

NetWorker Installation, Configuration and Administration Lab Guide

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Lab Introduction

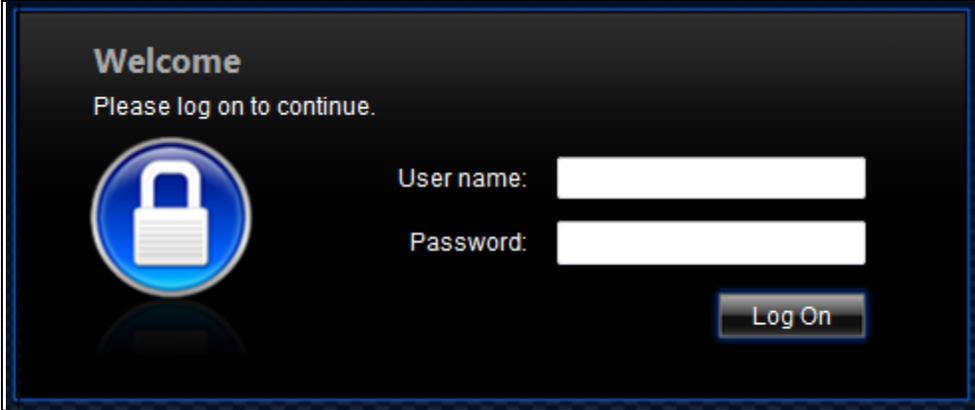
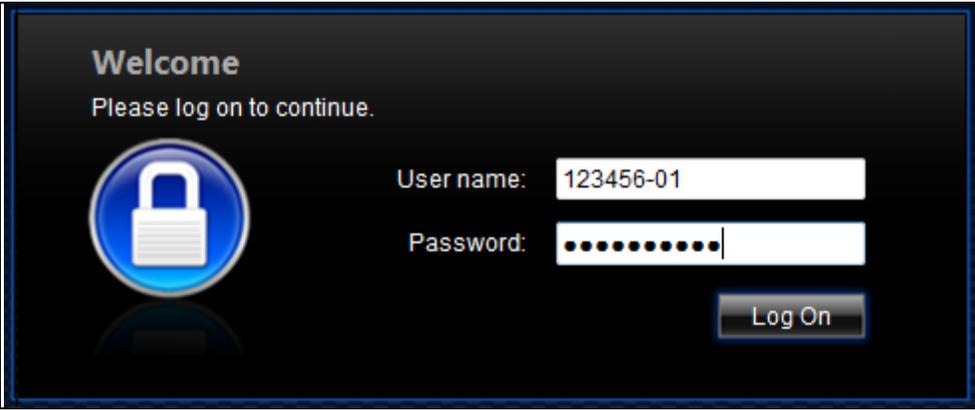
Purpose:	The lab exercises contained in this guide give you an opportunity to reinforce the information you are learning in the course. The lab exercises are designed to be run in a test lab environment on the NetWorker training lab system as described below. Some of the lab exercises may make changes to the system. For this reason, do <i>not</i> attempt to run the lab exercises on a production system.
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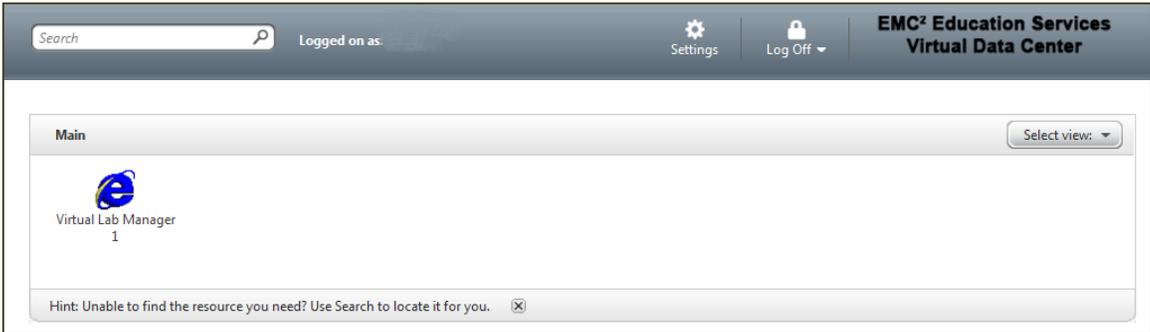
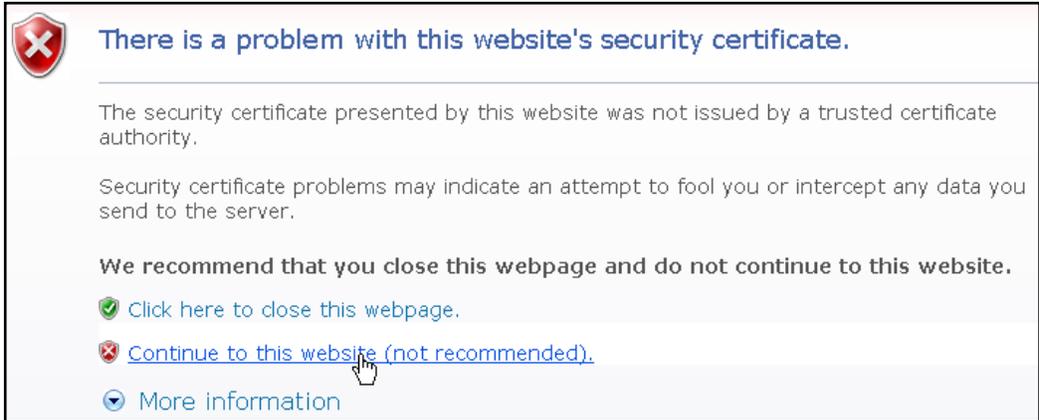
Lab Environment:	<p>You will be using a Virtual Data Center (VDC) environment in Lab Manager to perform the EMC NetWorker Installation, Configuration and Administration course lab exercises.</p> <p>Each student works in their own VDC configuration, accessed with an assigned VDC/Lab Manager username and password. The NetWorker Installation, Configuration and Administration Lab Manager configuration consists of these 5 virtual machines:</p> <ul style="list-style-type: none">• nwwindows - This will be your primary Windows workstation for the labs.• nwlinux – This is your Linux host for the labs.• dc - This is a domain controller and DNS for your configuration.• winclient – This will be your Windows client.• vtl – Virtual Tape Library <p>Additionally there is a physical Data Domain system that will be used for some labs. The username and login information for this system will be provided in the labs that require it.</p>
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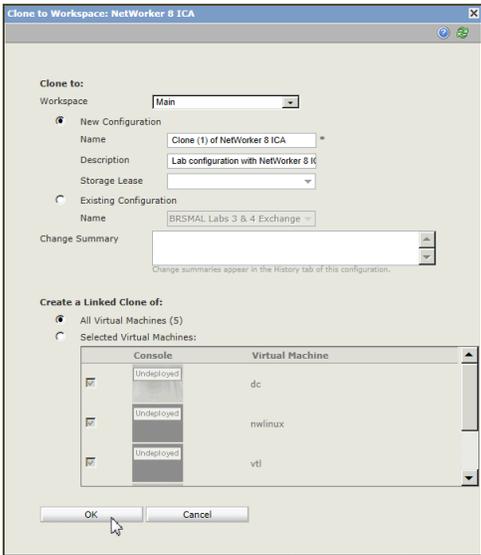
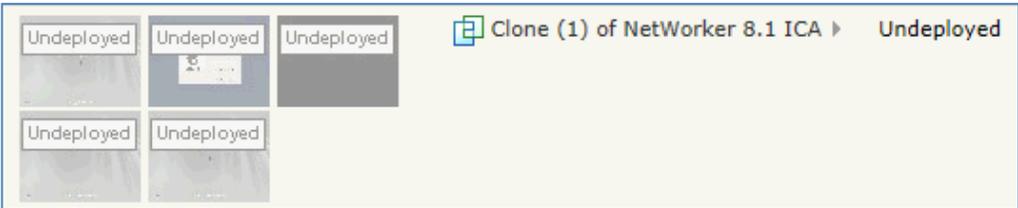
Important	The labs contain tasks and the solutions to those tasks. Many screenshots are presented which contain information showing how to perform a task. However, the actual information in the screenshot may or may not exactly reflect your particular lab environment. Thus, you should not simply type what you see in a screenshot and assume that it will work. Always consider the task that is being performed and determine for your lab environment whether the steps shown to perform the task are applicable.
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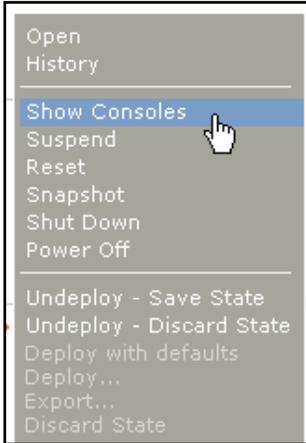
References:	EMC NetWorker Installation, Configuration and Administration course student guide EMC NetWorker Administration Guide
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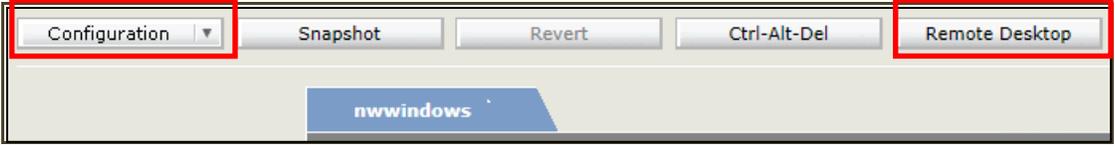
Logging into the Lab Environment

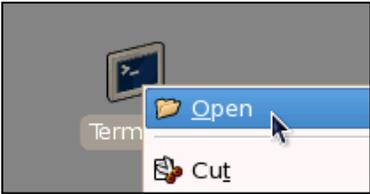
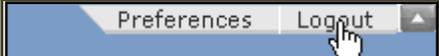
Step	Action
1	<p>Follow these steps to log into the EMC NetWorker ICA VDC lab environment.</p> <p>Log in to a Windows classroom computer with the login information provided by your instructor.</p>
2	<p>Open Microsoft Internet Explorer and go to the URL, https://vdc.emc.com</p>  <p>The screenshot shows a dark-themed login window with the text "Welcome" and "Please log on to continue." on the left. To the right of a lock icon are two input fields: "User name:" and "Password:". A "Log On" button is located at the bottom right of the window.</p>
3	<p>Log in to the Virtual Data Center with the user name and password provided to you by the instructor.</p>  <p>The screenshot shows the same login window as in step 2, but with the "User name:" field filled with "123456-01" and the "Password:" field filled with a series of dots. The "Log On" button remains at the bottom right.</p>

Step	Action
4	<p>At the Applications screen, click the Virtual Lab Manager link.</p> 
5	<p>If you see this message, click Continue to this website.</p> 
6	<p>At the Lab Manager login screen, enter the Lab Manager Login User name and Password assigned to you by your instructor. Then, click Login.</p> 

Step	Action
7	<p>You will be working in the NetWorker 8.1 ICA configuration for all the labs for this course. To get your own personal copy of the configuration, clone the configuration to your Lab Manager workspace.</p> <p>In the left pane of the Lab Manager screen, click Library. Next, right-click the NetWorker 8.1 ICA configuration and select Clone to Workspace.</p> 
8	<p>In Clone to Workspace, click OK.</p> 
9	<p>Click Workspace on the left side of the screen.</p> <p><u>Result:</u> When the clone operation completes, you see a clone copy of the NetWorker 8.1 ICA lab configuration in your workspace on the right side of the screen with 5 small console windows as shown here. The status of each window and the configuration is Undeployed.</p> 

Step	Action
10	<p>To be able to use the configuration, it must first be deployed. Highlight the Clone (1) of NetWorker 8.1 ICA configuration and select Deploy with defaults.</p>  <p><u>Note:</u> Deploying the configuration may take 4-5 minutes.</p>
11	<p>After the status of the configuration changes to Deployed, highlight the arrow next to the Clone (1) of NetWorker 8.1 ICA configuration and select Show Consoles.</p> 
12	<p>Alternatively, to see just one console window at a time, click in the small console view of the virtual machine that you want to work in.</p> 

Step	Action
	<p>Result: Only the console window for that machine is displayed for you to work on that machine. When you wish to work on another virtual machine, click Configuration in the upper left of the screen and choose another virtual machine console. You can also view a console with Remote Desktop by clicking the Remote Desktop button.</p>  <p>Note: For best performance, it is recommended that you perform all labs from a remote desktop session on the nwwindows.emc.edu server. From there you can log in to all other servers.</p>
14	<p>To work on a virtual machine, click inside its console window, or for best performance launch a Remote Desktop session.</p>
15	<p>To send a Ctrl-Alt-Delete sequence to one of the Windows machines if using the console, right-click or mouse over the arrow next to the machine name in the tab and select Ctrl-Alt-Delete.</p>  <p>Note: To send Ctrl-Alt-Delete using a key sequence, press Ctrl-Alt-Insert.</p>
16	<p>When prompted to log onto or unlock a Windows virtual machine (nwwindows or winclient), enter the following information in the login screen:</p> <p><u>User name:</u> Administrator</p> <p><u>Password:</u> student</p> 

Step	Action
17	<p>When prompted to log onto or unlock the Linux virtual machine (nwlinux), best performance can be achieved by initiating a putty session from the nwwindows server. Alternatively you can click in the console window for the machine and enter the following information:</p> <p><u>User name:</u> root <u>Password:</u> student</p> 
18	<p>To bring up a terminal window on the nwlinux host, right-click the Terminal icon and select Open.</p> 
19	<p>You can access the Linux host from the Windows host nwwindows with PuTTY for command line access or with remote desktop for GUI access.</p> 
20	<p>To release the cursor from a console, press Ctrl-Alt.</p>
21	<p>When you are finished with your Lab Manager configuration for the day, just logout of Lab Manager. (There's <i>no</i> need to undeploy the virtual machines until you are finished with all the labs at the end of the class.) To log out of Lab Manager, click Logout in the upper right corner of the Lab Manager screen.</p> 

End of Lab Manager Logon Instructions

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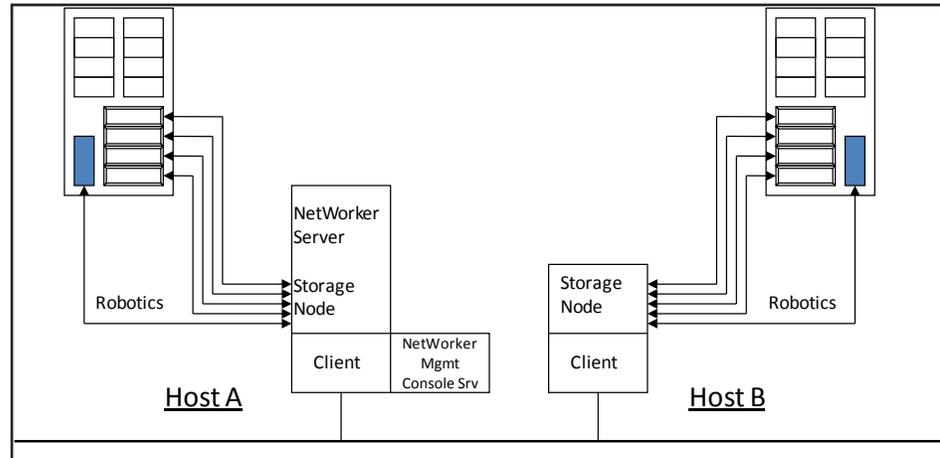
Lab 2: NetWorker Software Installation

Purpose:

In this lab you install NetWorker Server and NetWorker Management Console software on either nwwindows or nwlinux. This host will be used for configuration and administration of NetWorker during the remainder of the class. You then configure the host you didn't choose (either nwwindows or nwlinux) as a NetWorker storage node. The storage node will be used in a later lab. In the last section of this lab, you install NetWorker client software on the Windows client, winclient.

Lab Environment:

In the Virtual Data Center (VDC) environment, two host computers in the VDC are assigned to you as potential NetWorker servers: one is a Linux host (nwlinux) and the other is a Windows 2008 system (nwwindows). You decide which host to use as the NetWorker and Console server. This host is referred to as Host A in the diagram. The other host will be a remote storage node. This host is referred to as Host B in the diagram.



You decide: If your Windows host, nwwindows, is Host A, then your Linux host, nwlinux, is Host B. If your Linux host, nwlinux, is Host A, then your Windows host, nwwindows, is Host B.

Lab 2 Instructions:

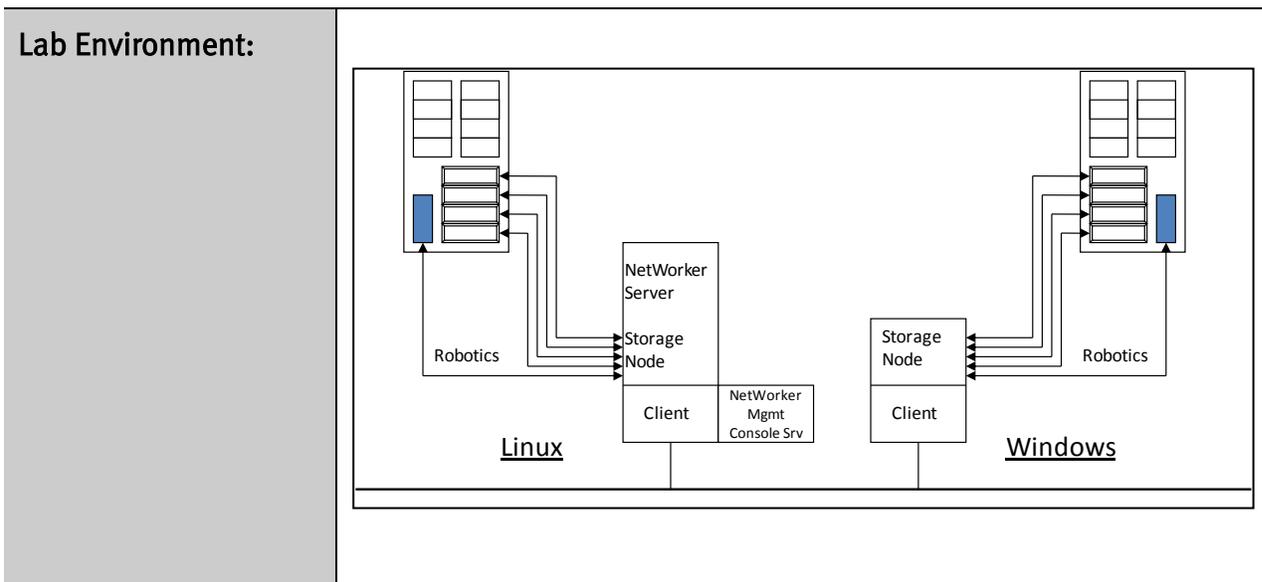
If you decide to install the NetWorker Server and NetWorker Management Console on the **Linux** host, nwlinux, perform **Lab 2-1**.

If you decide to install the NetWorker Server and NetWorker Management Console on the **Windows** host, nwwindows, perform **Lab 2-2**.

Lab Exercise 2-1: Install NetWorker and NMC Software on Linux

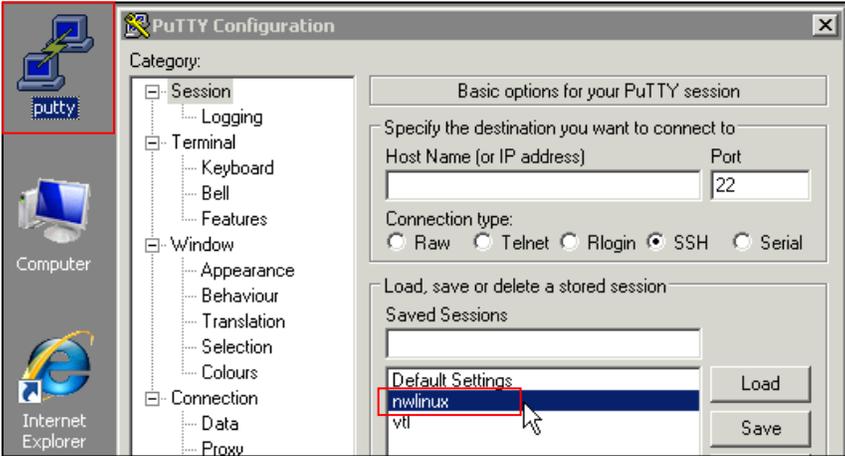
Purpose:	In this lab you install the NetWorker server and NetWorker Management Console server software on the Linux host, nwlinux. This host will be used for configuration and administration of NetWorker during the remainder of the class. You configure your Windows host, nwwindows, as a client and remote NetWorker storage node. The storage node is used in a later lab.
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Tasks:	<p>In this lab you:</p> <ul style="list-style-type: none">• Install and configure your Linux host, nwlinux, as both a NetWorker server and a NetWorker Management Console server.• Verify the installation was successful.• Stop and restart the NetWorker processes/services.• Install your Windows host, nwwindows, as a NetWorker storage node.
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Lab Exercise 2-1 Part 1: Install NetWorker Server and Console Server on a Linux Host

Perform the steps in Lab 2-1 *only* if you are installing the NetWorker Server and NetWorker Management Console software on your **Linux** host.

