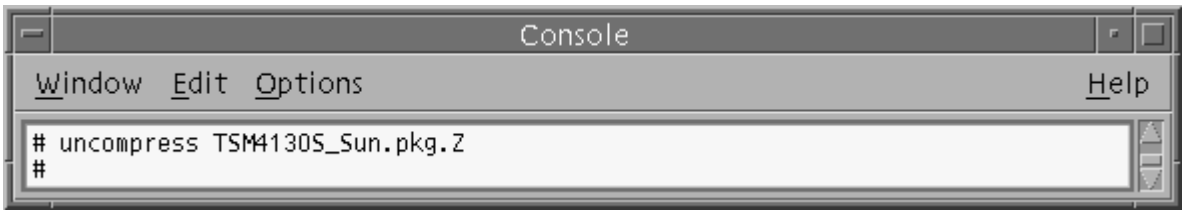
    tar xvf tsm4130_Sun.tar and hit *Enter*.



73. Uncompress the file *TSM4130S_Sun.pkg.Z* in the */Patches/Tivoli/Server* directory.

    At the command prompt, #, type:

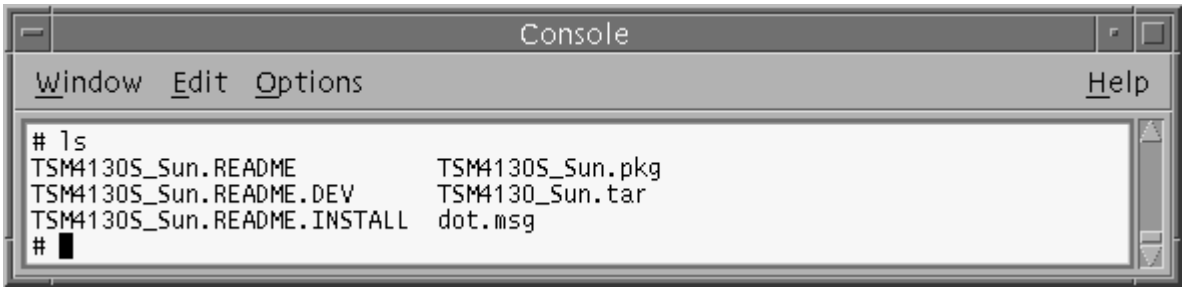
    uncompress TSM4130S_Sun.pkg.Z and hit *Enter*.



74. Check to see what files decompressed in the */Patches/Tivoli/Server* directory.

    At the command prompt, #, type:

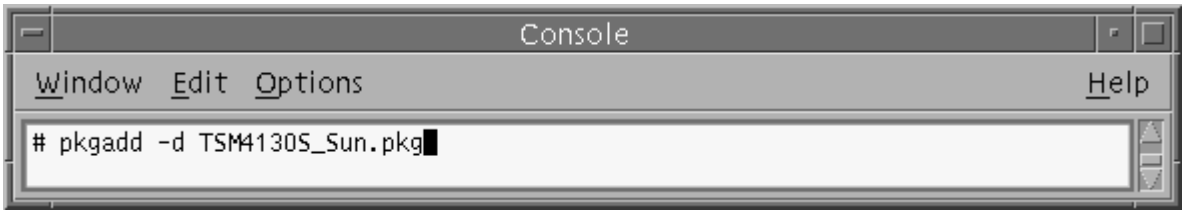
    ls and hit *Enter*.



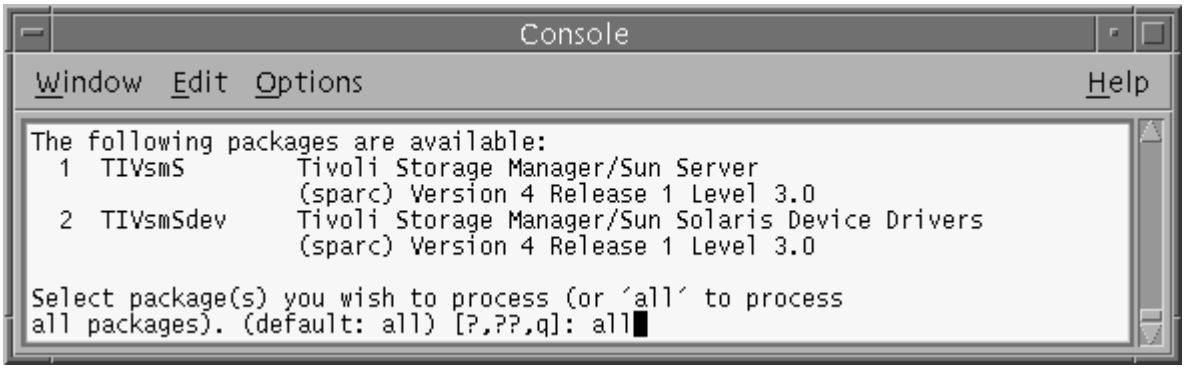
75. Check to see what Server packages you have available to install.

    At the command prompt, #, type:

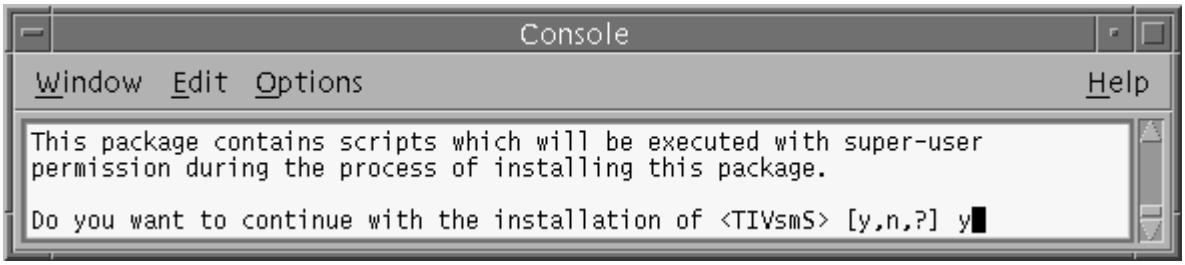
    pkgadd –d TSM4130S_Sun.pkg and hit *Enter*.



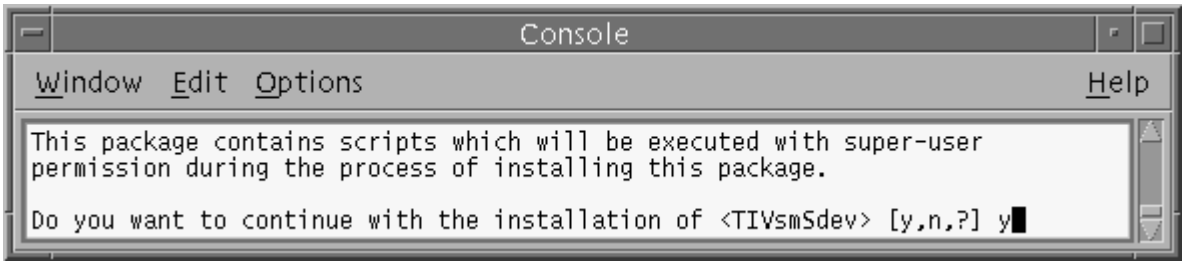
76. It will ask you what server packages you want to install, the default is *all*, so hit *Enter*.



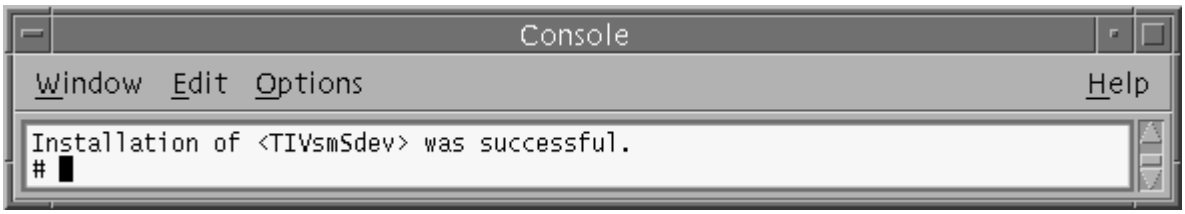
77. The following statement appears type *y* and hit *Enter*.



78. The following statement appears type *y* and hit *Enter*.



79. Once the installation is complete, the system will take you to the system prompt, #.



80. Go to the */Patches/Tivoli/Client* directory on your machine and to list the files in that directory.

    At the command prompt, *#*, type

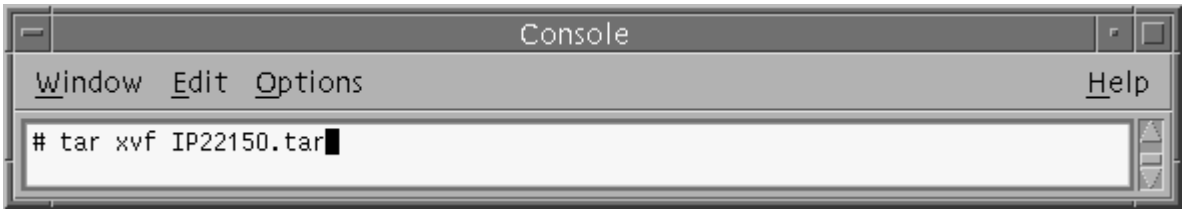
    cd /Patches/Tivoli/Client and hit *Enter*.

    ls and hit *Enter*

81. Expand the *IP22150.tar* file in the */Patches/Tivoli/Client* directory.

    At the command prompt, *#*, type:

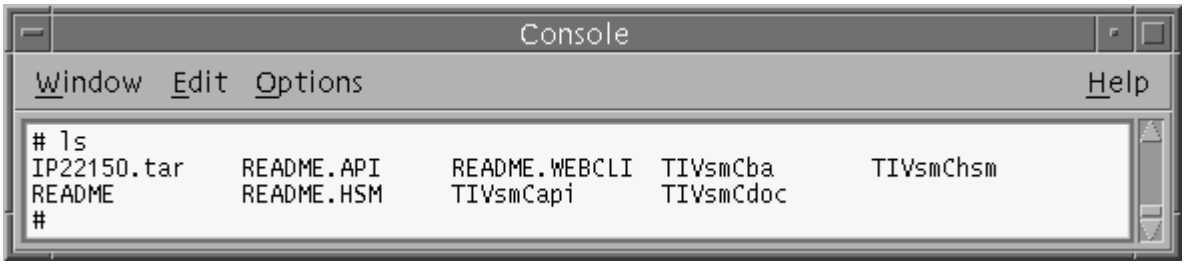
    tar xvf IP22150.tar and hit *Enter*.



82. View the files listed in the */Patches/Tivoli/Client* directory on you machine.

    At the command prompt, #, type

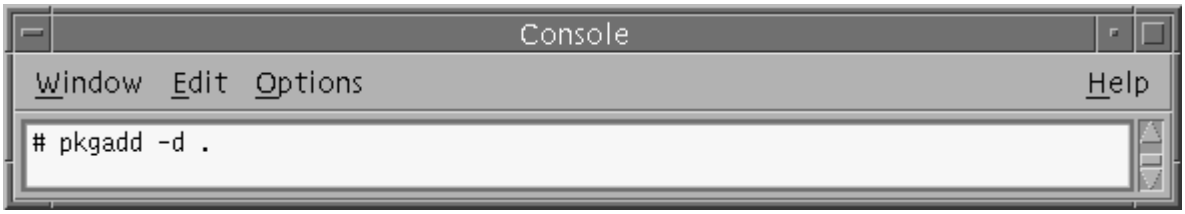
    ls and hit *Enter*



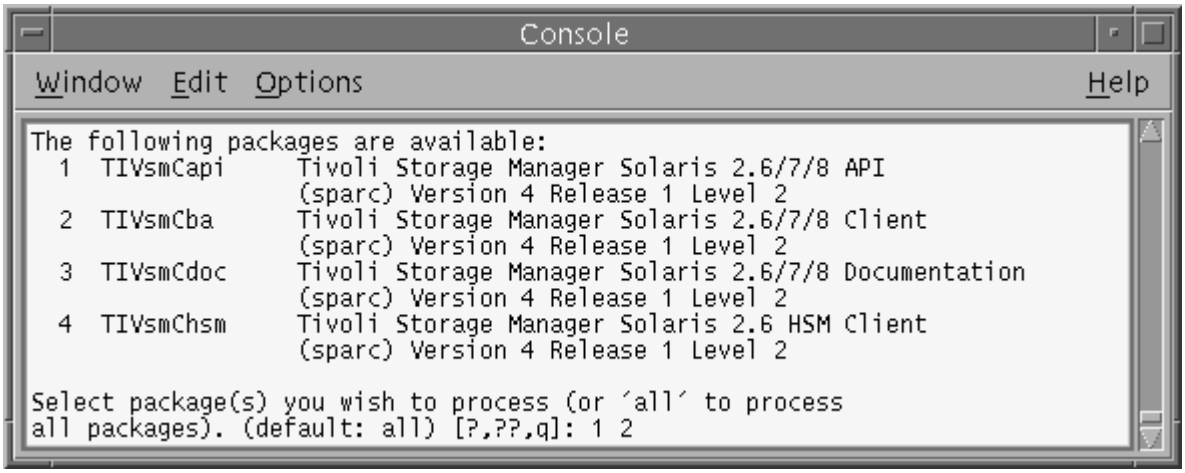
83. Check to see what files decompressed in the */Patches/Tivoli/Client* directory.

    At the command prompt, #, type:

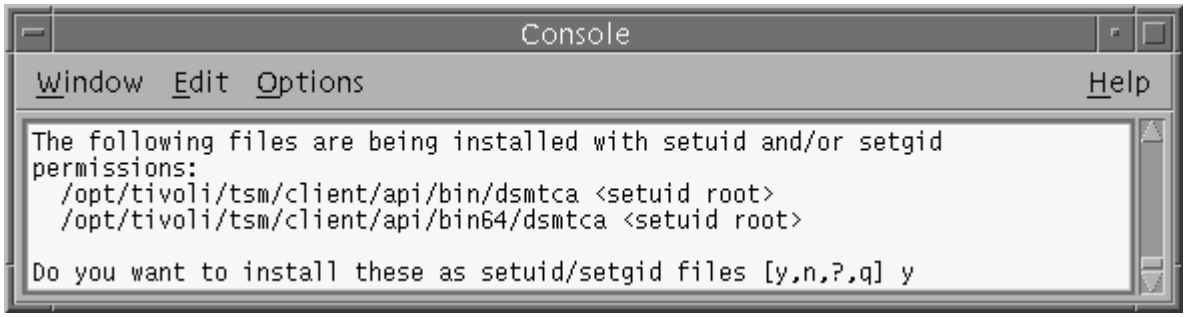
    pkgadd –d . and hit *Enter*.



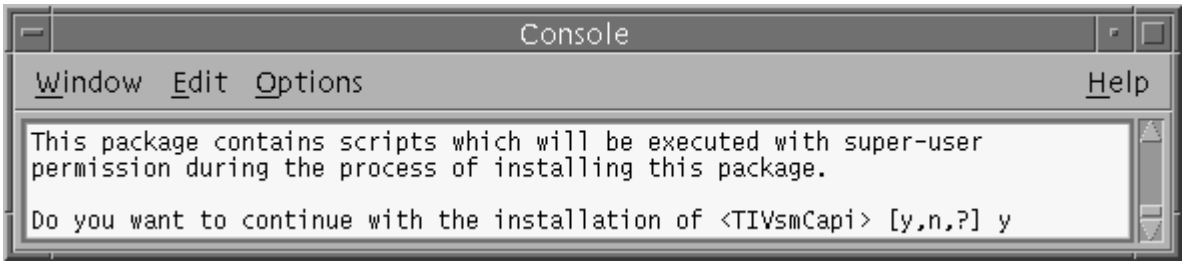
84. The list of available packages will appear. Select only *TIVsmCapi* and *TIVsmCba*. Type *1 2* and hit *Enter*.



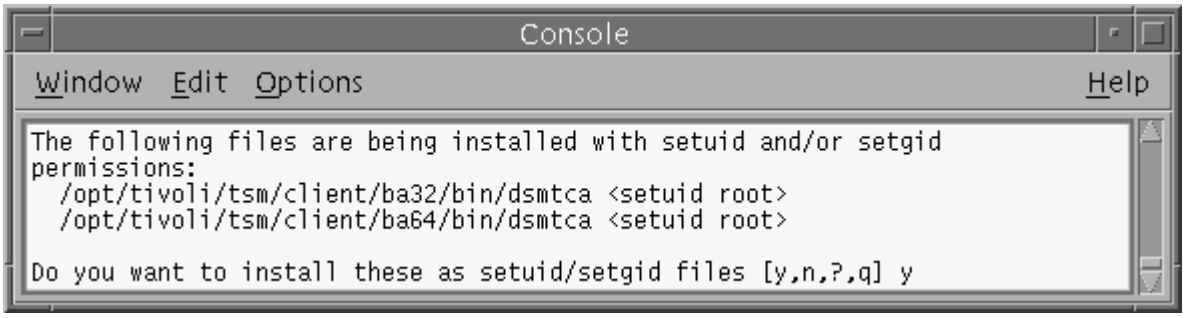
85. The following statement appears type *y* and hit *Enter*.



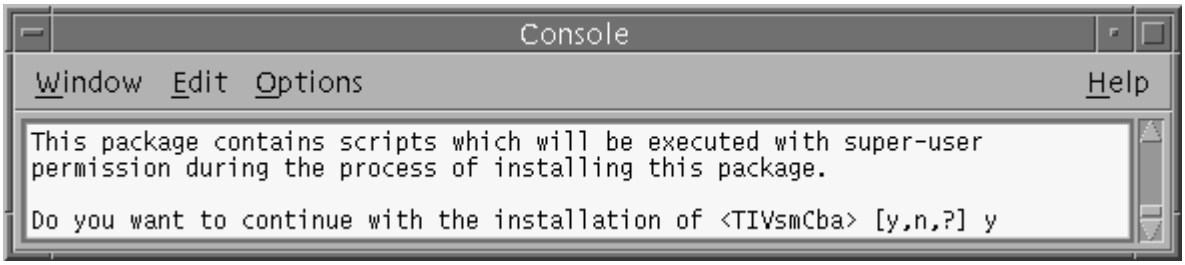
86. The following statement appears type *y* and hit *Enter*.



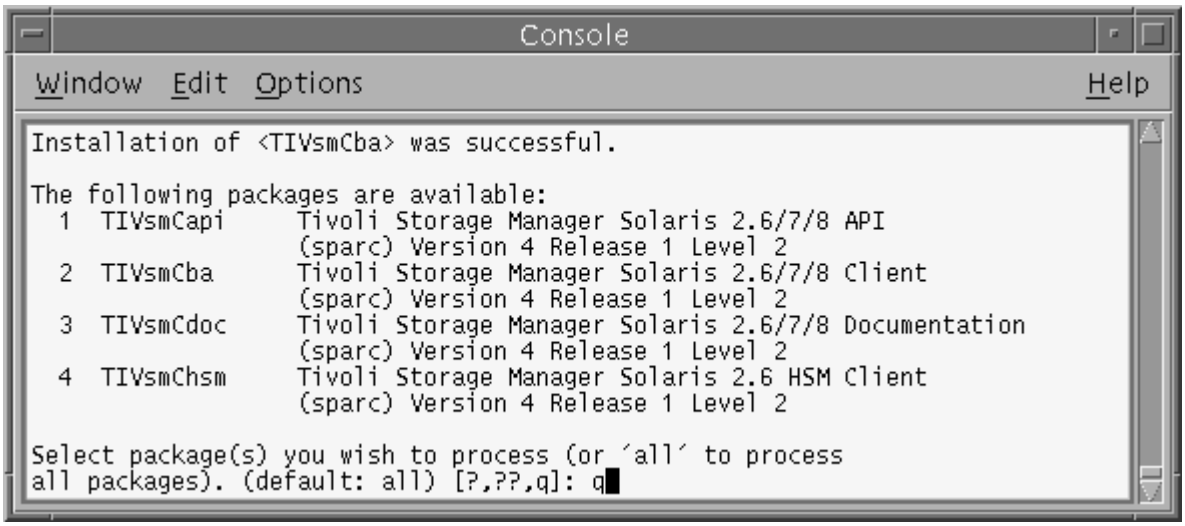
87. The following statement appears type *y* and hit *Enter*.



88. The following statement appears type *y* and hit *Enter*.



89. The list of available packages will appear again. Type "*q*", and hit *Enter* to quit. This will take you back to the system prompt, #.



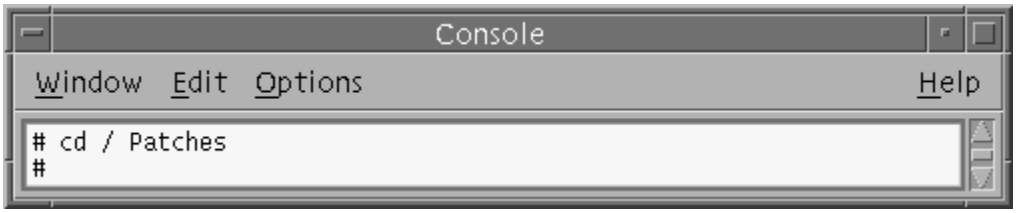
This Completes the Installation of the *Tivoli* patch

Step 8
HBA Configuration

90. Go into the patches directory

    At the system prompt, #, type

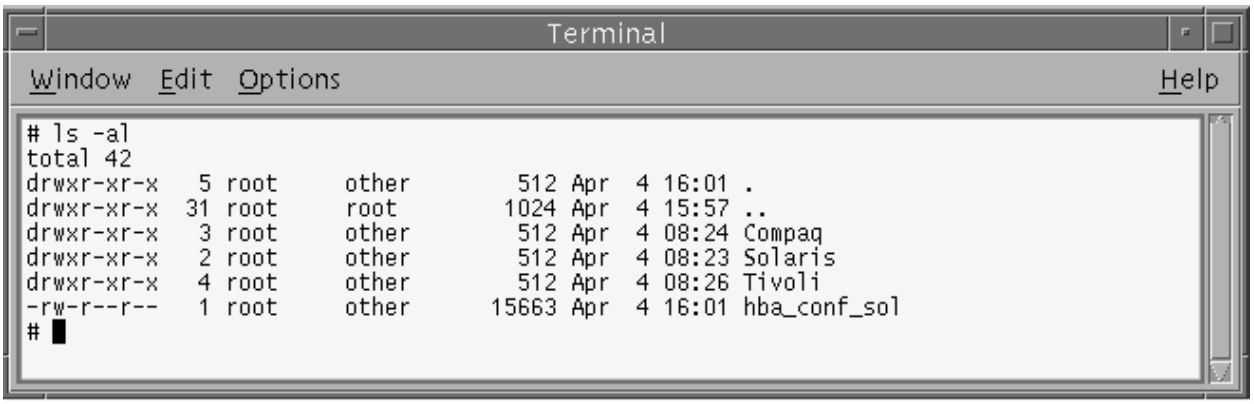
    cd /Patches and hit *Enter*.



91. View the information in the directory.

    At the system prompt, #, type

    ls –al and hit *Enter*.



92. Notice that the status of the *hba_conf_sol* file. It is read only. We need to modify it so we can run the file.

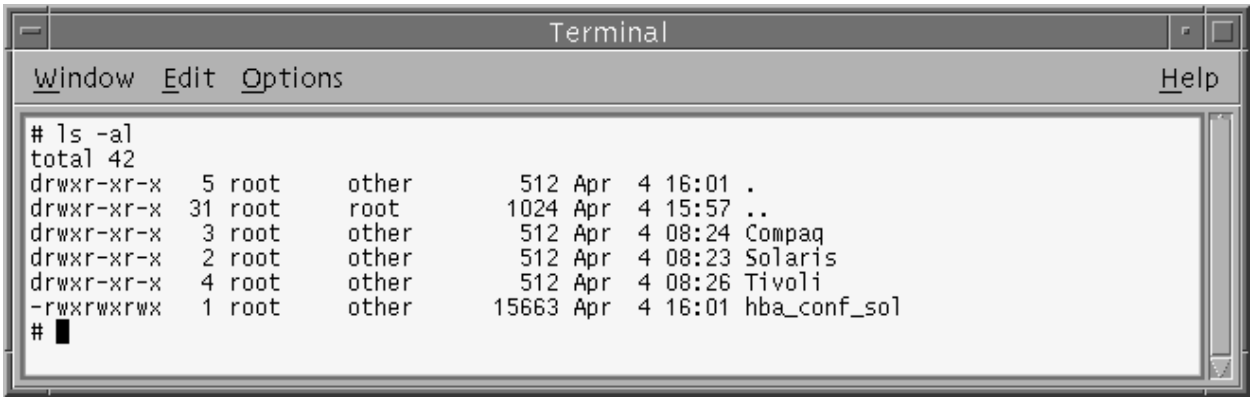
    At the system prompt, #, type

    chmod 777 hba_conf_sol and hit *Enter*.

93. View the information in the Patches directory once again.

    At the system prompt, #, type

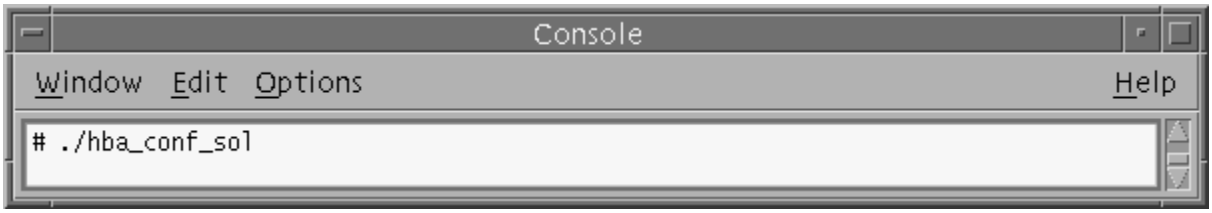
    ls –al and hit *Enter*.



94. Run the *hba_conf_sol* file.

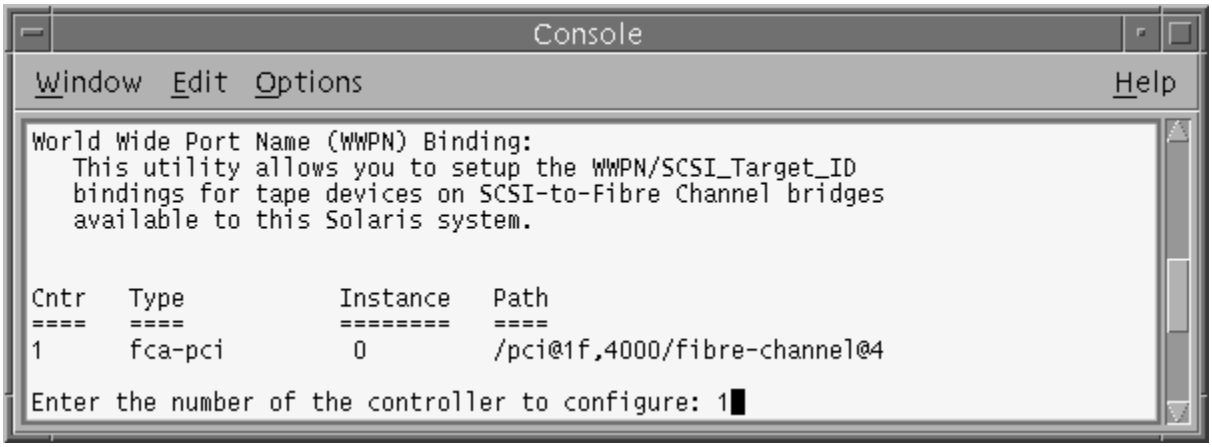
    At the system prompt, #, type

    ./hba_conf_sol and hit *Enter*.



95. The information below appears.

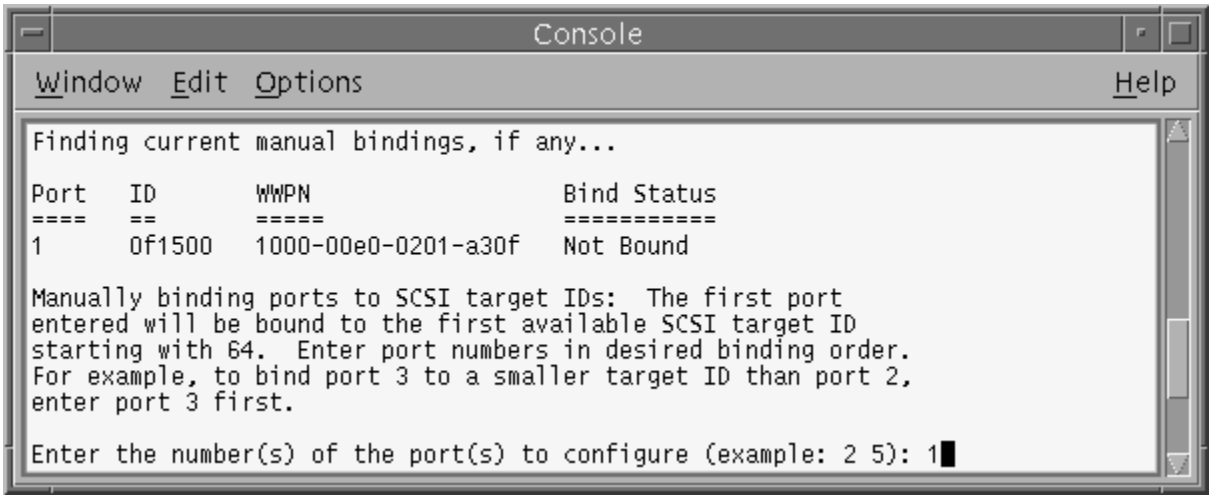
    Type *1* at the prompt and hit *Enter*.


Console
Window Edit Options Help
World Wide Port Name (WWPN) Binding:
This utility allows you to setup the WWPN/SCSI_Target_ID
bindings for tape devices on SCSI-to-Fibre Channel bridges
available to this Solaris system.
Cntr Type Instance Path
1 fca-pci 0 /pci@1f,4000/fibre-channel@4
Enter the number of the controller to configure: 1

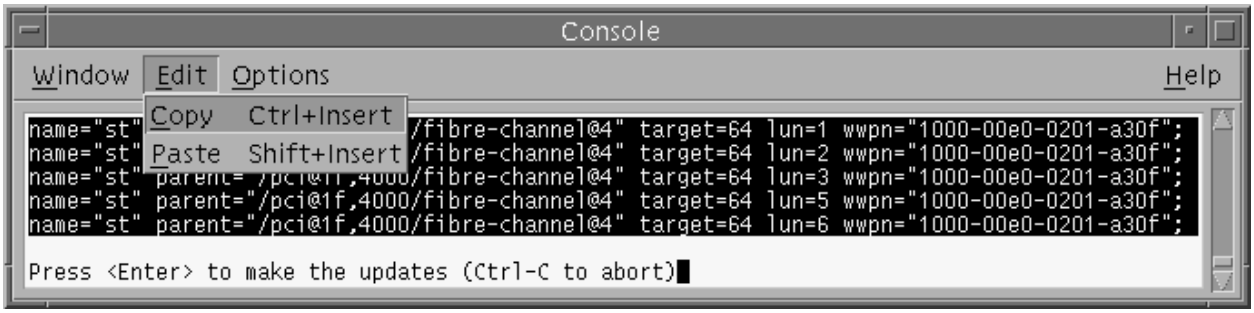
96. The information below appears.

    Type *1* at the prompt and hit *Enter*.

    Note: your *WWPN* number may be different than what is shown here.