Step	Action
1	<p>Open a remote desktop session and log in to the Windows host, nwwindows with user administrator password student. Then, open a PuTTY session to nwlinux using the PuTTY icon on the desktop.</p>  <p>Log in to nwlinux using the following credentials:</p> <p><u>Username:</u> root <u>Password:</u> student</p>
2	<p>Change directory to the location of the EMC NetWorker software. Unzip and untar the software file.</p> <p>Type the following:</p> <ul style="list-style-type: none">• <code>cd /software</code>• <code>tar xzvf nw81_linux*</code> • <code>cd linux_x86_64</code> <p><u>Result:</u> The directory <code>/software/linux_x86_64</code> contains the rpm files for the Linux installation.</p> <pre data-bbox="337 1528 1485 1822">[root@nwlinux linux_x86_64]# ls lgtocln-8.1.0.1-1.x86_64.rpm LGTO_METADATA.linuxx86_64 lgtocln_8.1.0.1_amd64.deb lgtommc-8.1-1.x86_64.rpm lgtofr-8.1.0.1-1.x86_64.rpm lgtonode-8.1.0.1-1.x86_64.rpm lgtolja-8.1.0.1-1.x86_64.rpm lgtoserv-8.1.0.1-1.x86_64.rpm lgtoko-8.1.0.1-1.x86_64.rpm lgtozh-8.1.0.1-1.x86_64.rpm lgtolicm-8.1.0.1-1.x86_64.rpm NetWorkerAdaptor-1.1.0-28-linux-x64.run lgtoman-8.1.0.1-1.x86_64.rpm sd_products.res [root@nwlinux linux_x86_64]#</pre>

Step	Action
3	<p>To install the NetWorker server, install the following rpm files in this order:</p> <p style="text-align: center;">lgtocInt, lgtonode, lgtoserv</p> <p>In the terminal type:</p> <pre style="text-align: center;">rpm -ivh lgtocInt*.rpm lgtonode* lgtoserv*</pre> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <pre>[root@nwlinux linux_x86_64]# rpm -ivh lgtocInt*.rpm lgtonode* lgtoserv* Preparing... ##### [100%] 1:lgtocInt ##### [33%] 2:lgtonode ##### [67%] 3:lgtoserv ##### [100%] [root@nwlinux linux_x86_64]# █</pre> </div>
4	<p>To install the man pages and the NetWorker Management Console software on this machine, install the following rpm files:</p> <p style="text-align: center;">lgtoman, lgtonmc</p> <p>In the terminal type:</p> <pre style="text-align: center;">rpm -ivh lgtoman* lgtonmc*</pre> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <pre>[root@nwlinux linux_x86_64]# rpm -ivh lgtoman* lgtonmc* Preparing... ##### [100%] 1:lgtonmc ##### [50%] NOTE: To complete configuration execute the following script as root: /opt/lgtonmc/bin/nmc_config 2:lgtoman ##### [100%] [root@nwlinux linux_x86_64]# █</pre> </div>
5	<p>To complete the NetWorker Management Console installation, run the nmc_config script. Accept all default values.</p> <p>In the terminal type:</p> <pre style="text-align: center;">/opt/lgtonmc/bin/nmc_config</pre>
6	<p>After all the specified packages are successfully installed, start all the NetWorker processes.</p> <pre style="text-align: center;">/etc/init.d/networker start</pre> <p>Start all Console server processes.</p> <pre style="text-align: center;">/etc/init.d/gst start</pre>
7	<p>During installation of the NetWorker server software, several entries are appended to /etc/syslog.conf. Send a HUP signal to syslogd so that it will reread its configuration file.</p> <pre style="text-align: center;">pkill -HUP syslog</pre>

Lab Exercise 2-1 Part 2: Verify a Successful Installation on the Linux Host

Step	Action
1	<p>Verify that all the required NetWorker and Console server processes are running:</p> <pre> nsrd nsrexecd nsrmmdbd gstd nsrindexd httpd nsrjobd dbsrv12 </pre> <p>In the terminal Type:</p> <pre>ps -eaf egrep 'nsr gst dbsrv httpd'</pre> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <pre> [root@nwlinux linux_x86_64]# ps -eaf egrep 'nsr gst dbsrv httpd' root 4548 1 0 15:31 ? 00:00:00 /usr/sbin/nsrexecd root 4559 1 0 15:32 ? 00:00:00 /usr/sbin/nsrd root 4573 4559 0 15:32 ? 00:00:00 /usr/sbin/nsrmmdbd root 4577 4559 0 15:32 ? 00:00:00 /usr/sbin/nsrindexd root 4580 4559 0 15:32 ? 00:00:00 /usr/sbin/nsrdispd root 4583 4559 0 15:32 ? 00:00:00 /usr/sbin/nsrjobd root 4588 4548 0 15:32 ? 00:00:00 /usr/sbin/nsrlogd root 4633 1 0 15:32 ? 00:00:00 /opt/igtonmc/bin/gstd root 4645 4559 0 15:32 ? 00:00:00 /usr/sbin/nsrvmwsd root 4670 4633 5 15:32 ? 00:00:03 /opt/igtonmc/sybase/bin/dbsrv12 -x tcpip(ServerPort=2638) -ti 1500 -tl 6000 -sb 0 -Q -gk all -o /opt/igtonmc/lo s/db_output.log -ch 500m -n gst_on_nwlinux /opt/igtonmc/igto_gstdb/igto_gst.db root 4697 4548 0 15:32 ? 00:00:00 /usr/sbin/nsrsnmd -s nwlinux.em .edu -M 655 -n 424768513 -N 1 root 4714 1 0 15:32 ? 00:00:00 /opt/igtonmc/apache/bin/httpd - /opt/igtonmc/apache/conf/httpd.conf nobody 4715 4714 0 15:32 ? 00:00:00 /opt/igtonmc/apache/bin/httpd - /opt/igtonmc/apache/conf/httpd.conf root 4735 4261 0 15:33 pts/1 00:00:00 egrep nsr gst dbsrv httpd [root@nwlinux linux_x86_64]# █ </pre> </div>
2	<p>Stop all the NetWorker daemons. Verify they are no longer running.</p> <pre> nsr_shutdown ps -ef grep nsr </pre> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <pre> [root@nwlinux linux_x86_64]# nsr_shutdown Stopping service: nsrd (4559) Waiting for service: nsrd (4559) Waiting for service: nsrd (4559) Waiting for service: nsrd (4559) Service nsrd (4559) shutdown. Stopping service: nsrexecd (4548) Service nsrexecd (4548) shutdown. [root@nwlinux linux_x86_64]# ps -ef grep nsr root 5075 4261 0 15:36 pts/1 00:00:00 grep nsr [root@nwlinux linux_x86_64]# █ </pre> </div>

Step	Action
3	Restart all the NetWorker daemons. <pre data-bbox="461 262 935 289">/etc/init.d/networker start</pre>
4	Stop all the Console server daemons and verify they are no longer running. <pre data-bbox="461 409 1027 474">/etc/init.d/gst stop ps -eaf egrep 'gst dbsrv httpd'</pre> <div data-bbox="354 514 1469 674" style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <pre>[root@nwlinux linux_x86_64]# /etc/init.d/gst stop Stopping GST: .. done. [root@nwlinux linux_x86_64]# ps -eaf egrep 'gst dbsrv httpd' root 11142 10047 0 13:57 pts/2 100:00:00 egrep gst dbsrv httpd</pre> </div>
5	Restart the Console server daemons. <pre data-bbox="461 793 829 821">/etc/init.d/gst start</pre> <div data-bbox="508 861 1313 1054" style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <pre>[root@nwlinux linux_x86_64]# /etc/init.d/gst start Starting GST: GST Services, Version 8.1.Build.199 done. [root@nwlinux linux_x86_64]# █</pre> </div>
6	Change directory to /opt. You should see the directory containing the Console server software, lgtonmc. <pre data-bbox="415 1213 540 1278">cd /opt ls -al</pre> <p data-bbox="321 1325 1398 1390">Change directory to the location of the Console server database lgto_gstdb and list the contents.</p> <pre data-bbox="415 1419 873 1484">cd /opt/lgtonmc/lgto_gstdb ls -al</pre> <p data-bbox="321 1530 1438 1596">Change directory to /nsr and list the contents. Among the other NetWorker directories, you should see the directories for the NetWorker control data: index, mm and res.</p> <pre data-bbox="415 1631 540 1696">cd /nsr ls -al</pre>

Lab Exercise 2-1 Part 3: Install a NetWorker Storage Node on a Windows Host

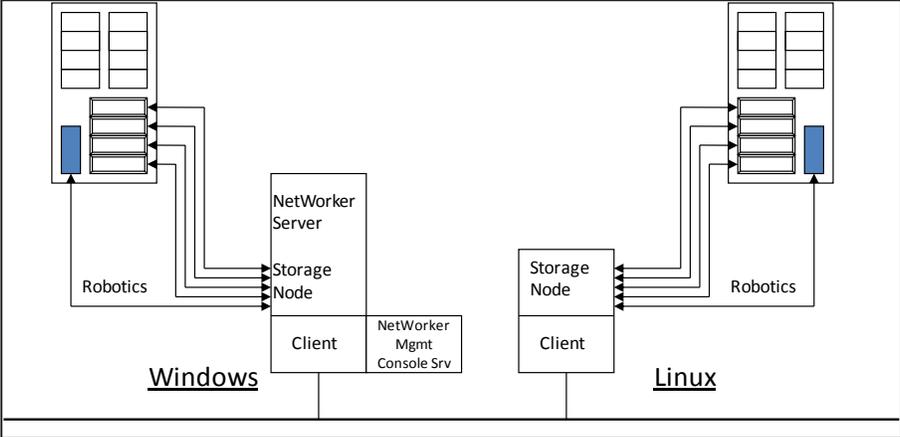
In this lab, you install the NetWorker storage node software on the **nwwindows** machine.

Step	Action
1	If not already there, log in to the Windows host, nwwindows.emc.edu , using the administrator account, password student if you have not already done so.
2	Open the C:\software\nw81_win_x64\win_x64 folder.
3	<p>From Windows explorer, run the following file. <u>Double-click or execute:</u> autorun</p> <p>In the Internet Explorer window that opens, click Install EMC NetWorker 8.1 Software</p> <div style="border: 1px solid black; padding: 10px; text-align: center;"><p>Install EMC NetWorker 8.1 software</p><p>Visit the EMC Software web site</p></div>
4	<p>Install NetWorker, providing all the information specified below when prompted:</p> <ol style="list-style-type: none">1. Click Run to run the software; click Run again.2. Select a language for the installation.3. Do NOT configure the Windows firewall.4. Install Storage Node software. This also installs the client software.5. Use the default installation directory.6. When prompted for NetWorker servers that are allowed to back up your host, do not specify any. <u>Warning:</u> This is insecure but avoids possible backup failures in later Lab Exercises!7. Do not run the Change Journal Manager after installation (uncheck the option).
5	Close the Thank you for selecting EMC NetWorker Internet Explorer window.

End of Lab Exercise 2-1

Go to Lab 2-3

Lab Exercise 2-2: Install NetWorker and NMC Software on Windows

Purpose:	In this lab you install the NetWorker server and NetWorker Management Console server software on the Windows host, nwwindows. This host is used for configuration and administration of NetWorker during the remainder of the class. You will configure your Linux host, nwlinux, as a remote NetWorker storage node. The storage node is used in a later lab.
Tasks:	In this lab you: <ul style="list-style-type: none">• Install and configure your Windows host, nwwindows, as both a NetWorker server and a NetWorker Management Console server.• Verify the installation was successful.• Stop and restart the NetWorker processes/services.• Install your Linux host, nwlinux, as a NetWorker storage node.
Lab Environment:	 <p>The diagram illustrates the lab environment. On the left, a Windows host is shown with a server rack icon. It is connected to a central NetWorker Server and a Storage Node. The Windows host also contains a Client and a NetWorker Mgmt Console Srv. On the right, a Linux host is shown with a server rack icon. It is connected to the central Storage Node and contains a Client. The central NetWorker Server and Storage Node are connected to each other. The Storage Node is also connected to Robotics components on both the Windows and Linux hosts.</p>

Lab Exercise 2-2 Part 1: Install NetWorker Server and NMC on a Windows Host

Perform the steps in Lab 2-2 **ONLY** if you are installing the NetWorker Server and NetWorker Management Console software on the **Windows** host, nwwindows.emc.edu.

Step	Action
1	<p>Log in to the Windows host, nwwindows, using the administrator account, password student.</p> 
2	<p>Browse to the <code>C:\software\nw81_win_x64\win_x64</code> folder.</p>
3	<p>Double-click the file named autorun.</p> <p>Install NetWorker, using the information below:</p> <ol style="list-style-type: none"> 1. Click Run to run the software. 2. In the Thank you for selecting EMC NetWorker Internet Explorer window, click Install EMC NetWorker 8.1 software. 3. Click Run to run the software; click Run again. 4. Select a language for the installation. 5. Do NOT configure the Windows firewall. 6. Install Server and Client and NetWorker Management Console software. (This also installs the storage node software.) 7. Uncheck Block Based Backups 8. Use the default installation directory. 9. Accept the terms of the license agreement 10. When prompted for NetWorker servers that are allowed to back up your host, do not specify any. <u>Warning</u>: This is less secure but avoids possible backup failures in later labs.
4	<p>Use the following information for the NetWorker Management Console part of the installation:</p> <ul style="list-style-type: none"> • Use the default installation directories. • Use the default port numbers for the Web Server and the Client Service. • Do not launch the Console client after installation (uncheck the option). <p>Click Finish to exit the wizard.</p>
5	<p>Do NOT run the Change Journal Manager after NetWorker server installation.</p> <p>Click Finish to exit the installation process.</p>
6	<p>Close Internet Explorer.</p>

Lab Exercise 2-2 Part 2: Verify Successful Installation on the Windows Host

Step	Action
1	<p>On nwwindows, open the Services window and verify that the following services are running:</p> <ul style="list-style-type: none">• NetWorker Backup and Recover Server• NetWorker Remote Exec Service• EMC GST Service• EMC GST Web Service <p><u>Note:</u> Services are viewed using Start > All Programs > Administrative Tools > Services, or by typing services.msc in the Start > Run box.</p>
2	<p>Right-click the NetWorker Remote Exec Service and select Stop from the menu. Note that the other services depend on this service and therefore will be stopped as well.</p>
3	<p>Start all the services that were stopped. <u>Note:</u> EMC GST Web Service is started automatically when the EMC GST service is started.</p> <p>Right-click NetWorker Remote Exec Service and select Start from the menu. Right-click NetWorker Backup and Recover Server and select Start. Right-click EMC GST Service and select Start.</p> <p>Close the Services window.</p>
4	<p>Open the Task Manager and verify that all required NetWorker and Console processes are running. Right-click the task bar at the bottom of the screen, select Task Manager and go to the Processes tab. Check the box at the bottom of the window entitled Show processes from all users.</p> <ul style="list-style-type: none">• Dbsrv12• gstd• httpd• nsrd• nsrexcd• nsrindexd• nsrjobd• nsrlogd• nsrmmdbd• nsrsnmd <p>Close Task Manager.</p>

Lab Exercise 2-2 Part 3: Install a NetWorker Storage Node on the Linux Host

Step	Action
1	<p>Log in to the Linux host, nwlinux, via the PuTTY link on the desktop with the following:</p> <ul style="list-style-type: none"> • <u>Username</u>: Root • <u>Password</u>: Student <div style="text-align: center;">  </div>
2	<p>Change to the /software directory and extract the software files.</p> <p><u>Type</u>:</p> <pre>cd /software tar xzvf nw81_linux* cd linux_x86_64</pre> <p><u>Result</u>: The directory <code>/software/linux_x86_64</code> contains the rpm files for the Linux installation.</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <pre>[root@nwlinux linux_x86_64]# ls lgtocln-8.1-1.x86_64.rpm LGTO_METADATA.linuxx86_64 lgtocln_8.1_amd64.deb lgtommc-8.1-1.x86_64.rpm lgtofr-8.1-1.x86_64.rpm lgtonode-8.1-1.x86_64.rpm lgtolja-8.1-1.x86_64.rpm lgtoserv-8.1-1.x86_64.rpm lgtoko-8.1-1.x86_64.rpm lgtozh-8.1-1.x86_64.rpm lgtolicm-8.1-1.x86_64.rpm NetWorkerAdaptor-1.1.0-28-linux-x64.run lgtoman-8.1-1.x86_64.rpm sd_products.res [root@nwlinux linux_x86_64]#</pre> </div>
3	<p>To install the NetWorker storage node, the following rpm files must be installed in the following order:</p> <p style="text-align: center;">lgtocln, lgtoman, lgtonode</p> <p>In the putty terminal type:</p> <p style="text-align: center;">rpm -ivh lgtocln*.rpm lgtoman* lgtonode*</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <pre>[root@nwlinux linux_x86_64]# rpm -ivh lgtocln*.rpm lgtoman* lgtonode* Preparing... ##### [100%] 1:lgtocln ##### [33%] 2:lgtoman ##### [67%] 3:lgtonode ##### [100%] [root@nwlinux linux_x86_64]#</pre> </div>

Step	Action
4	<p>Start the NetWorker client process and verify that it is running.</p> <p><u>Type:</u> <code>/etc/init.d/networker start</code></p> <p><u>Type:</u> <code>ps -ef grep nsr</code></p>

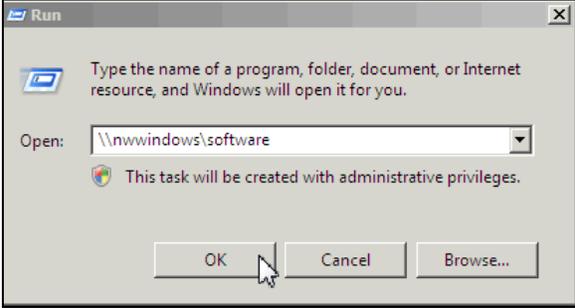
End of Lab Exercise 2-2

Go to Lab Exercise 2-3

Lab Exercise 2-3: Install NetWorker Client Software on Windows

Purpose:	In this lab you install NetWorker client software on your Windows client machine, winclient.
Tasks:	In this lab you: <ul style="list-style-type: none">• Install NetWorker client software on the Windows machine, winclient.

Lab Exercise 2-3 Part 1: Install NetWorker Client Software on a Windows Host

Step	Action
1	<p>Start a remote desktop session using the link on the desktop and log in to the Windows host, winclient.emc.edu using the following:</p> <ul style="list-style-type: none"> • <u>Username</u>: Administrator • <u>Password</u>: Student
2	<p>From Windows Start > Run, open the share \\nwwindows\software.</p> 
2	<p>Open the nw81_win_x64\win_x64 folder in the share.</p>
3	<p>Double-click or execute: autorun</p> <p>Install NetWorker, providing all the information specified below when prompted:</p> <ol style="list-style-type: none"> 1. Click Run to run the software. 2. In the Thank you for selecting EMC NetWorker Internet Explorer window, click Install EMC NetWorker 8.1 software. 3. Click Run to run the software. Click Run again. 4. Do <i>not</i> configure the Windows firewall. 5. Install Client software only. 6. Use the default installation directory. 7. When prompted for NetWorker servers that are allowed to back up your host, do not specify any. 8. Do <i>not</i> run the Change Journal Manager after installation (uncheck the option).
4	<p>Close Internet Explorer.</p>

Step	Action
5	Enter the server names of the servers you selected for each client: <Networker_Server> _____ <Storage_Node> _____ <Client> _____
6	Reboot each of the machines that you installed software on. <ul style="list-style-type: none"> • For nwwindows and winclient, select Start -> Restart • For nwlinux, from a command prompt type: reboot

End of Lab 2-3

End of Lab 2

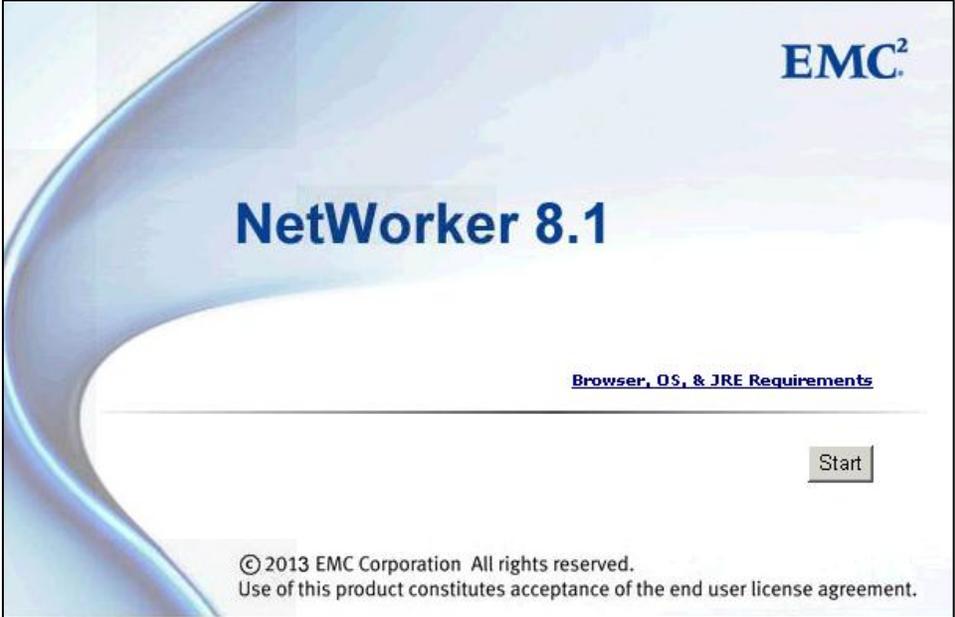
Lab 3: Using the NetWorker Management Console

Purpose:	In this lab, you explore the Console GUI
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Tasks:	In this lab you will: <ul style="list-style-type: none">• Launch Console and define a NetWorker server to manage.
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Lab Exercise 3-1: Connect to the Console Server from the Windows Host

Note: For all of the labs in this course you will be connecting to the console server from the Windows server, `nwwindows`.

Step	Action
1	<p>Open a remote desktop session to the <code>nwwindows.emc.edu</code> server.</p> <p>From <code>nwwindows</code>, connect to the Console server by opening Internet Explorer on that host and browsing to the following URL:</p> <p style="text-align: center;"><code>http://console_server:9000</code></p> <p>Replace <code>console_server</code> with the host name of your Console server, either <code>nwlinux.emc.edu</code> or <code>nwwindows.emc.edu</code>.</p> <div data-bbox="435 806 1390 1423" style="border: 1px solid black; padding: 10px;"></div>

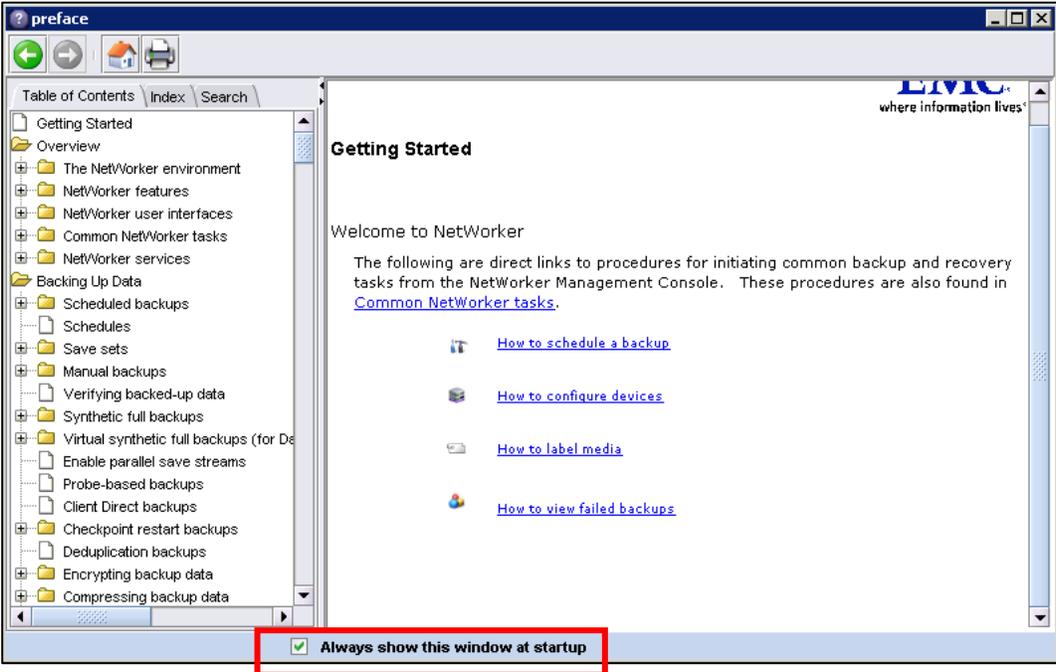
Step	Action
2	<p>Click Start to launch the Console client. Answer yes to any security questions.</p> <p>Click Run to start the application.</p> <p>Accept the End User License Agreement.</p> <p>The first time you log in to NetWorker Management Console, the Console Configuration Wizard starts.</p> <p>It will be used in the next lab to initially configure portions of your NetWorker environment.</p> <div data-bbox="500 548 1318 1140" data-label="Image"> </div> <p><u>Note</u>: Whenever the Console server is used in the remaining labs for this course, start it from the Windows host, nwwindows.emc.edu.</p>

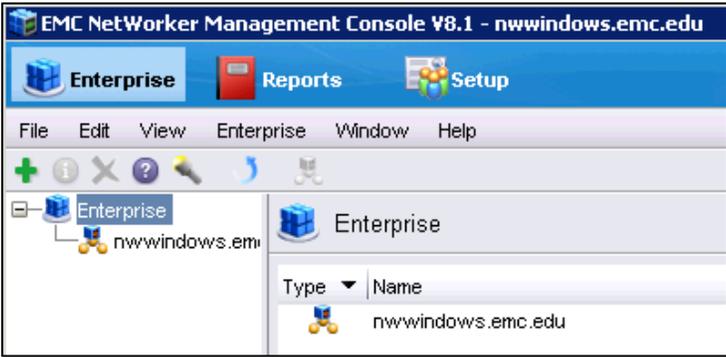
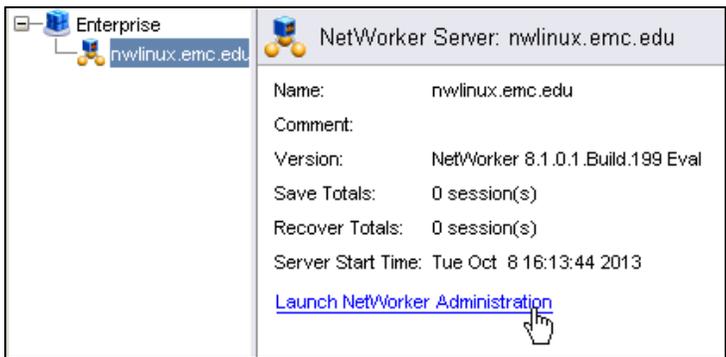
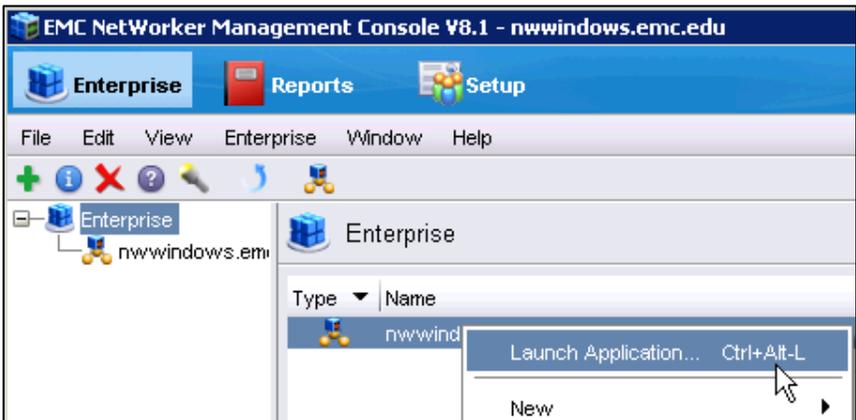
End of Lab Exercise 3-1

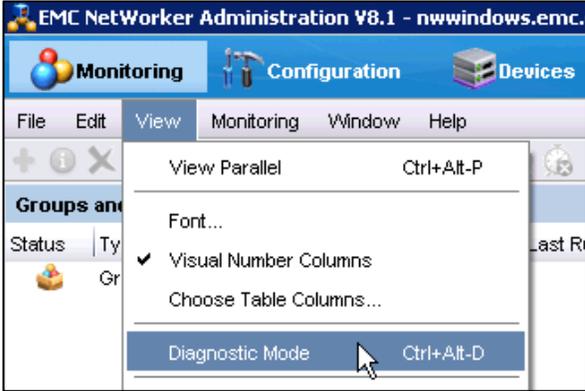
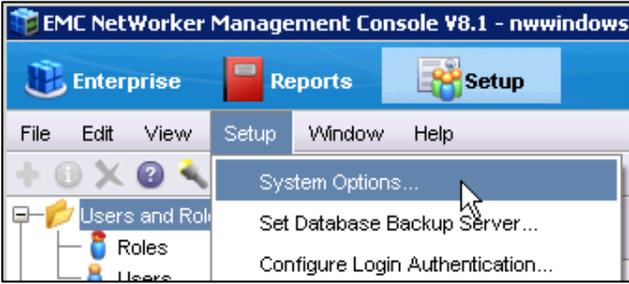
Lab Exercise 3-2: Customize the NetWorker Management Console Server

Step	Action
1	<p>The first time you log in to the NetWorker Management Console, the Console Configuration Wizard starts and displays a welcome screen.</p> <p>Run the wizard and follow the instructions.</p> <p><u>Note:</u> If the wizard is not currently running, start it from the Console Setup window. Select Setup > Configuration Wizard. Also, the wizard can be rerun at any time.</p> <div data-bbox="500 653 1318 1247" style="border: 1px solid black; padding: 10px; margin: 10px auto; width: fit-content;"><p>Console Configuration Wizard [X]</p><p>Welcome to the Console Configuration Wizard</p><p>This wizard will guide you through the following configuration steps.</p><ol style="list-style-type: none">1. Set Administrator password (Console Security Administrator only)2. Set NetWorker Management Console database backup server3. Add NetWorker servers<p>All the above settings can also be changed using the main user interface.</p><p style="text-align: right;"><input style="border: 1px solid gray;" type="button" value=" < Back "/> <input style="border: 1px solid gray; border-color: orange;" type="button" value=" Next > "/> <input style="border: 1px solid gray;" type="button" value=" Cancel "/></p></div> <p>Click Next.</p>

Step	Action
2	<p>Set the password for the NetWorker Administrator user account to: networker Confirm the password.</p> <div data-bbox="574 302 1243 781" data-label="Image"> </div> <p>Click Next.</p>
3	<p>Specify the fully qualified name of your NetWorker server in the NetWorker Server field.</p> <p><u>Note</u>: Ensure that the client name matches the NetWorker Server name exactly and that the FQDN is used for both.</p> <div data-bbox="574 1087 1243 1612" data-label="Image"> </div> <p>Click Next.</p>

Step	Action
4	<p>Enter the FQDN of your NetWorker server in the NetWorker Servers field.</p>  <p>Click Finish to perform the configuration wizard tasks.</p>
5	<p>The NetWorker Management Console interface is opened and the Getting Started window is displayed.</p> <p>Uncheck the box at the bottom of the window so that this window is not displayed every time the Console interface is started.</p>  <p>Close the window.</p>

Step	Action
6	<p>The NetWorker Console window is displayed with the Enterprise button open.</p> 
7	<p>In the Console Enterprise window, click the name of your NetWorker server (either nwwindows or nwlinux) in the left pane. Then, click Launch NetWorker Administration.</p>  <p>You can also right-click NetWorker in the right pane and select Launch Application.</p> 

Step	Action
8	<p>From the menu bar, select View > Diagnostic Mode.</p>  <p>Note: Diagnostic mode is needed to see many of the NetWorker resource attributes that we will be using in the following labs.</p>
9	<p>To facilitate faster monitoring of NetWorker activities,</p> <p>From the Console Setup tab, select System Options from the Setup pull-down menu.</p> 

Step	Action
10	<p>In the System Options window, set the following field values:</p> <ul style="list-style-type: none"> • <u>Polling interval for events and reporting</u>: 2 • <u>Polling thread factor</u>: 2 <div data-bbox="573 373 1250 1056" style="border: 1px solid black; padding: 10px; margin: 10px 0;"> </div> <p>Click OK to save the settings and close the dialog box.</p>

End of Lab Exercise 3-2

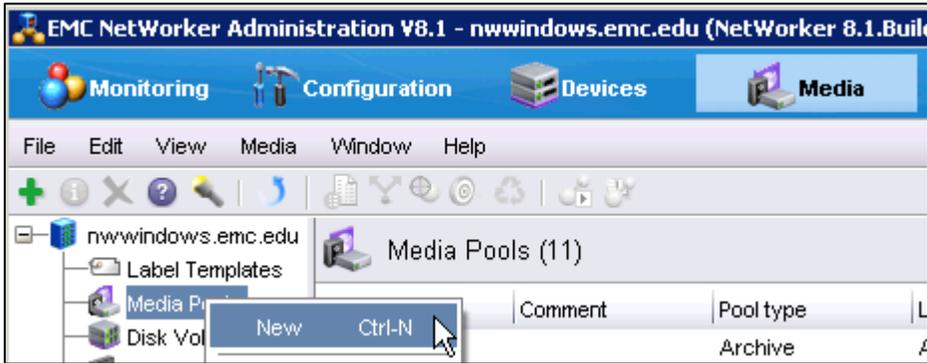
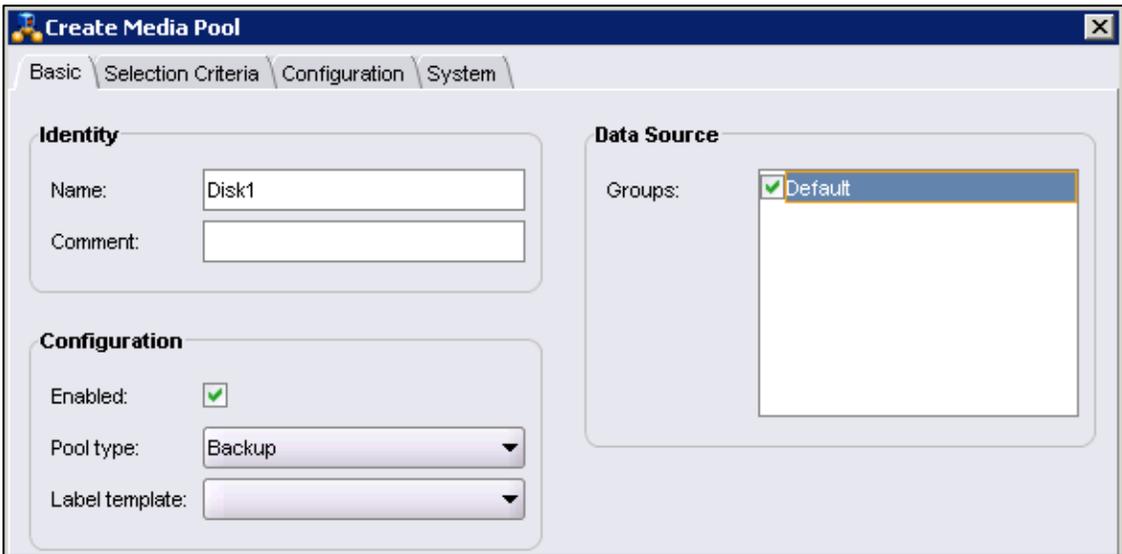
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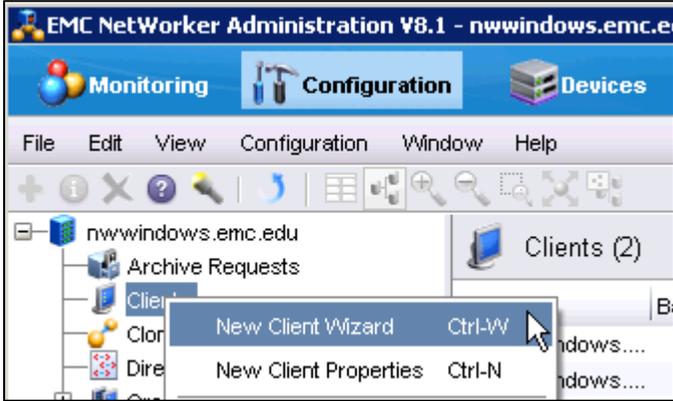
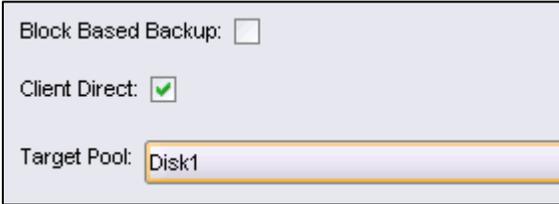
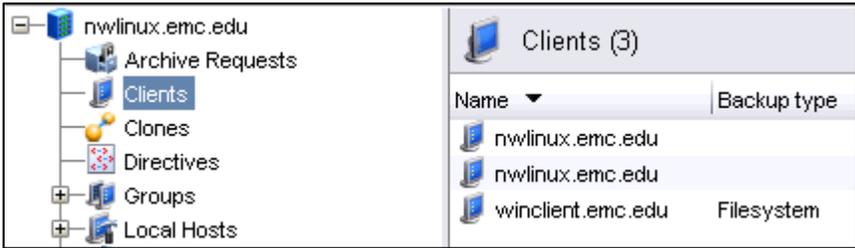
Lab 4: Perform NetWorker Backups

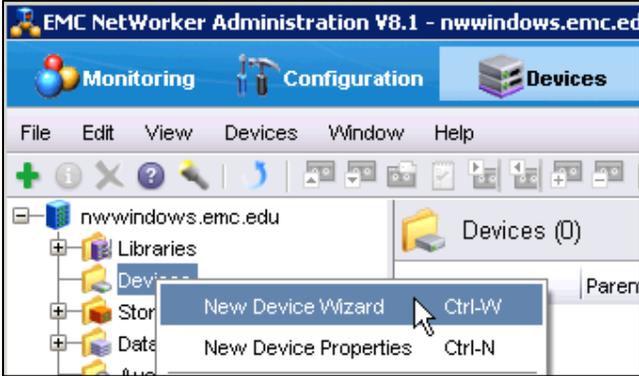
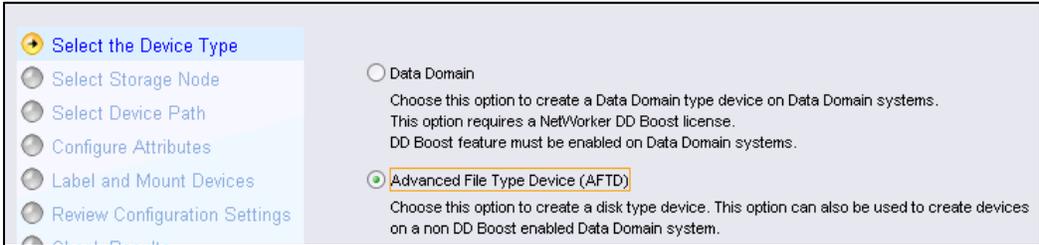
Purpose:	In this lab, you perform various backups of the NetWorker client, winclient.emc.edu.
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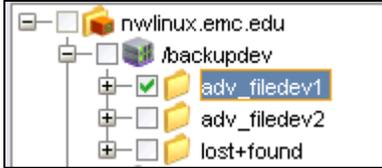
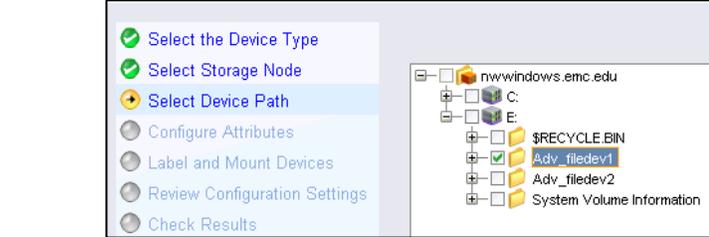
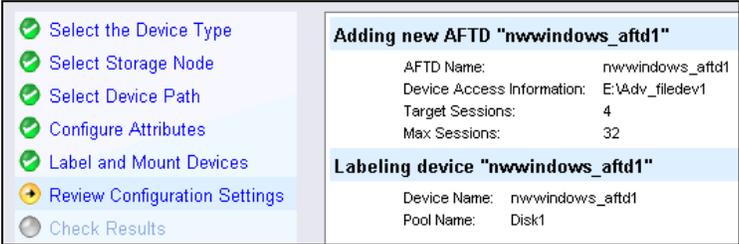
Tasks:	In this lab you: <ul data-bbox="600 567 1404 798" style="list-style-type: none">• Perform client-initiated backups using NetWorker User and the save.• Perform server-initiated backups.• Configure the resources required to satisfy a given scenario.• Configure server-side and client-side directives.
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Lab Exercise 4-1: Prepare for Backups

Step	Action
1	Start NetWorker Administration from a remote desktop session to the nwwindows.emc.edu host.
2	<p>A pool is a NetWorker resource that represents a set of volumes. To separate our disk backup data from data stored on other media later in the course, we'll create a pool for our disk devices.</p> <p>From the Media tab, right-click Media Pools in the left pane and select New.</p> 
3	<p>Type Disk1 for Name. Leave the Label template field blank and check Default for Groups.</p>  <p>Click OK. An error box displays telling you that no label template was selected. Click OK to acknowledge the error box, and click OK again on the Media Pool Creation window again. This automatically creates and applies a label template with the same name of the Media Pool.</p>

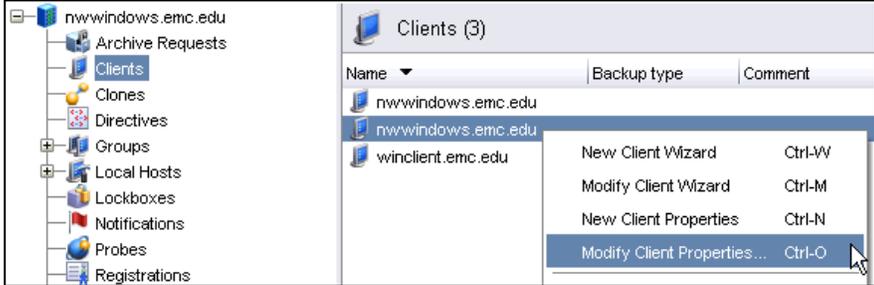
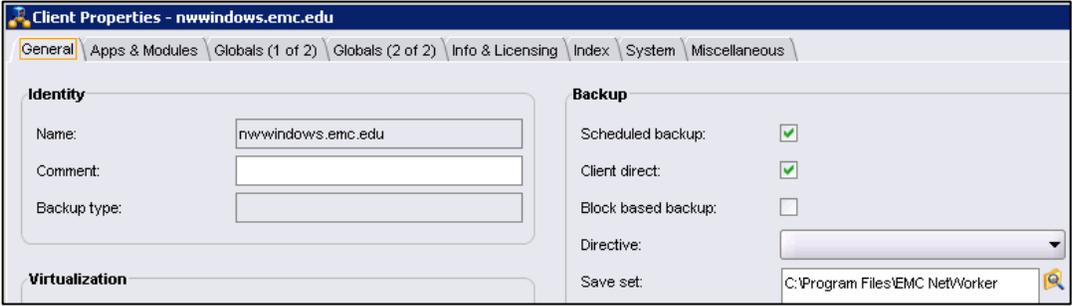
Step	Action										
4	<p>Create a resource for the Windows host, winclient, using the Client Backup Configuration wizard. From the Configuration tab, right-click Clients in the left pane and select New Client Wizard.</p> 										
5	<p>Enter the following information in the Client Backup Configuration wizard:</p> <p>Client Backup Configuration Wizard</p> <ul style="list-style-type: none"> • <u>Client Name</u>: winclient.emc.edu • Click Next to accept defaults until prompted to select a pool • <u>Target Pool</u>: Disk1  <p>Click Create to create the client resource. Click Finish to exit the wizard.</p> <p><u>Result</u>: A client resource is created for winclient.emc.edu.</p>  <table border="1" data-bbox="930 1371 1338 1619"> <thead> <tr> <th colspan="2">Clients (3)</th> </tr> <tr> <th>Name</th> <th>Backup type</th> </tr> </thead> <tbody> <tr> <td>nwlinux.emc.edu</td> <td></td> </tr> <tr> <td>nwlinux.emc.edu</td> <td></td> </tr> <tr> <td>winclient.emc.edu</td> <td>Filesystem</td> </tr> </tbody> </table>	Clients (3)		Name	Backup type	nwlinux.emc.edu		nwlinux.emc.edu		winclient.emc.edu	Filesystem
Clients (3)											
Name	Backup type										
nwlinux.emc.edu											
nwlinux.emc.edu											
winclient.emc.edu	Filesystem										

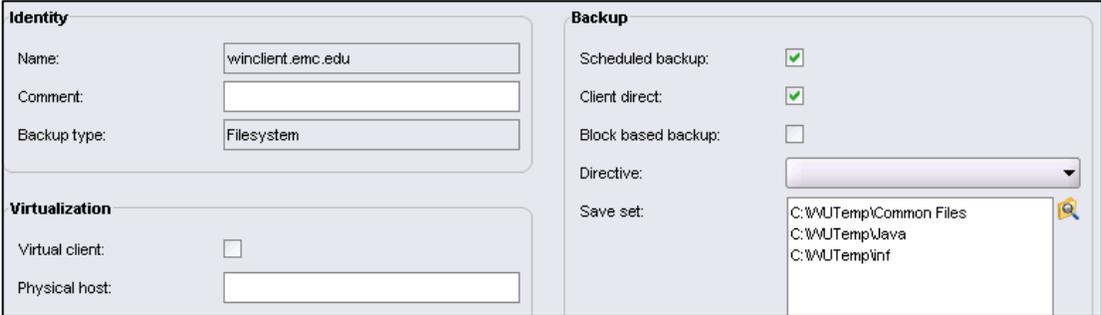
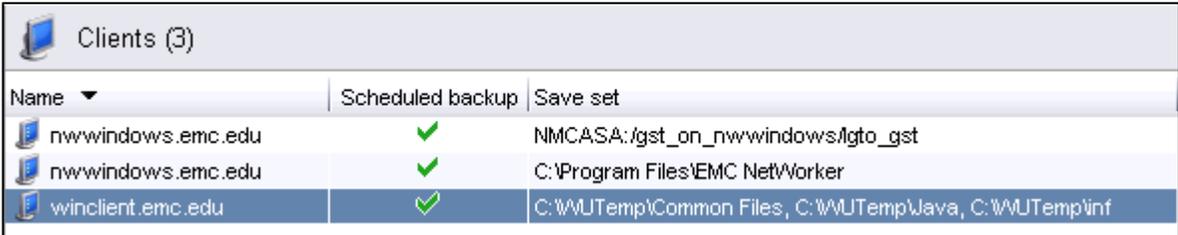
Step	Action
6	<p>An AFTD is a NetWorker disk device that supports concurrent backup and restore operations. An AFTD uses a directory within a file system as its volume. We will label this device into the pool, Disk1. A directory on the NetWorker server has already been created for you to use for the AFTD.</p> <p>From the Devices tab, right-click Devices in the left pane and select New Device Wizard.</p> 
7	<p>Select Advanced File Type Device (AFTD) for device type.</p>  <p>Click Next.</p>
8	<p>On the Select Storage Node screen:</p> <p>Select Next, and accept all default settings to use the NetWorker server as the storage node.</p>