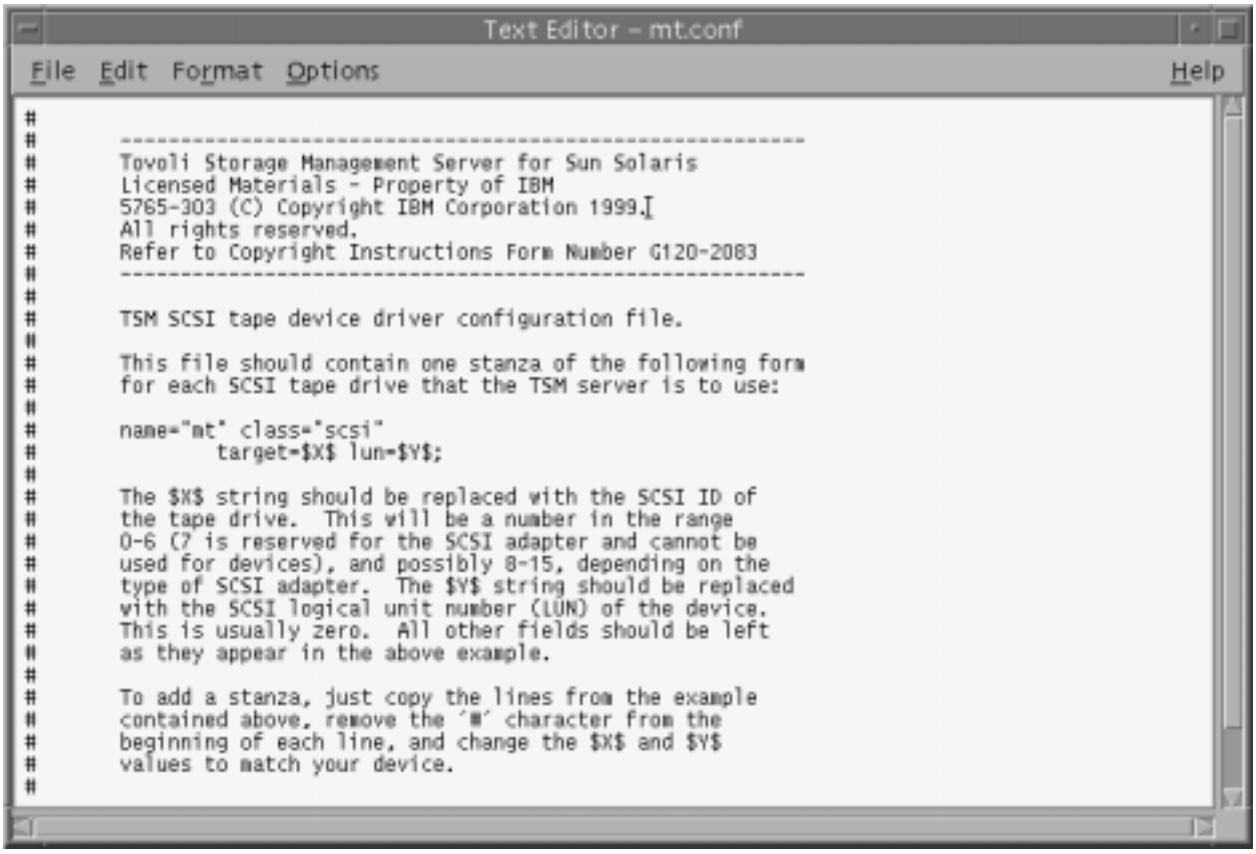


97. The below information appears. You will want to copy this information. Highlight the information then select *Edit* and then *Copy* on the task bar.



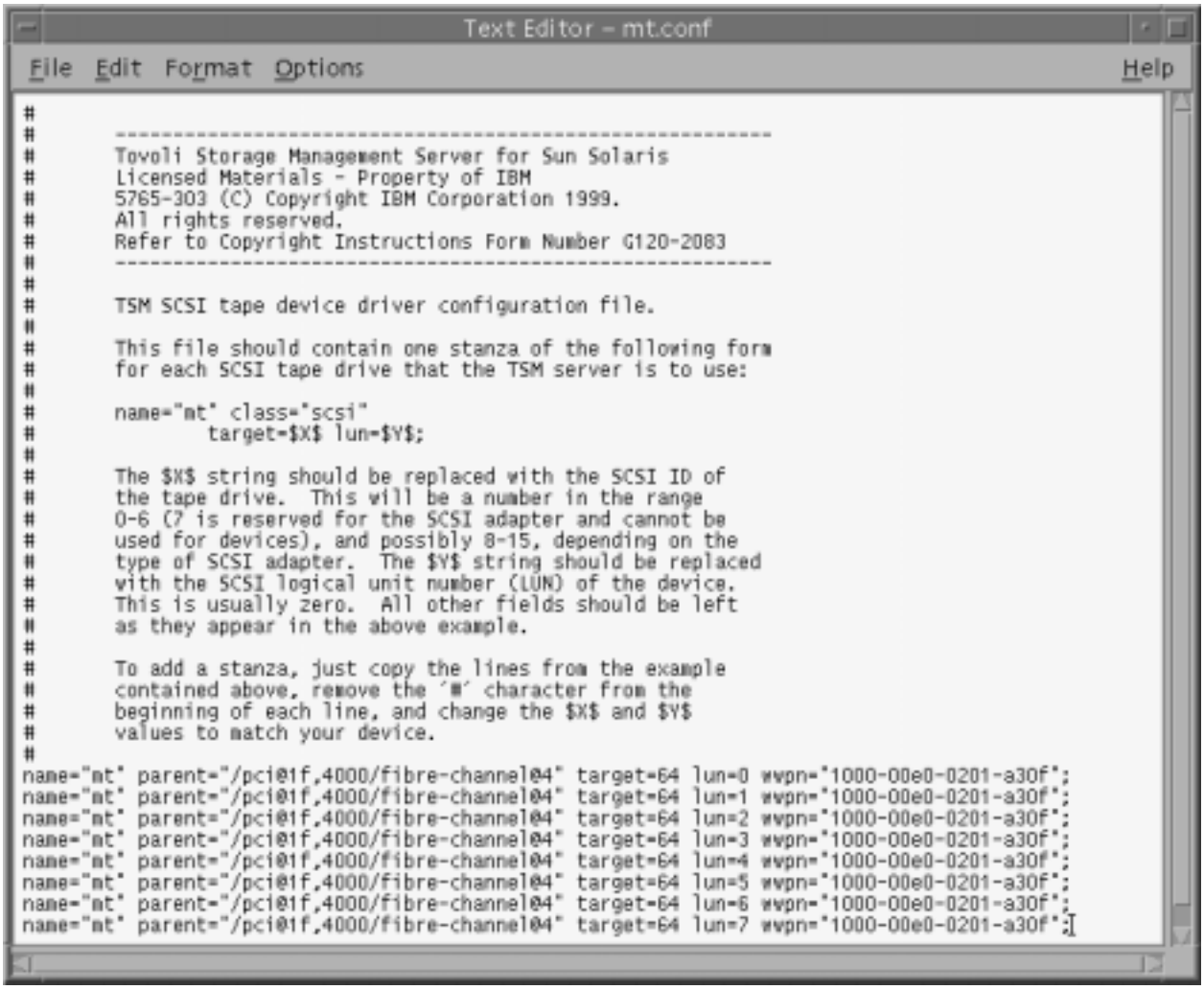
98. Use the *Text Editor* to find and edit the *mt.conf* file.

    Note: it is located in the */usr/kernel/drv* directory.



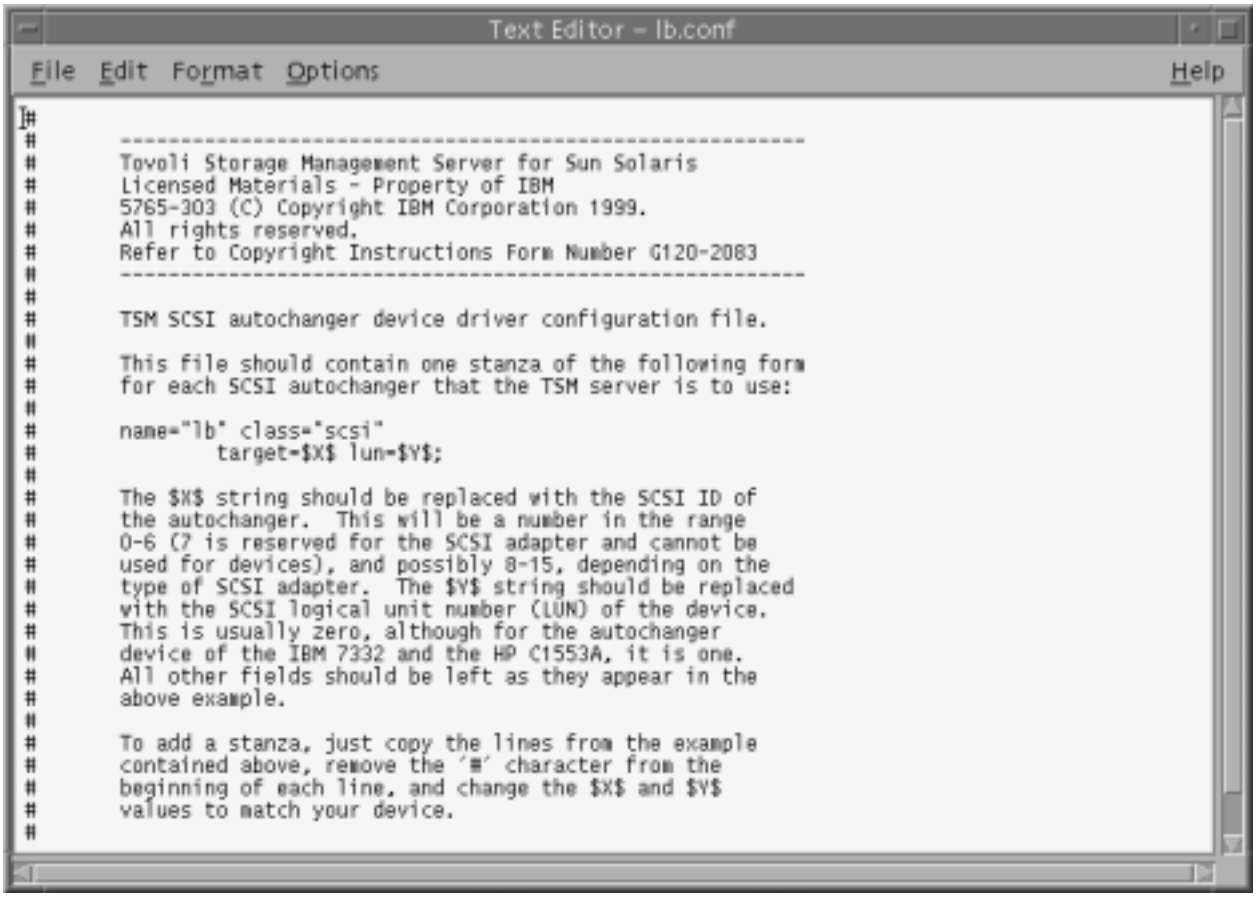
99. Place the copied information into the file.

    Change the "*st*" to "*mt*", set the system *lun*= information from *lun=0* … *lun=7*, and then save the file.



100. Use the *Text Editor* to find and edit the *lb.conf* file.

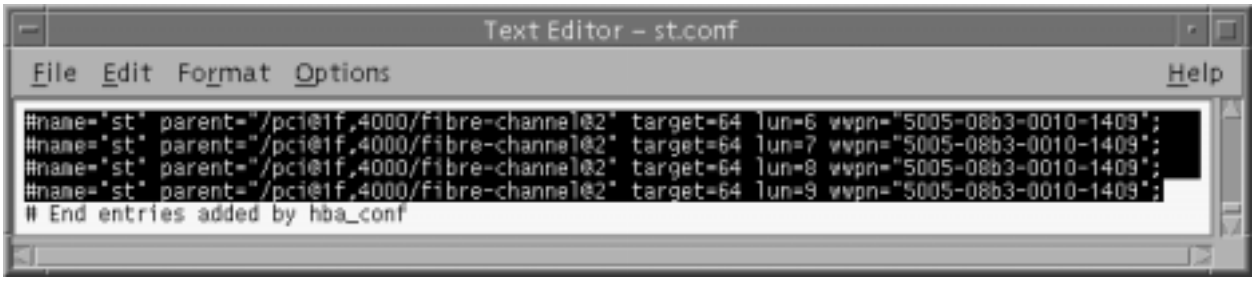
Note: it is located in the */usr/kernel/drv* directory.



101.Use the *Text Editor* and enter the same information that you entered into the *mt.conf* file.

Change the "*st*" to "*lb*", set the system lun= information from *lun=0* … *lun=7*, and then save the file and close the Text Editor.

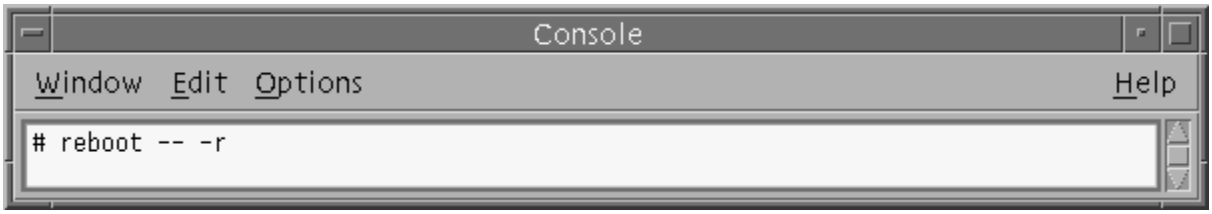
102.Use the *Text Editor* to find and edit the st.conf file in the */kernel/drv* directory. You will need to either comment out the information at the bottom or delete it.


Text Editor – st.conf
File Edit Format Options Help
#name="st" parent="/pci@1f,4000/fibre-channel@2" target=64 lun=6 wwpn="5005-08b3-0010-1409";
#name="st" parent="/pci@1f,4000/fibre-channel@2" target=64 lun=7 wwpn="5005-08b3-0010-1409";
#name="st" parent="/pci@1f,4000/fibre-channel@2" target=64 lun=8 wwpn="5005-08b3-0010-1409";
#name="st" parent="/pci@1f,4000/fibre-channel@2" target=64 lun=9 wwpn="5005-08b3-0010-1409";
End entries added by hba_conf

103.Now reboot the machine for the changes to take place.

At the system prompt, #, type the below command and hit *Enter*.

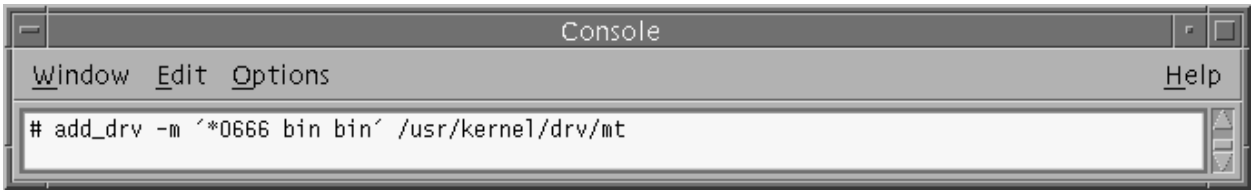
reboot -- -r

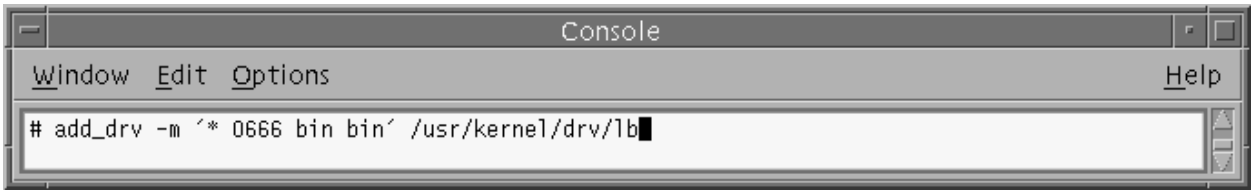


104.Once the system reboots, log back in and open a console window, if need, and run the below commands at the system prompt, #, and hit *Enter*.

add_drv –m ' 0666 bin bin' /usr/kernel/drv/mt*

add_drv –m ' 0666 bin bin' /usr/kernel/drv/lb*





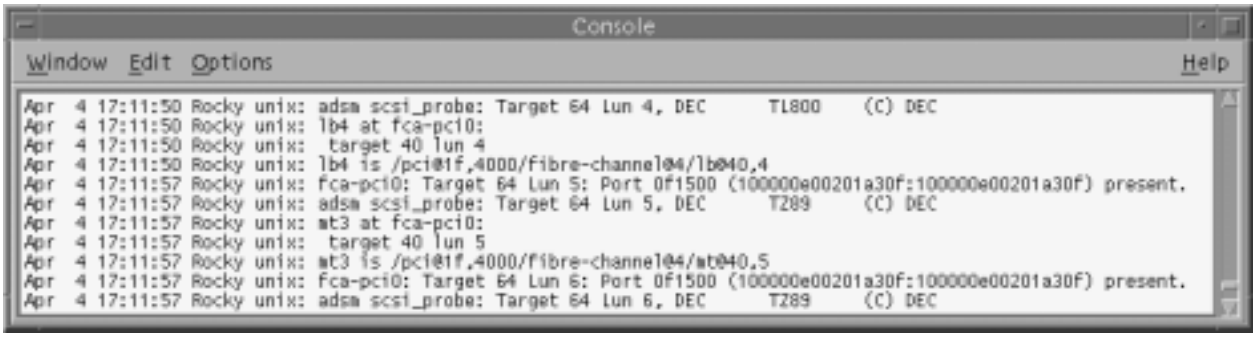
105.View the messages log to find out where the motor and the libraries are.

At the system prompt, #, type

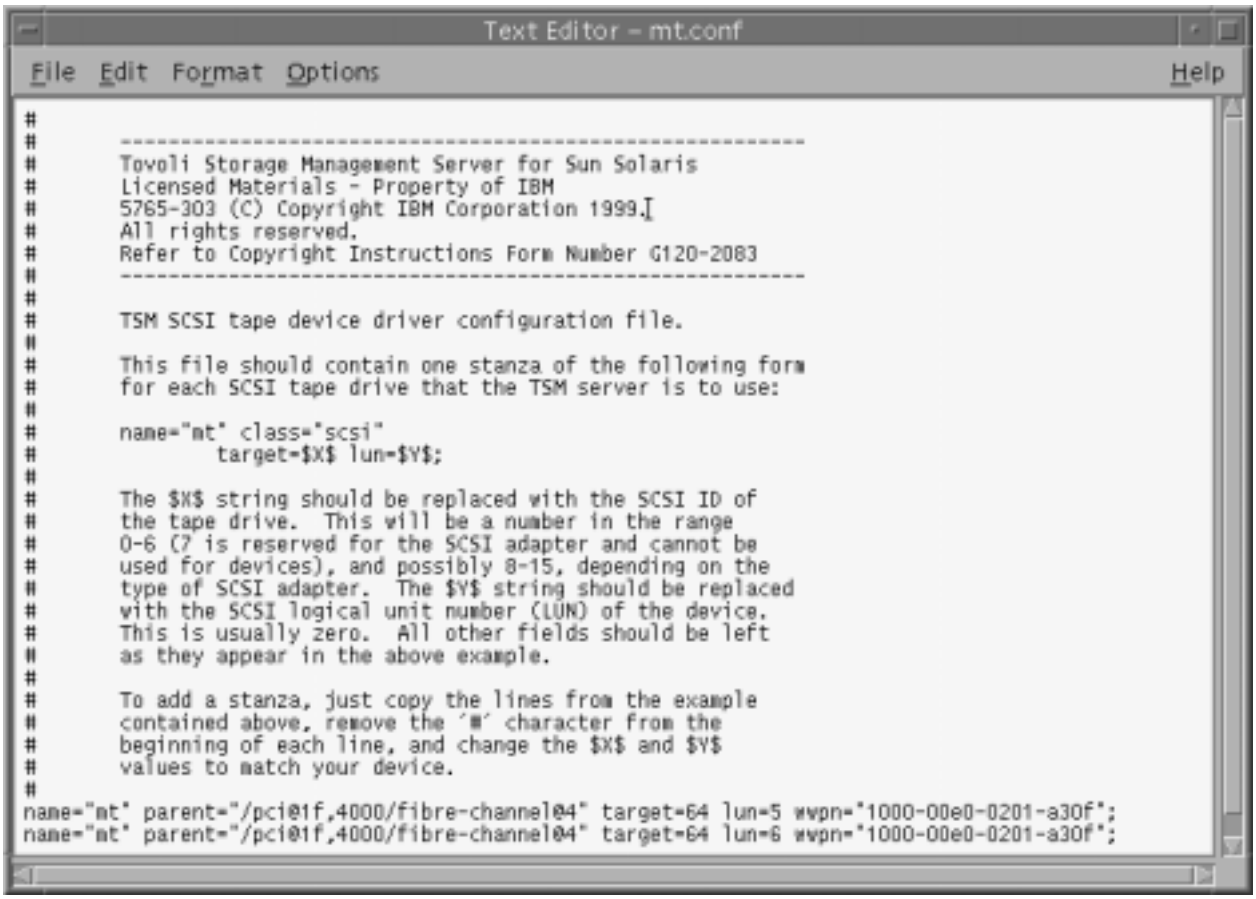
cd /var/adm and hit *Enter*

cat messages

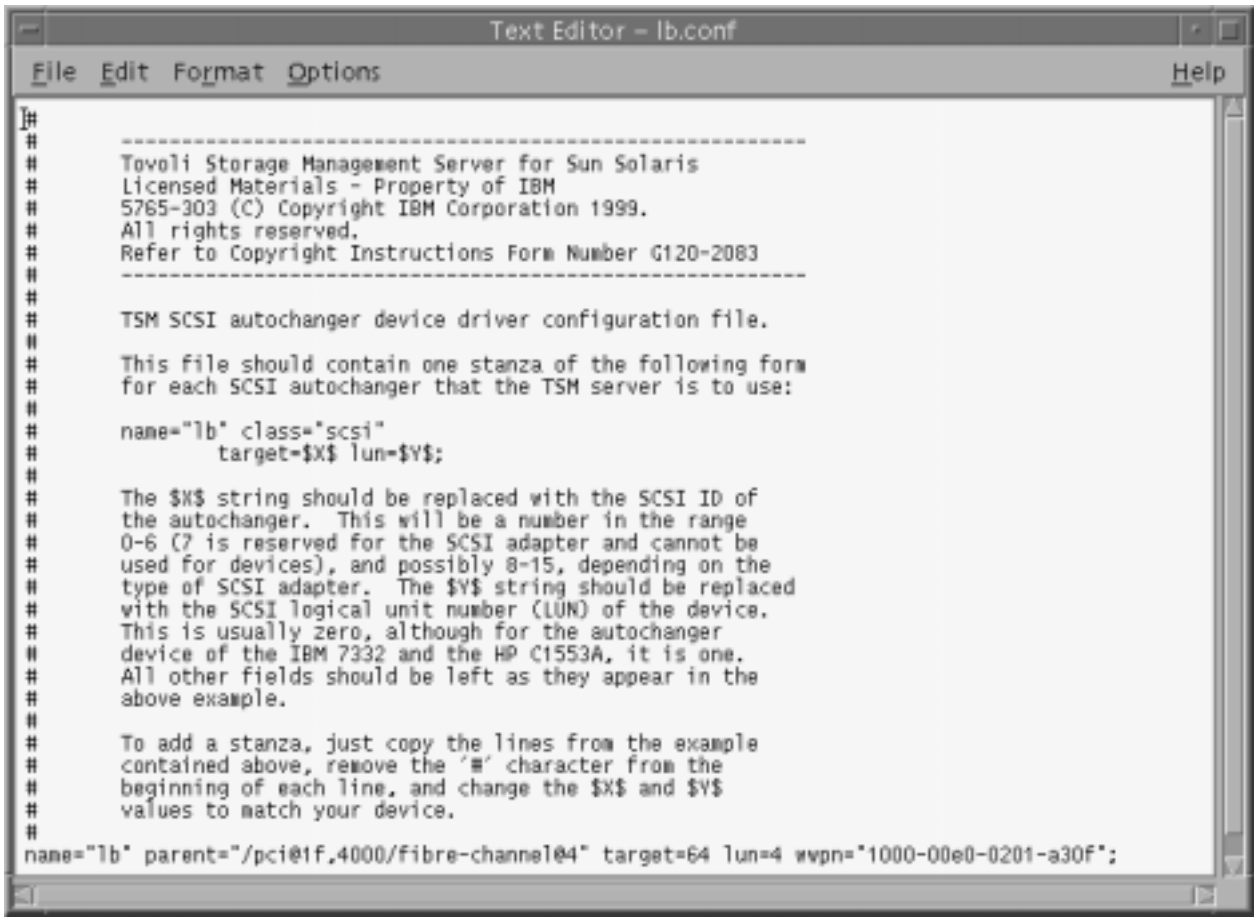
Note: in this example, the *robot is 4* and *drives are 5 and 6*.


Console
Window Edit Options Help
Apr 4 17:11:50 Rocky unix: adsm scsi_probe: Target 64 Lun 4, DEC TL800 (C) DEC
Apr 4 17:11:50 Rocky unix: lb4 at fca-pci0:
Apr 4 17:11:50 Rocky unix: target 40 lun 4
Apr 4 17:11:50 Rocky unix: lb4 is /pci@1f,4000/fibre-channel@4/lb@40,4
Apr 4 17:11:57 Rocky unix: fca-pci0: Target 64 Lun 5: Port 0f1500 (100000e00201a30f:100000e00201a30f) present.
Apr 4 17:11:57 Rocky unix: adsm scsi_probe: Target 64 Lun 5, DEC TZ89 (C) DEC
Apr 4 17:11:57 Rocky unix: mt3 at fca-pci0:
Apr 4 17:11:57 Rocky unix: target 40 lun 5
Apr 4 17:11:57 Rocky unix: mt3 is /pci@1f,4000/fibre-channel@4/mt@40,5
Apr 4 17:11:57 Rocky unix: fca-pci0: Target 64 Lun 6: Port 0f1500 (100000e00201a30f:100000e00201a30f) present.
Apr 4 17:11:57 Rocky unix: adsm scsi_probe: Target 64 Lun 6, DEC TZ89 (C) DEC

106.Use the *Text Editor* to find and edit the *mt.conf* file and delete everything that you copied into it except 5 and 6, Or whatever your tape drives are recognized with, then *Save* the file.



107.Use the *Text Editor* to find and edit the *lb.conf* file and delete everything that you copied into it except 4 or whatever your robot is recognized with and then *Save* and exit. This will take you back to the *Console* window.



This completes the Configuration of the HBA

Step 9
Modifying the .dtprofile file

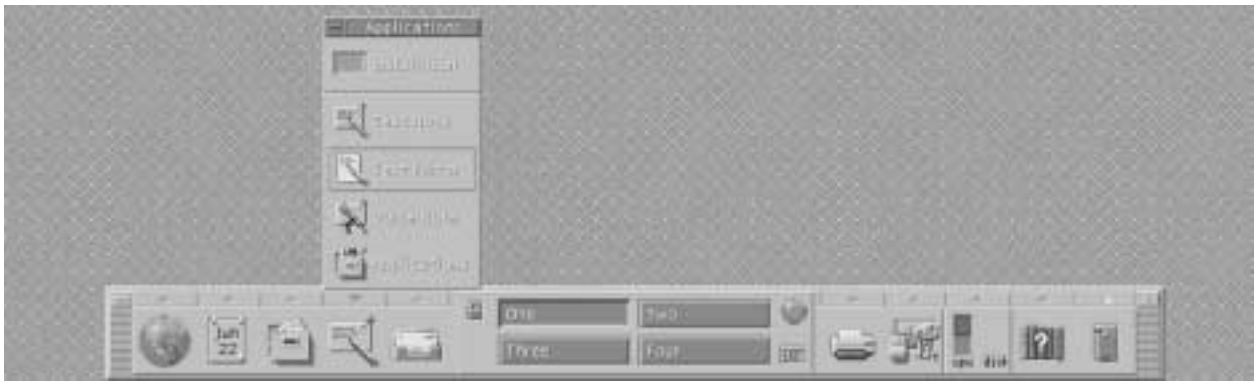
108.If Netscape has not been installed, insert the Netscape cd-rom and type the following at the command prompt:

cd /cdrom

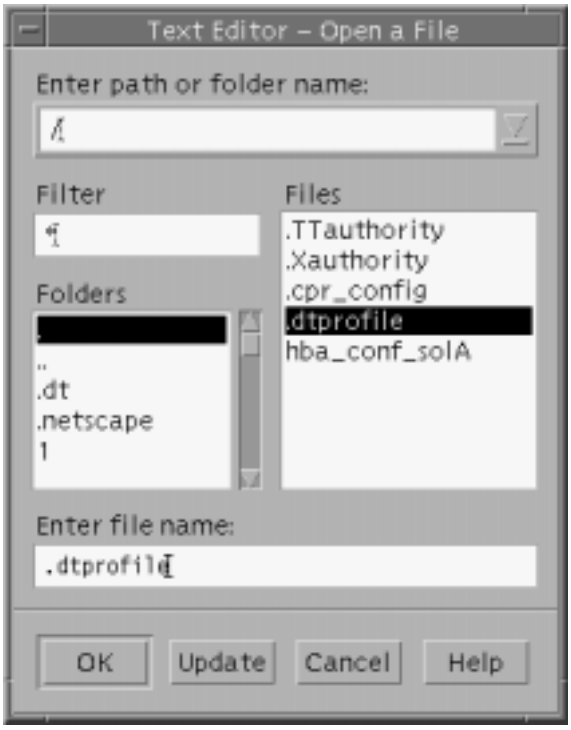
*cd net**

./installer

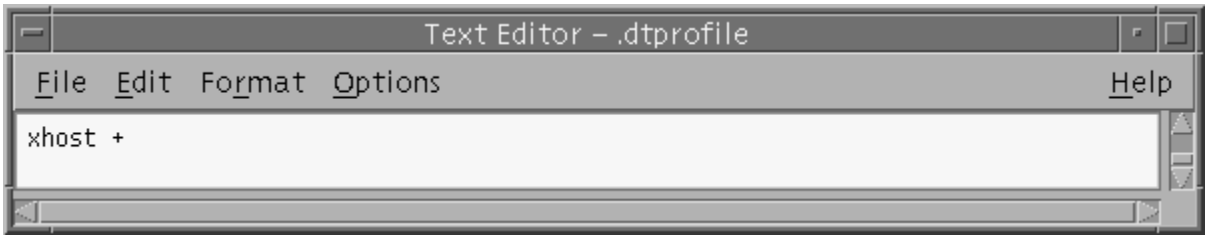
109.Open a *Text Editor* window.



110.The Text Editor window appears, click on *File, Open*, and double click on the *.dtprofile* file.


Text Editor – Open a File
Enter path or folder name:
/
Filter
*
Files
.TTauthority
.Xauthority
.cpr_config
.dtprofile
hba_conf_solA
Folders
..
.dt
.netscape
1
Enter file name:
.dtprofile
OK
Update
Cancel
Help

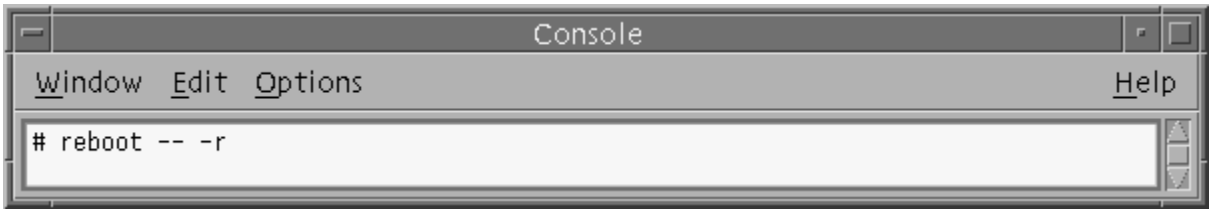
111.The Text Editor box now displays the information in the *.dtprofile* file. Arrow down to the bottom of the file and add the below information to the file and hit Enter..



112.Next, enter the below information at the bottom of the file. Once the information is Entered, *Save* and *Close* the window

setenv PATH /opt/tivoli/tsm/server/bin:/opt/NSCPcom:/opt/tivoli/tsm/client/bin:$PATH

113.Issue the below command to reboot the system for the changes to take effect..



This completes the modifying of the *.dtprofile* portion of the lab.