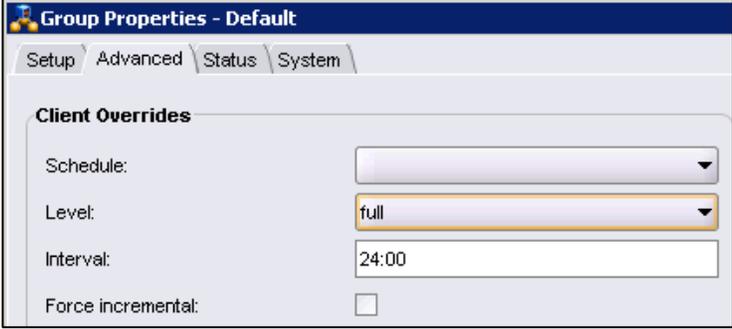
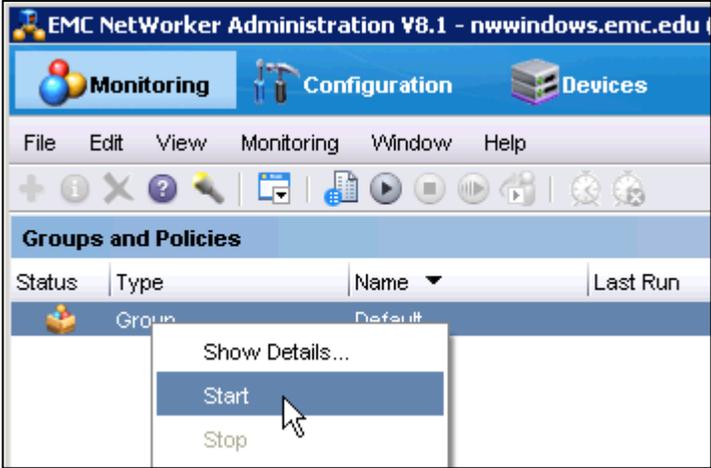
Step	Action
9	<p>On the Select Device Path screen select the folder to use based on which server you chose as your NetWorker server:</p> <ul style="list-style-type: none"> • <u>Linux NetWorker Server:</u> /backupdev/adv_filedev1  <ul style="list-style-type: none"> • <u>Windows NetWorker Server:</u> E:\Adv_filedev1 
10	<p>For device name, enter:</p> <ul style="list-style-type: none"> • <u>Windows NetWorker Server:</u> nwwindows_aftd1 • <u>Linux NetWorker Server:</u> nwlinux_aftd1 <p>For pool, select: Disk1</p> <p>Use default values for the other attributes, clicking next to continue.</p> 
11	<p>Click Configure to create the AFTD. Then, click Finish to exit the wizard.</p> 

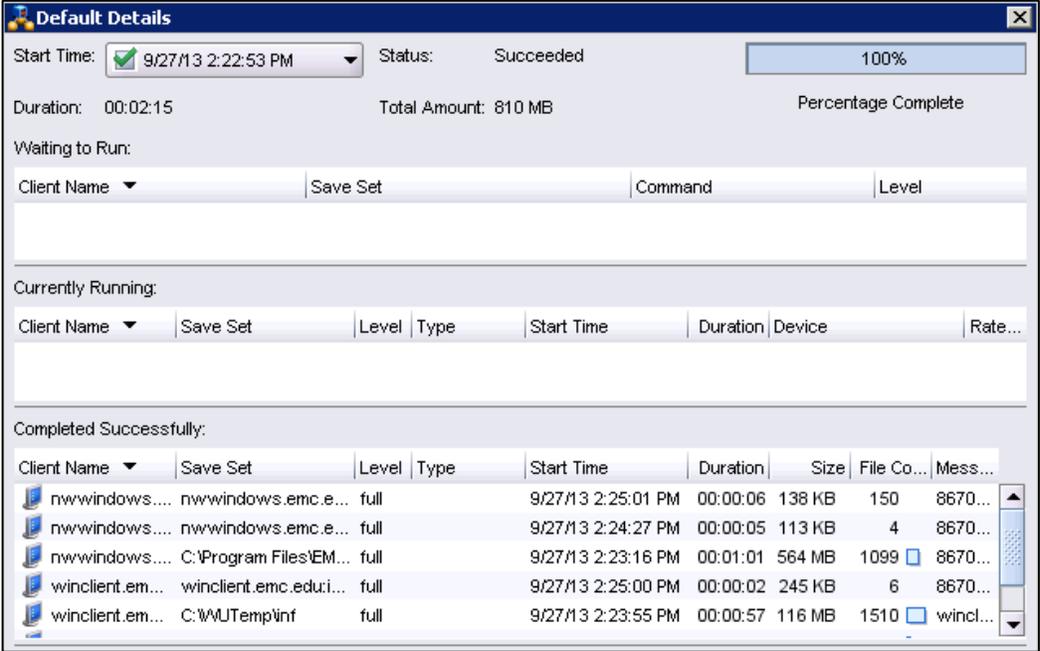
End of Lab Exercise 4-1

Lab Exercise 4-2: Perform Backups Using NetWorker Administration

Step	Action
1	<p>Change the Save set attribute of the client resources to prevent the entire disks from being backed up. Change only the client resources that currently have a save set of All.</p> <p>From NetWorker Administration on nwwindows.emc.edu, open the Configuration tab and highlight the Clients node in the left pane.</p> <p>Right-click your NetWorker server in the Clients list and click Modify Client Properties. <u>Note:</u> Make sure to select the NetWorker server's client resource that has a save set of All.</p> 
2	<p>For the Save set attribute, replace All with the following save set by typing it in the Save Set window.</p> <div style="display: flex; justify-content: space-around; margin: 10px 0;"> <div style="text-align: center;"> <p><u>Linux NetWorker Server</u></p> <p>/nsr</p> </div> <div style="text-align: center;"> <p><u>Windows NetWorker Server</u></p> <p>C:\Program Files\EMC NetWorker</p> </div> </div>  <p>Click OK to save your changes.</p>

Step	Action
3	<p>Modify the save set attribute for winclient.emc.edu. Right-click winclient.emc.edu in the Clients list and click Modify Client Properties.</p> <p>For the Save set attribute, replace All with the following save sets:</p> <pre> Winclient C:\WUTemp\inf C:\WUTemp\Common Files C:\WUTemp\Java </pre> <p>Click OK to save the changes.</p>  <p>Note: Ensure that you have three separate save sets listed. If using the save set browse wizard, it may consolidate the save sets to just C:\WUTemp if all subfolders are selected. If this happens change the save set to ensure you have three separate save sets listed.</p>
4	<p>You should now see the client resources with the modified Save set attributes.</p>  <p>Note: Do NOT use, copy, or modify the NetWorker client resource with “NMCASA” in the save set name until specifically directed to do so in later labs.</p>

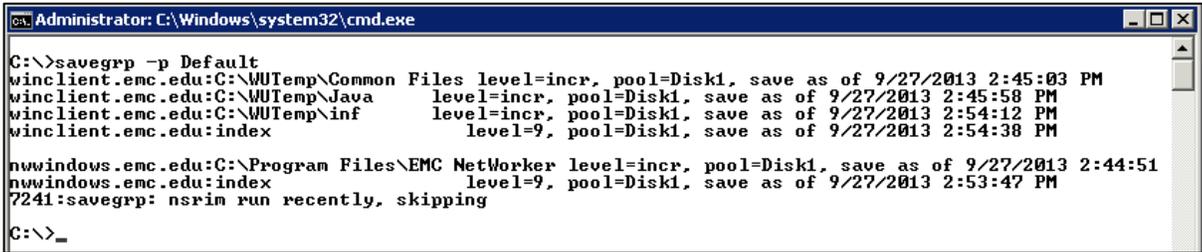
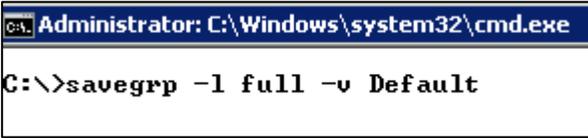
Step	Action
5	<p>Modify the Default group to ensure it always performs a Full backup. To do this, click Groups in the left pane of the Configuration tab, double-click Default in the right pane, and go to the Advanced tab.</p> <p>Set the following two attributes:</p> <ul style="list-style-type: none"> • <u>Level</u>: full • <u>Force Incremental</u>: uncheck the box  <p>Click OK to save the changes.</p>
6	<p>From the Monitoring tab, right-click the Default group and select Start, to start a backup of the Default group.</p>  <p>Reply Yes to the pop-up message.</p>

Step	Action																																																						
7	<p>Review the save group details for the Default group after the backup has completed.</p> <p>From the Monitoring tab, double-click Default in the Group column.</p> <p>Ensure that all save sets show completed successfully and there are no save sets listed in the failed section.</p>  <p>The screenshot shows the 'Default Details' dialog box with the following information:</p> <ul style="list-style-type: none"> Start Time: 9/27/13 2:22:53 PM (checked) Status: Succeeded Percentage Complete: 100% Duration: 00:02:15 Total Amount: 810 MB Waiting to Run: (empty table) Currently Running: (empty table) Completed Successfully: <table border="1" data-bbox="415 856 1425 1050"> <thead> <tr> <th>Client Name</th> <th>Save Set</th> <th>Level</th> <th>Type</th> <th>Start Time</th> <th>Duration</th> <th>Size</th> <th>File Co...</th> <th>Mess...</th> </tr> </thead> <tbody> <tr> <td>nwwindows....</td> <td>nwwindows.emc.e...</td> <td>full</td> <td></td> <td>9/27/13 2:25:01 PM</td> <td>00:00:06</td> <td>138 KB</td> <td>150</td> <td>8670...</td> </tr> <tr> <td>nwwindows....</td> <td>nwwindows.emc.e...</td> <td>full</td> <td></td> <td>9/27/13 2:24:27 PM</td> <td>00:00:05</td> <td>113 KB</td> <td>4</td> <td>8670...</td> </tr> <tr> <td>nwwindows....</td> <td>C:\Program Files\EM...</td> <td>full</td> <td></td> <td>9/27/13 2:23:16 PM</td> <td>00:01:01</td> <td>564 MB</td> <td>1099</td> <td>8670...</td> </tr> <tr> <td>winclient.em...</td> <td>winclient.emc.edu.i...</td> <td>full</td> <td></td> <td>9/27/13 2:25:00 PM</td> <td>00:00:02</td> <td>245 KB</td> <td>6</td> <td>8670...</td> </tr> <tr> <td>winclient.em...</td> <td>C:\WUTemp\inf</td> <td>full</td> <td></td> <td>9/27/13 2:23:55 PM</td> <td>00:00:57</td> <td>116 MB</td> <td>1510</td> <td>wincl...</td> </tr> </tbody> </table> 	Client Name	Save Set	Level	Type	Start Time	Duration	Size	File Co...	Mess...	nwwindows....	nwwindows.emc.e...	full		9/27/13 2:25:01 PM	00:00:06	138 KB	150	8670...	nwwindows....	nwwindows.emc.e...	full		9/27/13 2:24:27 PM	00:00:05	113 KB	4	8670...	nwwindows....	C:\Program Files\EM...	full		9/27/13 2:23:16 PM	00:01:01	564 MB	1099	8670...	winclient.em...	winclient.emc.edu.i...	full		9/27/13 2:25:00 PM	00:00:02	245 KB	6	8670...	winclient.em...	C:\WUTemp\inf	full		9/27/13 2:23:55 PM	00:00:57	116 MB	1510	wincl...
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8	<p>Perform another backup of the Default group and abort the group after at least one of the save set finishes. Use Show Details to determine the save set status.</p> <p>To stop the group, use the same menu used to start the group.</p>  <p>The screenshot shows the 'Groups and Policies' dialog box with a context menu open over the 'Default' group. The menu options are: Show Details..., Start, Stop (highlighted by the mouse), and Restart.</p>																																																						

Step	Action																																																																																	
9	<p>Double-click the group to view the details of the group and verify that not all save sets were backed up successfully.</p> <div data-bbox="345 300 1495 709" style="border: 1px solid black; padding: 5px;"> <p>Completed Successfully:</p> <table border="1"> <thead> <tr> <th>Client Name</th> <th>Save Set</th> <th>Level</th> <th>Type</th> <th>Start Time</th> <th>Duration</th> <th>Size</th> <th>File Co...</th> <th>Messages</th> </tr> </thead> <tbody> <tr> <td>nwwindows....</td> <td>nwwindows.emc.e...</td> <td>full</td> <td></td> <td>9/27/13 2:46:10 PM</td> <td>00:00:05</td> <td>225 KB</td> <td>5</td> <td>86705:s...</td> </tr> <tr> <td>nwwindows....</td> <td>C:\Program Files\EM...</td> <td>full</td> <td></td> <td>9/27/13 2:44:51 PM</td> <td>00:01:03</td> <td>564 MB</td> <td>1112</td> <td>86705:s...</td> </tr> <tr> <td>winclient.em...</td> <td>C:\WJUTemp\Java</td> <td>full</td> <td></td> <td>9/27/13 2:45:58 PM</td> <td>00:00:22</td> <td>100 MB</td> <td>651</td> <td>winclient...</td> </tr> <tr> <td>winclient.em...</td> <td>C:\WJUTemp\Commo...</td> <td>full</td> <td></td> <td>9/27/13 2:45:03 PM</td> <td>00:00:56</td> <td>28 MB</td> <td>271</td> <td>winclient...</td> </tr> </tbody> </table> <p>Failed:</p> <table border="1"> <thead> <tr> <th>Client Name</th> <th>Save Set</th> <th>Level</th> <th>Type</th> <th>Start Time</th> <th>Duration</th> <th>Messages</th> </tr> </thead> <tbody> <tr> <td>winclient.em...</td> <td>C:\WJUTemp\inf</td> <td>full</td> <td></td> <td>9/27/13 2:45:29 PM</td> <td>00:00:56</td> <td>Termination request was sen...</td> </tr> </tbody> </table> </div>	Client Name	Save Set	Level	Type	Start Time	Duration	Size	File Co...	Messages	nwwindows....	nwwindows.emc.e...	full		9/27/13 2:46:10 PM	00:00:05	225 KB	5	86705:s...	nwwindows....	C:\Program Files\EM...	full		9/27/13 2:44:51 PM	00:01:03	564 MB	1112	86705:s...	winclient.em...	C:\WJUTemp\Java	full		9/27/13 2:45:58 PM	00:00:22	100 MB	651	winclient...	winclient.em...	C:\WJUTemp\Commo...	full		9/27/13 2:45:03 PM	00:00:56	28 MB	271	winclient...	Client Name	Save Set	Level	Type	Start Time	Duration	Messages	winclient.em...	C:\WJUTemp\inf	full		9/27/13 2:45:29 PM	00:00:56	Termination request was sen...																						
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10	<p>Right-click the Default group and select Restart. When prompted select yes and allow the group to complete.</p> <div data-bbox="711 867 1127 1142" style="border: 1px solid black; padding: 5px;">  </div>																																																																																	
11	<p>Right-click the group and select Show Details to verify that the group completed successfully.</p> <p><u>Note:</u> Only the save sets that had not completed successfully when the group was stopped were run. Save sets that had already completed prior to stopping the group were not rerun.</p> <div data-bbox="444 1373 1398 1682" style="border: 1px solid black; padding: 5px;"> <p>Completed Successfully:</p> <table border="1"> <thead> <tr> <th>Client Name</th> <th>Save Set</th> <th>Level</th> <th>Type</th> <th>Start Time</th> <th>Duration</th> <th>Size</th> <th>File Co...</th> <th>Mess...</th> </tr> </thead> <tbody> <tr> <td>nwwindows....</td> <td>C:\Program Files\EM...</td> <td>full</td> <td></td> <td>9/27/13 2:44:51 PM</td> <td>00:01:03</td> <td>564 MB</td> <td>1112</td> <td>8670...</td> </tr> <tr> <td>nwwindows....</td> <td>nwwindows.emc.e...</td> <td>full</td> <td></td> <td>9/27/13 2:46:10 PM</td> <td>00:00:05</td> <td>225 KB</td> <td>5</td> <td>8670...</td> </tr> <tr> <td>nwwindows....</td> <td>nwwindows.emc.e...</td> <td>full</td> <td></td> <td>9/27/13 2:54:40 PM</td> <td>00:00:05</td> <td>144 KB</td> <td>150</td> <td>8670...</td> </tr> <tr> <td>nwwindows....</td> <td>nwwindows.emc.e...</td> <td>full</td> <td></td> <td>9/27/13 2:53:47 PM</td> <td>00:00:03</td> <td>225 KB</td> <td>5</td> <td>8670...</td> </tr> <tr> <td>winclient.em...</td> <td>C:\WJUTemp\Commo...</td> <td>full</td> <td></td> <td>9/27/13 2:45:03 PM</td> <td>00:00:56</td> <td>28 MB</td> <td>271</td> <td>wincl...</td> </tr> <tr> <td>winclient.em...</td> <td>C:\WJUTemp\Java</td> <td>full</td> <td></td> <td>9/27/13 2:45:58 PM</td> <td>00:00:22</td> <td>100 MB</td> <td>651</td> <td>wincl...</td> </tr> <tr> <td>winclient.em...</td> <td>winclient.emc.edu:i...</td> <td>full</td> <td></td> <td>9/27/13 2:54:38 PM</td> <td>00:00:02</td> <td>489 KB</td> <td>9</td> <td>8670...</td> </tr> <tr> <td>winclient.em...</td> <td>C:\WJUTemp\inf</td> <td>full</td> <td></td> <td>9/27/13 2:54:12 PM</td> <td>00:00:18</td> <td>116 MB</td> <td>1510</td> <td>wincl...</td> </tr> </tbody> </table> </div>	Client Name	Save Set	Level	Type	Start Time	Duration	Size	File Co...	Mess...	nwwindows....	C:\Program Files\EM...	full		9/27/13 2:44:51 PM	00:01:03	564 MB	1112	8670...	nwwindows....	nwwindows.emc.e...	full		9/27/13 2:46:10 PM	00:00:05	225 KB	5	8670...	nwwindows....	nwwindows.emc.e...	full		9/27/13 2:54:40 PM	00:00:05	144 KB	150	8670...	nwwindows....	nwwindows.emc.e...	full		9/27/13 2:53:47 PM	00:00:03	225 KB	5	8670...	winclient.em...	C:\WJUTemp\Commo...	full		9/27/13 2:45:03 PM	00:00:56	28 MB	271	wincl...	winclient.em...	C:\WJUTemp\Java	full		9/27/13 2:45:58 PM	00:00:22	100 MB	651	wincl...	winclient.em...	winclient.emc.edu:i...	full		9/27/13 2:54:38 PM	00:00:02	489 KB	9	8670...	winclient.em...	C:\WJUTemp\inf	full		9/27/13 2:54:12 PM	00:00:18	116 MB	1510	wincl...
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End of Lab Exercise 4-2

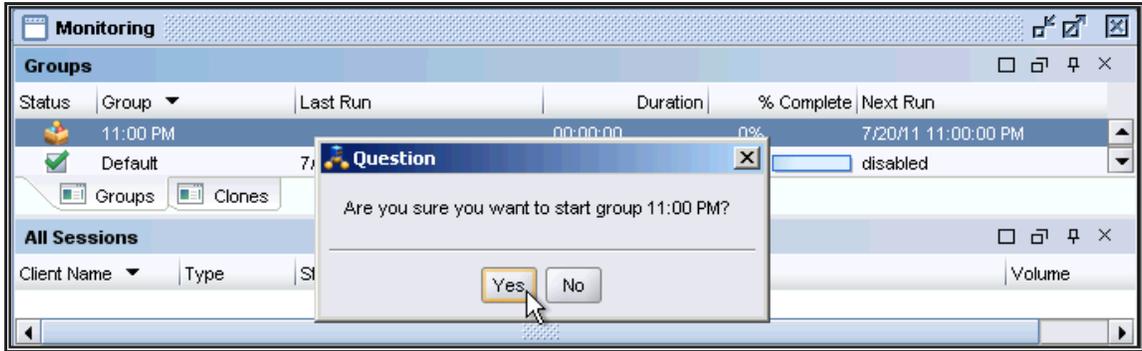
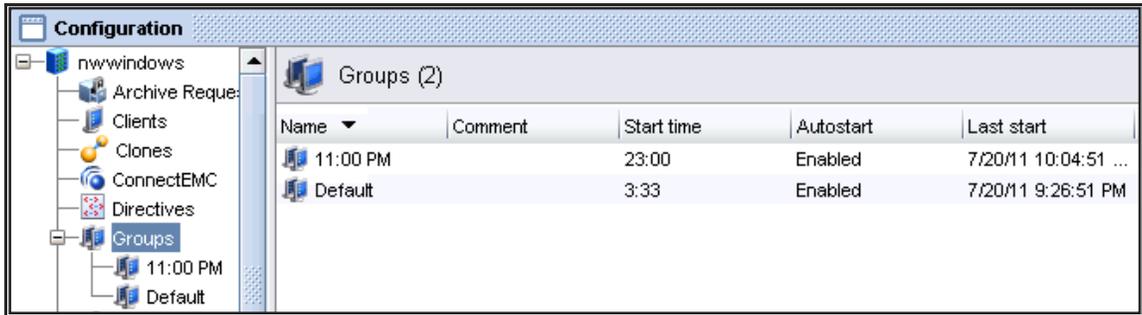
Lab Exercise 4-3: Perform a Backup Using savegrp

Step	Action
1	<p>Open a command prompt on your NetWorker server. <u>Note:</u> If you installed the NetWorker server on Linux, do this by opening a putty session to the nwlunix server. If you installed NetWorker server on Windows then just open a command prompt.</p> <p>At the command prompt, run savegrp -p Default for a preview of the backup of the Default group. <u>Note:</u> Group names are case sensitive.</p> <p>At a command prompt type: savegrp -p Default</p> 
2	<p>Next use the savegrp command to perform a full backup of the Default group.</p> <p>Type: savegrp -l full Default</p>  <p><u>Note:</u> While the backup is running, you can monitor it from the Monitoring window of the NetWorker Administration console. Additionally, you can add a -v to the savegrp command to increase the level of verbosity.</p>
3	<p>Validate that the backup completes successfully.</p> 

End of Lab Exercise 4-3

Lab Exercise 4-4: Create New Resources

In this lab, you are presented with a scenario for a data zone configuration. You then configure the NetWorker resources needed to attain that configuration. You will create group, schedule, policy and client resources.

Step	Action
1	Configure all the resources needed to perform the backups requested in the following scenario as detailed in the next pages.
2	<p>Perform a backup of all groups using any method you want. Monitor their progress and verify they finish without error. If any problem occurs, attempt to diagnose and correct the problem, and perform a restart of the group(s) that failed.</p> 
3	<p>Verify that all groups have their Autostart attribute set to Enabled so they will back up automatically during the remainder of the week.</p> 

Lab Exercise 4-4 SCENARIO

You will be backing up **two** hosts. The first host will be your **NetWorker server**. You will have **two client resources** for this host, in addition to the client resource with the NMC save set. You will modify the existing client resource for your NetWorker server. The second host will be your Windows client (**winclient.emc.edu**). Finally, a third client resource will be created for your NetWorker storage node.

Using the following backup requirements, create or modify resources to configure the data zone. **Before actually doing the configuration, use Table 4-4 on the following page to summarize all the resources that need to be created/configured.**

	NetWorker Server (Client Resource #1)
Save sets (Linux)	/nsr
Save sets (Windows)	C:\Program Files\EMC NetWorker
Backup time	9:00 a.m.
Schedule	Full backup on Monday No backup on Sunday Incremental backup on all other days
Policies	Data must be browsable for one month and recoverable for one year.
Pool	Ensure data is backed up to the Disk1 pool

	Winclient.emc.edu (Client Resource #2)
Save sets (Windows)	C:\WUTemp\ , C:\WINDOWS\Help
Backup time	11:00 p.m.
Schedule	Full on the 1 st and the 15 th of each month Incremental on all other days
Policies	Data must be browsable for 2 months and recoverable for 3 years.
Pool	Ensure data is backed up to the Disk1 pool

	NetWorker Storage Node (Client Resource #3)
Save sets (Linux)	/etc
Save sets (Windows)	C:\WINDOWS\Help
Backup time	11:00 p.m.
Schedule	Level 1 each Thursday A Full backup is needed on the 3 rd Friday of every month Incremental on all other days
Policies	Data must be browsable for one month and recoverable for two months.
Pool	Ensure data is backed up to the Disk1 pool.

Lab Exercise 4-4 Worksheet

(If desired, remove this page and fill in during the lab.)

	Client #1 (NetWorker Server)	Client #2 (Winclient.emc.edu)	Client #3 (NetWorker SN)
Client Name			
Save sets			
Group			
Schedule			
Browse Policy			
Retention Policy			

Table 4-4: Summary of Client Resource Information

(Use a '*' to designate a resource that must be created.)

Lab Exercise 4-4 Solutions

Client Resource Information

	Client #1 (NetWorker Server)	Client #2 (Winclient.emc.edu)	Client #3 (NetWorker SN)
Save sets (<u>Windows NW Server</u>)	C:\Program Files\EMC NetWorker	C:\WUTemp C:\WINDOWS\Help	/etc
Save sets (<u>Linux NW Server</u>)	/nsr		C:\WINDOWS\Help
Group	NSRBackup ***	11PM ***	11PM ***
Schedule	Full on Monday ***	Full on 1st and 15th ***	Full on 3rd Friday ***
Browse Policy	Month	2 Months ***	Month
Retention Policy	Year	3 Years***	2 Months ***

('***' - designates a resource that must be created prior to configuring the client resource)

Lab Exercise 4-4 Solution Steps

Action

All resources are configured using the **Configuration** and **Media** tabs in the **NetWorker Administration** interface.

Note: The names listed below for groups, schedules, and policies were selected as representative names for the resources. You may choose different names if you desire, however, it is important that you remember which of your chosen names relate to the names used in the labs. The lab guide will always reference the resources by the representative names below.

Group: NSRBackup

From the **Configuration** tab right-click **Groups** in the left pane and select **New**.

Create Group window > **Setup** tab:

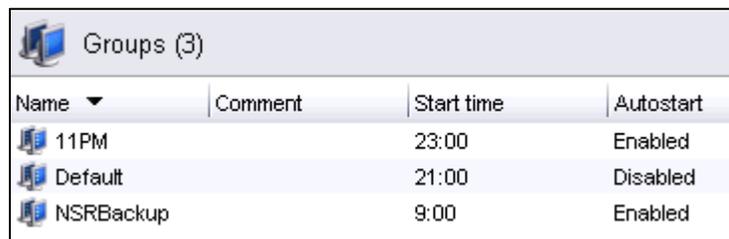
- Name: **NSRBackup**
- Start time: **9:00**
- Autostart: **Enabled**

Group: 11PM

Right-click **Groups** in the left pane and select **New**.

Create Group window > **Setup** tab:

- Name: **11PM**
- Start time: **23:00**
- Autostart: **Enabled**

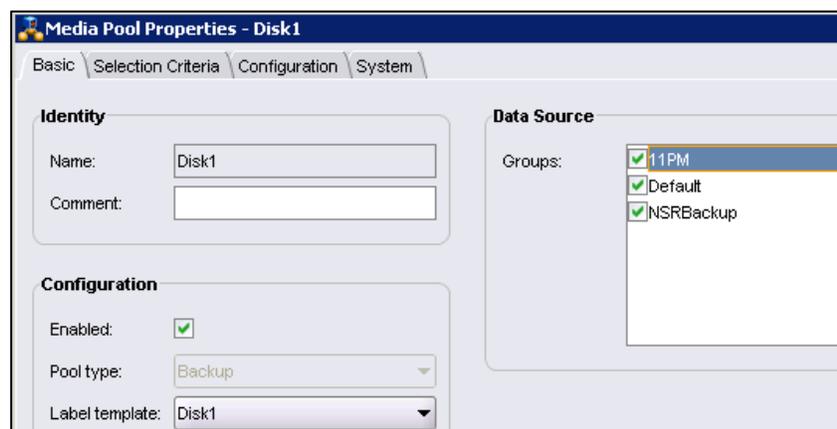


Name	Comment	Start time	Autostart
11PM		23:00	Enabled
Default		21:00	Disabled
NSRBackup		9:00	Enabled

Pool: Disk1

From the **Media** tab, select **Media Pools** and double-click the **Disk1** pool to open its properties.

In the **Data Source** field, select the **two** newly created groups so that **all groups** are selected for this pool.



Media Pool Properties - Disk1

Basic | Selection Criteria | Configuration | System

Identity

Name: Disk1

Comment:

Configuration

Enabled:

Pool type: Backup

Label template: Disk1

Data Source

Groups:

- 11PM
- Default
- NSRBackup

Click **OK**.

Schedule: Full on Monday

On the **Configuration** tab, Right-click **Schedules** in left pane and create a **New** schedule with the following:

Create Schedule window:

- **Name:** Full on Monday
- **Period:** Week
- Right-click any **Sunday** -> **Set Level** -> **Skip**
- Right-click any **Monday** -> **Set Level** -> **Full**

Create Schedule

Name: Full on Monday

Period: Week

Comment:

September 2013 September 27, 2013

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1 Skip	2 Full	3 Incremental	4 Incremental	5 Incremental	6 Incremental	7 Incremental
8 Skip	9 Full	10 Incremental	11 Incremental	12 Incremental	13 Incremental	14 Incremental
15 Skip	16 Full	17 Incremental	18 Incremental	19 Incremental	20 Incremental	21 Incremental
22 Skip	23 Full	24 Incremental	25 Incremental	26 Incremental	27 Incremental	28 Incremental
29 Skip	30 Full					

? OK Reset Cancel

Click **OK**.

Schedule: Full on 1st and 15th**Create Schedule** window:

- **Name:** Full on 1st and 15th
- **Period:** Month
- Right-click the **15th** > **Set Level** > **Full**
- Right-click the **8th** > **Set Level** > **5**
- Right-click the **22nd** > **Set Level** > **5**

Create Schedule

Name:

Period:

Comment:

September 2013 September 27, 2013

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1 Full	2 Incremental	3 Incremental	4 Incremental	5 Incremental	6 Incremental	7 Incremental
8 5	9 Incremental	10 Incremental	11 Incremental	12 Incremental	13 Incremental	14 Incremental
15 Full	16 Incremental	17 Incremental	18 Incremental	19 Incremental	20 Incremental	21 Incremental
22 5	23 Incremental	24 Incremental	25 Incremental	26 Incremental	27 Incremental	28 Incremental
29 Incremental	30 Incremental					

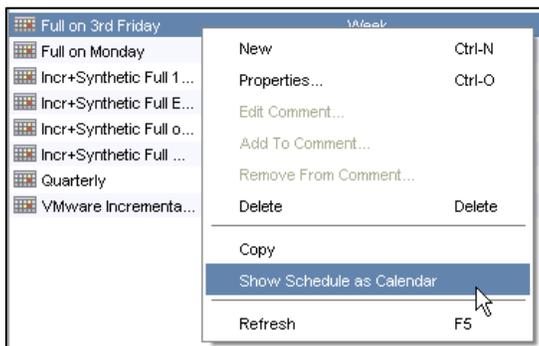
Buttons: ? OK Reset Cancel

Click **OK**.

Full Schedule: Full on 3rd Friday**Create Schedule** window:

- Name: **Full on 3rd Friday**
- Period: **Week**
- Click **ok** to save schedule

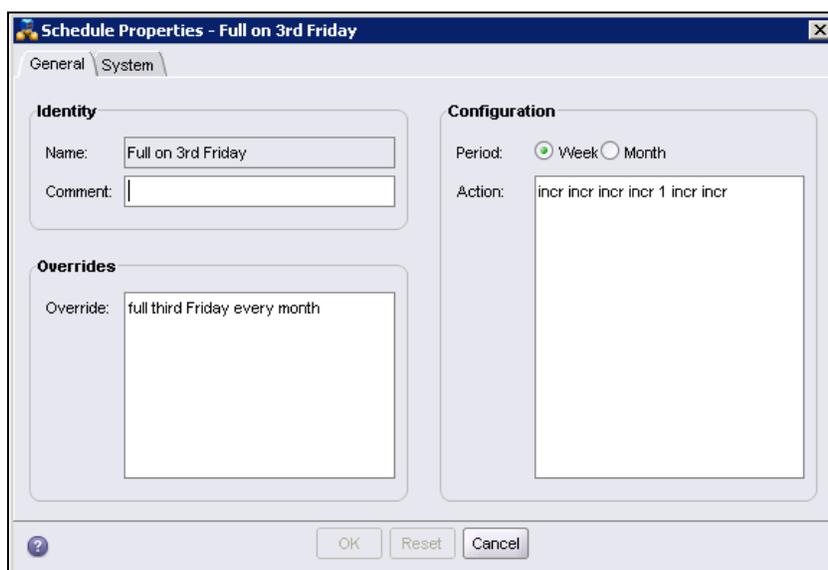
From the list of schedules, right-click your newly created schedule and **uncheck** the option **show schedule as calendar**



Right-click **Full on 3rd Friday** schedule and select **properties** to make the following changes:

Schedule Properties window:

- Action: **incr incr incr incr 1 incr incr**
- Override: **full third Friday every month**



Click **OK**.

Note: The method for schedule creation shown in this step is particularly useful for the creation of complex schedules that need to repeat over consecutive years. Any option supported by `nsr_get_date` can be used in the override section

Time Policy: 2 Months

Right-click **Time Policies** in left pane and create a **New** time policy with the following attributes:

Create Policy window:

- Name: **2 Months**
- Number of periods: **2**
- Period: **Months**

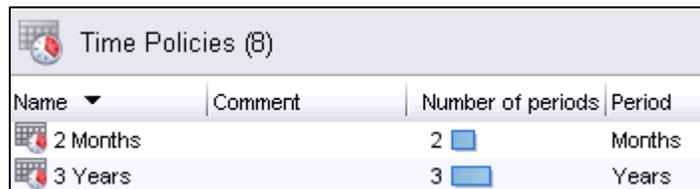
Click **OK**.

Time Policy: 3 Years

Create Policy window:

- Name: **3 Years**
- Number of periods: **3**
- Period: **Years**

Click **OK**.



Name	Comment	Number of periods	Period
2 Months		2	Months
3 Years		3	Years

Client: Client #1 (NetWorker Server)

From the **Configuration** tab, click **Clients** in the left pane and double-click the existing client (**not** the GST client) in the right pane.

Choose the save sets to back up by clicking **Browse** in the client **Properties** window, **General** tab and selecting the directories from the **Choose Directory** window.

- Save Set:
 - Linux NW Server: **/nsr**
 - Windows NW Server: **C:\Program Files\EMC NetWorker**
- Schedule: **Full on Monday**
- Group: **NSRBackup** only

Click **OK**.

Client: Client #2 (winclient.emc.edu)

Right-click the **winclient.emc.edu** client and select **Modify Client Properties**.

- Save Set:
 - C:\WUTemp**
 - C:\Windows\Help**
- Browse policy: **2 Months**
- Retention policy: **3 Years**
- Backup Schedule: **Full on 1st and 15th**
- Group: **11PM** only
- Pool: **Disk1**

Click **OK**.

Client: Client #3 (NW Storage Node)

Right-click Clients in the left pane and select **New Client Wizard**.

- Name: **nwlinux.emc.edu** or **nwwindows.emc.edu**
- Target Pool: **Disk1**
- Save set:
 - Linux Storage Node: **/etc**
 - Windows Storage Node: **C:\WINDOWS\Help**
- Browse policy: **Month**
- Retention policy: **2 Months**
- Schedule: **Full on 3rd Friday**
- Group: **11PM** only

Click **Create**.

End of Lab Exercise 4-4

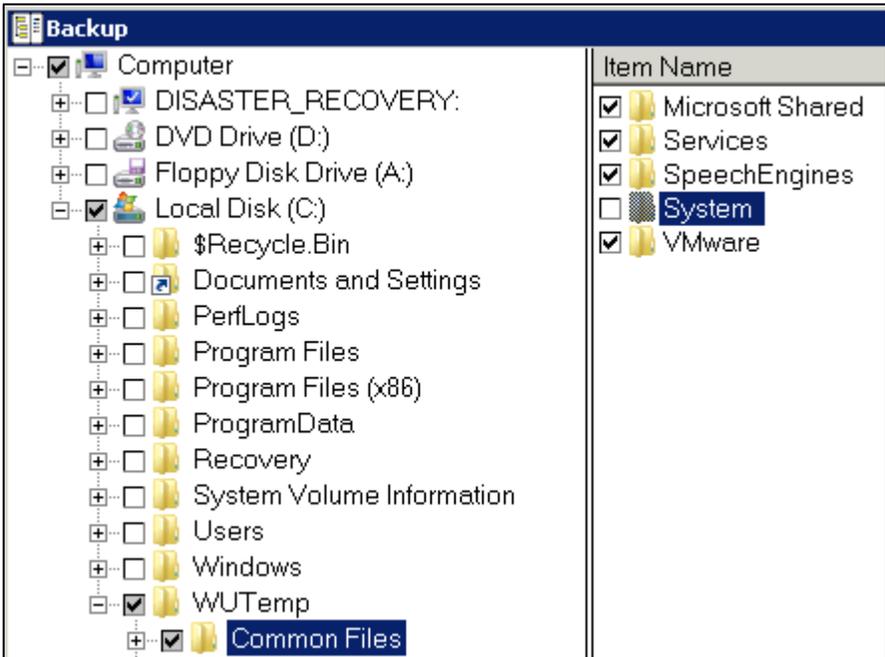
Lab Exercise 4-5: Perform Client-initiated Backups Using NetWorker User

Step	Action
1	<p>Backups run manually from the NetWorker client are considered a level M or Manual level backup and are treated differently than scheduled backups.</p> <p>To ensure these backups go to a pool other than Default, a new pool is created and configured specifically for manual backups.</p> <p>From the Device tab, right-click Devices and launch the New Device Wizard</p>  <p>The screenshot shows the EMC NetWorker Administration V8.1 interface. The title bar reads 'EMC NetWorker Administration V8.1 - nwwindows.emc.edu'. The main window has three tabs: 'Monitoring', 'Configuration', and 'Devices', with 'Devices' selected. Below the tabs is a menu bar with 'File', 'Edit', 'View', 'Devices', 'Window', and 'Help'. A toolbar with various icons is located below the menu bar. The main area is divided into a left pane showing a tree view of 'nwwindows.emc.edu' with folders for 'Libraries', 'Devices', 'Storage', and 'Data'. The 'Devices' folder is selected, and a context menu is open over it, showing options: 'New Device Wizard' (with keyboard shortcut 'Ctrl-W'), 'New Device Properties' (with keyboard shortcut 'Ctrl-N'), and 'Parent ju...'. A mouse cursor is pointing at the 'New Device Wizard' option.</p>

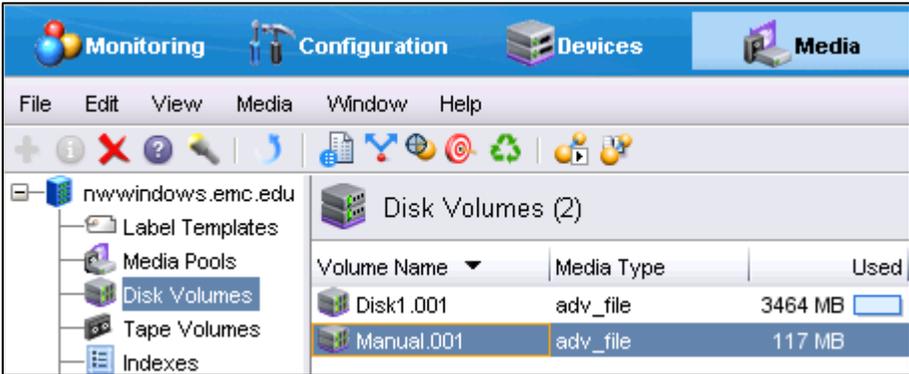
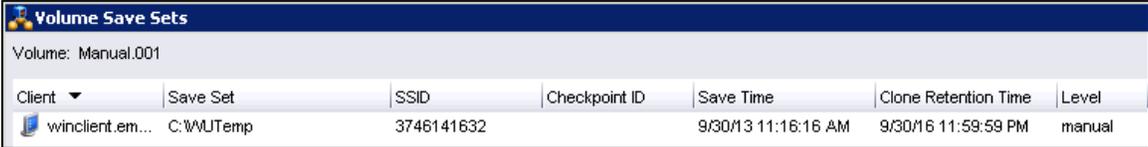
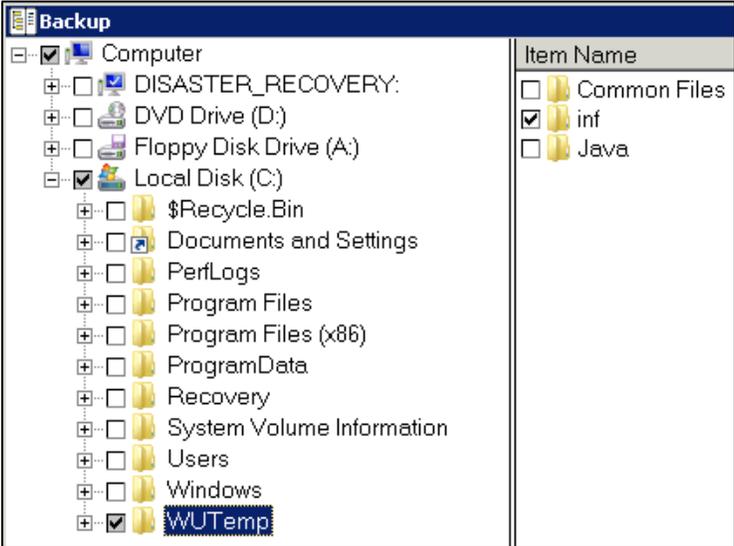
Step	Action						
2	<p>Use the following options to create the new device in the wizard:</p> <p>Device Configuration Wizard Options:</p> <ul style="list-style-type: none"> • Device Type: Advanced File Type Device (AFTD) • Storage Node: Accept default selection of NetWorker Server • Device Path: Choose the folder pre-created for you based on your NetWorker server Linux NetWorker Server: /backupdev/adv_filedev2 Windows NetWorker Server: E:\Adv_filedev2 <div data-bbox="656 485 1166 688" data-label="Image"> </div> <ul style="list-style-type: none"> • NetWorker Device Name: <networker_server_name>_AFTD2 <div data-bbox="488 800 1333 991" data-label="Form"> <table border="1"> <tr> <td>NetWorker Device Name:</td> <td>nwwindows_aftd2</td> </tr> <tr> <td>Comment:</td> <td></td> </tr> <tr> <td>Device Path:</td> <td>E:\Adv_filedev2</td> </tr> </table> </div> <ul style="list-style-type: none"> • Label and Mount Device after creation: uncheck the box Label and Mount device after creation. <div data-bbox="483 1136 1352 1362" data-label="Form"> <div style="border: 1px solid gray; padding: 5px;"> <input type="checkbox"/> Label and Mount device after creation <p><i>The Label and Mount device operation may take an extended amount of time.</i></p> <p>Pool Type</p> <p><input checked="" type="radio"/> Backup</p> <p><input type="radio"/> Backup Clone</p> </div> </div> <p>When presented with the summary page, click Configure, and Finish to complete creation of the device and close the wizard.</p>	NetWorker Device Name:	nwwindows_aftd2	Comment:		Device Path:	E:\Adv_filedev2
NetWorker Device Name:	nwwindows_aftd2						
Comment:							
Device Path:	E:\Adv_filedev2						

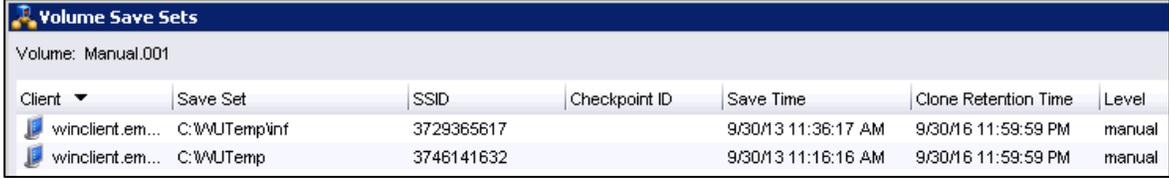
Step	Action
3	<p>On the Media tab, right-click Media Pools, and select New</p> <p>Create a new pool with the following attributes:</p> <p>Basic Tab</p> <ul style="list-style-type: none"> • <u>Name</u>: Manual <p>Selection Criteria Tab</p> <ul style="list-style-type: none"> • <u>Levels</u>: check the box for manual <div data-bbox="647 480 1170 762" data-label="Image"> <p>A screenshot of a 'Levels' list in a software interface. The list contains the following items: 4, 5, 6, 7, 8, 9, incr, and manual. The 'manual' item has a green checkmark in a small box to its left, indicating it is selected. The list is contained within a scrollable window.</p> </div> <p>Click OK.</p> <p>Click OK again to acknowledge the error box, and click OK again on the Media Pool Creation window.</p> <div data-bbox="647 905 1170 1104" data-label="Image"> <p>An error dialog box with a blue title bar and a close button. The text inside reads: 'No label template selected. Choose one now, or Apply again to have a label template created and selected automatically.' There is an 'OK' button at the bottom.</p> </div> <p><u>Result</u>: This automatically creates and applies a label template with the name of the Media Pool.</p>
4	<p>On the Devices tab select Devices from the tree on the left.</p> <p>Right-click the newly created device and choose label.</p> <ul style="list-style-type: none"> • <u>Pools</u>: Manual <div data-bbox="686 1375 1133 1749" data-label="Image"> <p>A 'Label' dialog box with a blue title bar and a close button. It contains several fields: 'Device' with the value 'nwwindows_aftd2', 'Volume Label' with 'Manual.001', and a 'Pools' dropdown menu currently set to 'Manual'. Below these are two checkboxes: 'Manual Recycle' (unchecked) and 'Mount after Labeling' (checked). At the bottom are 'OK' and 'Cancel' buttons.</p> </div> <p>Click OK.</p>

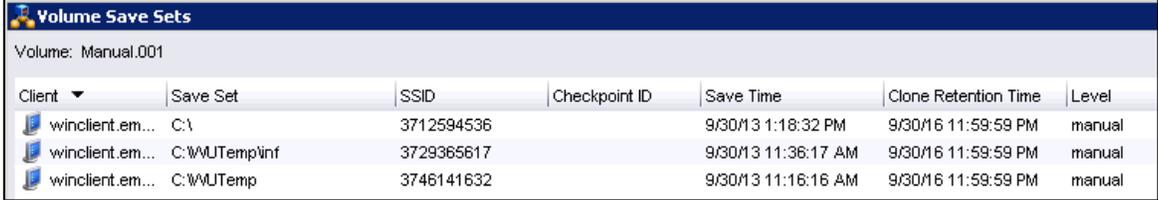
Step	Action
5	<p>Using the Winclient link on the desktop, log in to the Windows client, winclient.emc.edu, with the following credentials:</p> <ul style="list-style-type: none"> • <u>User</u>: WINCLIENT\administrator • <u>Password</u>: student <p>Launch the NetWorker User application.</p> <p style="text-align: center;">Start > All Programs > EMC NetWorker > NetWorker User</p>
6	<p>If the Change Server dialog box is presented, enter the fully qualified name of your NetWorker server.</p> <p>NetWorker User – Change Server</p> <ul style="list-style-type: none"> • <u>Server</u>: FQDN of NetWorker Server • <u>Check the Box</u>: Save as Default Server <div data-bbox="711 745 1101 1003" data-label="Image"> </div> <p>Click OK.</p>
7	<p>Click the Backup icon to display the file selection window.</p> <div data-bbox="597 1192 1218 1423" data-label="Image"> </div>
8	<p>Navigate to C:\WUTemp and mark the Common Files and Java folders for backup.</p> <div data-bbox="690 1543 1128 1753" data-label="Image"> </div>