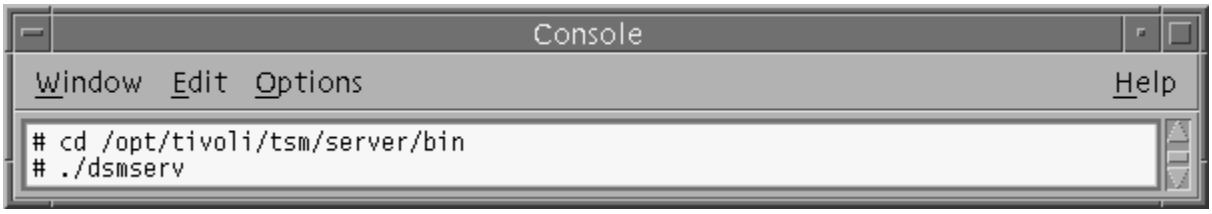
Step 10
Setting up the Server GUI

114. Load the server Command console window.

At the Command prompt, #, type:

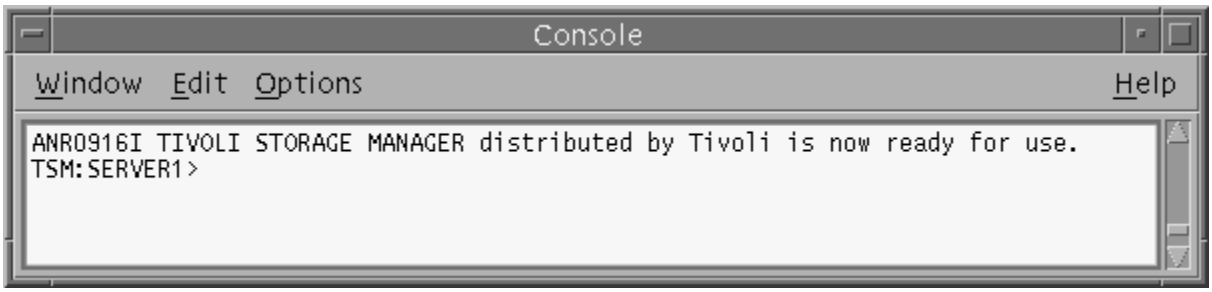
cd /opt/tivoli/tsm/server/bin hit *Enter*.

./dsmserv hit *Enter*.



115. The below window appears. You may minimize this window, but do not close it. It is needed to run the Netscape GUI.

Note: This is the Server Console window, which displays all commands running from the TSM GUI. You can use this to see what commands have been run.



116. The below screen appears. Minimize all windows and open a *Web browser* by using the *menu bar*.

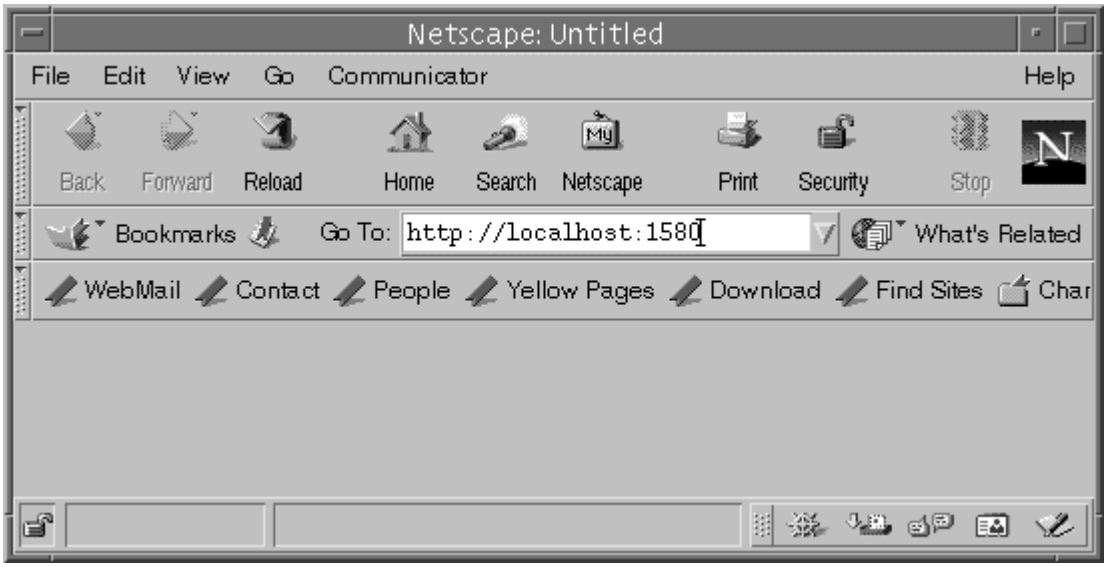
Note: you may get a couple of error screens, ignore and close them.


Links
Install Icon
Web Browser
Personal Bookmarks
Find Web Page
Feb
19
One
Two
Three
Four
cpu disk

117. The Web browser appears. Once you click on it, the below *error* windows appears. Click on OK: on both to continue.

118. To log in, clear out the default URL and input the below information and hit *Enter*.

http://localhost:1580/


Netscape: Untitled
File
Edit
View
Go
Communicator
Help
Back
Forward
Reload
Home
Search
Netscape
Print
Security
Stop
Bookmarks
Go To:
http://localhost:1580
What's Related
WebMail
Contact
People
Yellow Pages
Download
Find Sites
Char

119. The *Administrator Login* window appears.

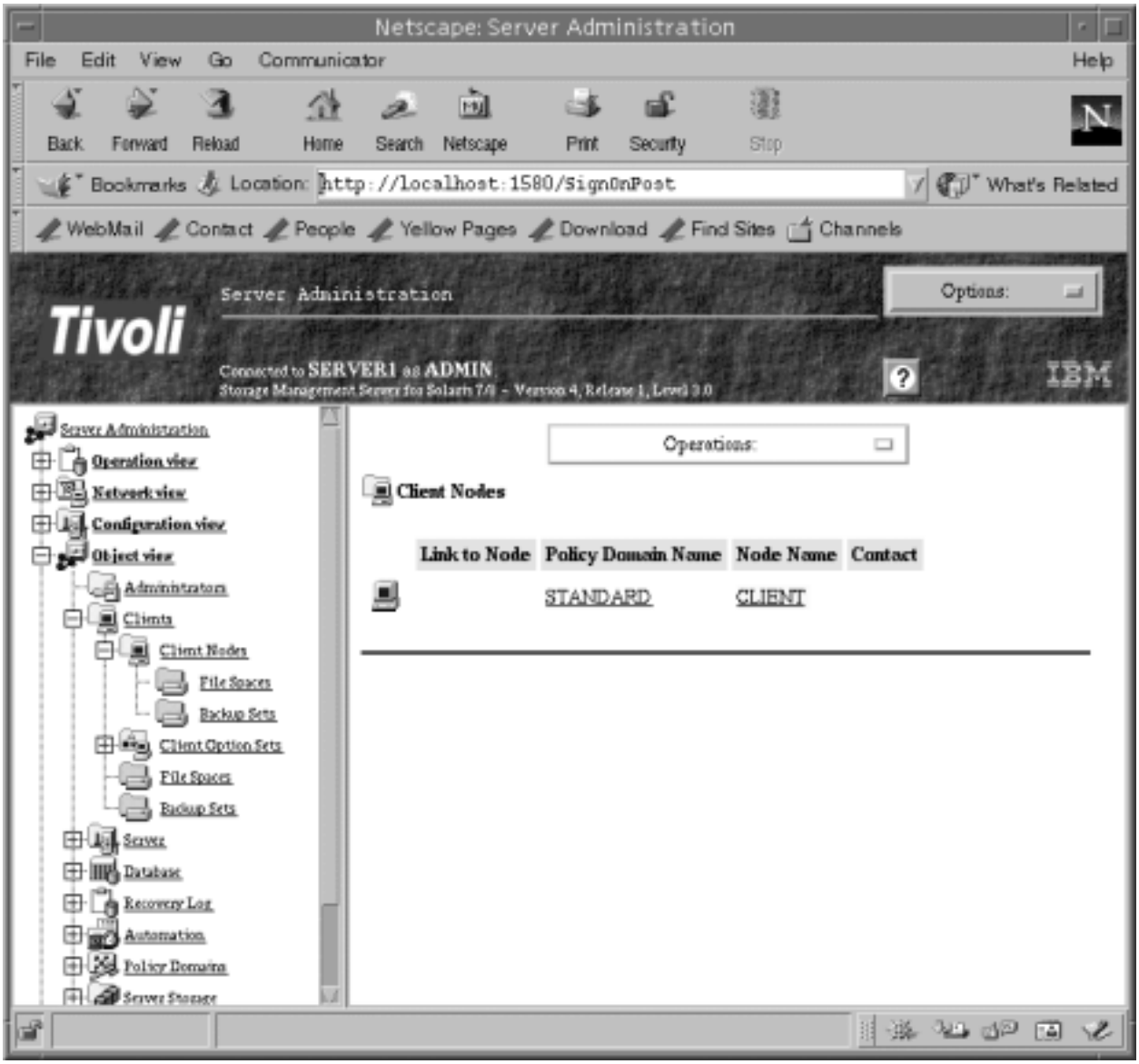
Enter *admin* for both *Userid* and *Password* and click on *submit*.

120. The below warning message screen appears. Remove the check in the check box next to *Show this Alert Next Time* then click on *Continue Submission*.

This completes the setting up of the Tivoli Storage Manager GUI portion of the lab.

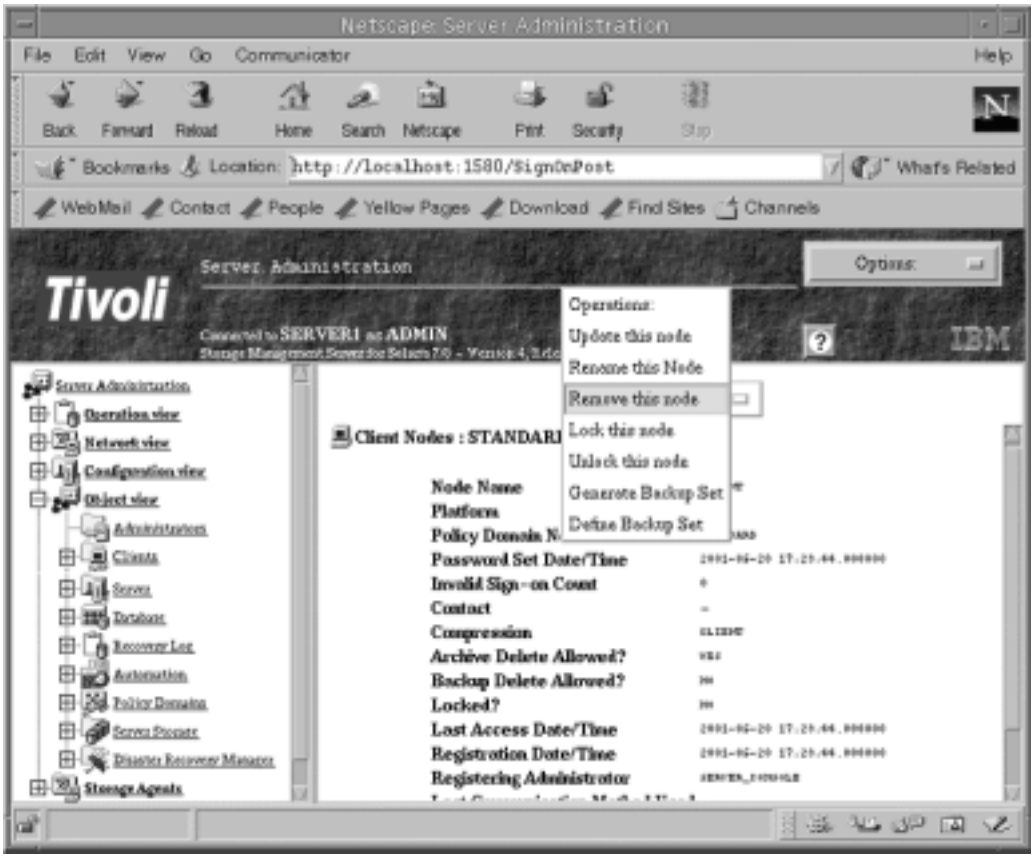
Step 11
Remove the Default Client

121. The *Tivoli Server Administration* window appears, click on the *plus sign* to the left of *Object View*, then the *plus sign* to the left of *Client*, click on the *plus sign* left of *Client Node*, click on *Client Nodes*, and on the right hand side of the screen, click on *Client*.

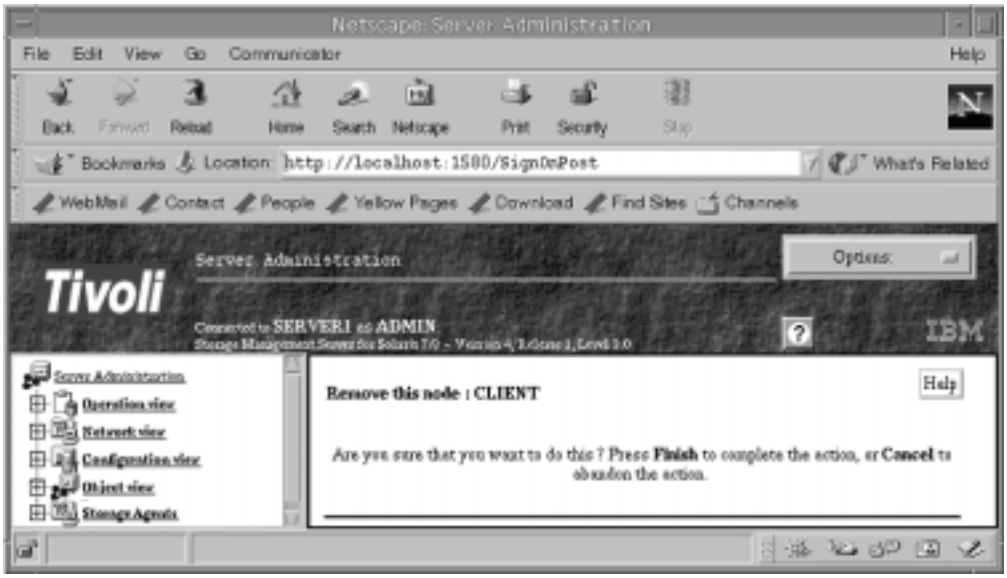


122. The *Client Node Information* window appears, click on *Operations*, then click on *Remove this node*.

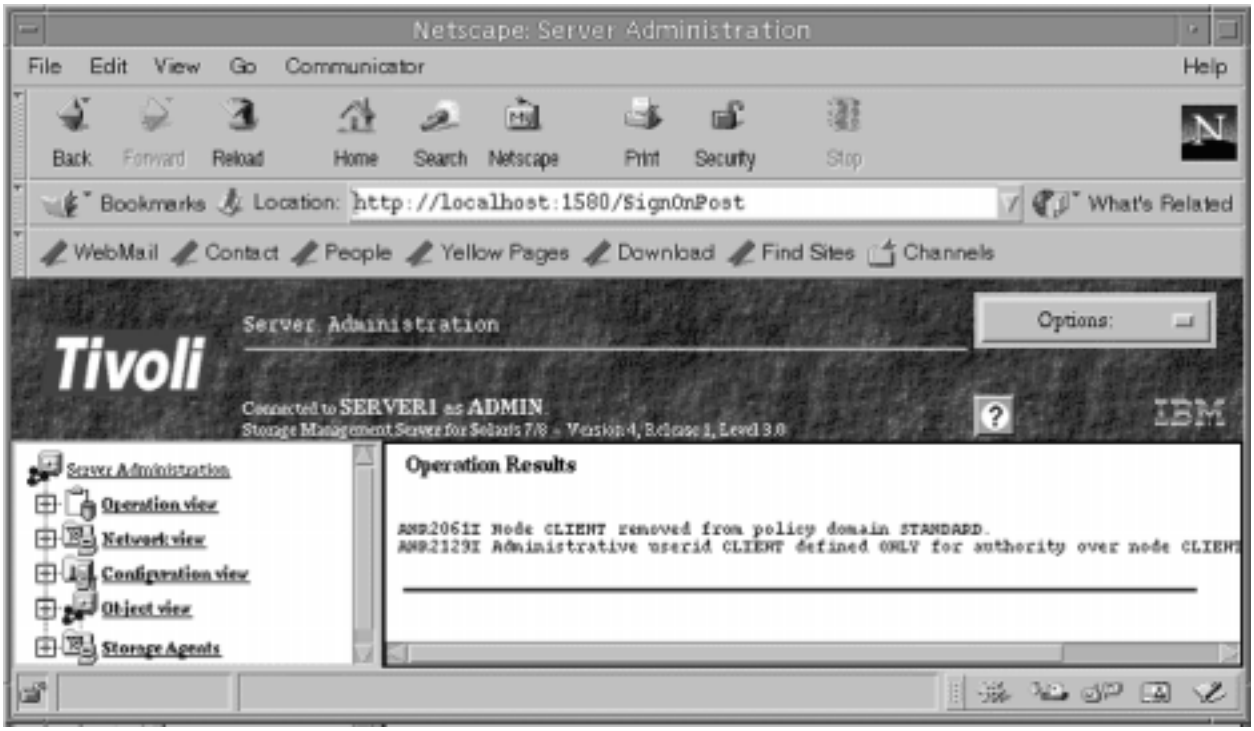
Note: The default client will be the only one listed. This node must be deleted to enable the deletion of the default policy domain later.



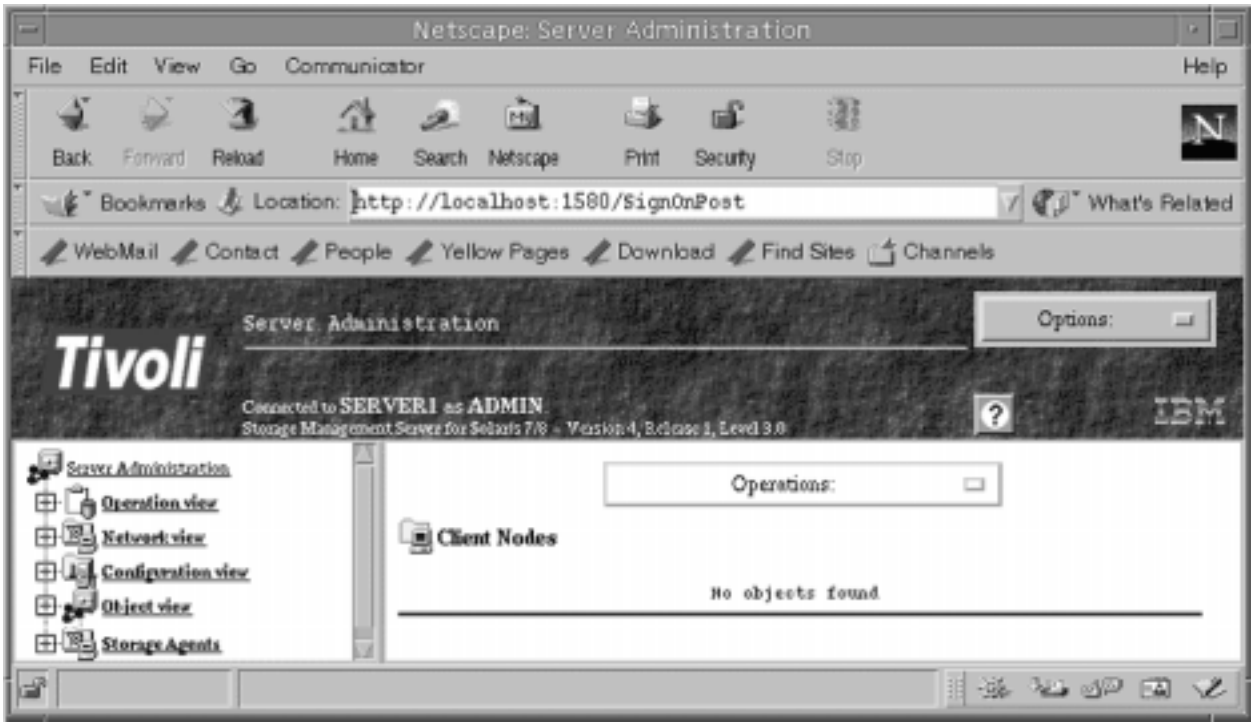
123. The *Remove this node: CLIENT* Confirmation window appears, click on Finish.


Netscape: Server Administration
File Edit View Go Communicator Help
Back Forward Reload Home Search Netscape Print Security Stop
Bookmarks Location: http://localhost:1500/SignOnPost
What's Related
WebMail Contact People Yellow Pages Download Find Sites Channels
Tivoli
Server Administration
Options
Connected to SERVER1 as ADMIN
IBM
Server Administration
Operations view
Network view
Configuration view
Object view
Storage Agents
Remove this node : CLIENT
Help
Are you sure that you want to do this ? Press Finish to complete the action, or Cancel to abandon the action.

124.The Operational Results window appears. Click on Return



125.The *Client Node* window appears, this time there isn't anything listed.



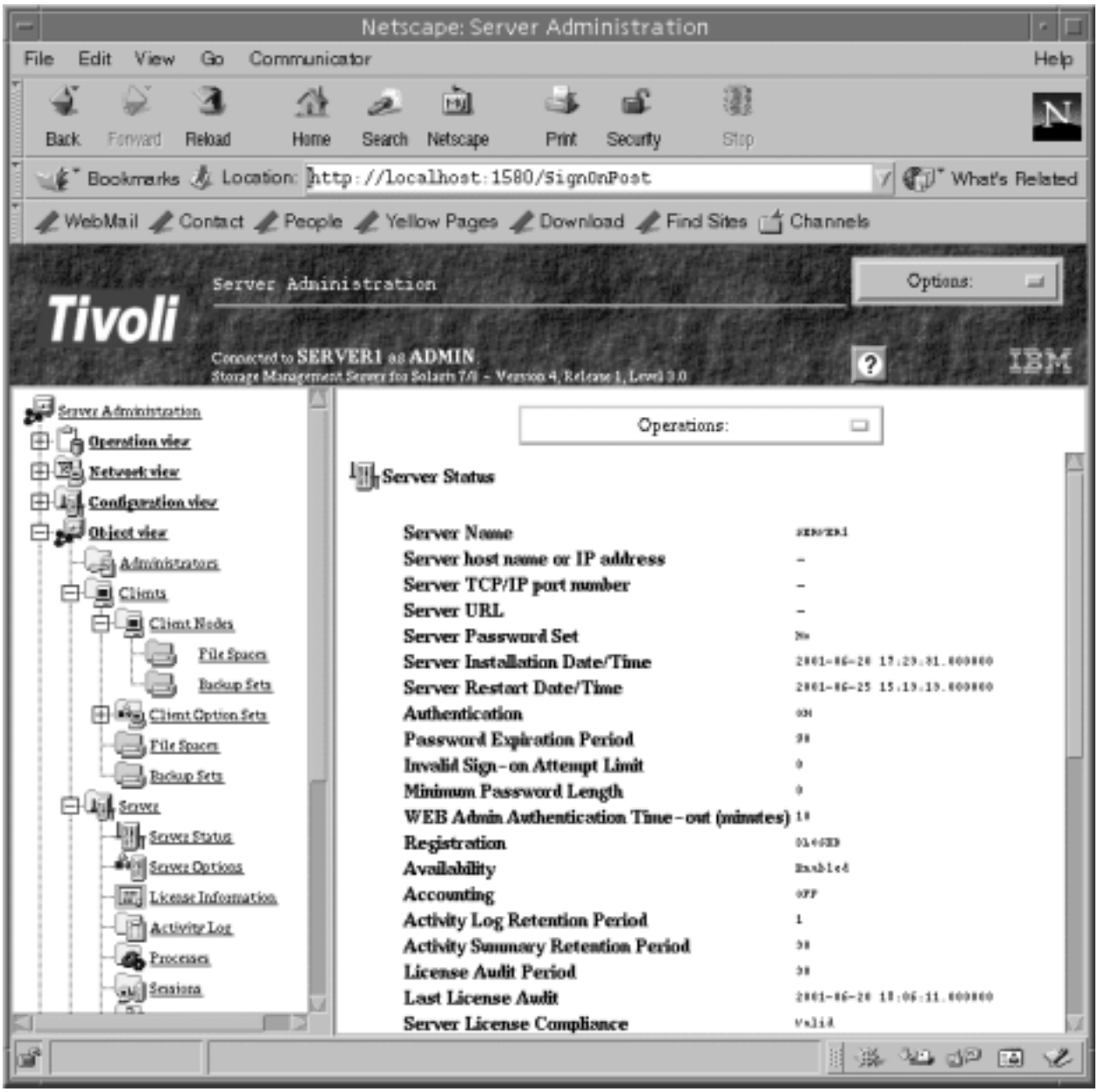
This completes the removal of the default client portion of the lab.

Step 12
Setting up your server

126. Set up your server with the below information.

Note: IP addresses and Server names must be unique.

Click on the *plus sign* to the left of *Object View*, then the *plus sign* to the left of *Server*, click on *Server Status*.



127. The *Server Status* window appears, click on the *Operations* button, on the pull-down menu, and enter the below information:

Note: You will need to click on *Finish* and *Return* after each input.

Set Server Name (eliminate the "_Server1" on the end) – *simba*

Set server host name or IP address – *Local Host IP "10.10.222.75"*

Set server TCP/IP Port number – *1500*

Set Server URL (http://<server>:1580) – *http://10.10.222.75:1580*

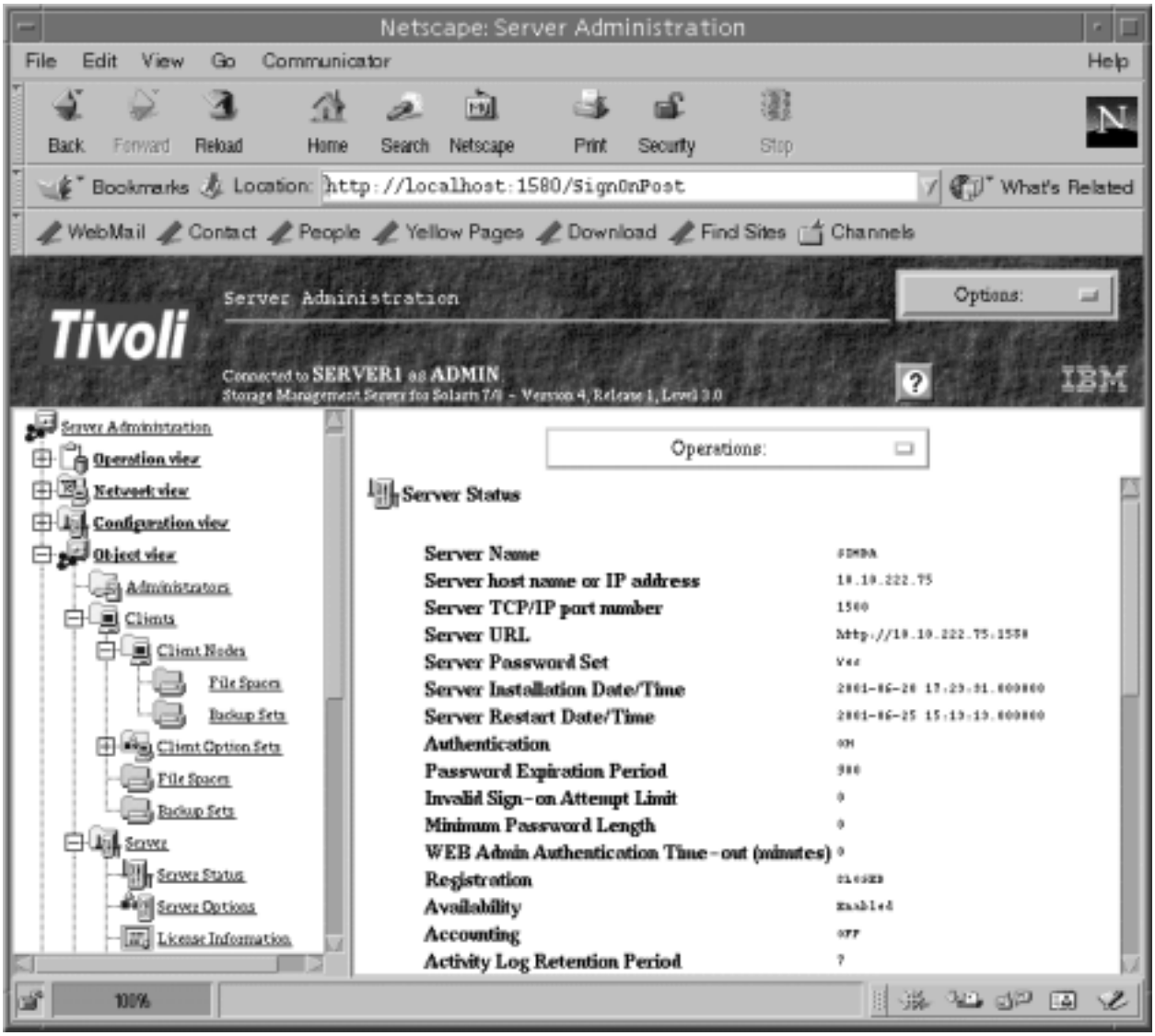
Set Server password – *admin*

Set Crossdefine – *ON*

Set password expiration – *900*

Set web authentication time out – *0*

Set Activity Log retention – *7*



This completes the configuration of your server portion of the lab.

Step 13
Set up the Library

128. Click on the *plus sign* to the left of *Object View*, if needed, then the *plus sign* to the left of *Server Storage*, then the *plus sign* to the left of *Libraries and Drives*, then *Automated Libraries*, and then *Define Automated Library*.

129. The Define Automated Libraries window appears, input the below information:

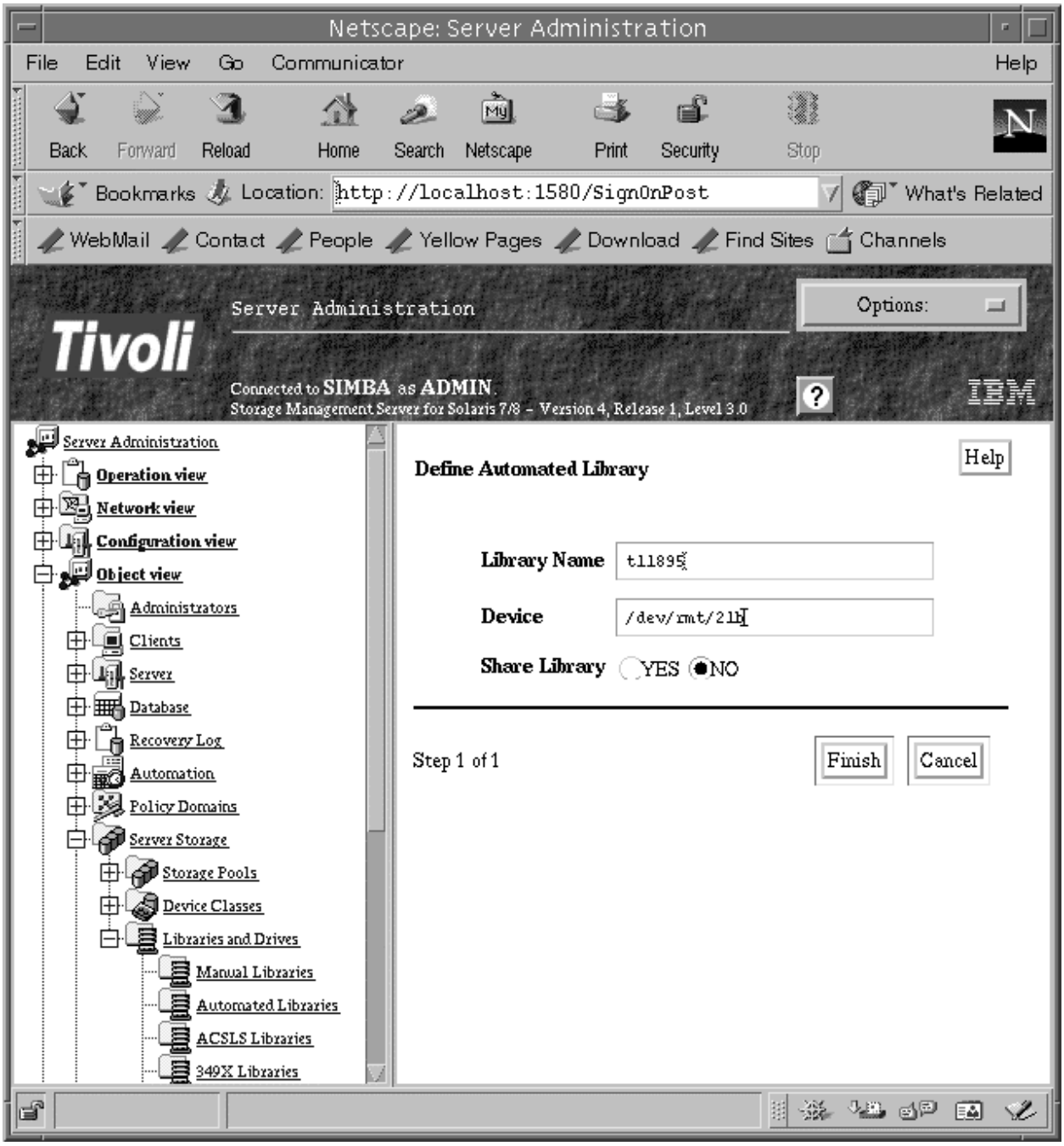
Once complete, click on *Finish* and then Return. If you do not know the Device information, type *ls /dev/rmt* at the command prompt and then input the information:

Note: The information in the Device Field may be different. Check your configuration.