Step	Action
9	<p>Navigate into the C : \WUTemp\Common Files folder and unmark the System folder.</p>  <p>The screenshot shows the Backup application window. On the left, the file tree is expanded to 'Local Disk (C:)' and then to the 'Common Files' folder. The 'System' folder is highlighted with a blue selection bar, and its checkbox is unchecked. Other folders like 'Microsoft Shared', 'Services', 'SpeechEngines', and 'VMware' have their checkboxes checked. On the right, the 'Item Name' list shows the same folders with their respective checkboxes.</p>
10	<p>From NetWorker User, start the backup by clicking the green start icon.</p>  <p>The screenshot shows the NetWorker User interface. At the top, there's a title bar 'NetWorker User' and a menu bar with 'File', 'Operation', 'Tree', 'View', 'Options', and 'Window'. Below the menu bar is a toolbar with several icons. A mouse cursor is clicking on the green arrow icon, which is the 'Start' button. Below the toolbar, the 'Backup' window is visible, showing the 'Computer' folder selected.</p>

Step	Action
11	<p>Monitor the backup by viewing the <i>Backup Status</i> window.</p> <div data-bbox="553 262 1268 1224" style="border: 1px solid black; padding: 5px;">  <p>The screenshot shows a window titled "Backup Status" with a list of files and folders. The files listed are:</p> <ul style="list-style-type: none"> C:\WUTemp\Java\jre6\lib\zi\System\AST4ADT C:\WUTemp\Java\jre6\lib\zi\System\CST6 C:\WUTemp\Java\jre6\lib\zi\System\CST6CDT C:\WUTemp\Java\jre6\lib\zi\System\EST5 C:\WUTemp\Java\jre6\lib\zi\System\EST5EDT C:\WUTemp\Java\jre6\lib\zi\System\HST10 C:\WUTemp\Java\jre6\lib\zi\System\MST7 C:\WUTemp\Java\jre6\lib\zi\System\MST7MDT C:\WUTemp\Java\jre6\lib\zi\System\PST8 C:\WUTemp\Java\jre6\lib\zi\System\PST8PDT C:\WUTemp\Java\jre6\lib\zi\System\YST9 C:\WUTemp\Java\jre6\lib\zi\System\YST9YDT C:\WUTemp\Java\jre6\lib\zi\System\ C:\WUTemp\Java\jre6\lib\zi\WET C:\WUTemp\Java\jre6\lib\zi\ZoneInfoMappings C:\WUTemp\Java\jre6\lib\zi\ C:\WUTemp\Java\jre6\lib\ C:\WUTemp\Java\jre6\LICENSE C:\WUTemp\Java\jre6\LICENSE.txt C:\WUTemp\Java\jre6\README.txt C:\WUTemp\Java\jre6\THIRDPARTYLICENSEREADME.txt C:\WUTemp\Java\jre6\Welcome.html C:\WUTemp\Java\jre6\ C:\WUTemp\Java\ C:\WUTemp\ C:\ / <p>At the bottom of the window, the following text is displayed:</p> <pre> backup: C:\WUTemp 117 MB 00:00:18 849 files 94694:winworkr: The backup of save set 'C:\WUTemp' succeeded. 7167:winworkr: backup completion time: 9/30/2013 8:16:34 AM Start time: 9/30/2013 8:15 AM </pre> </div> <p>When the backup completes, this window can be used to validate that no files were backed up from the C:\WUTemp\Common Files\System folder which you excluded from the backup.</p>

Step	Action
12	<p>Return to the NetWorker Administration GUI you have open on nwwindows.</p> <p>On the Media tab, select Disk Volumes in the left pane. Double-click the Manual.001 volume to display a list of save sets on the volume.</p>  <p>Note the save set and client name.</p> 
13	<p>Go back to winclient and perform another backup. This time, only back up the C:\WUTemp\inf folder.</p> 

Step	Action																					
14	<p>Verify that the most recent backup was written to the same volume as the first.</p> <p>Notice the save set name from this backup in comparison to the save set name from the previous backup.</p>  <table border="1" data-bbox="326 373 1495 552"> <thead> <tr> <th>Client</th> <th>Save Set</th> <th>SSID</th> <th>Checkpoint ID</th> <th>Save Time</th> <th>Clone Retention Time</th> <th>Level</th> </tr> </thead> <tbody> <tr> <td>winclient.em...</td> <td>C:\WUTemp\inf</td> <td>3729365617</td> <td></td> <td>9/30/13 11:36:17 AM</td> <td>9/30/16 11:59:59 PM</td> <td>manual</td> </tr> <tr> <td>winclient.em...</td> <td>C:\WUTemp</td> <td>3746141632</td> <td></td> <td>9/30/13 11:16:16 AM</td> <td>9/30/16 11:59:59 PM</td> <td>manual</td> </tr> </tbody> </table>	Client	Save Set	SSID	Checkpoint ID	Save Time	Clone Retention Time	Level	winclient.em...	C:\WUTemp\inf	3729365617		9/30/13 11:36:17 AM	9/30/16 11:59:59 PM	manual	winclient.em...	C:\WUTemp	3746141632		9/30/13 11:16:16 AM	9/30/16 11:59:59 PM	manual
Client	Save Set	SSID	Checkpoint ID	Save Time	Clone Retention Time	Level																
winclient.em...	C:\WUTemp\inf	3729365617		9/30/13 11:36:17 AM	9/30/16 11:59:59 PM	manual																
winclient.em...	C:\WUTemp	3746141632		9/30/13 11:16:16 AM	9/30/16 11:59:59 PM	manual																
15	<p>Perform another backup, this time select the C:\WUTemp\Common Files and C:\Windows\Fonts folders.</p> <p>Compress all the files being backed up by selecting Special Handling from the File menu.</p> <p>Special Handling</p> <ul style="list-style-type: none"> Options: Compress   <p>Click OK.</p> <p>Initiate the backup and monitor its progress in the Backup Status window.</p>																					

Step	Action																												
16	<p>Once again, look at the contents of the volume to verify that the save set was backed up successfully.</p> <p>Identify the save set from this backup and notice the difference in save set names between the three backups.</p>  <table border="1" data-bbox="332 409 1490 609"> <thead> <tr> <th>Client</th> <th>Save Set</th> <th>SSID</th> <th>Checkpoint ID</th> <th>Save Time</th> <th>Clone Retention Time</th> <th>Level</th> </tr> </thead> <tbody> <tr> <td>winclient.em...</td> <td>C:\</td> <td>3712594536</td> <td></td> <td>9/30/13 1:18:32 PM</td> <td>9/30/16 11:59:59 PM</td> <td>manual</td> </tr> <tr> <td>winclient.em...</td> <td>C:\WUTemp\inf</td> <td>3729365617</td> <td></td> <td>9/30/13 11:36:17 AM</td> <td>9/30/16 11:59:59 PM</td> <td>manual</td> </tr> <tr> <td>winclient.em...</td> <td>C:\WUTemp</td> <td>3746141632</td> <td></td> <td>9/30/13 11:16:16 AM</td> <td>9/30/16 11:59:59 PM</td> <td>manual</td> </tr> </tbody> </table> <p>Can you explain why the names of each of the three save sets you backed up are different?</p> <p><u>Note:</u> The name of a save set created by a client-initiated backup is set to the lowest directory in the directory structure which contains all files in the backup.</p>	Client	Save Set	SSID	Checkpoint ID	Save Time	Clone Retention Time	Level	winclient.em...	C:\	3712594536		9/30/13 1:18:32 PM	9/30/16 11:59:59 PM	manual	winclient.em...	C:\WUTemp\inf	3729365617		9/30/13 11:36:17 AM	9/30/16 11:59:59 PM	manual	winclient.em...	C:\WUTemp	3746141632		9/30/13 11:16:16 AM	9/30/16 11:59:59 PM	manual
Client	Save Set	SSID	Checkpoint ID	Save Time	Clone Retention Time	Level																							
winclient.em...	C:\	3712594536		9/30/13 1:18:32 PM	9/30/16 11:59:59 PM	manual																							
winclient.em...	C:\WUTemp\inf	3729365617		9/30/13 11:36:17 AM	9/30/16 11:59:59 PM	manual																							
winclient.em...	C:\WUTemp	3746141632		9/30/13 11:16:16 AM	9/30/16 11:59:59 PM	manual																							
17	<p>Perform another backup of C:\WUTemp\Common Files and C:\WINDOWS\Fonts.</p> <p><u>Before starting the backup:</u></p> <p>Compress the C:\WUTemp\Common Files folder by selecting the Common Files folder for backup. Next right-click the folder and select Compress from the menu.</p>  <p>Continue to Step 18.</p>																												

Step	Action
18	<p>Encrypt the C : \WINDOWS\Fonts folder. In order to do this, you first must set a password. To set the password, click the Options menu and select Password.</p>  <p>Password dialog box:</p> <ul style="list-style-type: none"> • <u>P</u>assword: encrypt1 • <u>R</u>etyp<u>e</u> Password: encrypt1  <p>Click OK.</p>
19	<p>Encrypt the C:\WUTemp\Fonts folder by selecting the Fonts folder for backup. Next right-click the folder and select Encrypt from the menu.</p> 
20	<p>Initiate the backup and validate its successful completion in the Backup Status window.</p>

End of Lab Exercise 4-5

Lab Exercise 4-6: Using NetWorker Directives

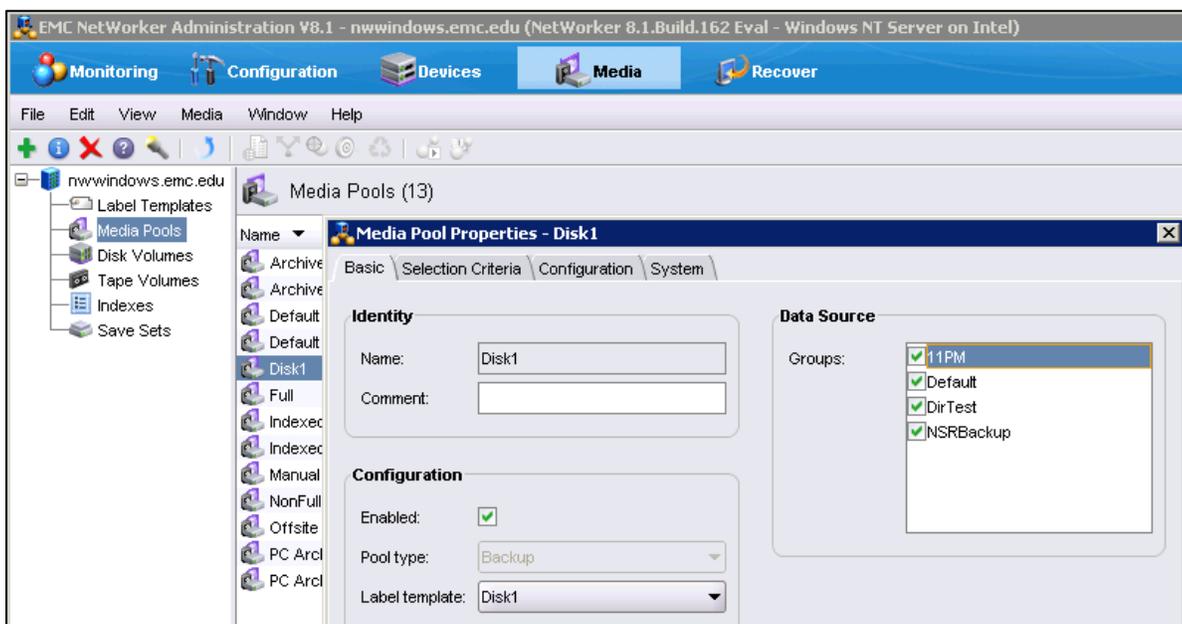
Step	Action
	<p><u>Background:</u> This lab is designed to simulate a common real world scenario often encountered in backup environments.</p> <p><u>Scenario:</u> In this scenario, you have a database instance with two databases that are running on your winclient.emc.edu server. Backups of the databases are going to be performed using a NetWorker module and for the sake of this lab we will pretend that the module backups have already been configured.</p> <p><u>Overview:</u> For this lab, you need to configure filesystem backups of the database directories. Because we don't want to backup data already protected by the simulated NetWorker module, you need to exclude backing up the .dbf (database) files in each of the two database directories. You will use NetWorker directives to skip the two database files while still backing up all of the other files in those directories.</p>
1	<p>From the Configuration tab, right-click Groups and select New to create a new group with the following options:</p> <p>Create Group</p> <p style="padding-left: 20px;">Setup Tab</p> <ul style="list-style-type: none"> • <u>Name:</u> DirTest <p style="padding-left: 20px;">Advanced Tab</p> <ul style="list-style-type: none"> • <u>Level:</u> full • <u>Uncheck:</u> Force incremental Box <div style="text-align: center; margin: 10px 0;">  </div> <p>Click OK.</p>

2 On the **Media** tab select **Media Pools**, and modify the properties of the **Disk1** pool.

Media Pool Properties

Basic Tab

- Groups: Select **DirTest** so all groups listed are selected to send data to this pool.

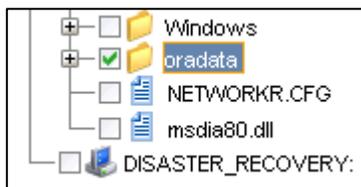


Click **OK**.

3 Create a **new** client resource for **winclient.emc.edu** accepting the defaults for everything but the following properties:

Client Backup Configuration

- Name: **winclient.emc.edu**
- Save sets: **C:\oradata**



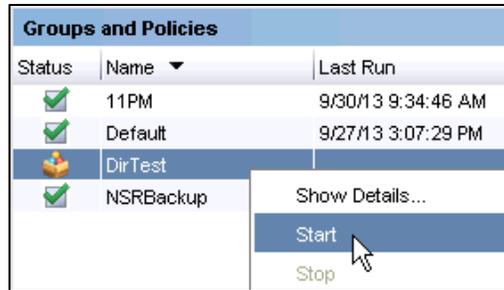
- Group: **DirTest**

Add to an existing group		
Name	Client Retries	Start Time
<input type="checkbox"/> Default	1	21:00
<input checked="" type="checkbox"/> DirTest	1	21:00
<input type="checkbox"/> NSRBackup	1	9:00

Click **configure**, and **Finish** to complete creation of the new client instance.

4

From the **Monitoring** tab, perform a **backup** of the **DirTest** group.



Note: This backup included the .dbf files because you have not yet created directives to exclude them. This backup will be used as a baseline to compare consecutive backups against.

5

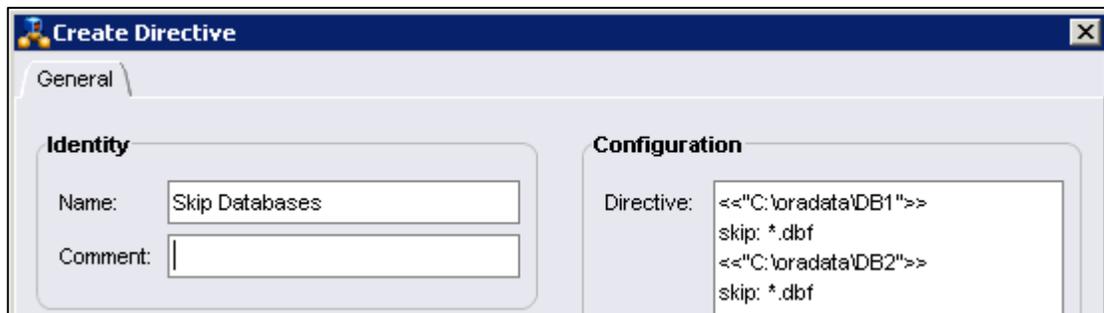
Create a directive to skip the two .dbf files.

From the **Configuration** tab, **right-click Directives** and select **New**. Create a new directive using with the following properties:

Create Directive

General Tab

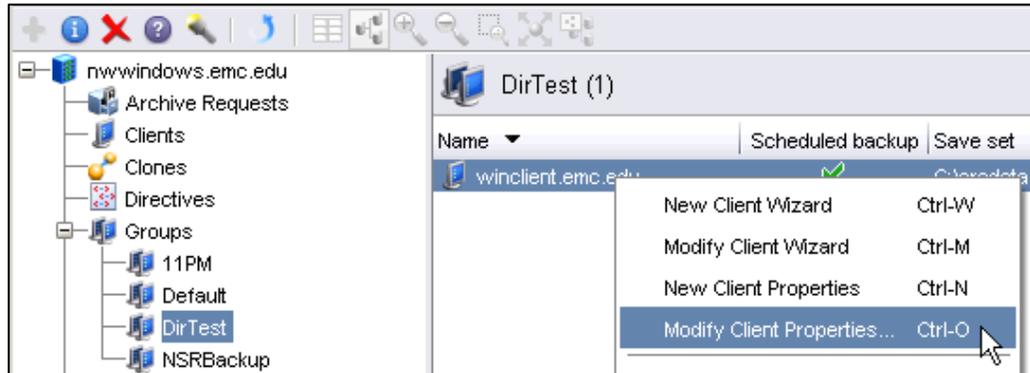
- **Name:** Skip Databases
- **Directive:** <<"C:\oradata\DB1">>
skip: *.dbf
<<"C:\oradata\DB2">>
skip: *.dbf



Click **OK**.

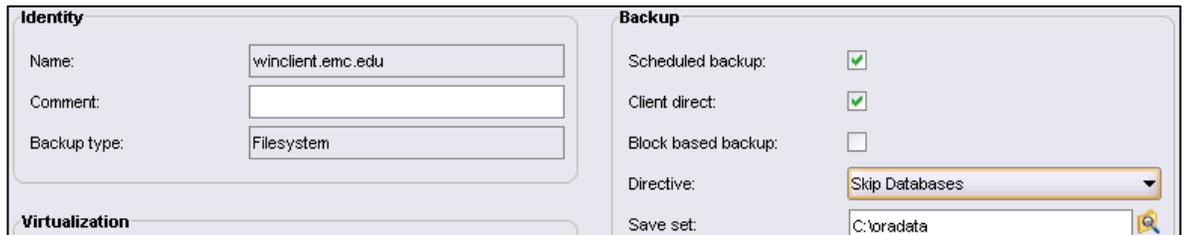
Note: Be sure that the directive text is entered **exactly** as displayed and on separate lines.

- 6 From the **Configuration** Tab, edit the properties of the **winclient.emc.edu** instance in the **DirTest** Group.



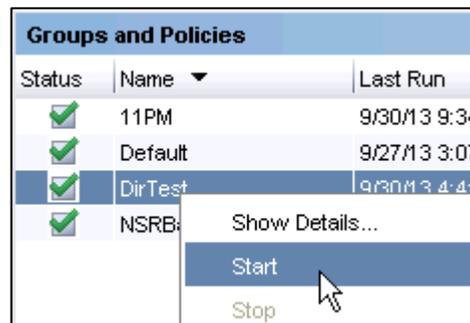
Modify the following attributes:
Client Properties – winclient.emc.edu
General Tab

- Directive: **Skip Databases**



Click **OK**.

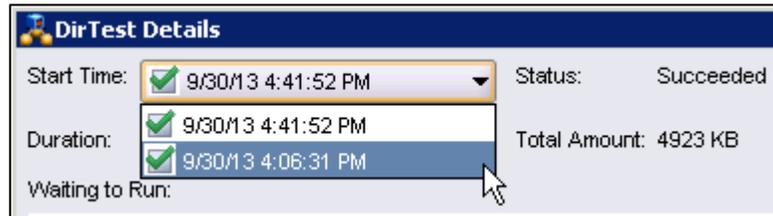
- 7 From the **Monitoring** tab, run another backup of the **DirTest** group.



- 8 **Double-click** the **DirTest** backup group to open the **details window**, if not already open. **Note** the **size** of the **C:\oradata** save set.

Save Set	Level	Type	Start Time	Duration	Size
C:\oradata	full		9/30/13 4:42:18 PM	00:00:04	3538 KB
winclient.emc.edu:index	full		9/30/13 4:42:31 PM	00:00:02	1385 KB

In the **DirTest Details** window click the **Start Time** attribute and select the previously run backup of this group.



Note the **size difference** of the **C:\oradata** save set from the previous backup.

Save Set	Level	Type	Start Time	Duration	Size
winclient.emc.edu:index	full		9/30/13 4:07:37 PM	00:00:05	1383 KB
C:\oradata	full		9/30/13 4:06:57 PM	00:00:30	813 MB

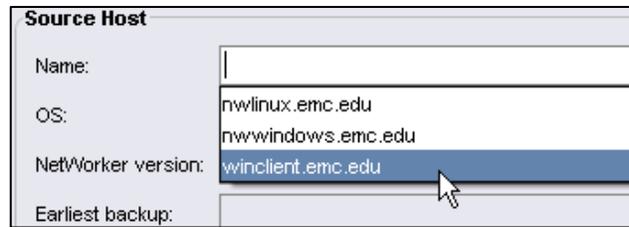
Note: You should see a significant size difference indicating that the two .dbf files in the DB1 and DB2 directories have been skipped. If the size is the same for both backups, repeat the previous steps to configure your directive and ensure that it is typed correctly and properly applied to the correct client.

- 9 You can further validate that only the two .dbf files were skipped by using the Recovery Wizard. **Click** the **Recovery** tab and **select** the **green plus** symbol to open the **recovery wizard**.



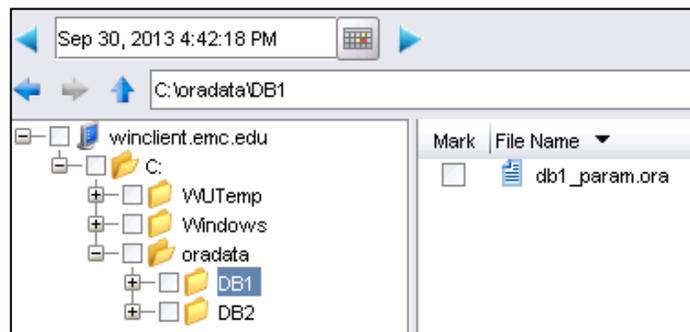
10

Click in the **Name** attribute in the **Source Host** box and select **winclient.emc.edu** from the popup list.

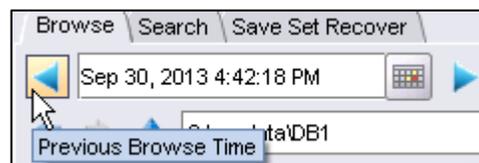


Click **Next** to move to the **Select Data To Recover** section. By default the most recent backup is selected and is browsable using the tree structure on the left side of the window.

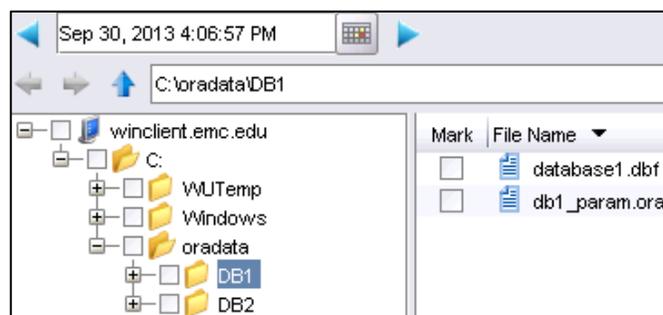
Expand the directory structure out until you see the **DB1** and **DB2** directories. **Click on DB1**, and **note** that only **one** file is displayed on the **right**. **Repeat** the process for the **DB2** directory.