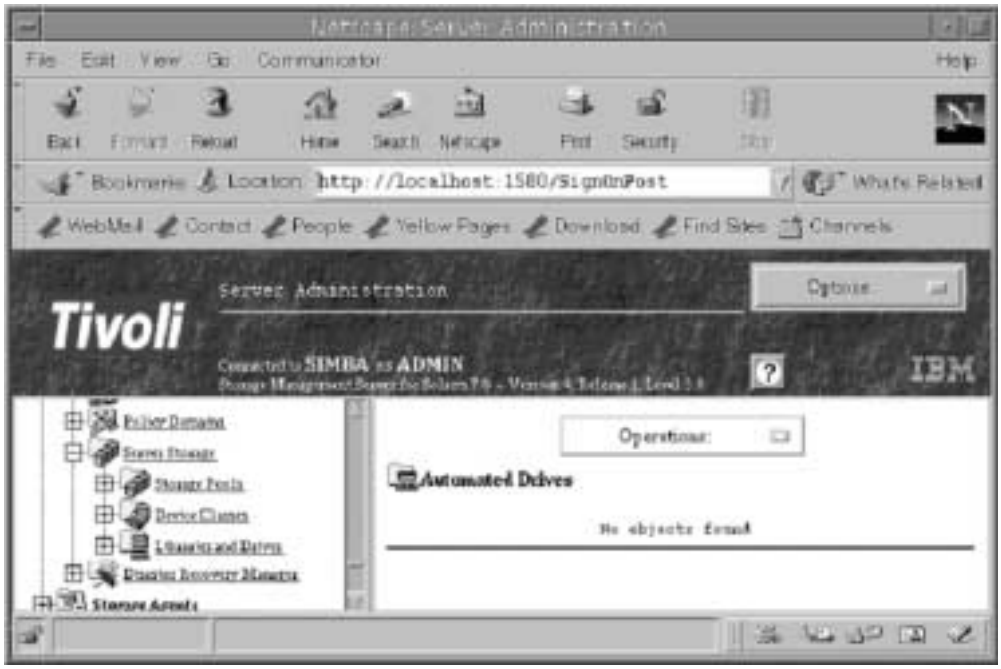
Library Name – *TL891*

Device Field – */dev/rmt/2lb*

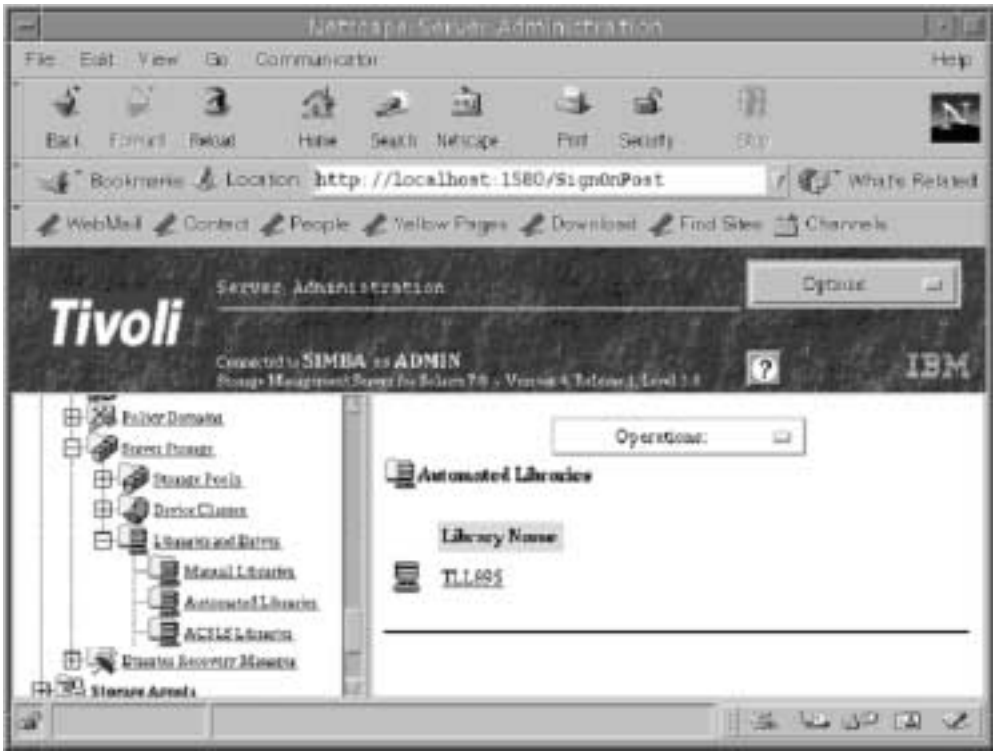
Shared Library – *No*


Netscape: Server Administration
File Edit View Go Communicator Help
Back Forward Reload Home Search Netscape Print Security Stop
Bookmarks Location: http://localhost:1580/SignOnPost What's Related
WebMail Contact People Yellow Pages Download Find Sites Channels
Tivoli
Server Administration
Options:
Connected to SIMBA as ADMIN.
Storage Management Server for Solaris 7/8 - Version 4, Release 1, Level 3.0
IBM
Server Administration
Operation view
Network view
Configuration view
Object view
Administrators
Clients
Server
Database
Recovery Log
Automation
Policy Domains
Server Storage
Storage Pools
Device Classes
Libraries and Drives
Manual Libraries
Automated Libraries
ACSLS Libraries
349X Libraries
Help
Define Automated Library
Library Name tl1895
Device /dev/rmt/21b
Share Library YES NO
Step 1 of 1
Finish
Cancel

130. The Operation results window appears. Click on Return, if the operation states Finished. If not repeat steps 127 - 128. The system



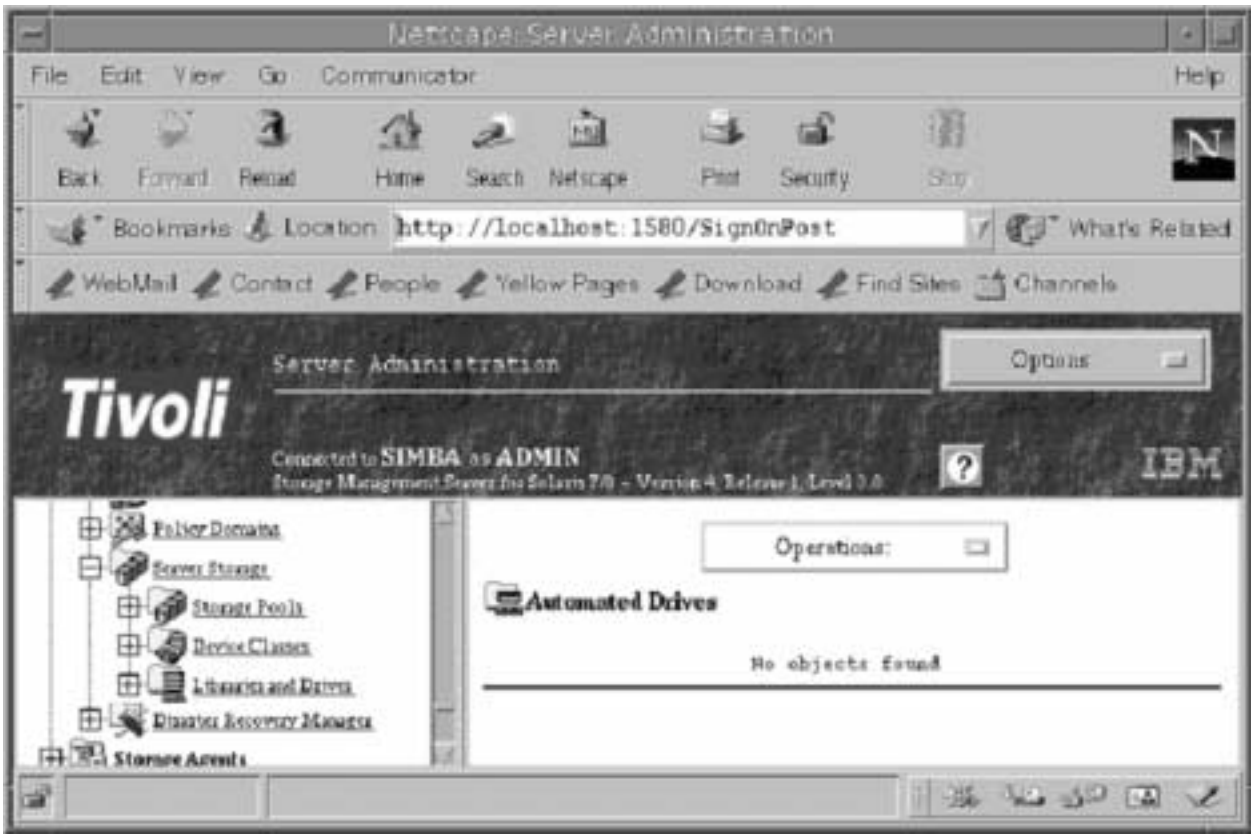
131. The system should now show the TL891 library that you created.



This completes the initial setup of the Library portion of the lab.

Step 14
Setting up the Drives in the Library

132. Click on the *plus sign* to the left of *Object View*, if needed, then the *plus sign* to the left of *Server Storage*, then the *plus sign* to the left of *Libraries and Drives*, if not already there, click on *Automated Drives*, then *Operations*, and then *Define Automated Drive*.



133. The Define Automated Drives window appears, input the below information then click Finish.

Note: To find the element information for your library configuration, access the TSM Web site at: http://www.tivoli.com/support/storage_mgr/requirements.html . At this URL, *Select a Device Category* and then look for your product.

TL891 Drive 1 – *240*

TL891 Drive 2 – *241*

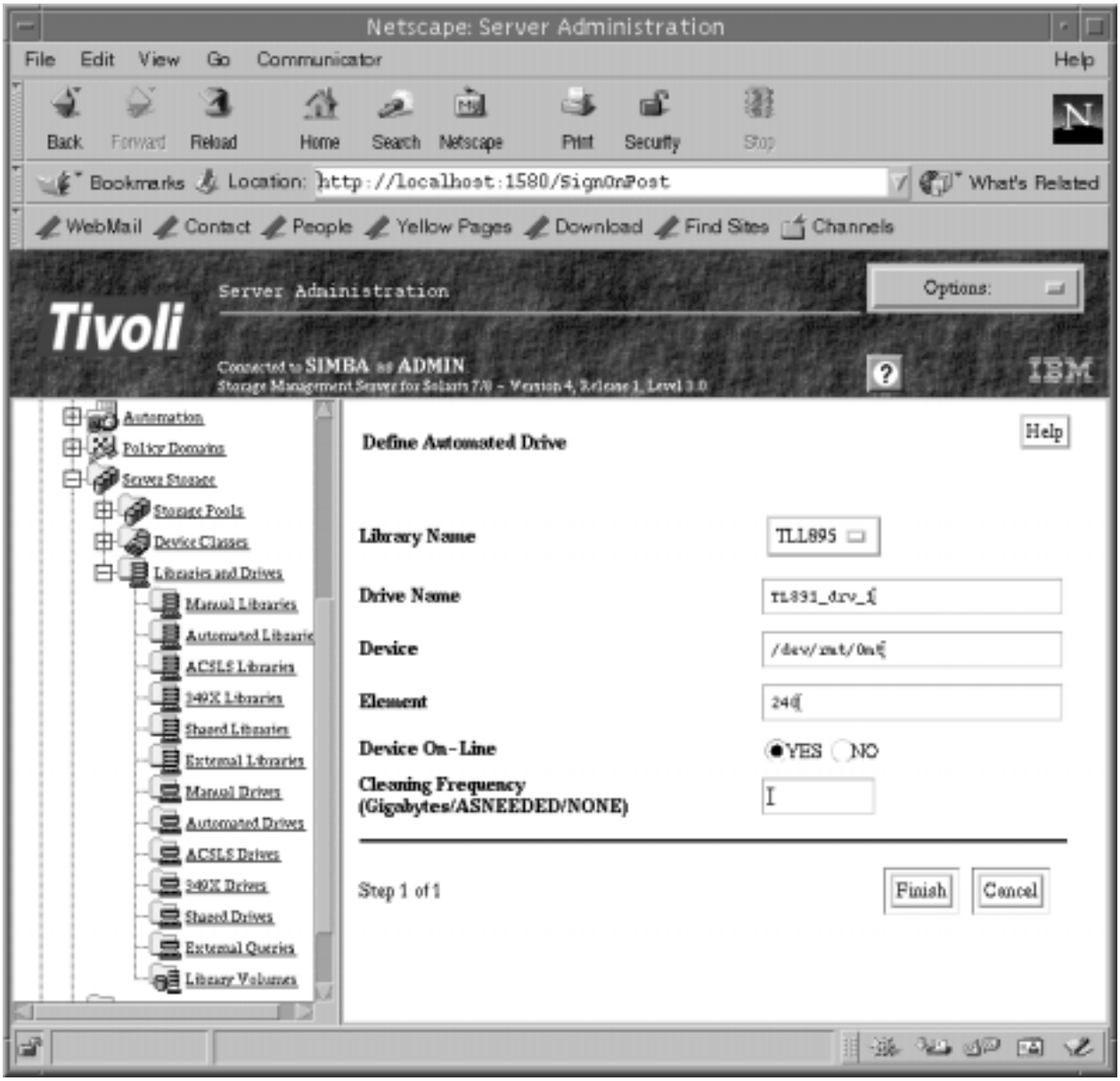
Choose the library previously defined – *TL891*

Drive Name – *TL891_DRV_1*

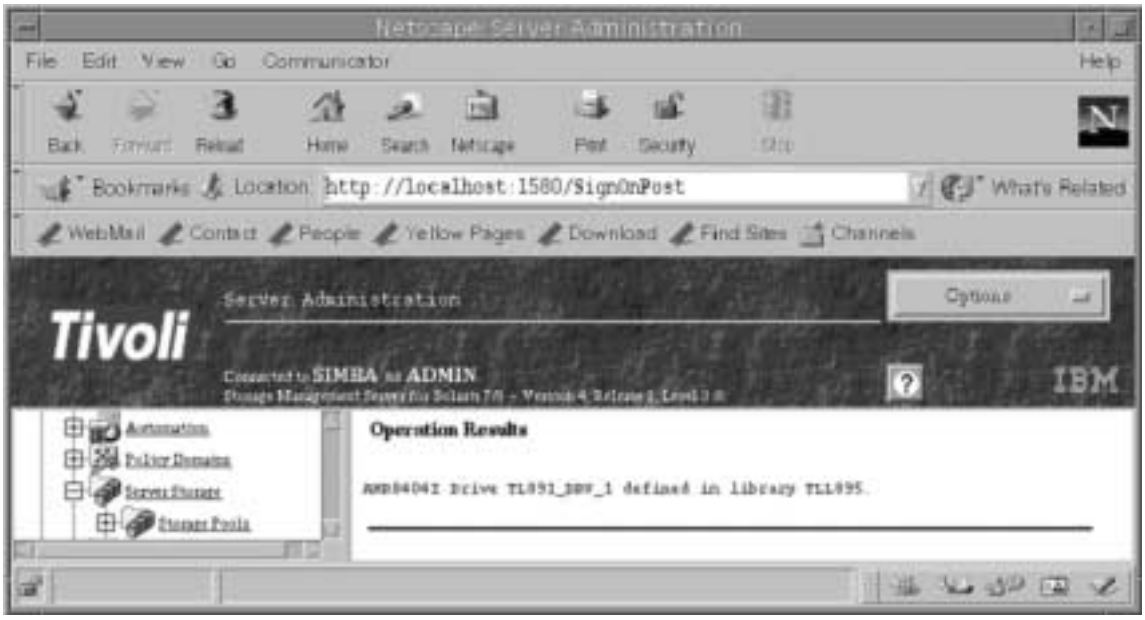
Device Name Field – */dev/rmt/0mt*

Element field – *240*

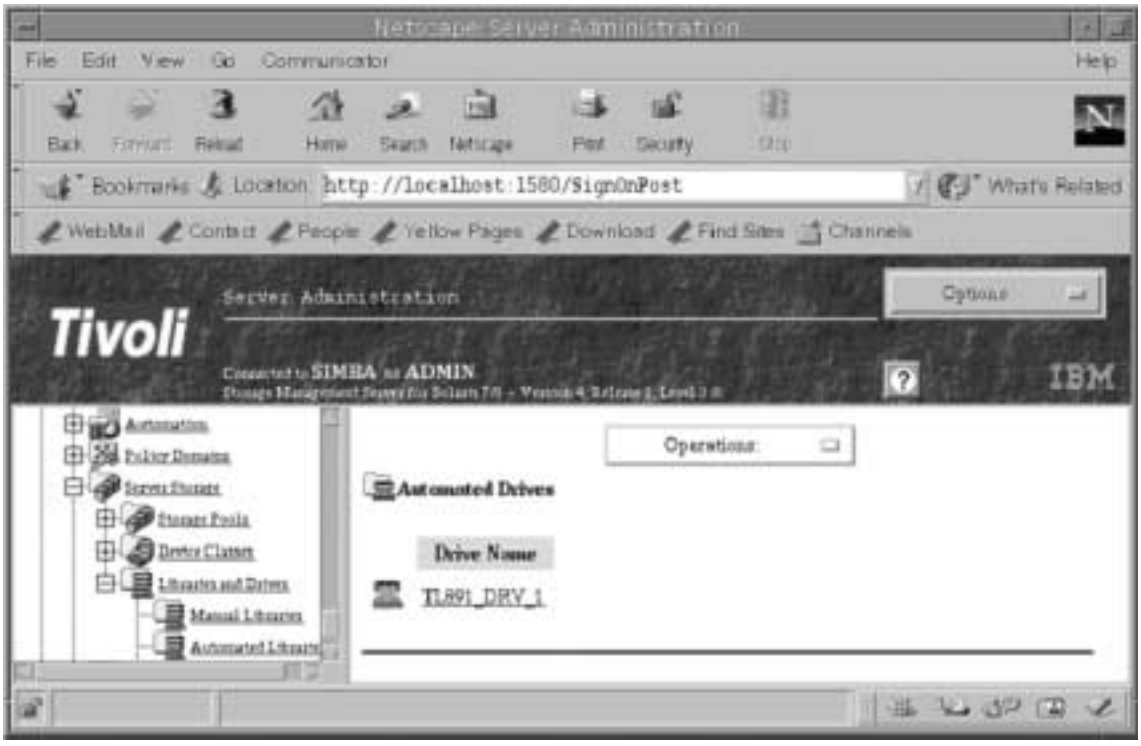
Device online – *Yes*



134. The Operation Results window appears, if failed, click Return and verify the information for steps 131 and 132, and try it again, if passed click Return and continue to the next step.



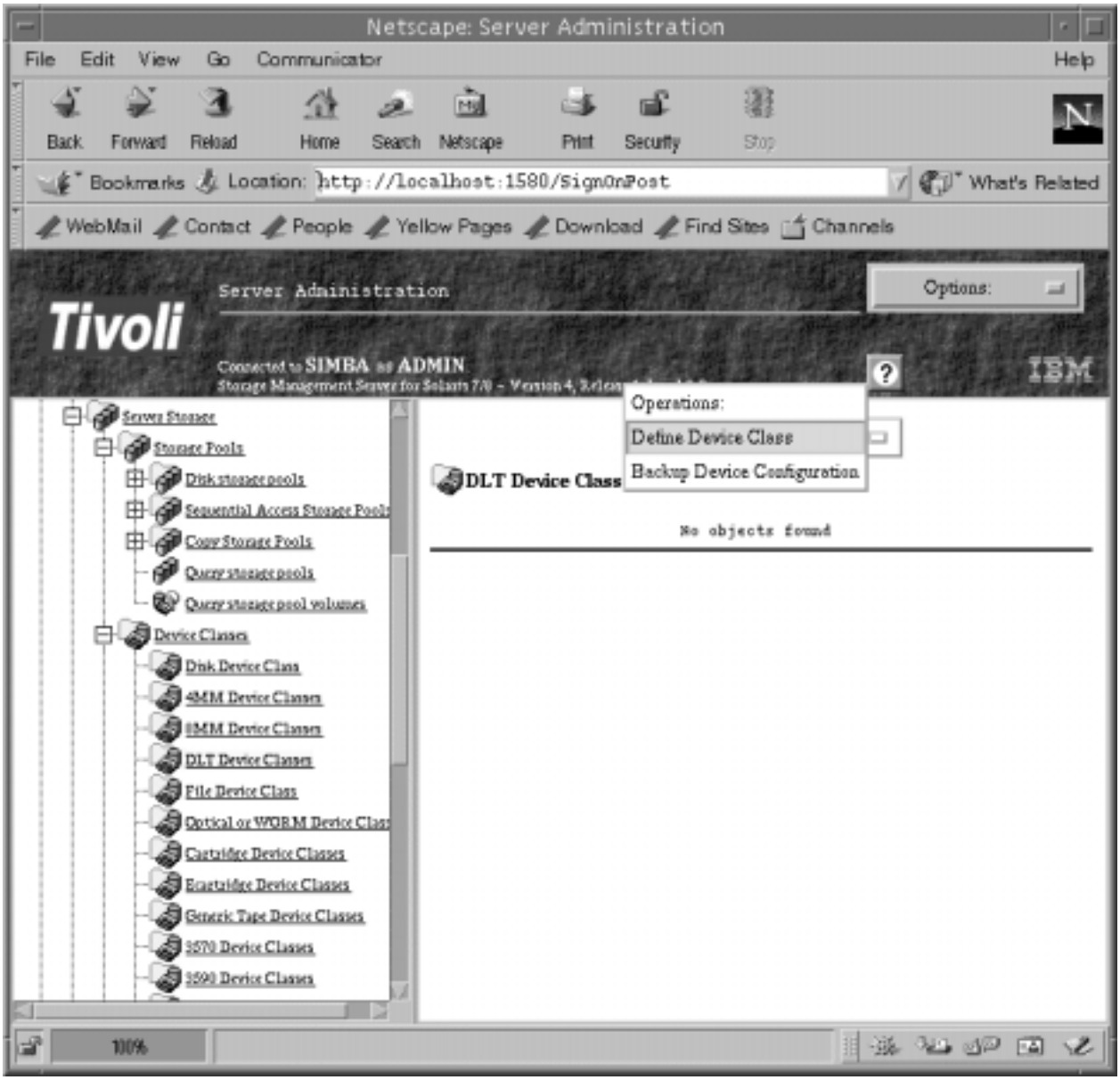
135. Once the tape drive information is accepted, you will need to repeat steps 131 – 133 for each tape drive in the library.



This completes the installation of the tape drives portion of the lab.

Step 15
Setting up Device Class

136. Click on the plus sign to the left of Object View, the plus sign to the left of Device Class, then click on DLT Device Classes, click on Operations, and then click on Define Device Class.



137. The Define Device Class Appears, input the below information and click on Finnish.

Device Class Name – *TL891Class*

Recording Format – *Drive*

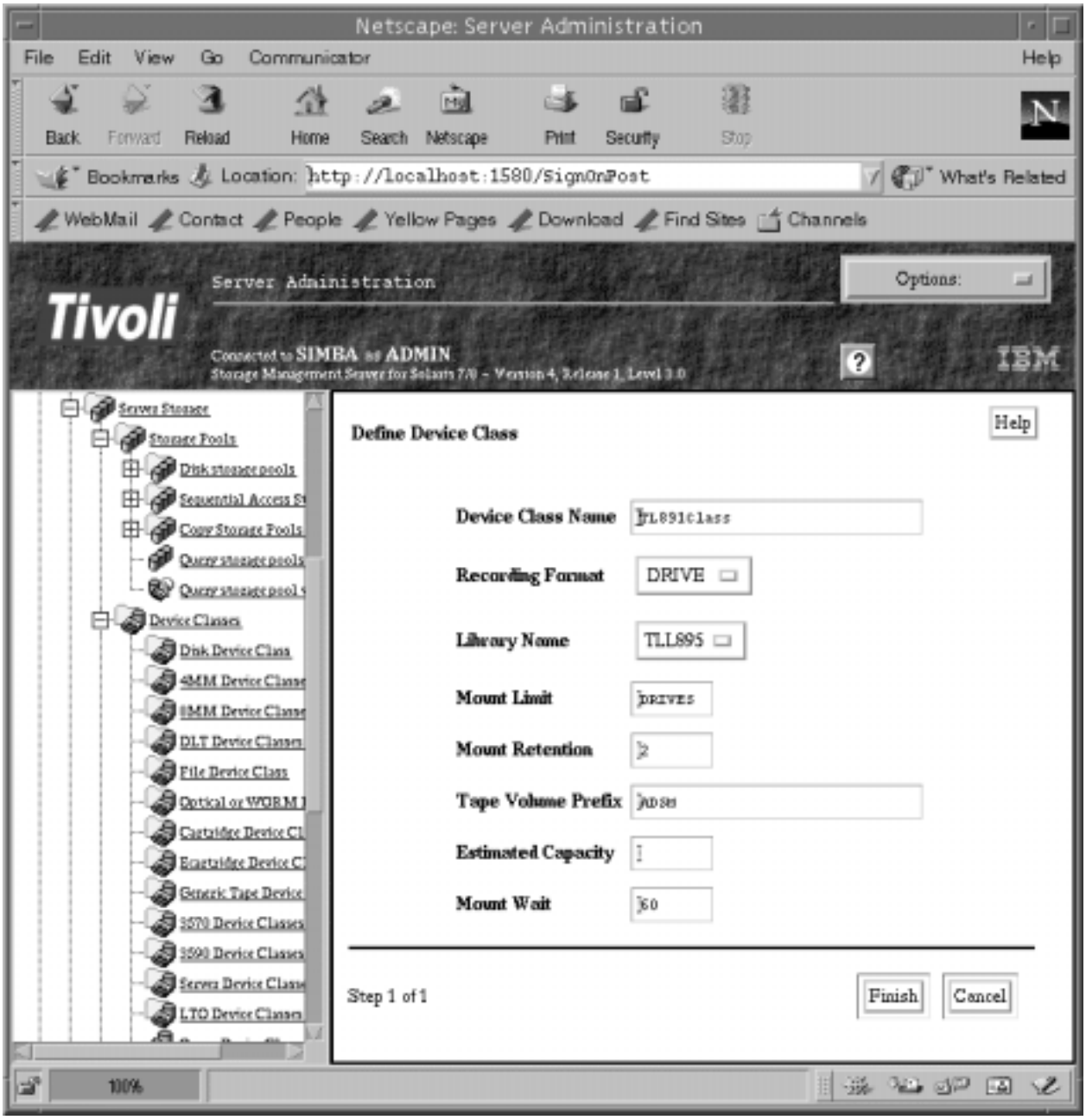
Library Name – *TL891*

Mount Limit – *Drives*

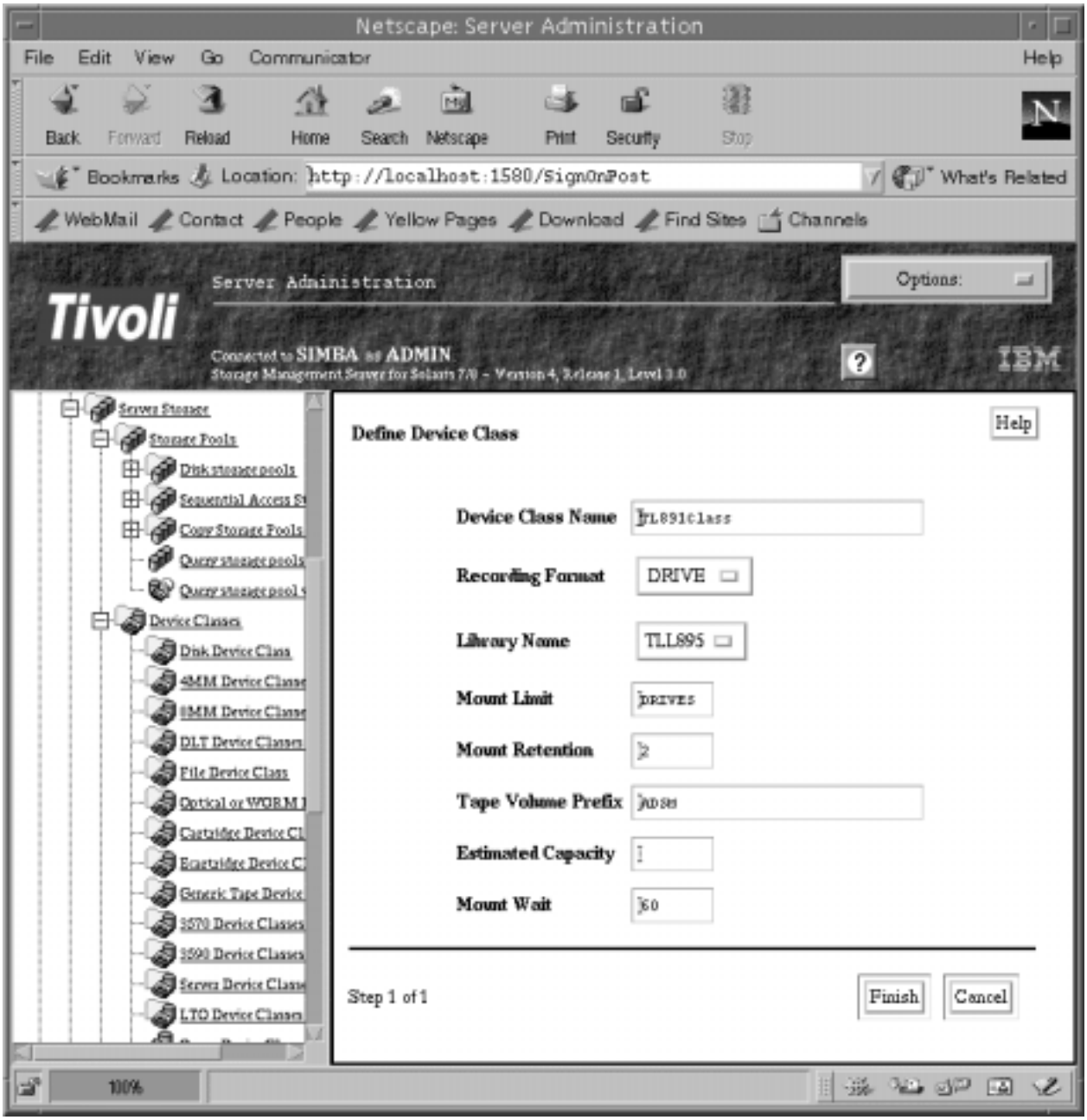
Mount Retention – *2*

Tape Volume Prefix – *ADSM*

Mount Wait – *60*


Netscape: Server Administration
File Edit View Go Communicator Help
Back Forward Reload Home Search Netscape Print Security Stop
Bookmarks Location: http://localhost:1580/SignOnPost What's Related
WebMail Contact People Yellow Pages Download Find Sites Channels
Tivoli
Server Administration
Options:
Connected to SIMBA as ADMIN
IBM
Server Storage
Storage Pools
Disk storage pools
Sequential Access St
Copy Storage Pools
Query storage pools
Query storage pool s
Device Classes
Disk Device Class
4MM Device Classe
8MM Device Classe
DLT Device Classes
File Device Class
Optical or WORM
Cartridge Device Cl
Reartridge Device C
Generic Tape Device
3570 Device Classes
3590 Device Classes
Server Device Class
LTO Device Classes
Define Device Class
Help
Device Class Name TL891class
Recording Format DRIVE
Library Name TLL895
Mount Limit DRIVES
Mount Retention 2
Tape Volume Prefix JU08
Estimated Capacity 1
Mount Wait 60
Step 1 of 1
Finish
Cancel
100%

138.The DLT Device Class window now shows the Device Class you created.



This completes the setting up of the Device Class portion of the lab

Step 16
Setting up the Storage Pools

139. Click on plus sign to the left of *Object View*, the plus sign to the left of *Server Storage*, the plus sign to the left of *Storage Pools*, click on *Sequential Access Storage Pools*, click on *Operations*, and *Define Sequential Access Storage pools*.

140. The *Define Sequential Access Storage Pools* window appears, input the below information and click on *Finish*.

Storage Pool Name – *TL891SP*

Device Class – *TL891CLASS*

Description – *TL891 Storage Pool*

Media access Status – *READ/WRITE*

Maximum Size Threshold – *NOLIMIT*

Next Storage Pool – “Left Blank”

High Migration Threshold – *90*

Low Migration Threshold – *70*

Collocate? – *No*

Reclamation Threshold – *60*

Maximum Scratch Volume Allowed – *999*

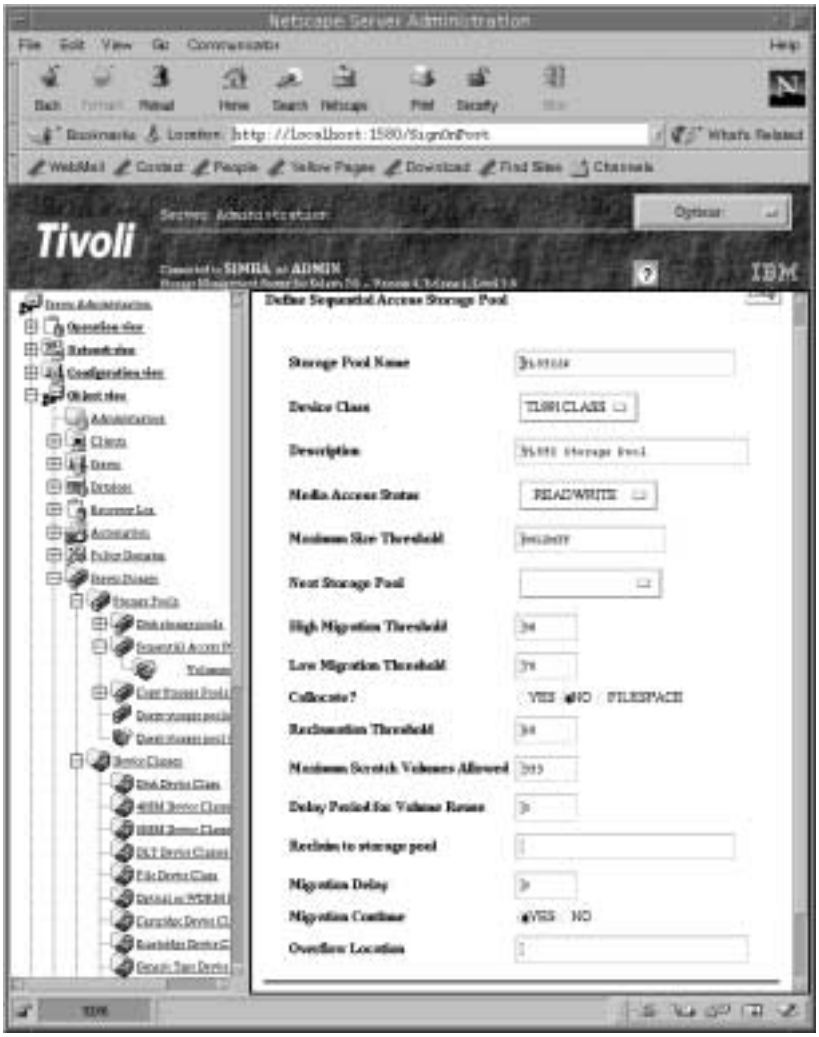
Delay Period for Volume Reuse – *0*

Reclamation to Storage Pool – “Left Blank”

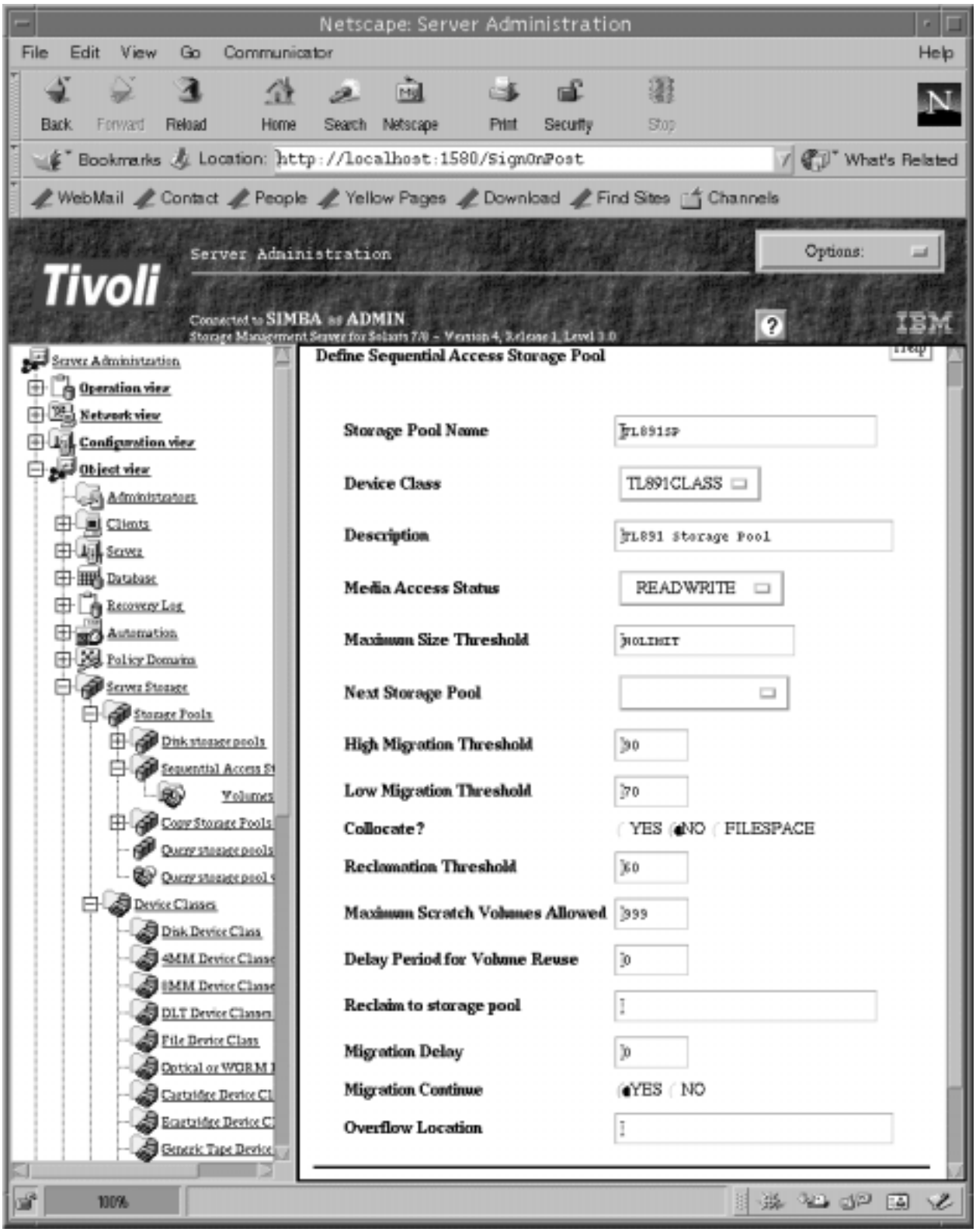
Migration Delay – *0*

Migration Continue – *YES*

Overflow Location – “Left Blank”



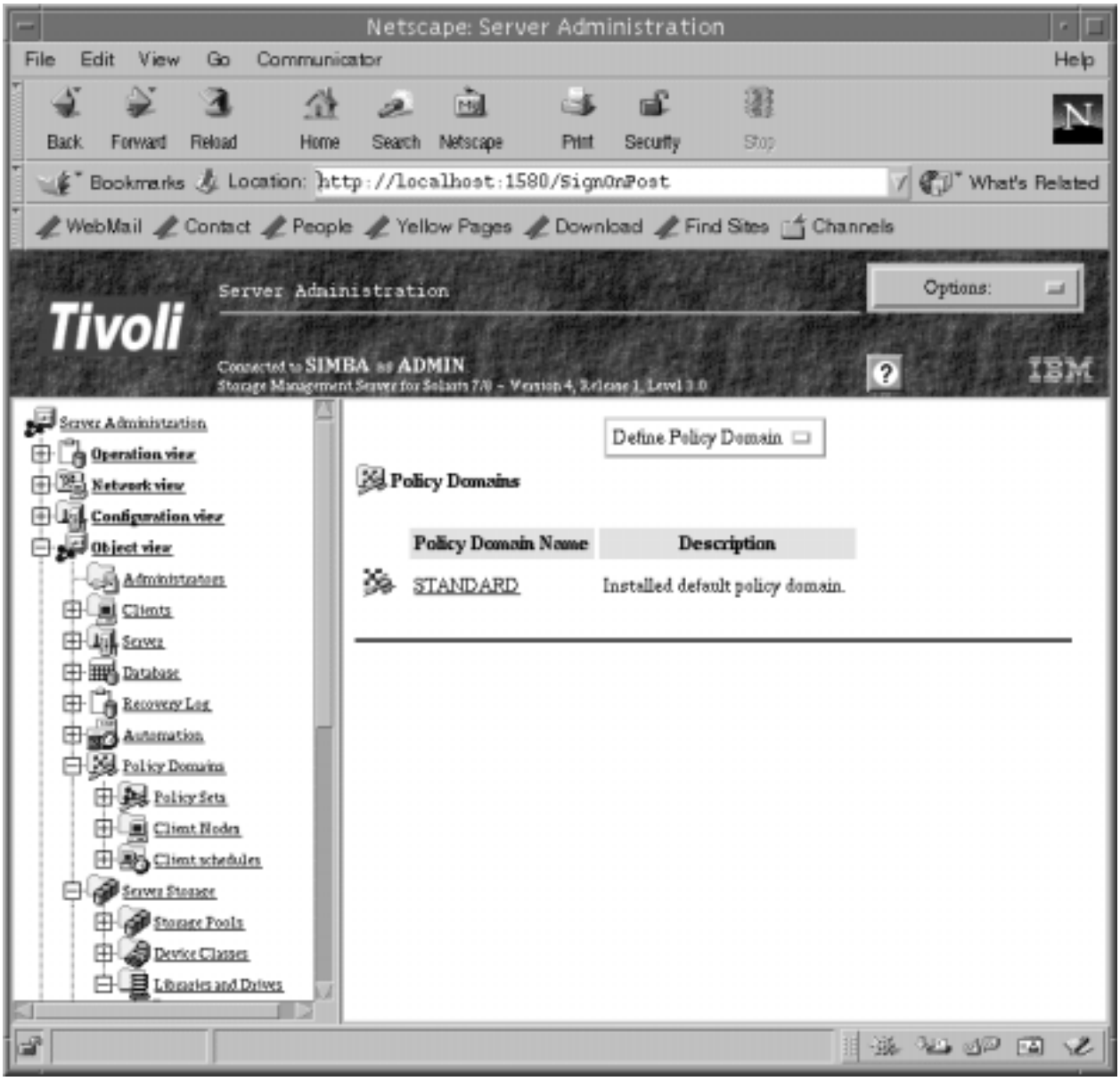
141. The *Sequential Access Storage Pools* window appears, it now displays the Storage Pool you just created.



Step 17
Setting up the Policy Domain Information

142. Click on the *plus sign* to the left of *Object View*, then the *plus sign* to the left of *Policy Domains*, click on *Policy Domain*, then *Operations*, and then *Define Policy Domain*.

Note: There is already a Standard Policy domain set up. Remove it before continuing to the next step.



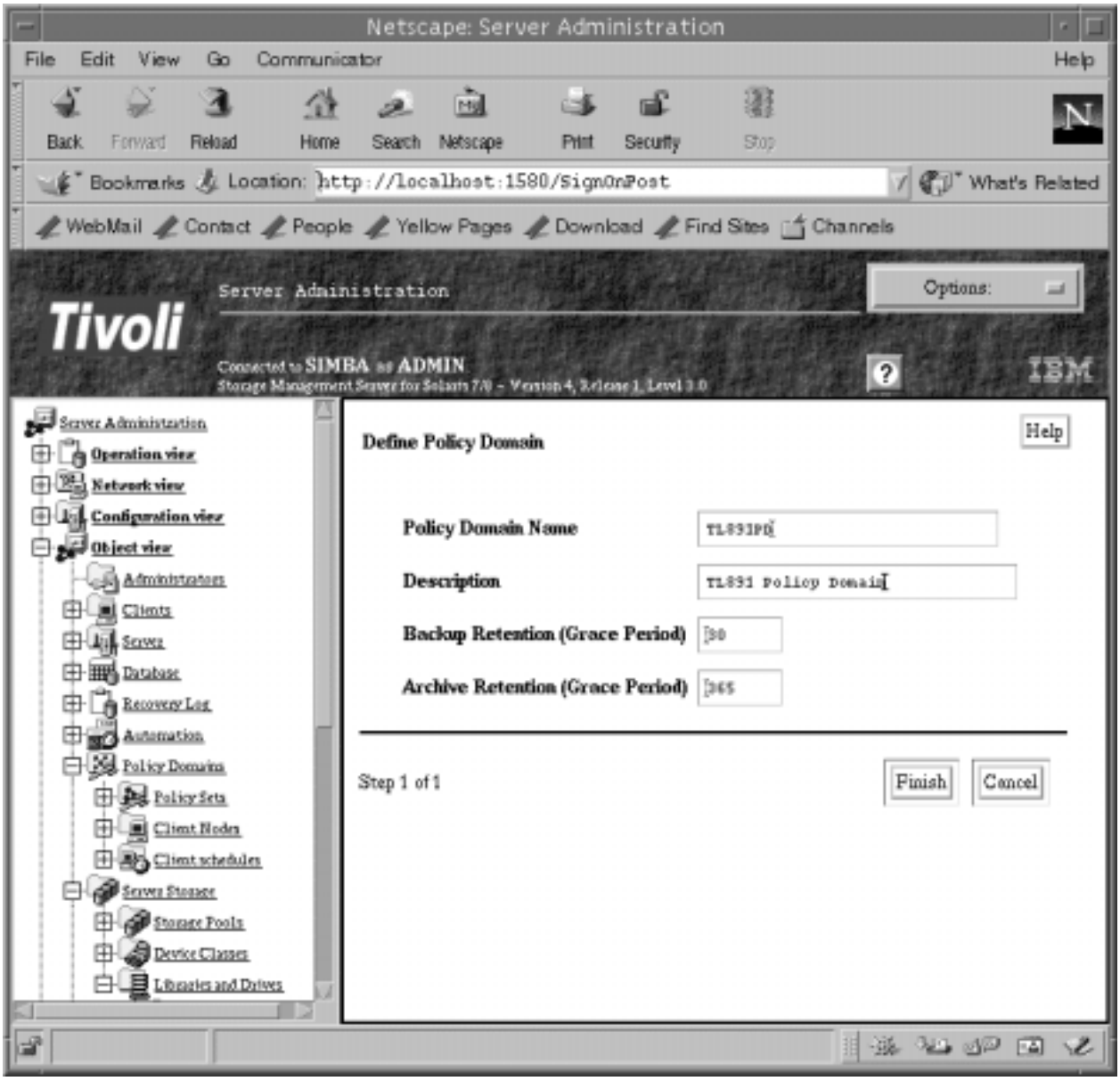
143. The Define Policy Domain window appears, input the below information and then click on Finish and then Return. If fails, verify the information you are entering and try it again, if passes continue to step 31.

Policy Domain Name – *TL891PD*

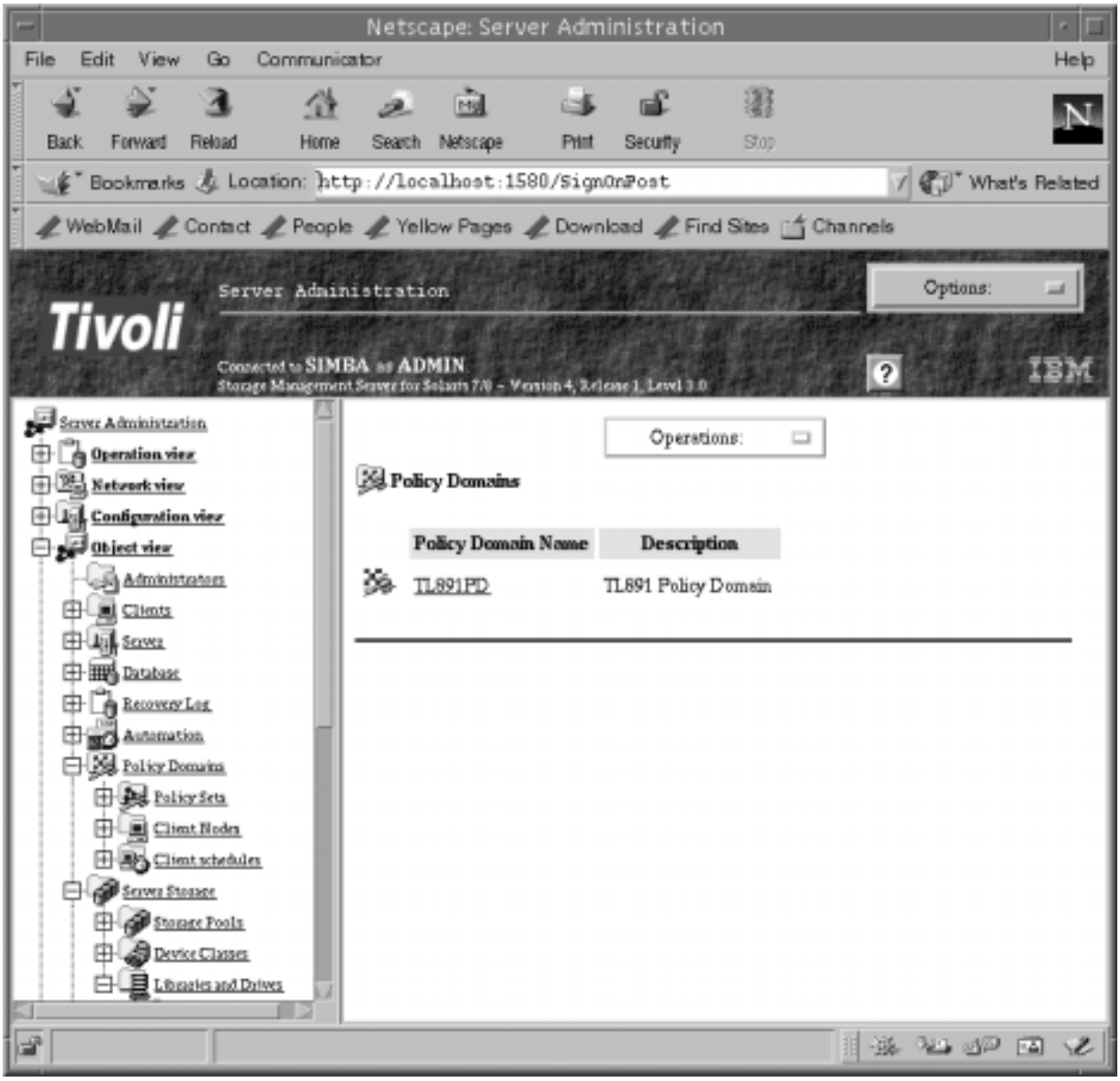
Description – *TL891 Policy Domain*

Backup Retention (Grace Period) – *30*

Archive Retention (Grace Period) – *365*



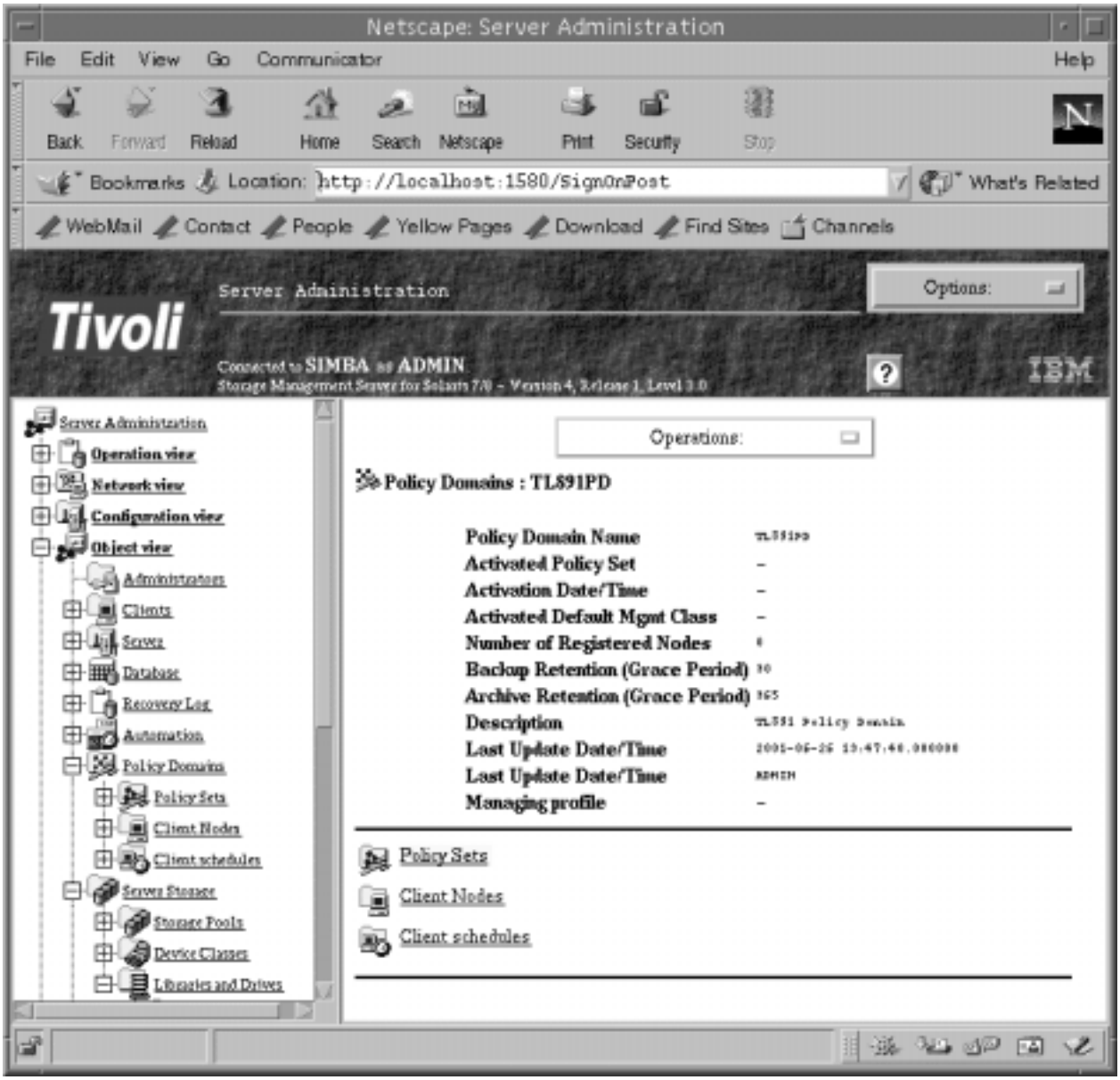
144.The *Policy Domain* window now displays the Policy Domain you have just created.



This completes the installation of the Policy Domain

Step 18
Setting up the Policy Set Information

145. Click on the *Policy Domain* that you created. The *Policy Domain* window appears with detailed information about this *Policy Domain*. Click on *Policy Sets* at the bottom of the window, click on *Operation*, and then *Define Policy Set*.

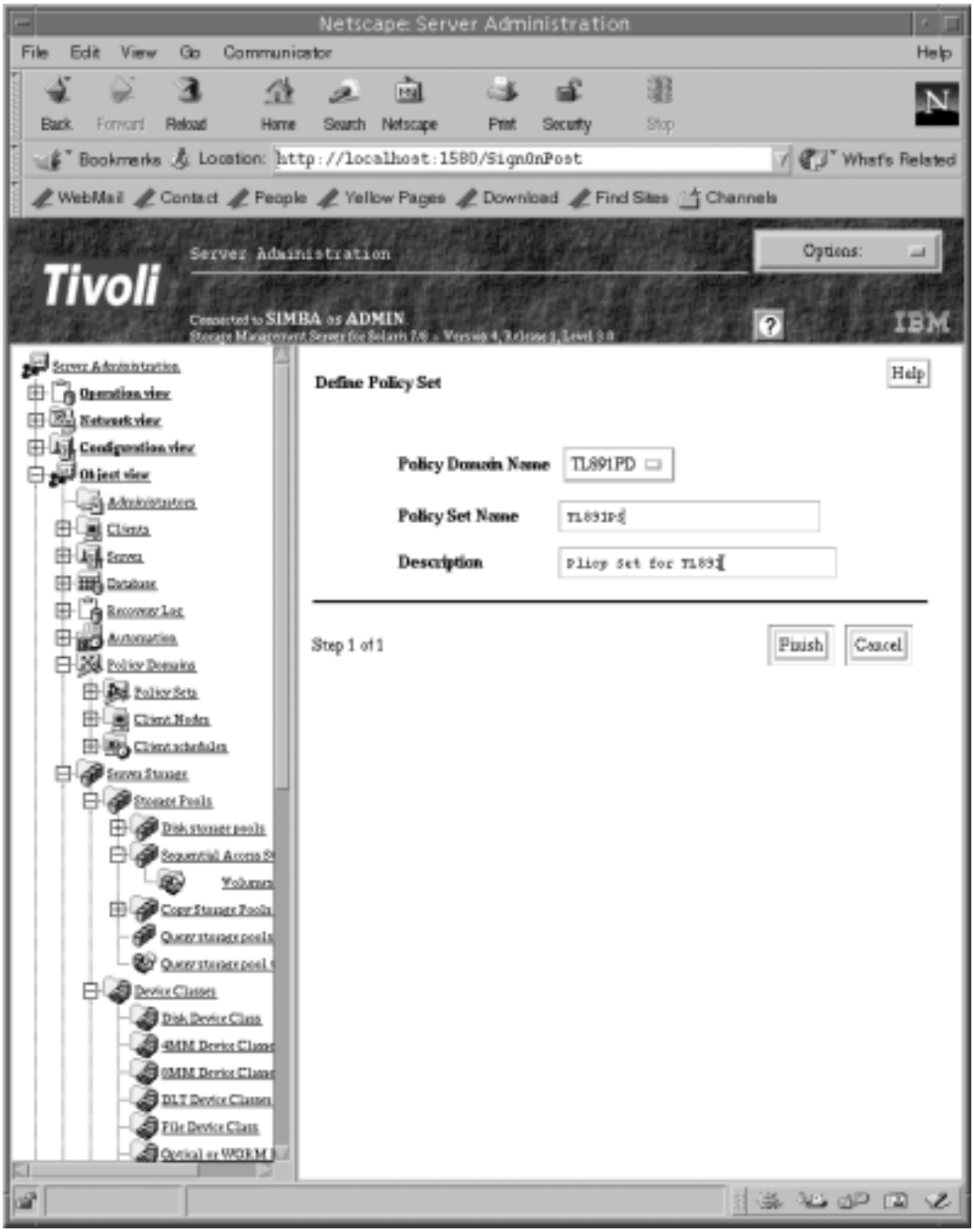


146. The *Define Policy Set* window appears, input the below information and then click on *Finish* and then *Return*. If fails, verify the information you are entering and try it again, if passes continue to the next step.

Policy Domain Name – *TL891PD*

Policy Set Name – *TL891PS*

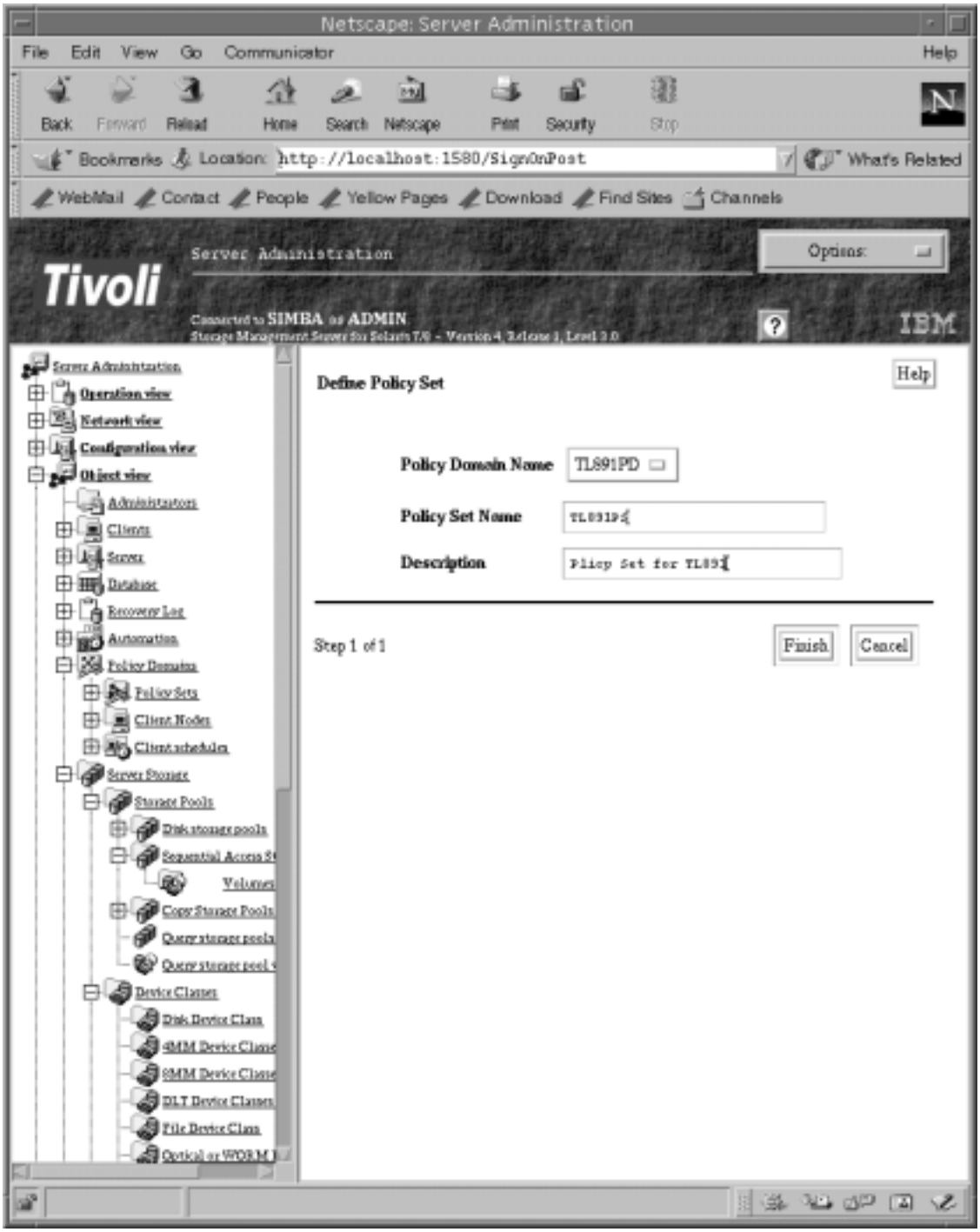
Description – *Policy Set for TL891*



This completes the setting up of the policy set portion of the lab.

Step 19
Setting up the Management Classes

147. The *Policy Set* window now displays the Policy Set that you just created. Click on the policy set that you created, then *Management Classes*, then *Operations*, and *Define Management Classes*.



148. The *Define Management Classes* Window appears, input the below information and then click on *Finish* and then *Return*. If fails, verify the information you are entering and try it again, if passes continue to step 36.