Click the **blue arrow** on the left side of the date box once to **change** to the backup performed prior to configuring the directives.



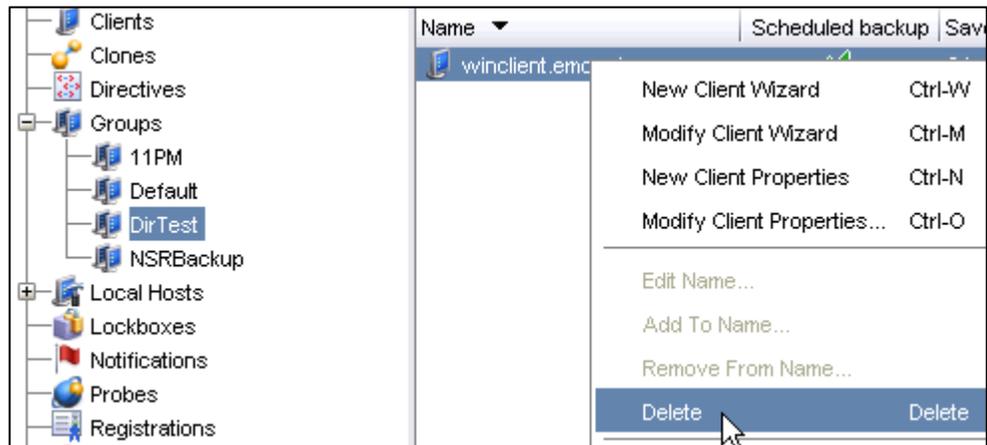
Notice that after changing to the first backup, the **.dbf** files are listed in both the **DB1** and **DB2** directories. This validates that the files were included in the backup prior to configuring the directives and skipped by backups run after applying them.



- 11 Click **Close**, to exit the **Recovery Wizard** and select **Don't Save** when asked if you want to save the recovery session.



- 12 Return to the **Configuration** tab and **delete only** the client instance of **winclient.emc.edu** belonging to the **DirTest** group. It will not be used for any other labs.



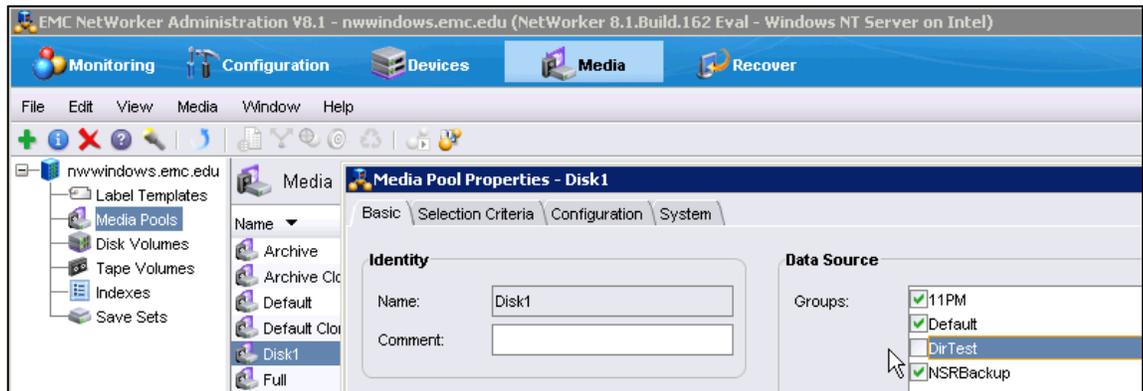
13

On the **Media** tab, open the properties of the **Disk1** media pool and make the following changes:

Media Pool Properties – Disk1

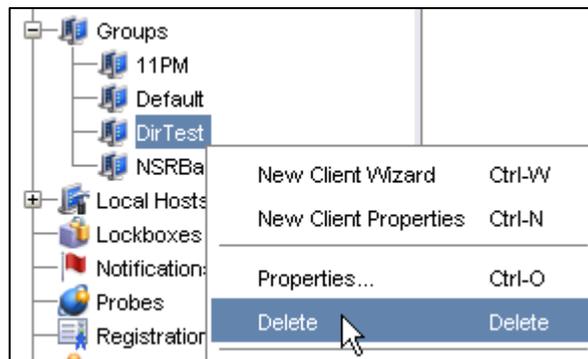
Basic

- **Groups:** Uncheck the box next to DirTest



Click **OK** to save the change.

On the **Configuration** tab, **right-click** the **DirTest** group under **Groups** and **delete** it.



Click **Yes** when prompted if you are sure you want to delete this group.

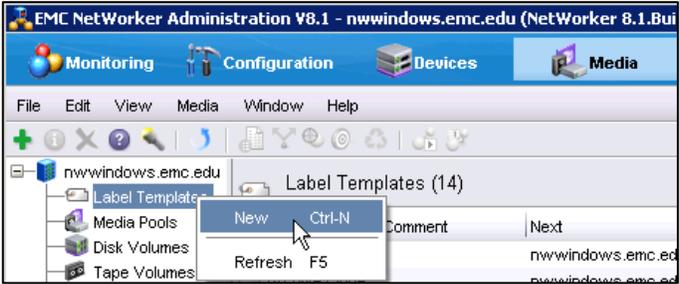
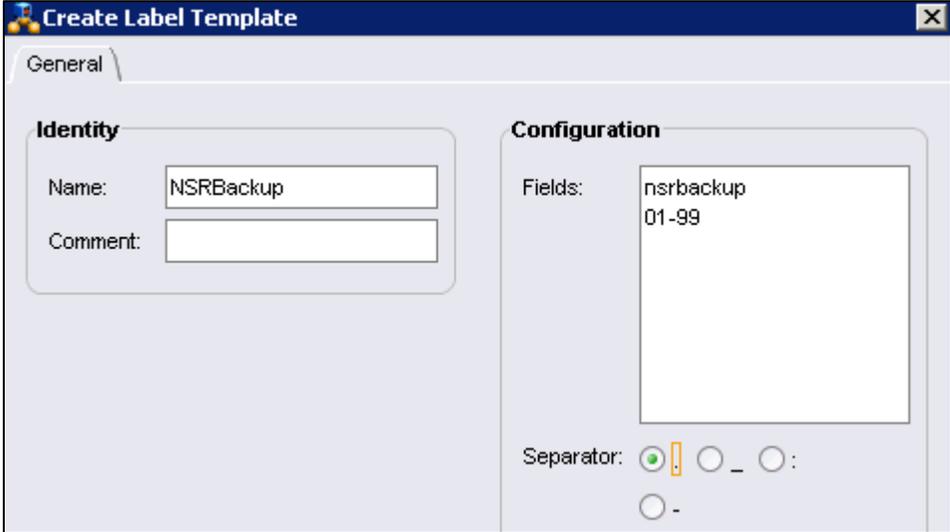
End of Lab Exercise 4-6

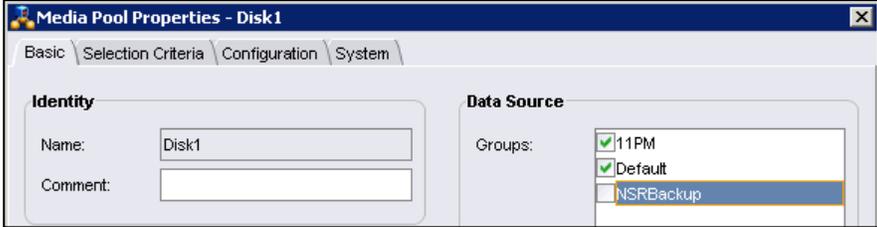
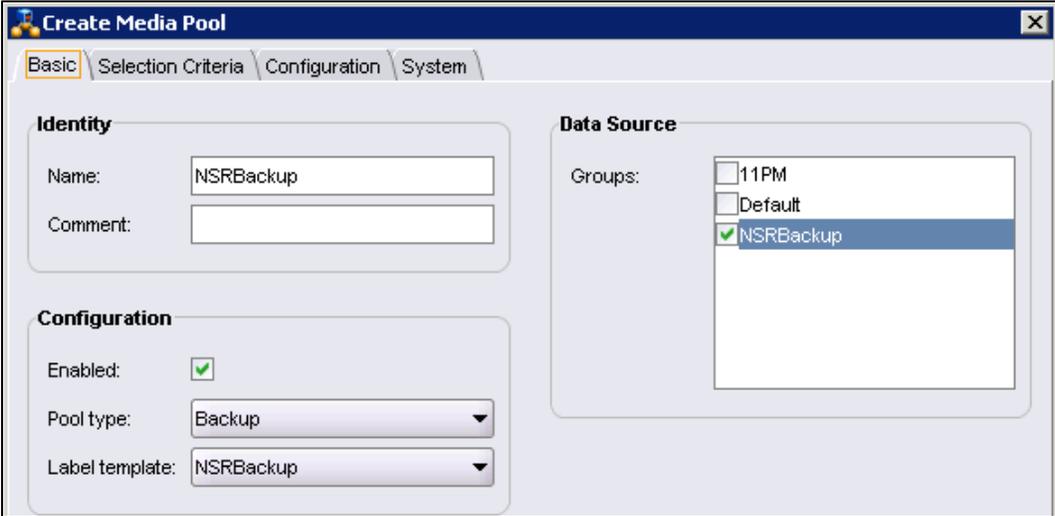
End of Lab 4

Lab 5: Configuring Pools and Label Templates

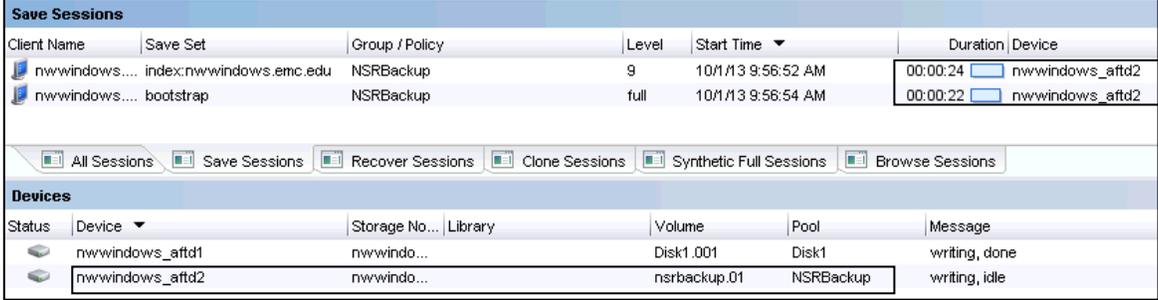
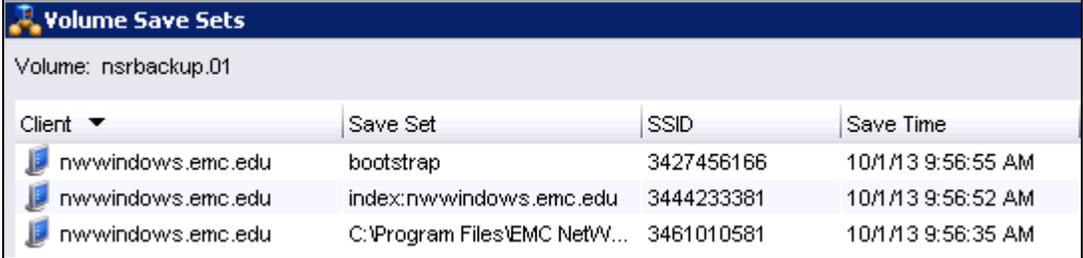
Purpose:	In this lab, you will configure a label template resource for a pool and then configure a pool resource.
Tasks:	In this lab you: <ul data-bbox="600 535 1347 682" style="list-style-type: none">• Create a label template resource.• Create a pool resource.• Perform a backup to verify the pool is properly configured.

Lab Exercise 5-1: Configuring Pools and Label Templates

Step	Action
1	<p>From the Media tab, create a new label template by right-clicking Label Templates, and selecting New.</p>  <p>Create a label template with the following properties:</p> <p>Create Label Template</p> <p>General Tab</p> <ul style="list-style-type: none">• <u>N</u>ame: NSRBackup• <u>F</u>ields: nsrbackup 01-99• <u>S</u>eparator: “.”  <p>Click OK to create the label template.</p>

Step	Action
2	<p>Before creating your new media pool for the NSRBackup group to use, you must first clear the NSRBackup group from the Disk1 pool.</p> <p>From the Media tab select Media Pools and double-click the Disk1 pool and make the following changes:</p> <p>Media Pool Properties – Disk1</p> <p>Basic Tab</p> <ul style="list-style-type: none"> • <u>Groups</u>: Un-check NSRBackup  <p>Click OK.</p>
3	<p>From the Media tab, right-click Media Pools and create a New media pool with the following properties:</p> <p>Create Media Pool</p> <p>Basic Tab</p> <ul style="list-style-type: none"> • <u>Name</u>: NSRBackup • <u>Groups</u>: Check the NSRBackup box • <u>Label Template</u>: NSRBackup  <p>Click OK to save.</p>

Step	Action																		
4	<p>From the Devices tab re-label the device currently in the Manual pool into your newly created NSRBackup pool.</p> <p>Right-click your <servername>_aftd2 device and select label.</p> <div data-bbox="651 331 1170 831" data-label="Image"> <p>A screenshot of a device management interface. A list of devices is shown with 'nwwindows_aftd2' selected. A context menu is open over it, listing various actions. The 'Label...' option is highlighted with a mouse cursor.</p> </div> <p>Label the volume by selecting the following options:</p> <p>Label</p> <ul style="list-style-type: none"> • <u>Pools</u>: NSRBackup <div data-bbox="646 1010 1174 1451" data-label="Image"> <p>A screenshot of the 'Label' dialog box. It contains the following fields and options: <ul style="list-style-type: none"> Device: nwwindows_aftd2 Volume Label: nsrbackup.01 Pools: NSRBackup (dropdown menu) Manual Recycle: <input type="checkbox"/> Mount after Labeling: <input checked="" type="checkbox"/> At the bottom are 'OK' and 'Cancel' buttons. </p> </div> <p>Click OK and then click Yes to confirm you want to overwrite the existing data on the volume.</p> <div data-bbox="375 1593 1448 1730" data-label="Table"> <table border="1"> <thead> <tr> <th>Name</th> <th>Parent jukebox</th> <th>Description</th> <th>Volume name</th> <th>M...</th> <th>Enabled</th> </tr> </thead> <tbody> <tr> <td>nwwindows_aftd1</td> <td></td> <td></td> <td>Disk1.001</td> <td>a...</td> <td>Yes</td> </tr> <tr> <td>nwwindows_aftd2</td> <td></td> <td></td> <td>nsrbackup.01</td> <td>a...</td> <td>Yes</td> </tr> </tbody> </table> </div> <p>Note: Ensure that the Disk1 pool is NOT selected on the properties of the client in the NSRBackup group. If it is, it will override the pool settings and send data to the Disk1 pool. The pool entry of the client should be blank.</p>	Name	Parent jukebox	Description	Volume name	M...	Enabled	nwwindows_aftd1			Disk1.001	a...	Yes	nwwindows_aftd2			nsrbackup.01	a...	Yes
Name	Parent jukebox	Description	Volume name	M...	Enabled														
nwwindows_aftd1			Disk1.001	a...	Yes														
nwwindows_aftd2			nsrbackup.01	a...	Yes														

Step	Action																																																								
5	Perform a backup of the NSRBackup group.																																																								
6	<p>While the backup runs, note that the save sessions are writing to the device labeled in the NSRBackup pool.</p>  <table border="1" data-bbox="332 388 1490 688"> <thead> <tr> <th colspan="7">Save Sessions</th> </tr> <tr> <th>Client Name</th> <th>Save Set</th> <th>Group / Policy</th> <th>Level</th> <th>Start Time</th> <th>Duration</th> <th>Device</th> </tr> </thead> <tbody> <tr> <td>nwwindows_...</td> <td>index:nwwindows.emc.edu</td> <td>NSRBackup</td> <td>9</td> <td>10/1/13 9:56:52 AM</td> <td>00:00:24</td> <td>nwwindows_ajtd2</td> </tr> <tr> <td>nwwindows_...</td> <td>bootstrap</td> <td>NSRBackup</td> <td>full</td> <td>10/1/13 9:56:54 AM</td> <td>00:00:22</td> <td>nwwindows_ajtd2</td> </tr> </tbody> </table> <table border="1" data-bbox="332 577 1490 688"> <thead> <tr> <th colspan="7">Devices</th> </tr> <tr> <th>Status</th> <th>Device</th> <th>Storage No...</th> <th>Library</th> <th>Volume</th> <th>Pool</th> <th>Message</th> </tr> </thead> <tbody> <tr> <td></td> <td>nwwindows_ajtd1</td> <td>nwwindo...</td> <td></td> <td>Disk1_001</td> <td>Disk1</td> <td>writing, done</td> </tr> <tr> <td></td> <td>nwwindows_ajtd2</td> <td>nwwindo...</td> <td></td> <td>nsrbackup.01</td> <td>NSRBackup</td> <td>writing, idle</td> </tr> </tbody> </table>	Save Sessions							Client Name	Save Set	Group / Policy	Level	Start Time	Duration	Device	nwwindows_...	index:nwwindows.emc.edu	NSRBackup	9	10/1/13 9:56:52 AM	00:00:24	nwwindows_ajtd2	nwwindows_...	bootstrap	NSRBackup	full	10/1/13 9:56:54 AM	00:00:22	nwwindows_ajtd2	Devices							Status	Device	Storage No...	Library	Volume	Pool	Message		nwwindows_ajtd1	nwwindo...		Disk1_001	Disk1	writing, done		nwwindows_ajtd2	nwwindo...		nsrbackup.01	NSRBackup	writing, idle
Save Sessions																																																									
Client Name	Save Set	Group / Policy	Level	Start Time	Duration	Device																																																			
nwwindows_...	index:nwwindows.emc.edu	NSRBackup	9	10/1/13 9:56:52 AM	00:00:24	nwwindows_ajtd2																																																			
nwwindows_...	bootstrap	NSRBackup	full	10/1/13 9:56:54 AM	00:00:22	nwwindows_ajtd2																																																			
Devices																																																									
Status	Device	Storage No...	Library	Volume	Pool	Message																																																			
	nwwindows_ajtd1	nwwindo...		Disk1_001	Disk1	writing, done																																																			
	nwwindows_ajtd2	nwwindo...		nsrbackup.01	NSRBackup	writing, idle																																																			
7	<p>To verify the save sets reside on the volume from the NSRBackup pool, from the Media tab, select Disk Volumes, and double-click the nsrbackup.01 volume to validate the contents of the volume.</p>  <table border="1" data-bbox="370 850 1453 1108"> <thead> <tr> <th colspan="4">Volume Save Sets</th> </tr> <tr> <th colspan="4">Volume: nsrbackup.01</th> </tr> <tr> <th>Client</th> <th>Save Set</th> <th>SSID</th> <th>Save Time</th> </tr> </thead> <tbody> <tr> <td>nwwindows.emc.edu</td> <td>bootstrap</td> <td>3427456166</td> <td>10/1/13 9:56:55 AM</td> </tr> <tr> <td>nwwindows.emc.edu</td> <td>index:nwwindows.emc.edu</td> <td>3444233381</td> <td>10/1/13 9:56:52 AM</td> </tr> <tr> <td>nwwindows.emc.edu</td> <td>C:\Program Files\EMC NetW...</td> <td>3461010581</td> <td>10/1/13 9:56:35 AM</td> </tr> </tbody> </table> <p>Click ok.</p>	Volume Save Sets				Volume: nsrbackup.01				Client	Save Set	SSID	Save Time	nwwindows.emc.edu	bootstrap	3427456166	10/1/13 9:56:55 AM	nwwindows.emc.edu	index:nwwindows.emc.edu	3444233381	10/1/13 9:56:52 AM	nwwindows.emc.edu	C:\Program Files\EMC NetW...	3461010581	10/1/13 9:56:35 AM																																
Volume Save Sets																																																									
Volume: nsrbackup.01																																																									
Client	Save Set	SSID	Save Time																																																						
nwwindows.emc.edu	bootstrap	3427456166	10/1/13 9:56:55 AM																																																						
nwwindows.emc.edu	index:nwwindows.emc.edu	3444233381	10/1/13 9:56:52 AM																																																						
nwwindows.emc.edu	C:\Program Files\EMC NetW...	3461010581	10/1/13 9:56:35 AM																																																						

End of Lab Exercise 5-1

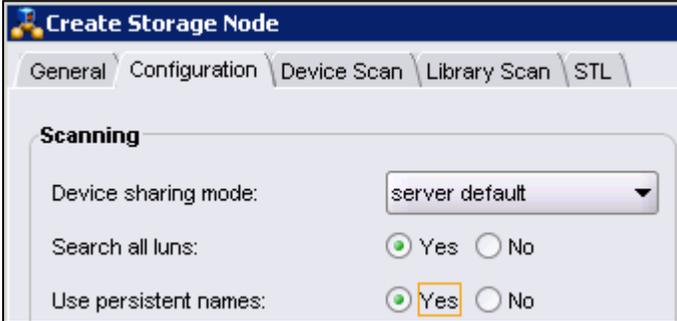
End of Lab 5

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Lab 6: Working with NetWorker Devices

Purpose:	In this lab, you configure a storage node resource, an advanced file type device, and a dedicated autochanger controlled by the storage node.
Tasks:	<p>In this lab you:</p> <ul style="list-style-type: none">• Create a NetWorker resource for the storage node• Create a NetWorker resource for an advanced file type device.• Label a volume in the new device and mount it.• Perform a backup and verify that the new device is used.• Configure and run a client direct backup.• View volume and save set information pertaining to the advanced file type device volume.• Use inquire to view available autochangers and their associated drive path names.• Configure a dedicated autochanger controlled by the storage node host.• Configure a dedicated autochanger controlled by the NetWorker server.• Perform a backup to verify the autochanger configuration is correct.