Policy Domain Name – *TL891PD*

Policy Set Name – *TL891PS*

Mgmt Class Name – *TL891MC*

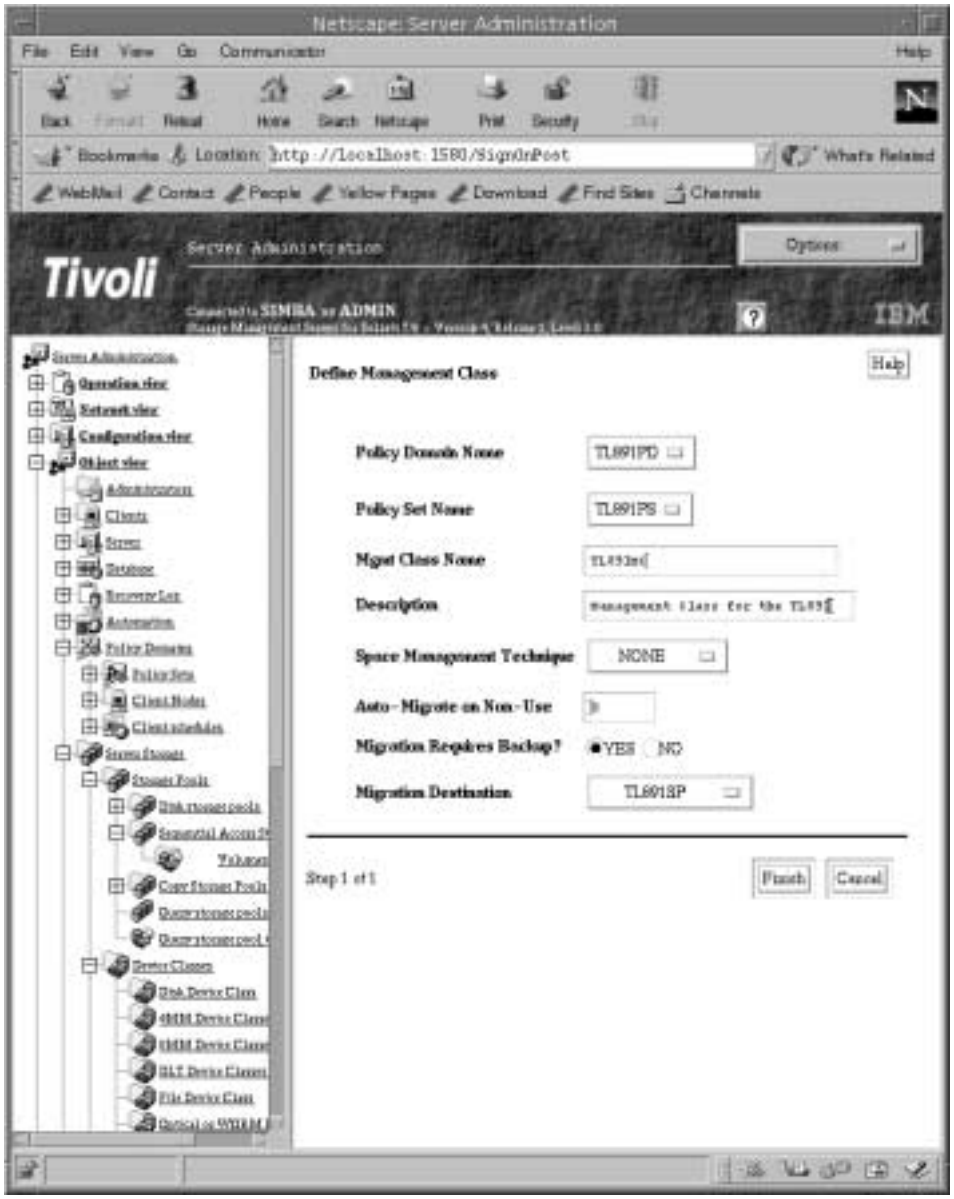
Description – *Management Class For TL891*

Space Management Technique – *NONE*

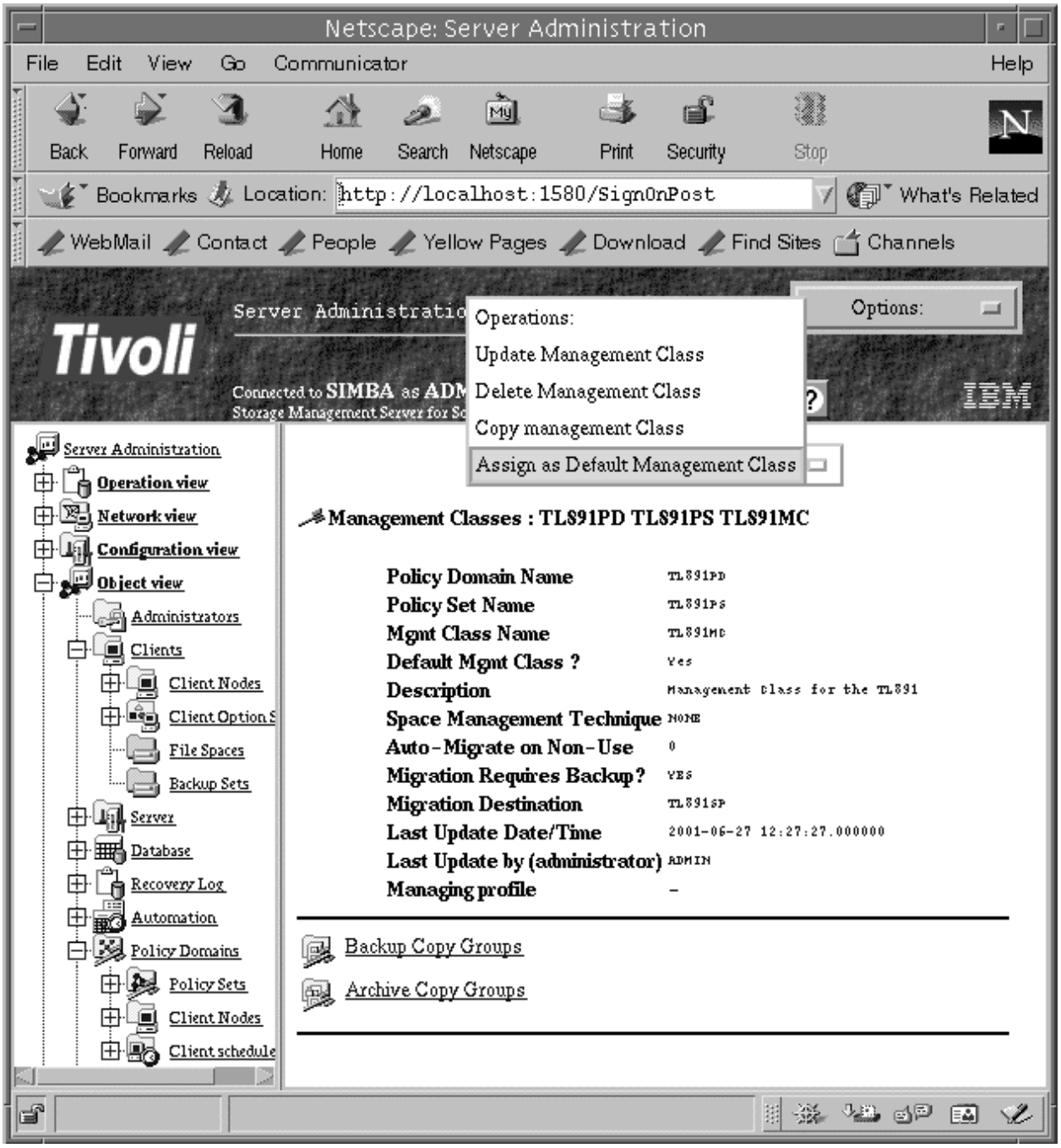
Auto-Migrate on Non-Use – *0*

Migration Requires Backup – *Yes*

Migration Destination – *TL891SP*



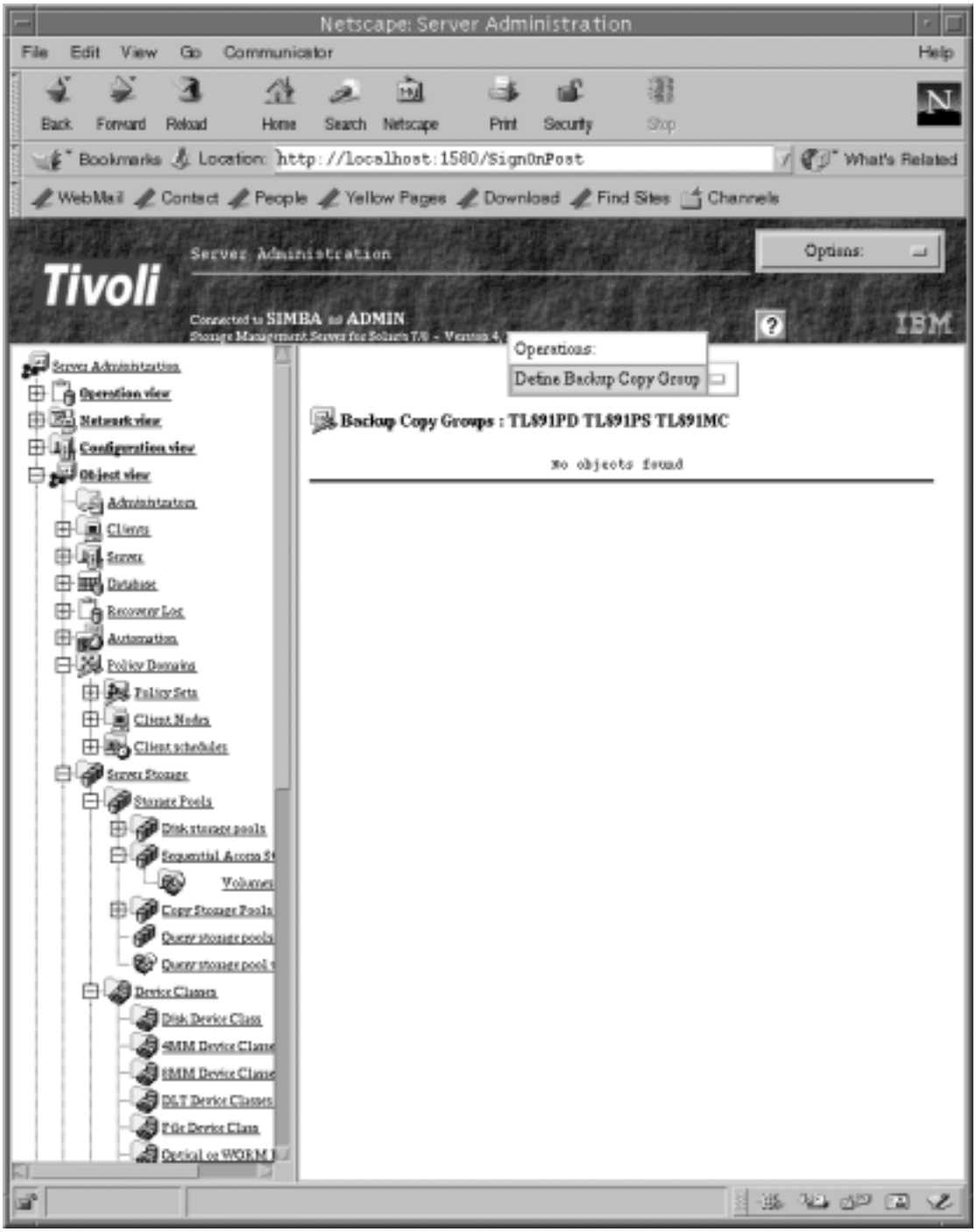
149. The *Management Class* window appears, it displays the Management Class you created. Click on the *management class*, then *Operations*, then *Assign as Default Management Class*, then *Finish* and then *Return*.



This completes the creation of the Management Classes portion of the lab.

Step 20
Defining the Backup Copy Group

150. The *Management Classes* window appears it now shows the *Management Class* you just created. Click on the *Management Class* you created, then *Backup Copy Groups*, then *Operations*, then *Define Backup Copy Group*.



151. The *Define Backup Copy Group* window appears, input the below information and click *Finish* and *Return*. If fails, verify the information you are entering and try it again, if passes continue to the next step.

Policy Domain Name – *TL891PD*

Policy Set Name – *TL891PS*

Mgmt Class Name – *TL891MC*

Copy Destination – *TL891SP*

Copy Frequency – *0*

Version Data Exists – *2*

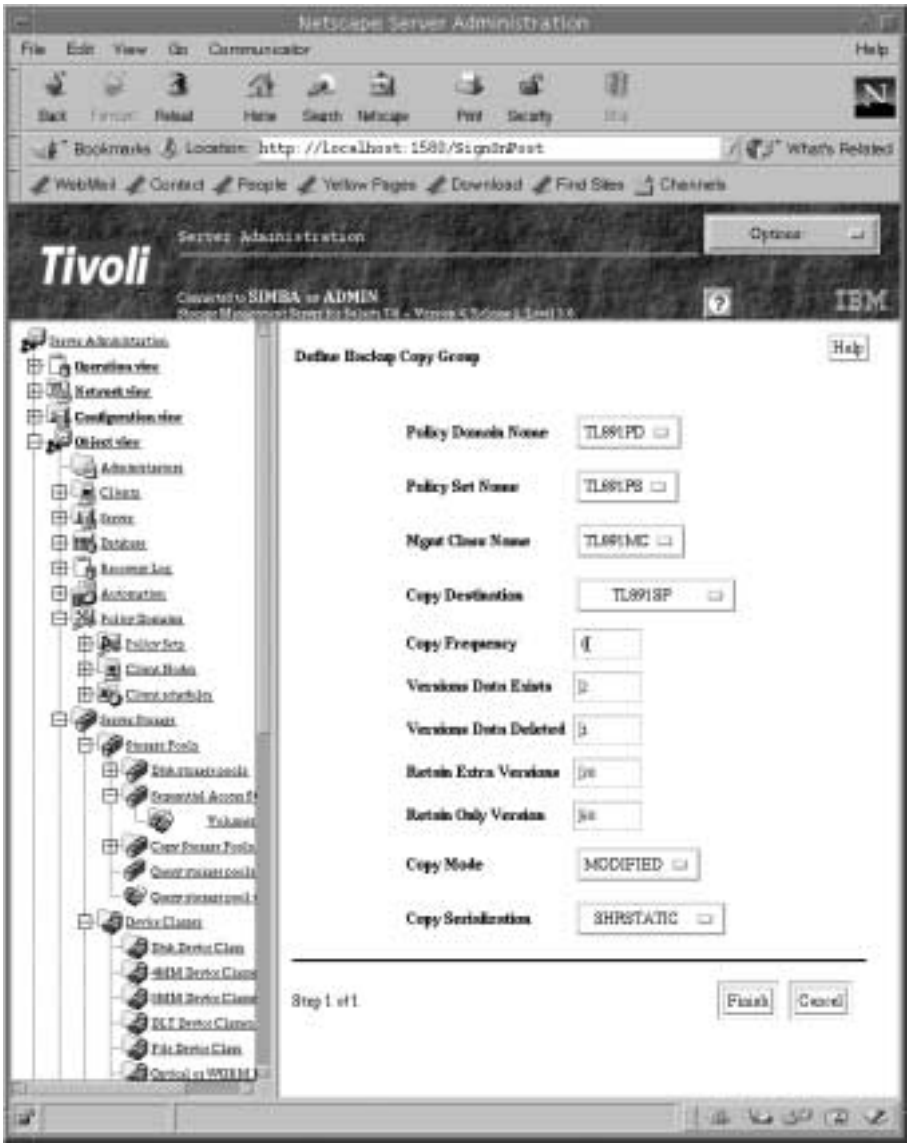
Version Data Delete – *1*

Retain Extra Version – *30*

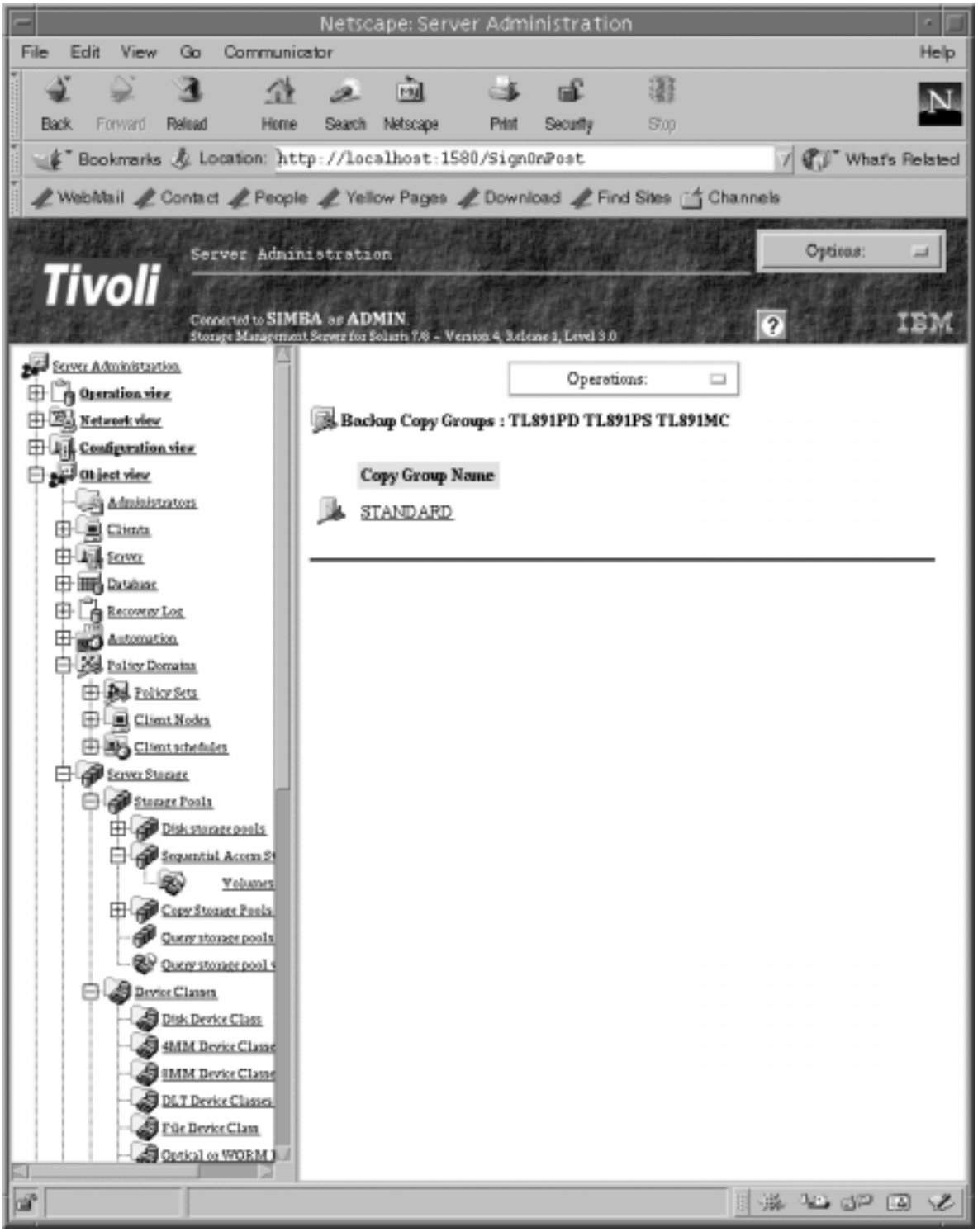
Retain Only Version – *60*

Copy Mode – *Modified*

Copy Serialization – *SHRSTATIC*



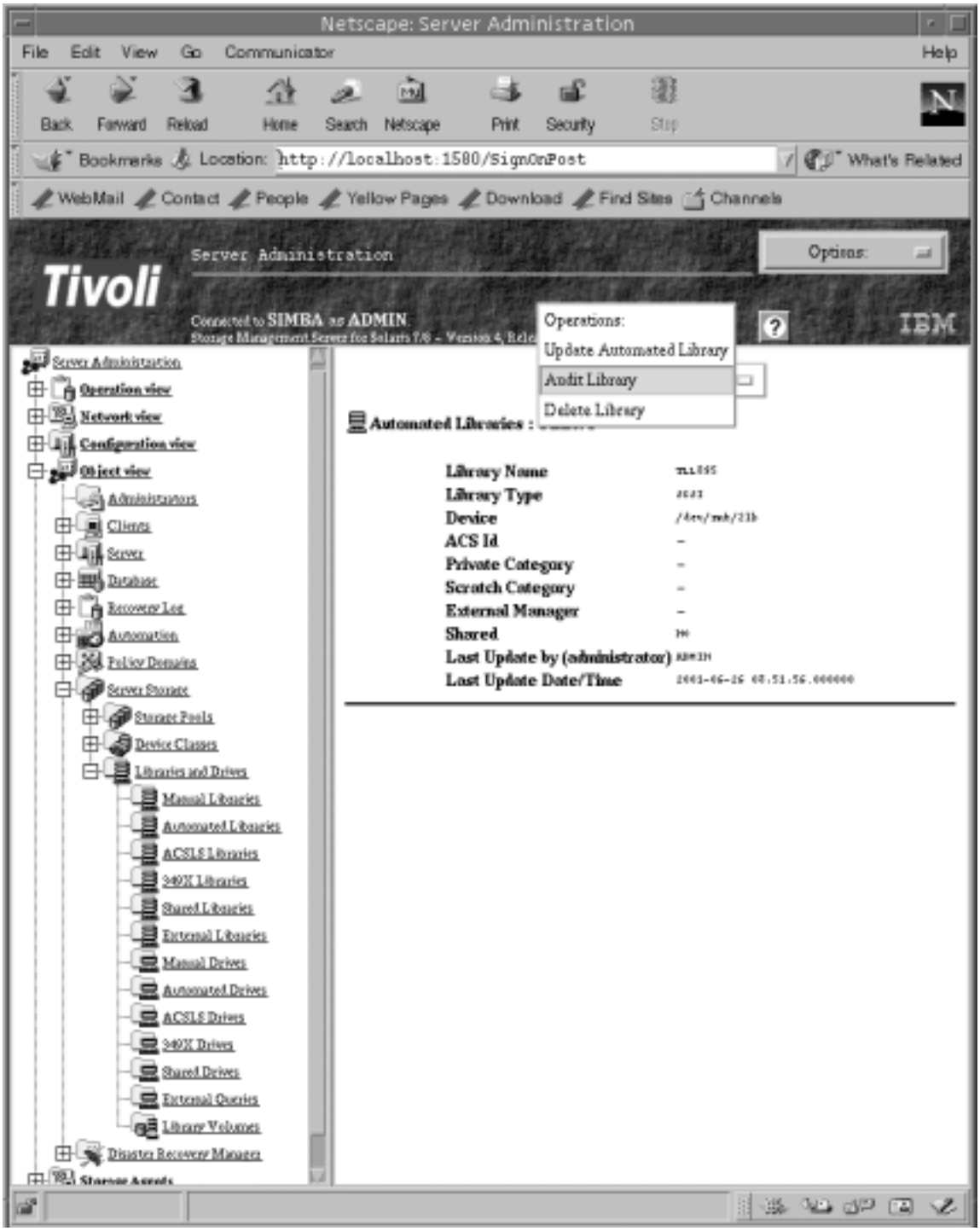
152. The *Backup Copy Groups* Windows appears, it now displays the Backup Copy Group they you created.



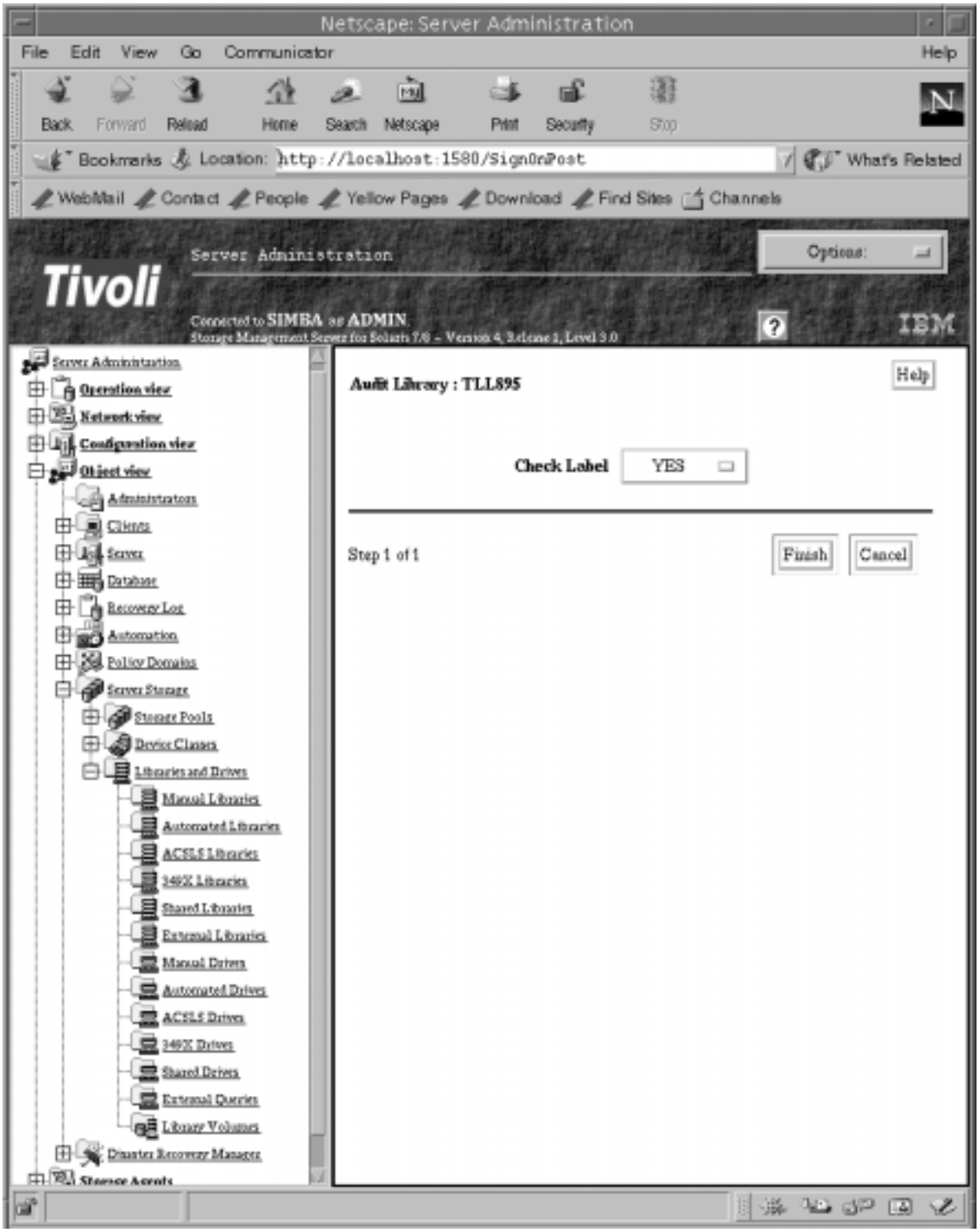
This completes the Defining of the Backup Copy Group portion of the lab.

Step 21
Audit the Library

153. Click on *Object View*, *Server Storage*, *Library and Drives*, *Automated Libraries*, The *Library you defined*, *Operations*, and then *Audit Library*.



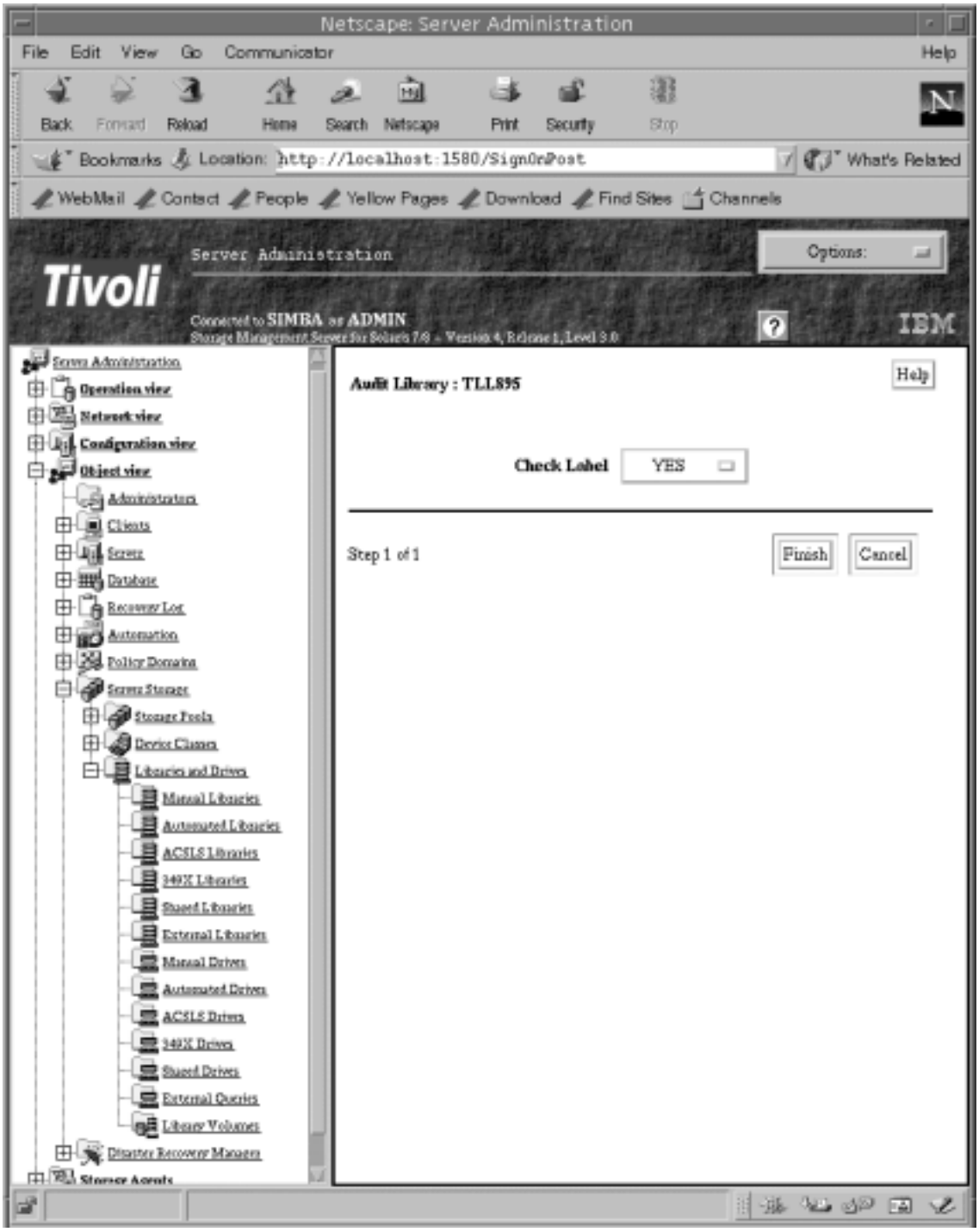
154. The *Audit Library* window appears, Verify that *YES* is selected for *Check Labels*, then click *Finish*, and then *Return*.



This completes the Audit the Library portion of the lab.

Step 22
Labeling the Library Volume

155. The *Audit Library* window appears, it displays the information about the library. Click on *Object View*, then *Server Storage*, then *Library and Drives*, then *Library Volumes*, then *Operations*, and then *Label Library Volume*.



156. The Label Library Volume window appears, input the below information and click on *Finish* and then *Return*.

Library Name – *TL891*

Volume Name – *"Leave Blank"*

Search Library – *YES*

Source for Library – *BARCODE*

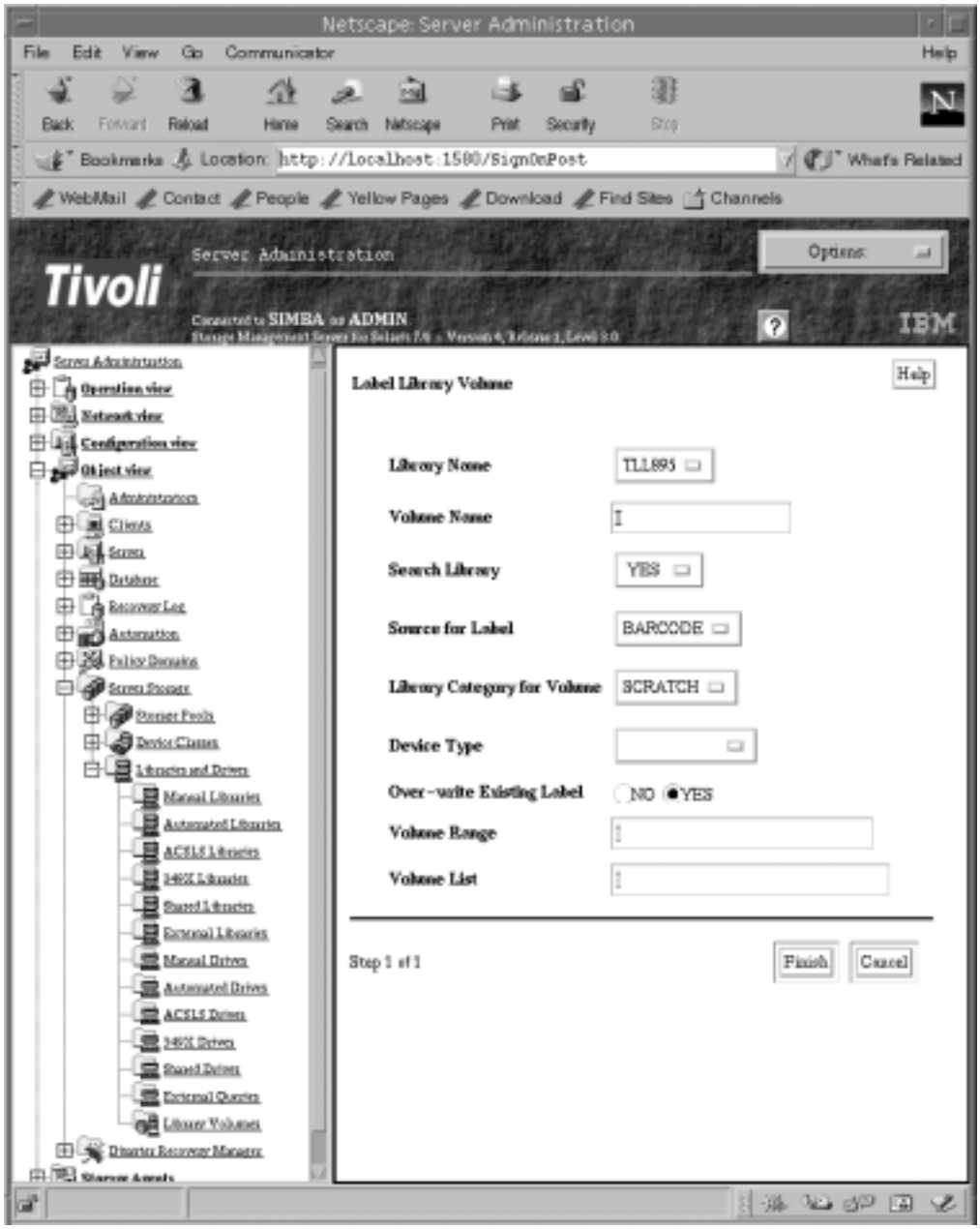
Library Category for Volume – *SCRATCH*

Device Type – “Leave Blank”

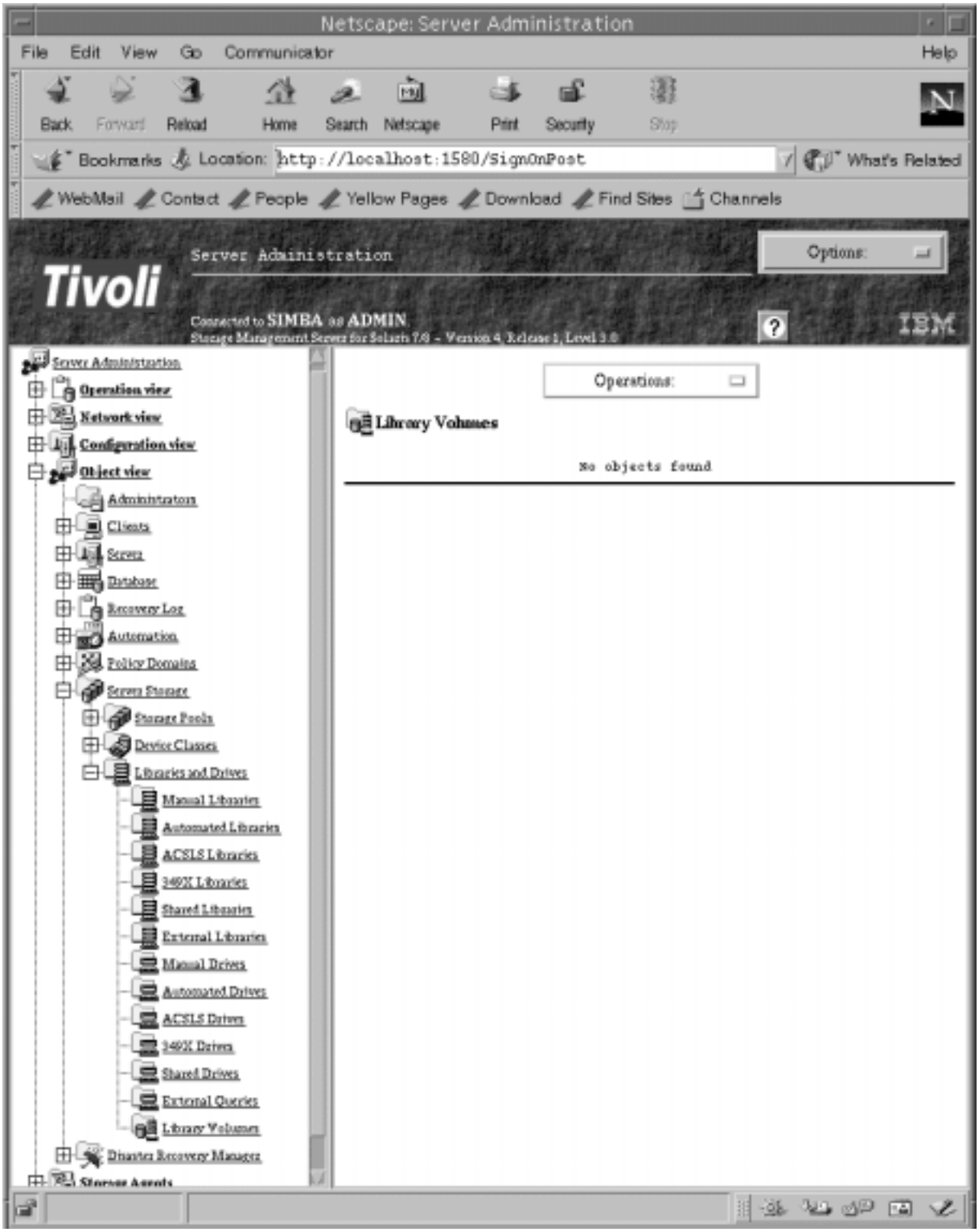
Over-write existing Label – *YES*

Volume Range – “Leave Blank”

Volume List – “Leave Blank”



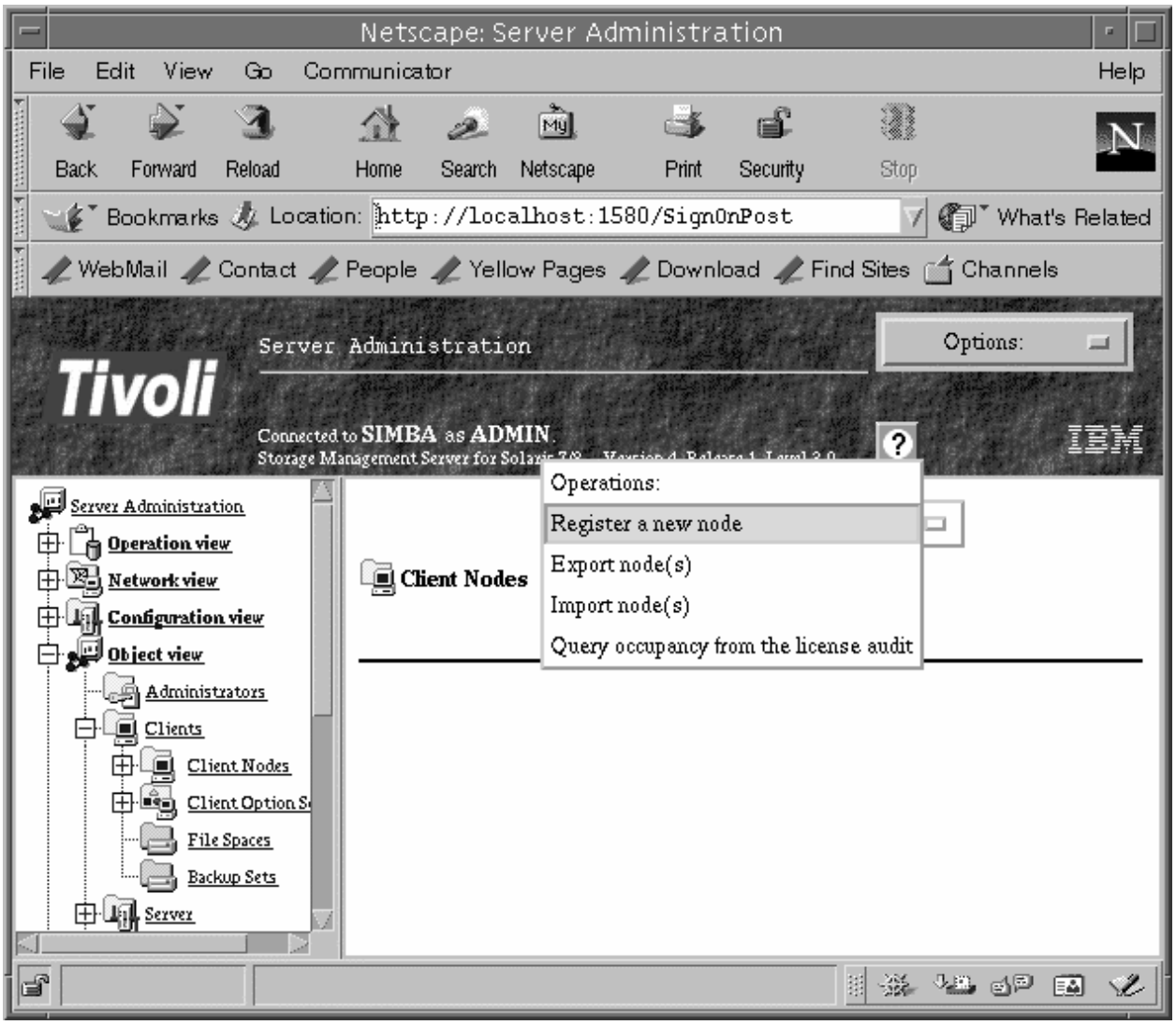
157.The Library Volumes Window appears, with no objects found.



This completes the Labeling of the Library Volume portion of the lab.

Step 23
Setting up the Client Node Information

158. Click on the *plus sign* to the left of *Object View*, the *plus sign* to the left of *Clients*, click on *Client Nodes*, then *Operations*, and then *Register a New Node*.



159. The *Register a New Node* window appears, input the below information then click on *Finish* and then *Return*.

Node Name – *TL891NODE* "Name it what you want"

Password – *admin*

Contact – "Leave Blank"

Policy Domain Name – *TL891PD*

Client Compression Settings – *NO* "Tape devices already have their own compression."

Archive Delete Allowed – *YES*

Backup Delete Allowed – *NO*

Client Option SET – *"Leave Blank"*

Force Password Reset – *NO*

Node Type – *Client*

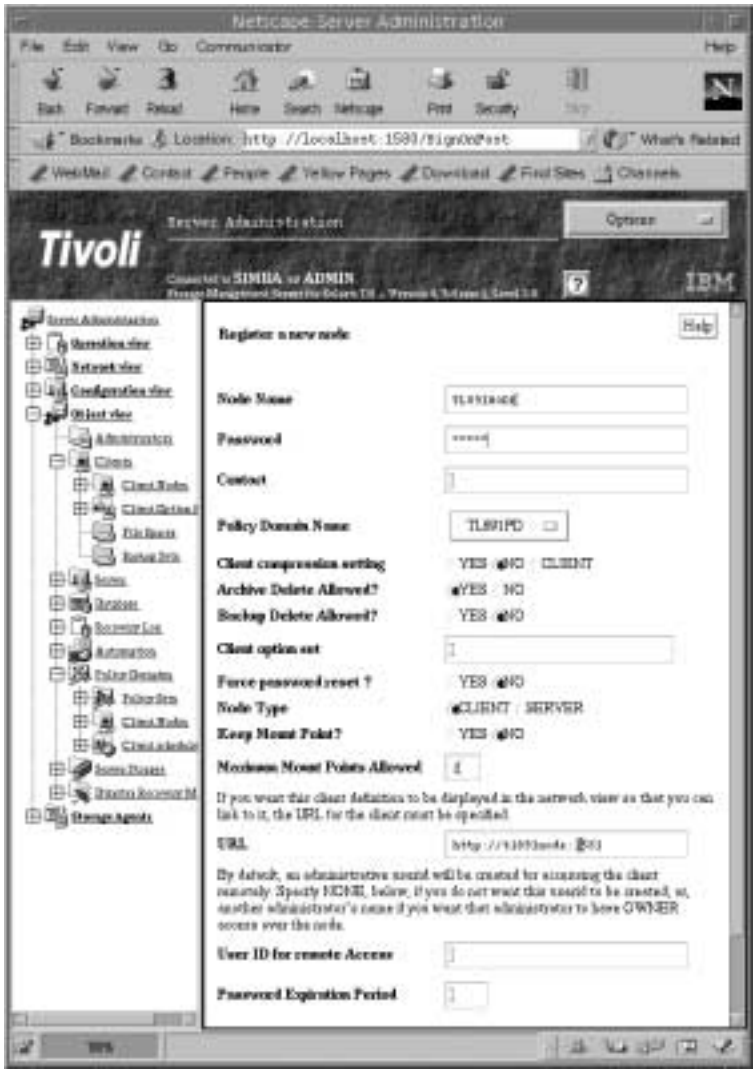
Keep Mount Point – *NO*

Maximum Mount Points Allowed – *2*

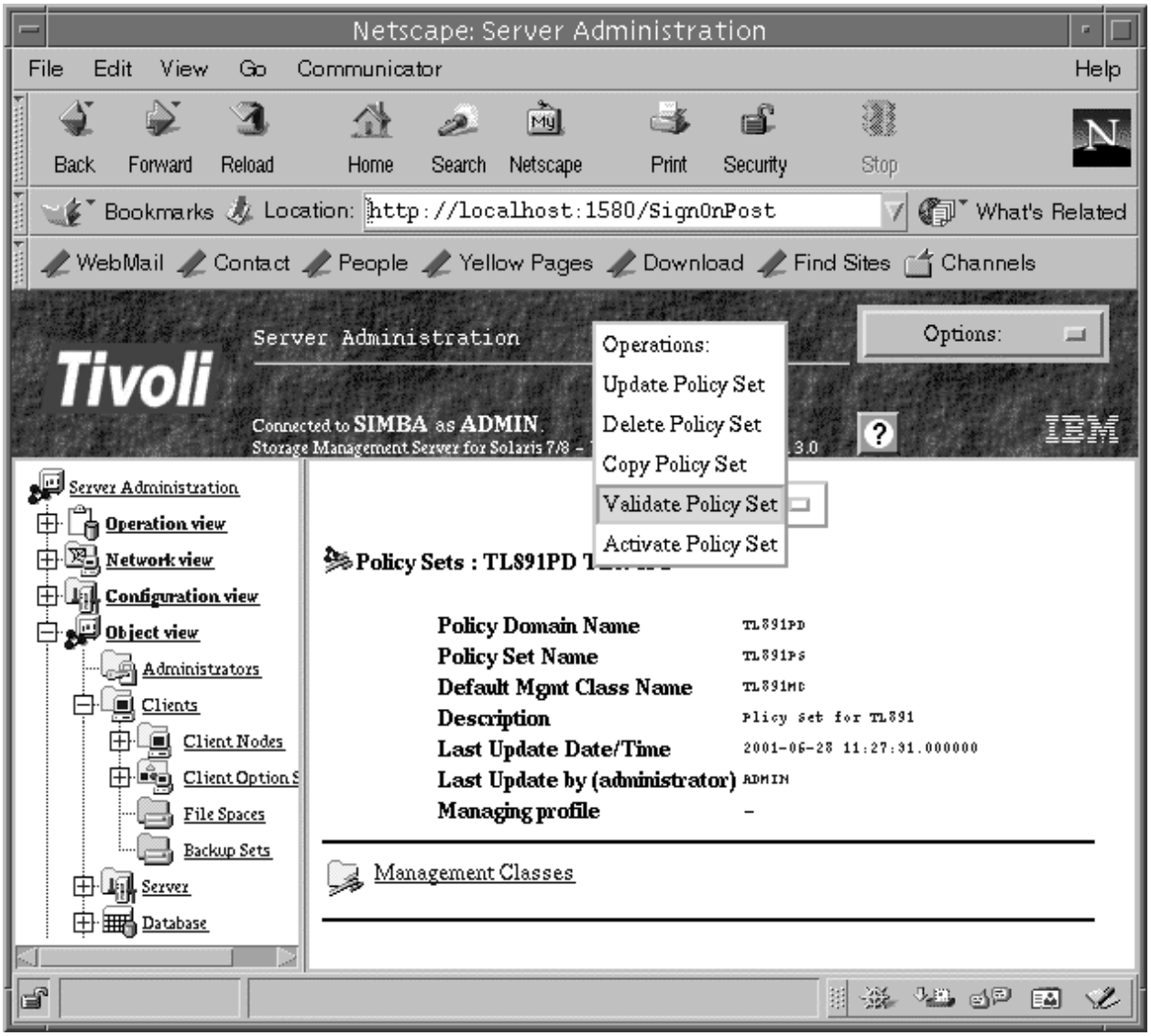
URL – *http://client.host.name:1581*

User ID for Remote Access - "Leave Blank"

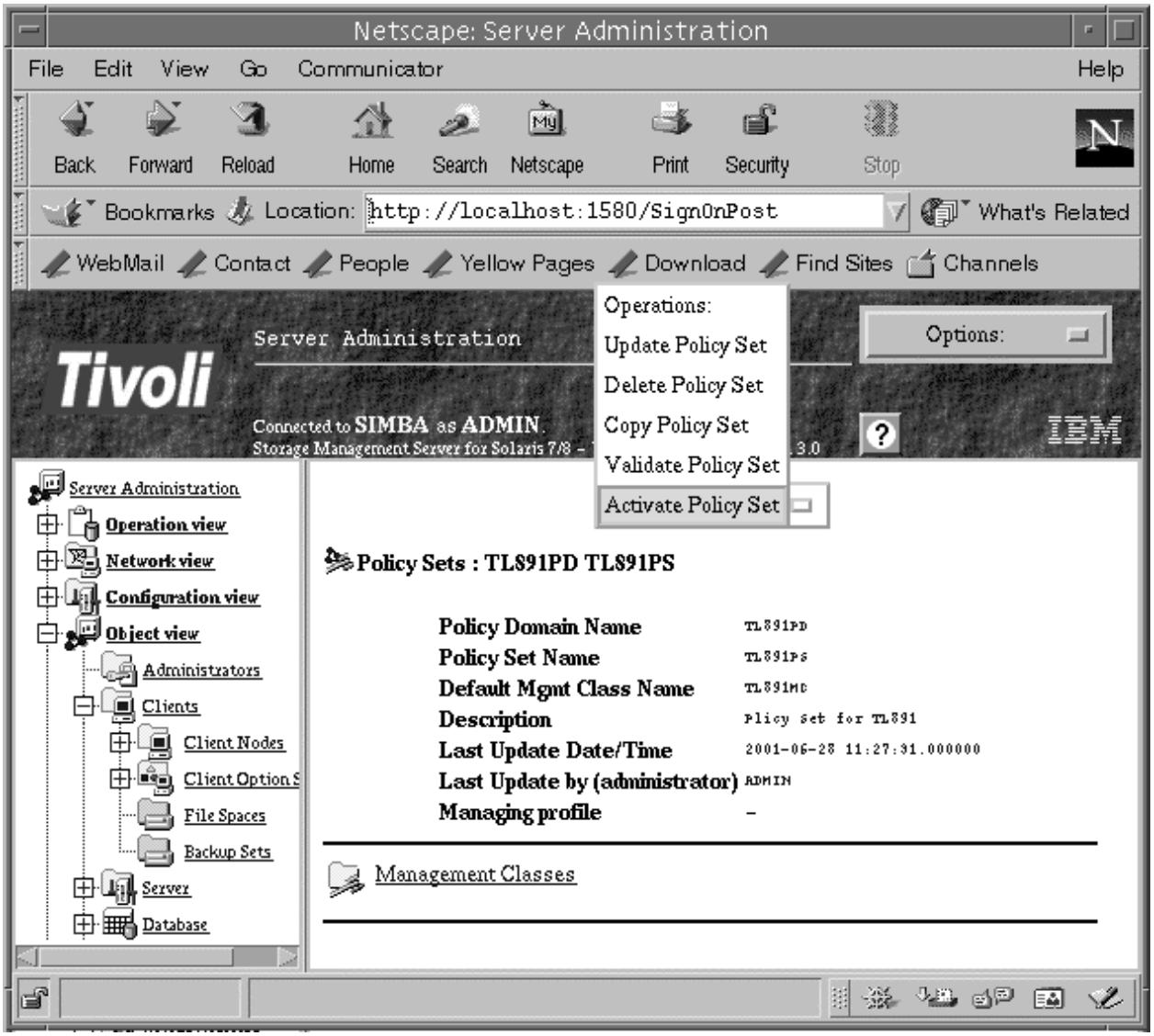
Password Expiration Period - "Leave Blank"



160. Click on *Object View*, then *Policy Domains*, then *Policy Sets*, then *The defined Policy Set*, then *Operations*, then *Validate Policy Set*, then *Finish* and then *Return*.


Netscape: Server Administration
File Edit View Go Communicator Help
Back Forward Reload Home Search Netscape Print Security Stop
Bookmarks Location: http://localhost:1580/SignOnPost What's Related
WebMail Contact People Yellow Pages Download Find Sites Channels
Tivoli
Server Administration
Connected to SIMBA as ADMIN.
Storage Management Server for Solaris 7/8 -
Options:
Operations:
Update Policy Set
Delete Policy Set
Copy Policy Set
Validate Policy Set
Activate Policy Set
IBM
Server Administration
Operation view
Network view
Configuration view
Object view
Administrators
Clients
Client Nodes
File Spaces
Backup Sets
Server
Database
Policy Sets : TL891PD
Policy Domain Name TL891PD
Policy Set Name TL891PS
Default Mgmt Class Name TL891MC
Description Plicy Set for TL891
Last Update Date/Time 2001-06-28 11:27:31.000000
Last Update by (administrator) ADMIN
Managing profile -
Management Classes

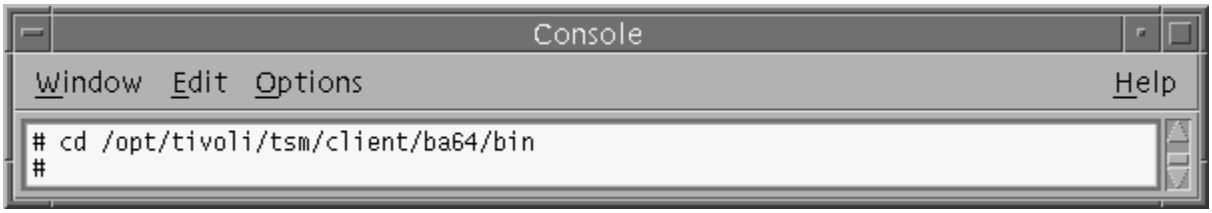
161. Click on *Operations*, then *Activate Policy Set*, then *Finish* and then *Return*.



This completes the Setting up of the Client Node portion of the lab.

Step 24
Running the dsmcad file in the background

162. Open a Console Window and go into the */opt/tivoli/tsm/client/ba64/bin* directory.



163. Run the *dsmcad* file and place it into memory by running the below command. Once ran, you can Minimize or close the window and go back to the Netscape Navigator window.

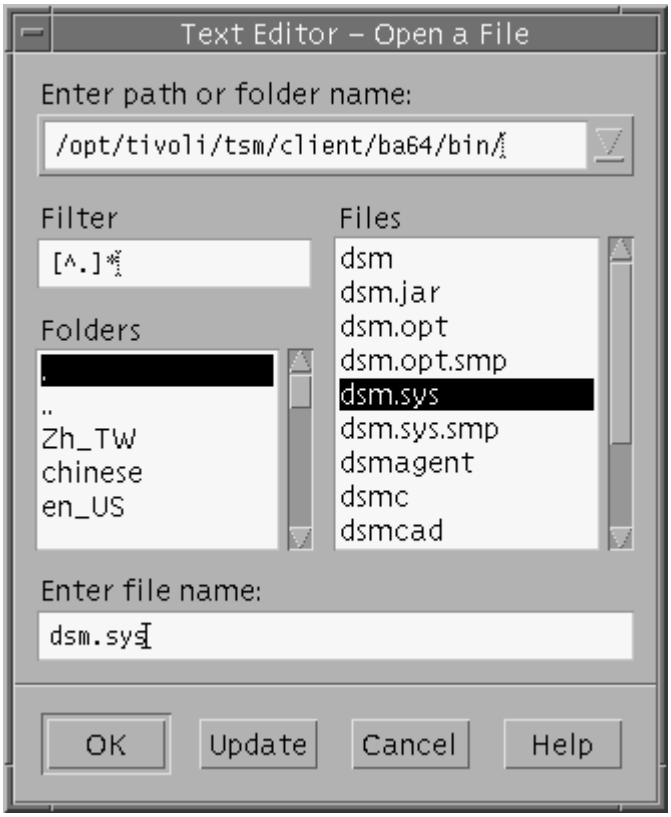
Note: If you minimize the window, you will be able to go back and view the actual command lines needed to perform the various tasks, Backup, Restore. Etc.

This completes the running of the dsmcad service in the background

Step 25
Install and configure the Web client from the command line

164. Open up a notepad session by clicking on the notepad icon on the task bar

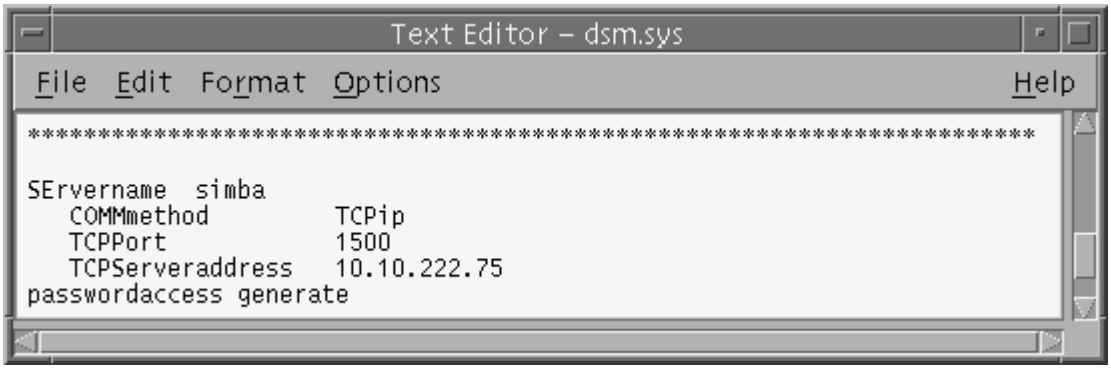
165. The Notepad window appears, maximize it, then click on file, open and follow the following path, /opt/tivoli/tsm/client/ba64/bin and double-click the dsm.sys file.



166. The information in the dsm.sys file is shown. Add the below information, exactly as shown, to the file above and below the information under the *****. Then save and close the window.

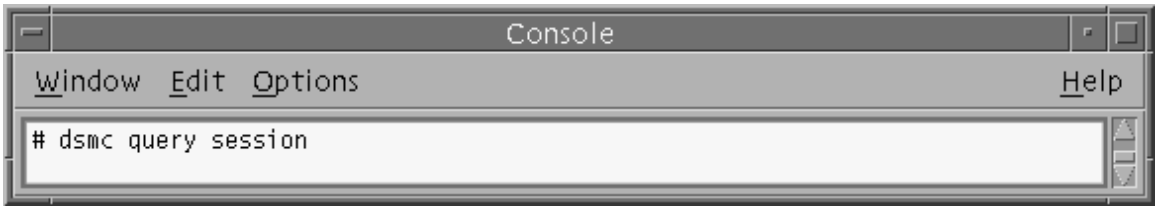
Above – *Servername simba* I used simba, your name will be different.

Below – *passwordaccess generate* – all lower case

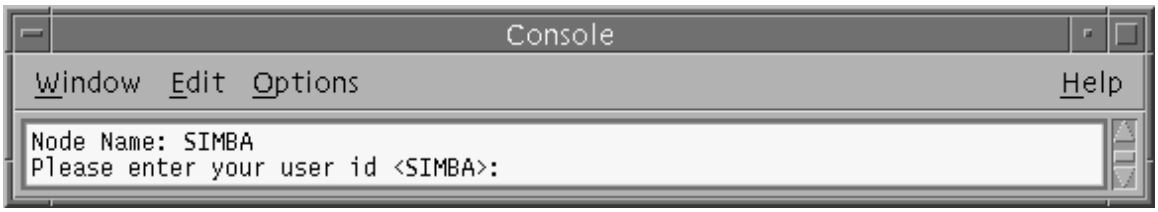


167. The Command prompt, #, appears Generate the TSM password, start a native backup-archive client.

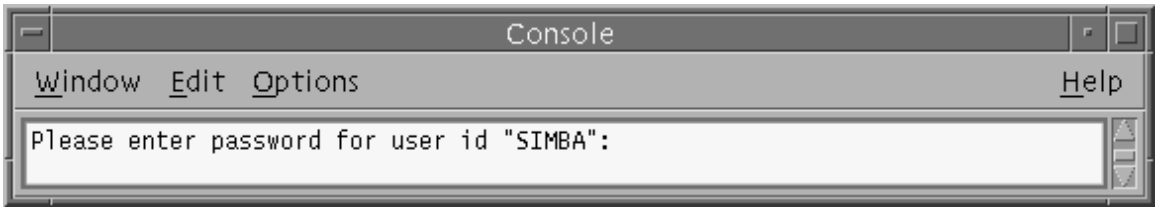
At the command prompt, #, type dsmc query session



168. The system will ask you to Please Enter your user id <simba>:Type your user id "simba for my lab" and hit Enter.



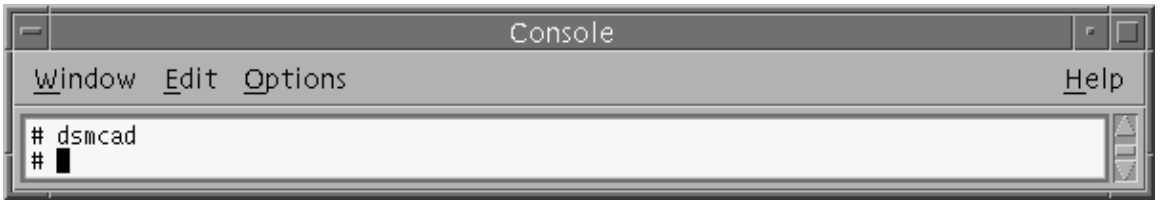
169. The system will ask you to Please Enter your password for user id <simba>:Type your password "client" and hit Enter.



170.Quit the native TSM backup-archive client.

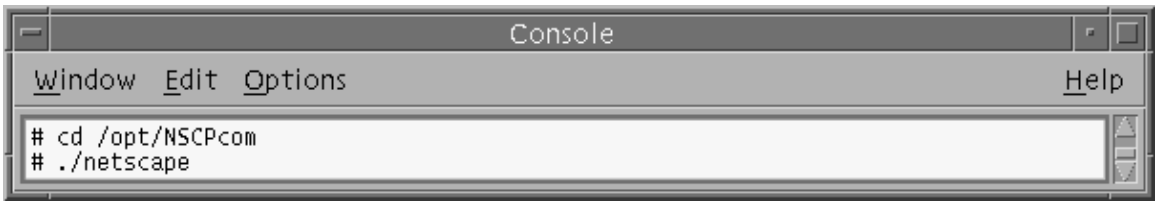
171.Start the client acceptor service.

At the command prompt type dsmcad and hit enter.



172.Load Netscape.

At the command prompt, #, type the below commands and hit Enter after each.

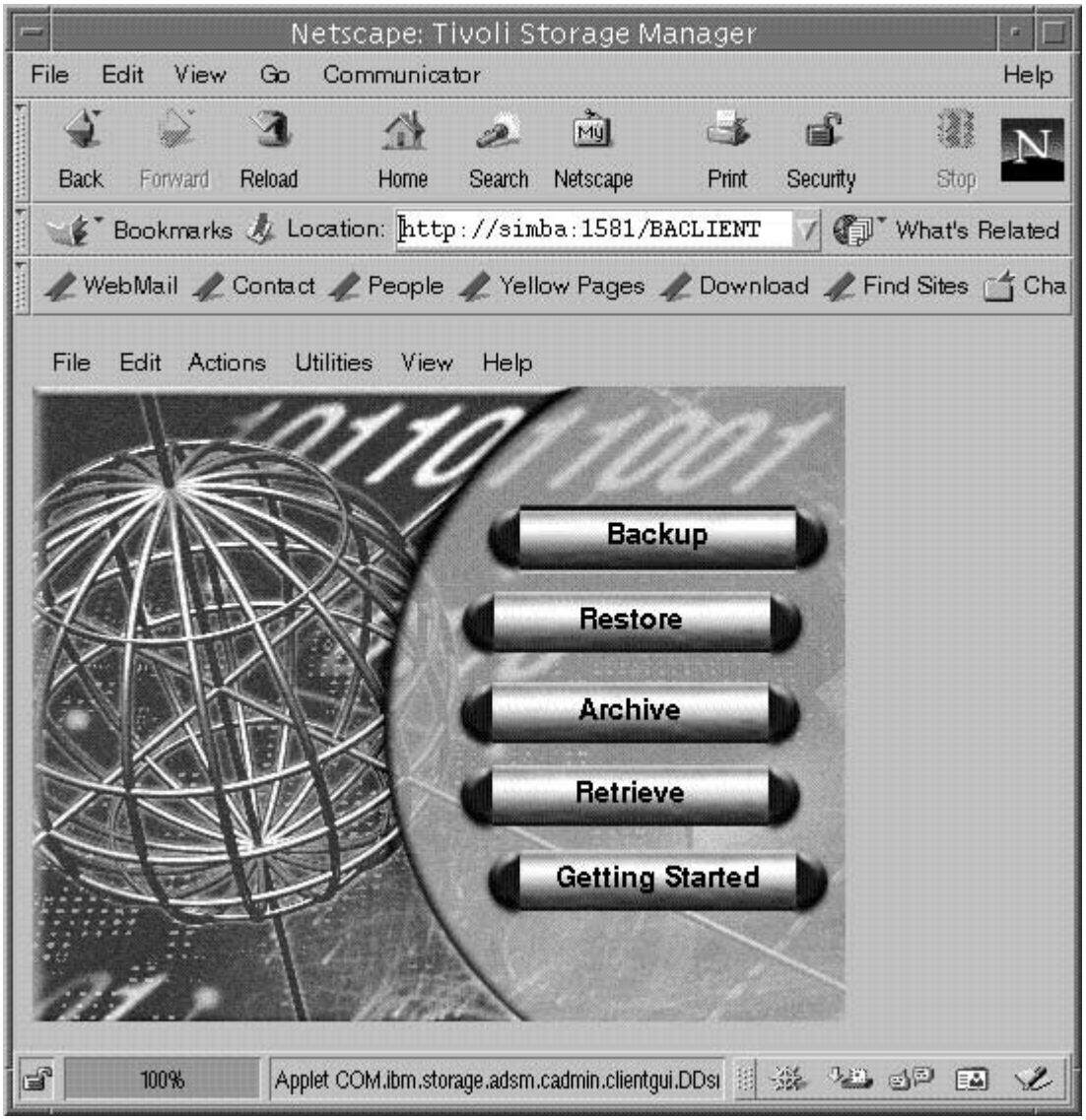


173.The Netscape window appears, enter the below url into the url address and hit enter.

http://your_machine_name:1581 “my lab I used simba”


Netscape: Server Administration
File Edit View Go Communicator Help
Back Forward Reload Home Search Netscape Print Security Stop
Bookmarks Go To: http://simba:1581/ What's Related
WebMail Contact People Yellow Pages Download Find Sites Channels
Tivoli
Server Administration
Storage Management Server for Solaris 7/8 - Version 4, Release 1, Level 3.0
IBM
Administrator Login
Userid:
Password:
Submit
100%

174.The Netscape Tivoli Storage manager window appears, click on the backup button.

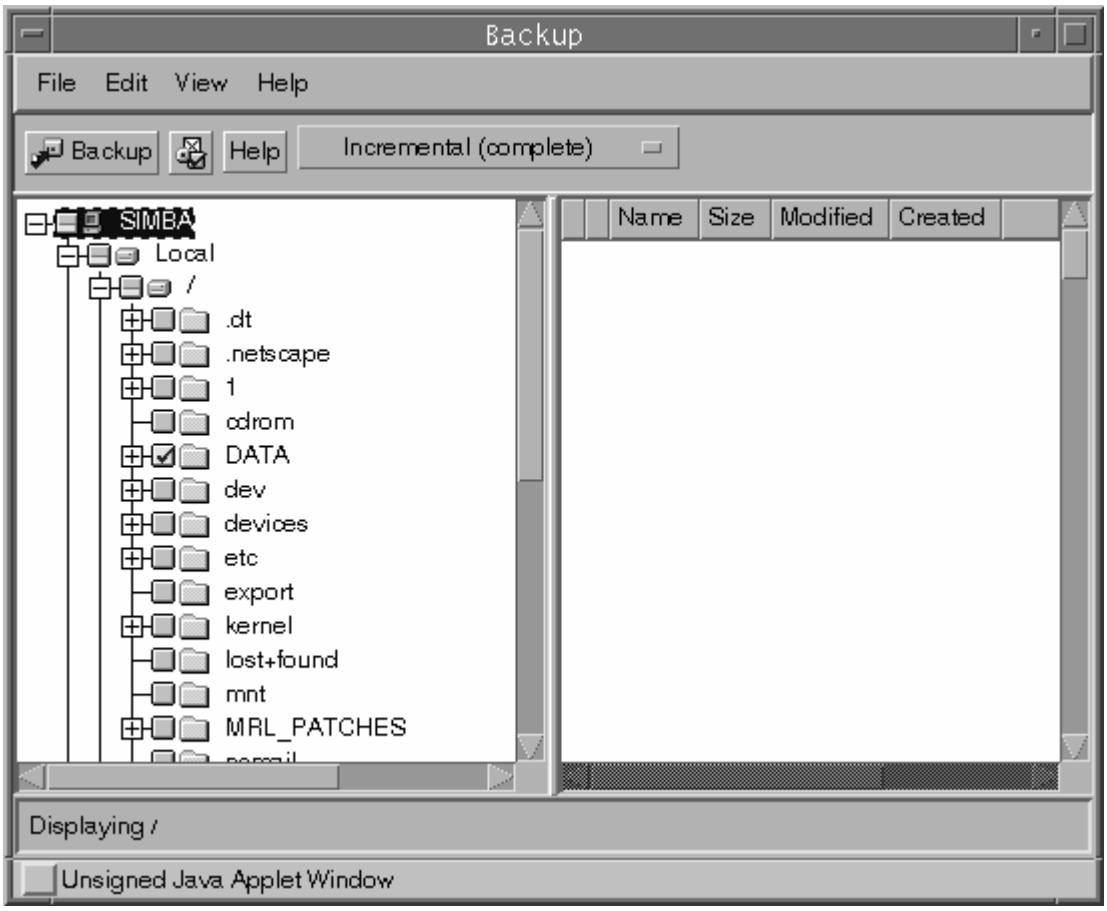


175. The *TSM login* window appears, type your *user id*, I used simba, and type in your *Password*, I used client, then click on *Login*.

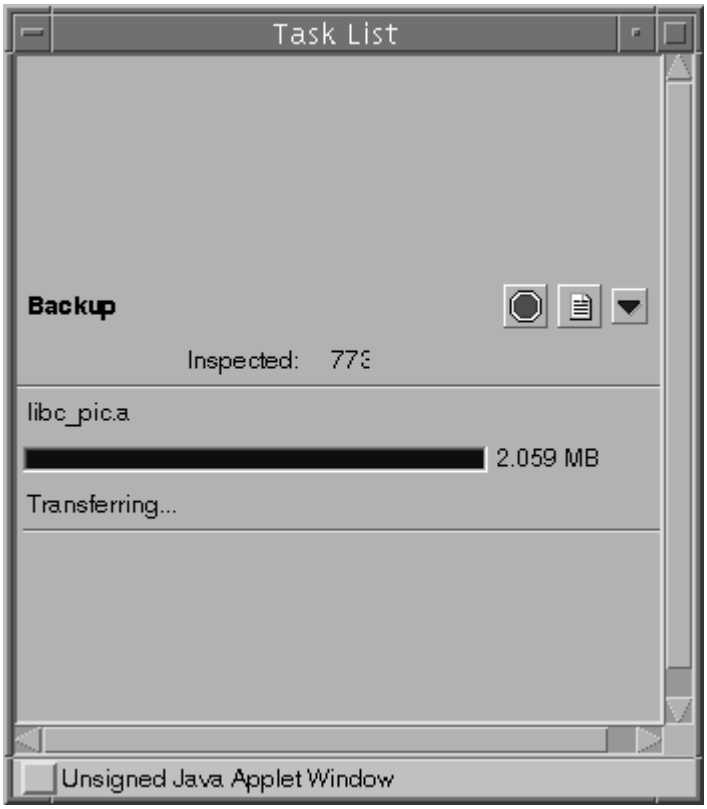
This completes the installation and configuration of the Web client from the command line portion of the lab.

Step 25
Run a Backup

176. The backup screen will appear, find and select a directory to backup. Once selected click on the Backup button on the task bar.



177. The Task List window appears. It displays the files that are being backup up and the size of each.



178. Once the backup is complete, the TSM message window appears, click on OK

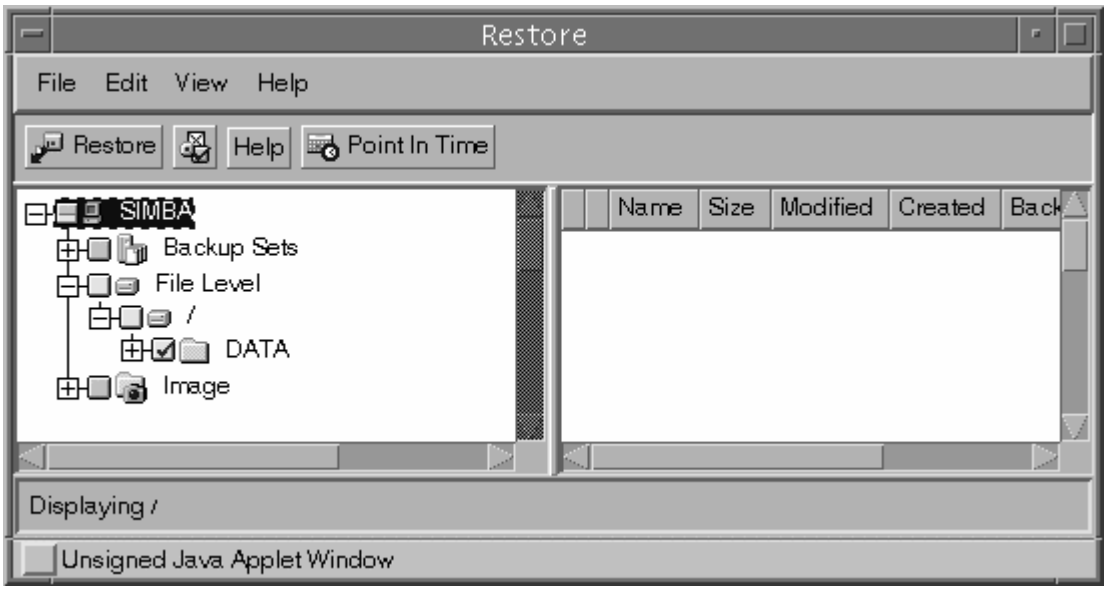
179. The Backup report window appears, review it for errors then close it.

This completes the backup portion of the lab

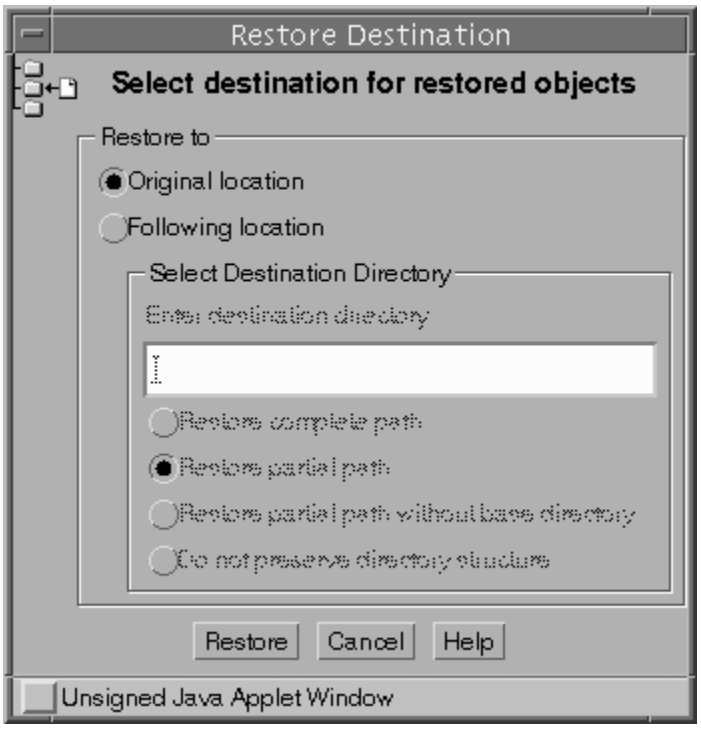
Step 26
Run a Restore

180. The Netscape Tivoli Storage manager window appears once more. Open up a File Manager Window and delete the File you just backed up. Once removed, close the window and click on Restore.

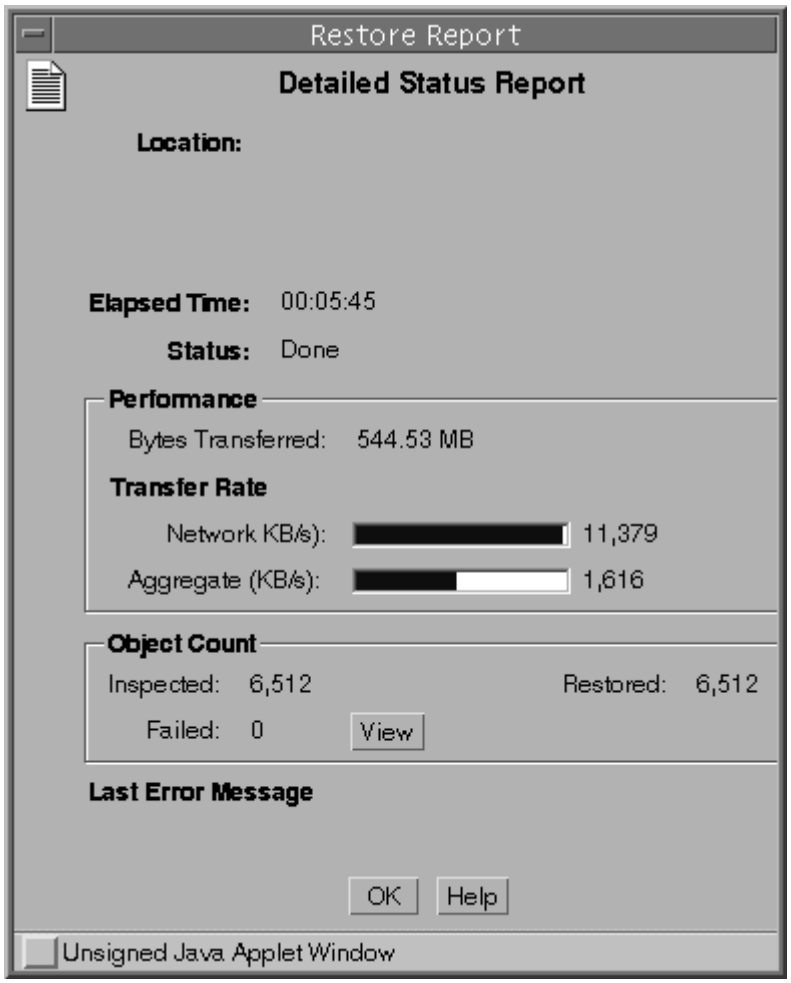
181. The Restore Window appears, find and select the directory you want to restore then click on the Restore button on the task bar.



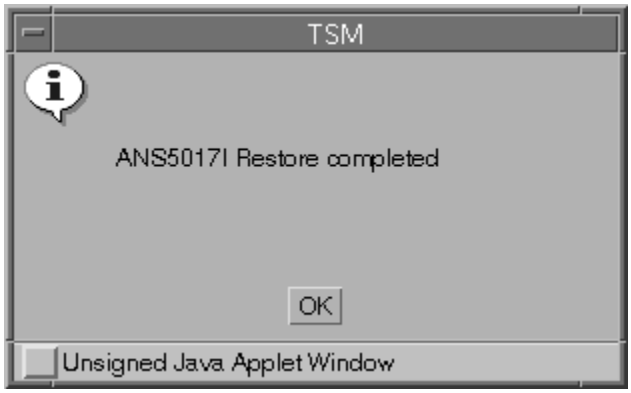
182. The restore Destination window appears, Verify that Original Location is selected and click on Restore located at the bottom of the window.



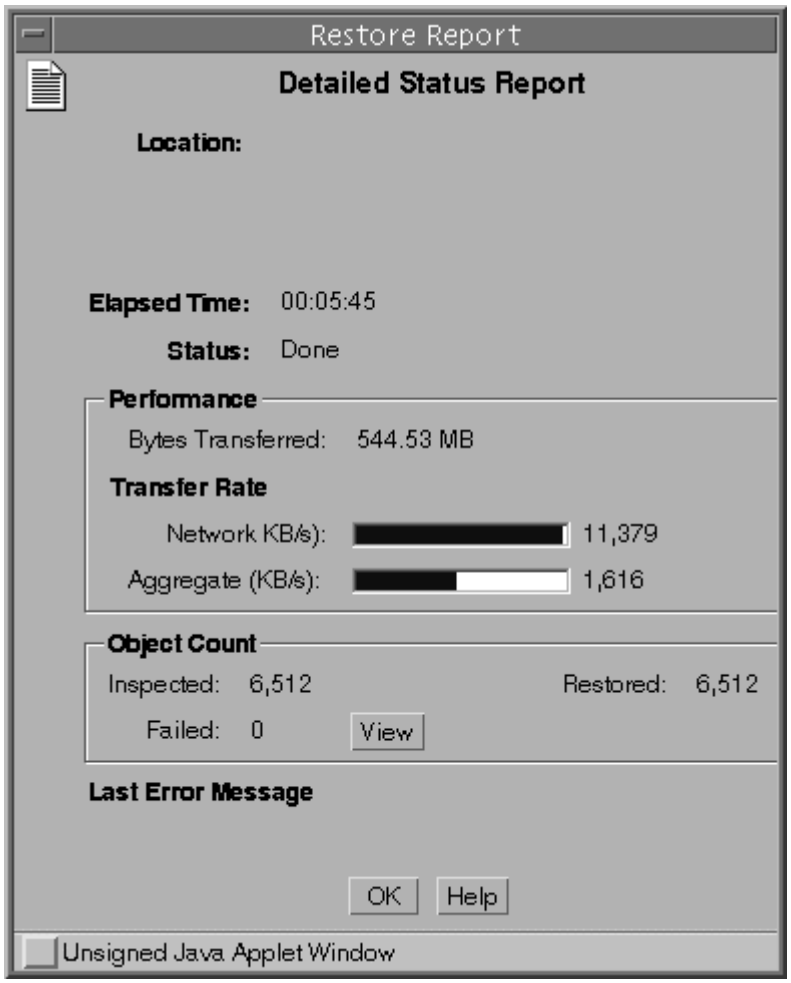
183.The Restore Report window appears it lists the files being restored.



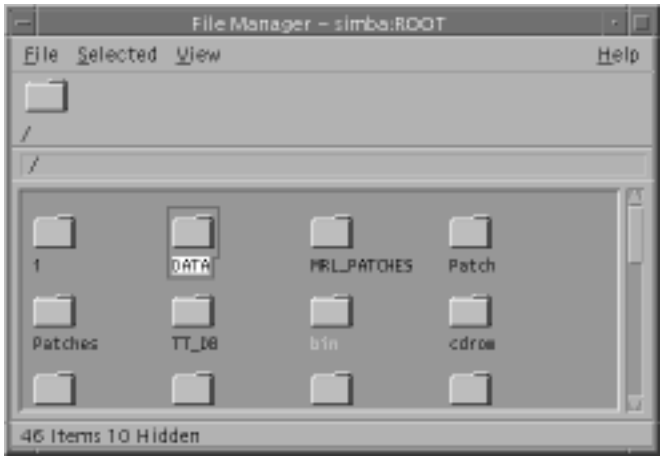
184.Once the restore is complete, the TSM message window appears. Click on OK.



185. The Restore Report window appears, close it.



186. Open a file Manager window and verify that the file you deleted earlier is now restored. Once complete, close file manager.



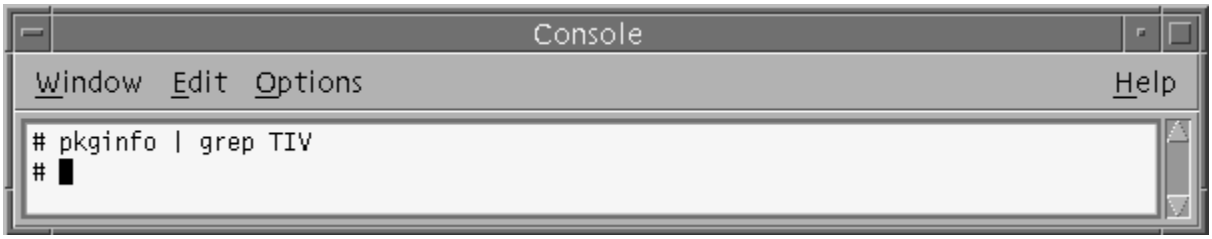
This completes the Restore portion of the Lab

Step 27
Uninstalling TSM

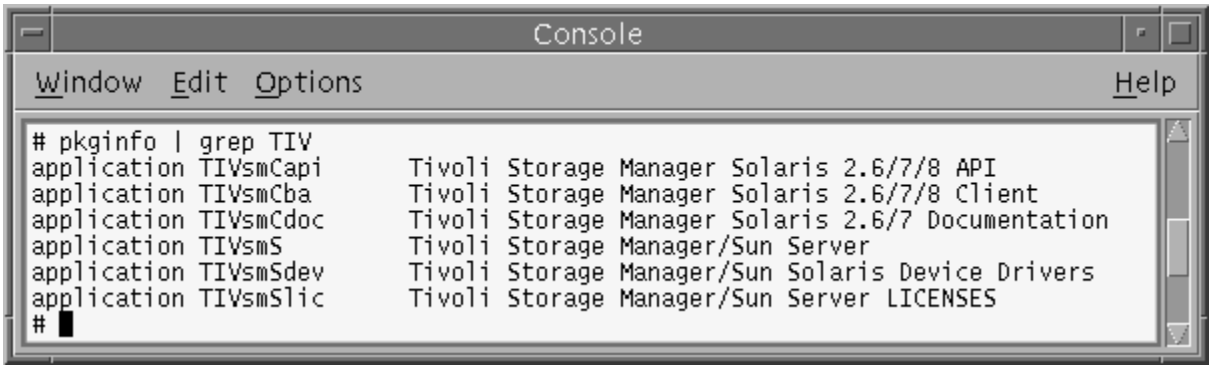
187. Determine the Tivoli Subsets installed on your system.

At the command prompt, #, type

pkginfo | grep TIV



188. The below information appears.

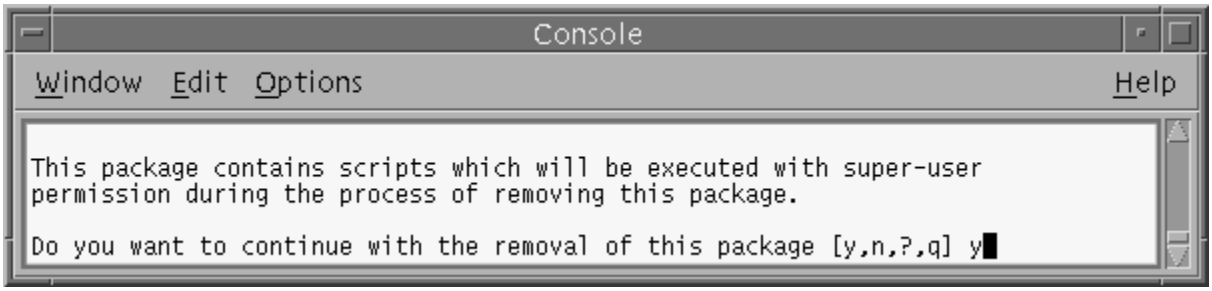


189. Remove your version of Tivoli Software

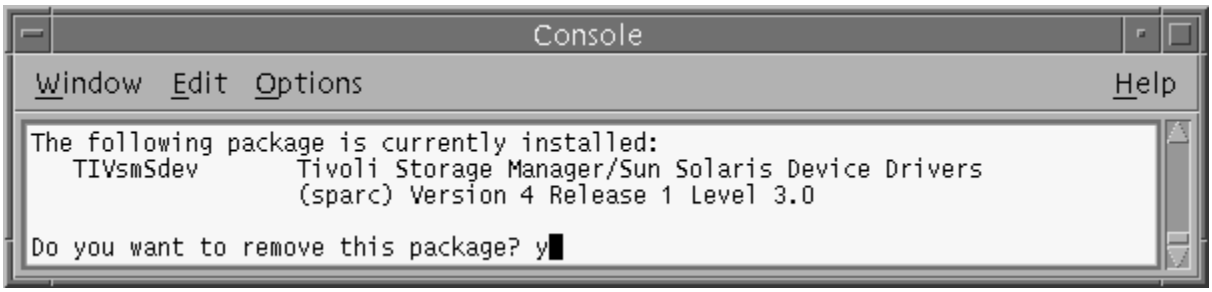
At the command prompt, #, type the below command and hit *Enter*.

190.The below screen appears, type *y* and hit *Enter*.

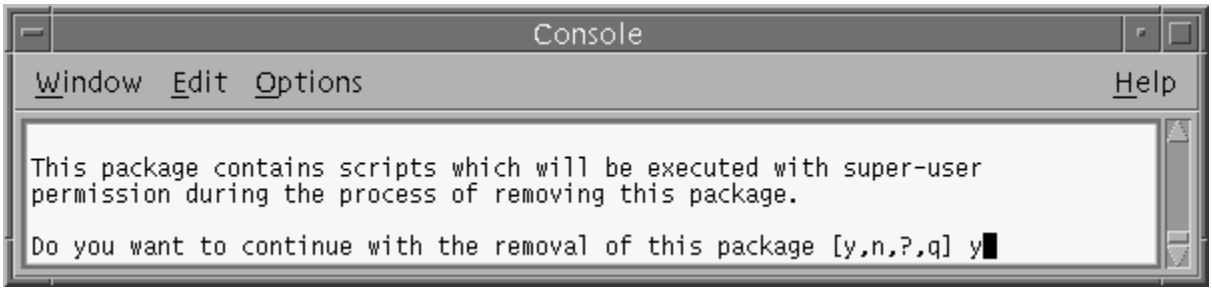
191.The below screen appears, type *y* and hit *Enter*.



192.The below screen appears, type *y* and hit *Enter*.

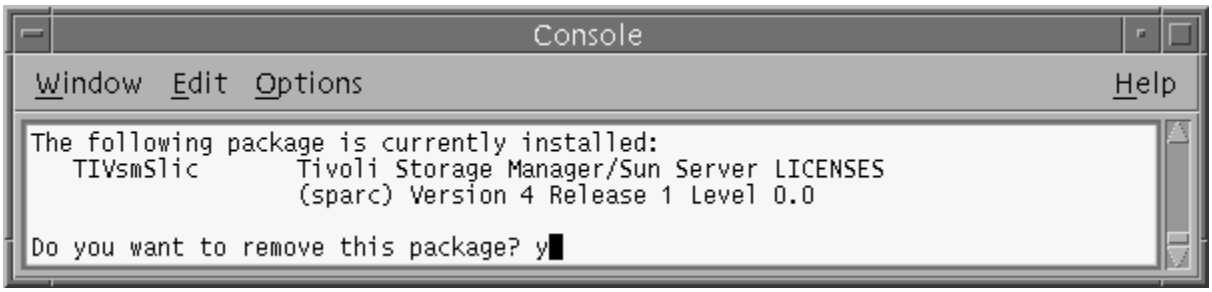


193.The below screen appears, type *y* and hit *Enter*.


Console
Window Edit Options Help
This package contains scripts which will be executed with super-user
permission during the process of removing this package.
Do you want to continue with the removal of this package [y,n,?,q] y

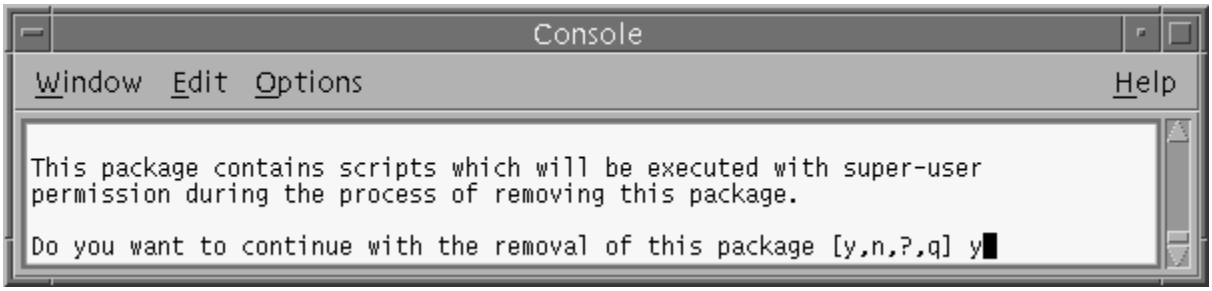
194.The below screen appears, type *y* and hit *Enter*.

195.The below screen appears, type *y* and hit *Enter*.



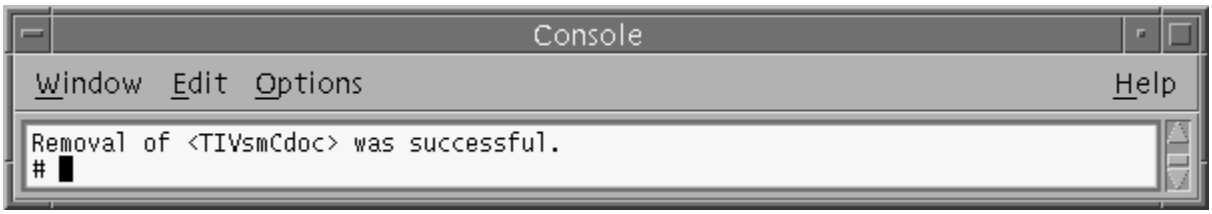
196.The below screen appears, type *y* and hit *Enter*.

197.The below screen appears, type *y* and hit *Enter*.


Console
Window Edit Options Help
This package contains scripts which will be executed with super-user
permission during the process of removing this package.
Do you want to continue with the removal of this package [y,n,?,q] y

198.The below screen appears, type *y* and hit *Enter*.

199.The below screen appears.



This completes the removal of Tivoli Storage Manager portion of the lab