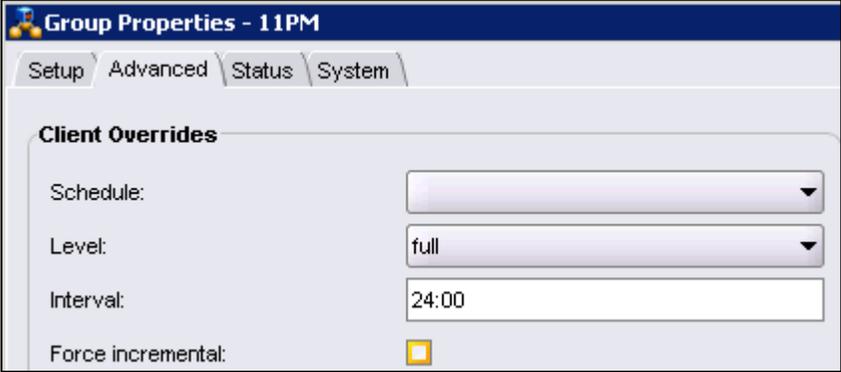
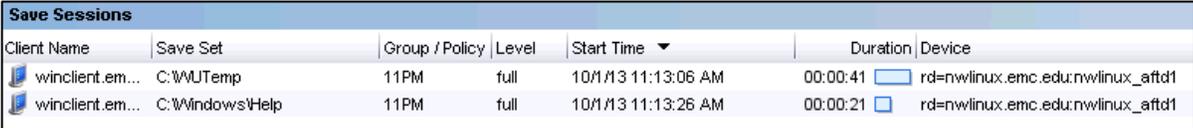
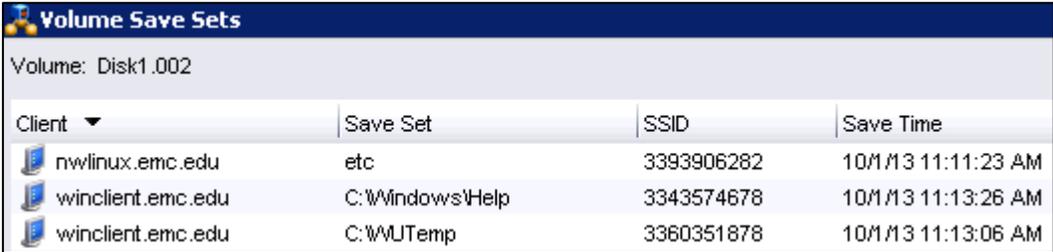
Lab Exercise 6-1: Create a Storage Node Resource

Step	Action
1	<p>From the Devices tab, right-click the Storage Nodes folder and create a New storage node resource with the following properties:</p> <p>Create Storage Node</p> <p>General Tab</p> <ul style="list-style-type: none">• Name: FQDN of your Storage Node <i>Note:</i> Your storage node is the VM that you loaded the client and storage node software on. If you NetWorker server is Windows, it will be the Linux server. <div data-bbox="589 657 1232 814"><p>Identity</p><p>Name: nwlinux.emc.edu</p><p>Comment:</p></div> <p>Configuration Tab</p> <ul style="list-style-type: none">• Search all luns: Yes• Use persistent names: Yes <div data-bbox="571 999 1248 1320"><p>Create Storage Node</p><p>General Configuration Device Scan Library Scan STL</p><p>Scanning</p><p>Device sharing mode: server default</p><p>Search all luns: <input checked="" type="radio"/> Yes <input type="radio"/> No</p><p>Use persistent names: <input checked="" type="radio"/> Yes <input type="radio"/> No</p></div> <p>Click OK.</p>

End of Lab Exercise 6-1

Lab Exercise 6-2: Configure an Advanced File Type Device

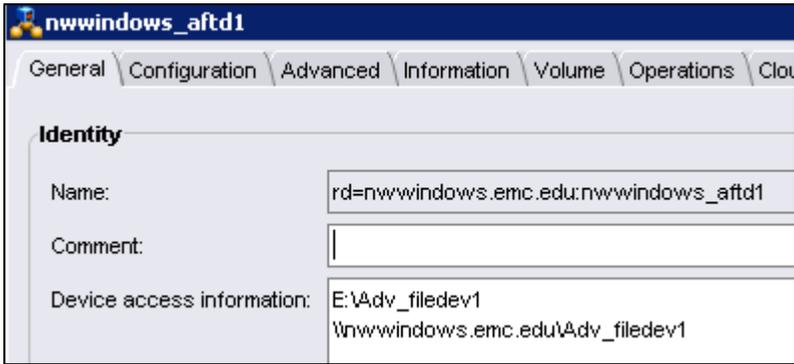
Step	Action												
1	<p>From the Devices tab, right-click Devices and use the New Device Wizard to create a new AFTD with the following properties:</p> <p>Device Configuration Wizard</p> <ul style="list-style-type: none"> • Device Type: Advanced File Type Device (AFTD) • Storage Node: Name of your Storage Node • Device Path: <div style="margin-left: 20px;"> Linux Storage Node: <code>/backupdev/adv_filedev1</code> Windows Storage Node: <code>E:\adv_filedev1</code> </div> • Device Name: <code><storage node short name>_aftd1</code> • Pool: Disk1 <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p style="background-color: #e1eef6; margin: 0;">Adding new AFTD "rd=nwlinux.emc.edu:nwlinux_aftd1"</p> <table style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 30%;">AFTD Name:</td><td>rd=nwlinux.emc.edu:nwlinux_aftd1</td></tr> <tr><td>Device Access Information:</td><td>/backupdev/adv_filedev1</td></tr> <tr><td>Target Sessions:</td><td>4</td></tr> <tr><td>Max Sessions:</td><td>32</td></tr> </table> <p style="background-color: #e1eef6; margin: 0;">Labeling device "rd=nwlinux.emc.edu:nwlinux_aftd1"</p> <table style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 30%;">Device Name:</td><td>rd=nwlinux.emc.edu:nwlinux_aftd1</td></tr> <tr><td>Pool Name:</td><td>Disk1</td></tr> </table> </div> <p>Click Configure and Finish to complete configuration of the device.</p>	AFTD Name:	rd=nwlinux.emc.edu:nwlinux_aftd1	Device Access Information:	/backupdev/adv_filedev1	Target Sessions:	4	Max Sessions:	32	Device Name:	rd=nwlinux.emc.edu:nwlinux_aftd1	Pool Name:	Disk1
AFTD Name:	rd=nwlinux.emc.edu:nwlinux_aftd1												
Device Access Information:	/backupdev/adv_filedev1												
Target Sessions:	4												
Max Sessions:	32												
Device Name:	rd=nwlinux.emc.edu:nwlinux_aftd1												
Pool Name:	Disk1												
2	<p>From the Configuration tab, modify the two clients in the 11PM group to use the newly created storage node by changing the following property:</p> <p>Client Properties</p> <p>Globals (2 of 2) Tab</p> <ul style="list-style-type: none"> • Storage Nodes: <code><FQDN of storage node></code> <div style="margin-left: 20px;">nsrserverhost</div> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%; padding: 2px;">Storage Nodes:</td> <td style="padding: 2px;">nwlinux.emc.edu nsrserverhost</td> </tr> </table> </div> <p>Click OK and repeat the process to edit the other client in the 11PM group.</p>	Storage Nodes:	nwlinux.emc.edu nsrserverhost										
Storage Nodes:	nwlinux.emc.edu nsrserverhost												

Step	Action
3	<p>From the Configuration tab, edit the properties of the 11PM group to make the following changes: Group Properties – 11PM Advanced Tab</p> <ul style="list-style-type: none"> • <u>Level</u>: Full • <u>Force Incremental</u>: Un-check the box  <p>Click OK.</p>
4	<p>From the Monitoring tab, run a backup of the 11PM group. Monitor the backup to verify that the storage node device is used for most of the save sets.</p>  <p>Note: Not all save sets are sent to the storage node. Index save sets are backed up from the NetWorker server and will not be directed to this device.</p>
5	<p>From the Media tab, select Disk Volumes, and double-click the Disk1.002 volume to validate the save sets from the backup reside on the volume.</p> 

End of Lab Exercise 6-2

Lab Exercise 6-3: Configure and Run a Client Direct Backup

In order to facilitate client direct backups a CIFS share has already been created on your Windows server for the E:\Adv_filedev1 device. This has been preconfigured to save time in the labs, however this would be required if performing this outside of the lab.

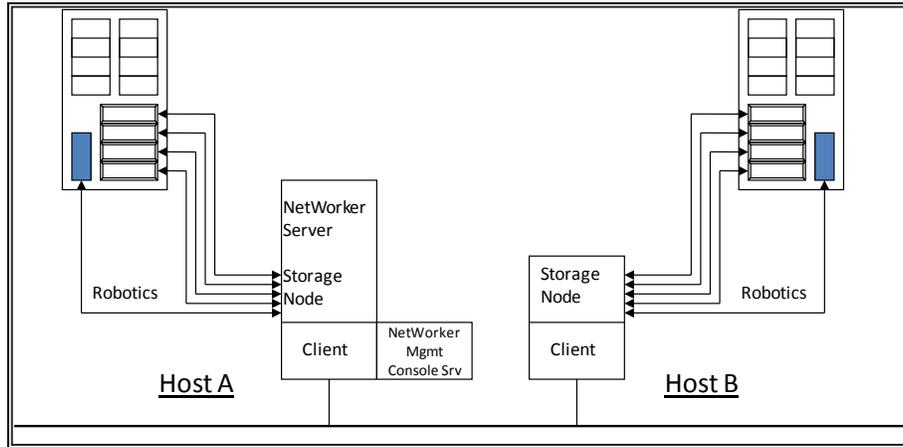
Step	Action
1	<p>From the Devices tab, edit the properties of your nwwindows_aftd1 device and make the following additions:</p> <p>Device Properties – nwwindows_aftd1</p> <p>General Tab</p> <ul style="list-style-type: none"> • <u>Device Access Information</u>: \\nwwindows.emc.edu\Adv_filedev1  <p>Configuration Tab</p> <ul style="list-style-type: none"> • <u>Remote User</u>: administrator • <u>Password</u>: student  <p>Click OK.</p>

Step	Action																		
2	<p>From the Configuration tab, validate the client winclient.emc.edu will use nwwindows.emc.edu as its storage node:</p> <p>Client Properties – winclient.emc.edu Globals (2 of 2) Tab</p> <ul style="list-style-type: none"> Storage Nodes: nwwindows.emc.edu (If Linux NetWorker server) nsrserverhost (If Windows NetWorker server) <div data-bbox="688 445 1162 520" style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> Storage Nodes: nsrserverhost </div> <p>Click OK.</p> <p><u>Note:</u> If you chose to use a Linux NetWorker server, then the storage node attribute for winclient.emc.edu, should contain nwwindows.emc.edu. If instead you are using a Windows NetWorker server, the storage node attribute should contain only the keyword nsrserverhost.</p>																		
3	<p>From the Monitoring tab, run a backup of the 11PM group.</p> <p>When the backup has completed, open the Details window for the 11PM group and double-click the C:\WUTemp save set.</p> <div data-bbox="600 961 1253 1255" style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <p>Completed Successfully:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Client Name</th> <th>Save Set</th> <th>Level</th> </tr> </thead> <tbody> <tr> <td>nwlinux.emc....</td> <td>nwlinux.emc.edu:index</td> <td>full</td> </tr> <tr> <td>nwlinux.emc....</td> <td>etc</td> <td>full</td> </tr> <tr> <td>winclient.em...</td> <td>winclient.emc.edu:index</td> <td>full</td> </tr> <tr> <td>winclient.em...</td> <td>C:\Windows\Help</td> <td>full</td> </tr> <tr style="background-color: #e0e0e0;"> <td>winclient.em...</td> <td>C:\WUTemp</td> <td>full</td> </tr> </tbody> </table> </div> <p>In the pop-up windows that is displayed note the message stating <i>Successfully established DFA session with adv_file device</i>. This indicates that a Client Direct backup has been performed.</p> <div data-bbox="418 1402 1435 1591" style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <p>Show Messages</p> <p>Below are the messages for the saveset.</p> <pre>86705:save: Successfully established DFA session with adv_file device for save-set ID '3192590007' (winclient.emc.edu:C:\WUTemp).</pre> </div> <p>Click OK twice to close both windows.</p> <p><u>Note:</u> If you do not see the DFA message, validate the pathname to the share is typed exactly as written in the lab guide and that you correctly entered the username and password.</p>	Client Name	Save Set	Level	nwlinux.emc....	nwlinux.emc.edu:index	full	nwlinux.emc....	etc	full	winclient.em...	winclient.emc.edu:index	full	winclient.em...	C:\Windows\Help	full	winclient.em...	C:\WUTemp	full
Client Name	Save Set	Level																	
nwlinux.emc....	nwlinux.emc.edu:index	full																	
nwlinux.emc....	etc	full																	
winclient.em...	winclient.emc.edu:index	full																	
winclient.em...	C:\Windows\Help	full																	
winclient.em...	C:\WUTemp	full																	

End of Lab Exercise 6-3

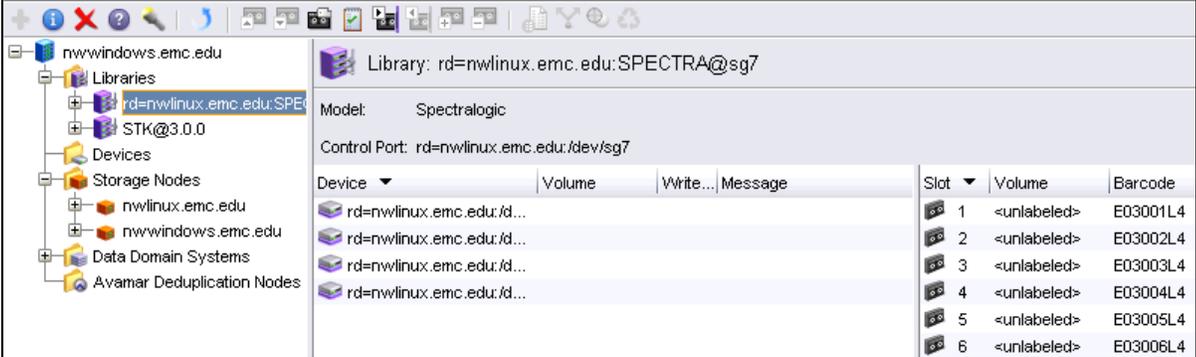
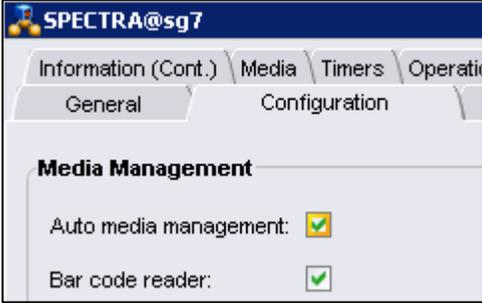
Lab Exercise 6-4: Configure Library Resources

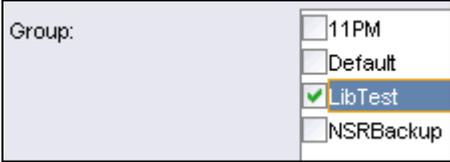
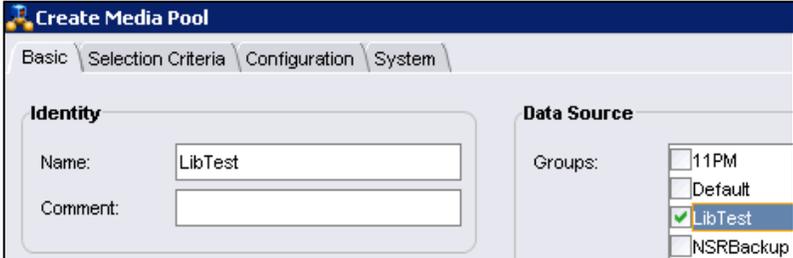
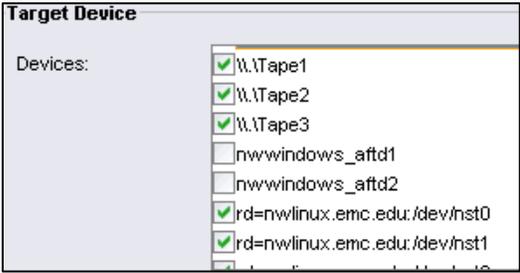
In this lab, you configure two dedicated tape libraries, one controlled by the storage node host and the other by the NetWorker server.

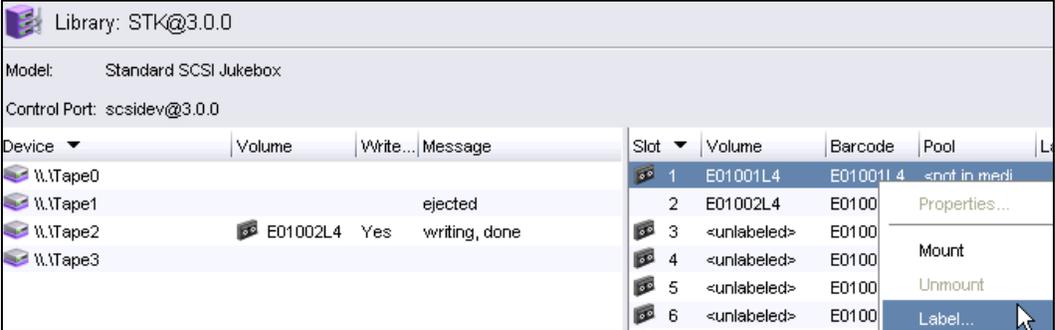


Step	Action
1	<p>From a command prompt on the NetWorker server and storage node, type the command inquire.</p> <p>Validate that an autochanger and four tape drives are detected.</p> <pre data-bbox="394 338 1471 886"> C:\>inquire scsidev@2.0.0:UMware Virtual disk 1.0 Disk, \\.\PhysicalDrive0 scsidev@2.1.0:UMware Virtual disk 1.0 Disk, \\.\PhysicalDrive1 scsidev@3.0.0:STK L700 550U Autochanger (Jukebox), S/N: XYZZY_A ATNN=STK L700 XYZZY_A WWNN=50223344AB000000 scsidev@3.1.0:IBM ULT3580-TD4 550U Tape, \\.\Tape1 S/N: XYZZY_A1 ATNN=IBM ULT3580-TD4 XYZZY_A1 WWNN=50223344AB000100 scsidev@3.2.0:IBM ULT3580-TD4 550U Tape, \\.\Tape2 encryption unsupported S/N: XYZZY_A2 ATNN=IBM ULT3580-TD4 XYZZY_A2 WWNN=50223344AB000200 scsidev@3.3.0:IBM ULT3580-TD4 550U Tape, \\.\Tape3 encryption unsupported S/N: XYZZY_A3 ATNN=IBM ULT3580-TD4 XYZZY_A3 WWNN=50223344AB000300 scsidev@3.4.0:IBM ULT3580-TD4 550U Tape, \\.\Tape0 encryption unsupported S/N: XYZZY_A4 ATNN=IBM ULT3580-TD4 XYZZY_A4 WWNN=50223344AB000400 encryption unsupported </pre> <p><u>Note:</u> if an autochanger and four tape drives are not detected, power off and power on the VM VTL in you lab manager configuration.</p>
2	<p>From the Devices tab in the Administration interface, right-click the Storage Nodes in the left pane and select Configure all libraries.</p> 
3	<p>In the Provide General Configuration Information window, leave all selections at their default values.</p> <p>Click Next.</p>

Step	Action																														
4	<p>In the Select Target Storage Nodes window, make the following selections for both storage nodes: Configure All Libraries Select Target Storage Nodes</p> <ul style="list-style-type: none"> • <u>Configure</u>: Select the check box for both storage nodes • <u>Search all LUNs</u>: Yes • <u>Use Persistent Names</u>: Yes <div data-bbox="537 447 1328 1241" style="border: 1px solid black; padding: 5px;"> <p>Select Target Storage Nodes</p> <p>Select existing or create new storage nodes to configure SCSI or NDMP libraries</p> <p>Create a new Storage Node</p> <table border="1"> <thead> <tr> <th>Configure</th> <th>Storage...</th> <th>Storage Nod...</th> <th>Sharing Policy</th> <th>Search all L...</th> <th>Use Persist</th> </tr> </thead> <tbody> <tr> <td><input checked="" type="checkbox"/></td> <td>nwlinux.em...</td> <td>scsi</td> <td>server default</td> <td>Yes</td> <td>Yes</td> </tr> <tr style="background-color: #e0e0e0;"> <td><input checked="" type="checkbox"/></td> <td>nwwindow...</td> <td>scsi</td> <td>server default</td> <td>Yes</td> <td>Yes</td> </tr> </tbody> </table> <p>A Scan for Devices operation is always suggested to ensure storage node co</p> <p>Update storage node properties if required</p> <p>Storage Node Name: <input type="text" value="nwwindows.emc.edu"/> Exclude SCSI Paths: <input type="text"/></p> <p>Sharing Policy: <input type="text" value="server default"/></p> <p>Search all LUNs: <input type="text" value="Yes"/></p> <p>Use Persistent Names: <input type="text" value="Yes"/></p> </div> <p>Click Start Configuration and Finish.</p>	Configure	Storage...	Storage Nod...	Sharing Policy	Search all L...	Use Persist	<input checked="" type="checkbox"/>	nwlinux.em...	scsi	server default	Yes	Yes	<input checked="" type="checkbox"/>	nwwindow...	scsi	server default	Yes	Yes												
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5	<p>Monitor the Log window in the lower left corner of the NetWorker Administration GUI until the message is displayed that both jukeboxes have been enabled and are ready.</p> <div data-bbox="402 1472 1466 1738" style="border: 1px solid black; padding: 5px;"> <p>Log</p> <table border="1"> <thead> <tr> <th>Priority</th> <th>Time</th> <th>Source</th> <th>Category</th> <th>Message</th> </tr> </thead> <tbody> <tr> <td>i</td> <td>Tuesday 2:52:54 PM</td> <td>event</td> <td>media</td> <td>Jukebox `STK@3.0.0' Hardware status of...</td> </tr> <tr> <td>i</td> <td>Tuesday 2:52:52 PM</td> <td>event</td> <td>media</td> <td>Jukebox `rd=nwlinux.emc.edu:SPECTRA...</td> </tr> <tr> <td>i</td> <td>Tuesday 2:52:12 PM</td> <td>event</td> <td>media</td> <td>Finished searching for new backup devic...</td> </tr> <tr> <td>i</td> <td>Tuesday 2:52:12 PM</td> <td>event</td> <td>media</td> <td>Jukebox STK@3.0.0 is now enabled.</td> </tr> <tr> <td>i</td> <td>Tuesday 2:52:12 PM</td> <td>STK@3.0.0</td> <td>media</td> <td>Jukebox STK@3.0.0 is now enabled.</td> </tr> </tbody> </table> </div>	Priority	Time	Source	Category	Message	i	Tuesday 2:52:54 PM	event	media	Jukebox `STK@3.0.0' Hardware status of...	i	Tuesday 2:52:52 PM	event	media	Jukebox `rd=nwlinux.emc.edu:SPECTRA...	i	Tuesday 2:52:12 PM	event	media	Finished searching for new backup devic...	i	Tuesday 2:52:12 PM	event	media	Jukebox STK@3.0.0 is now enabled.	i	Tuesday 2:52:12 PM	STK@3.0.0	media	Jukebox STK@3.0.0 is now enabled.
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Step	Action																																																	
6	<p>From the Devices tab, expand the + symbol next to Libraries to view the two libraries you just configured.</p> <p>Click each of the two libraries to see the configuration and inventory of each library.</p>  <table border="1" data-bbox="649 541 1533 730"> <thead> <tr> <th>Device</th> <th>Volume</th> <th>Write...</th> <th>Message</th> <th>Slot</th> <th>Volume</th> <th>Barcode</th> </tr> </thead> <tbody> <tr> <td>rd=nwlinux.emc.edu:/d...</td> <td></td> <td></td> <td></td> <td>1</td> <td><unlabeled></td> <td>E03001L4</td> </tr> <tr> <td>rd=nwlinux.emc.edu:/d...</td> <td></td> <td></td> <td></td> <td>2</td> <td><unlabeled></td> <td>E03002L4</td> </tr> <tr> <td>rd=nwlinux.emc.edu:/d...</td> <td></td> <td></td> <td></td> <td>3</td> <td><unlabeled></td> <td>E03003L4</td> </tr> <tr> <td>rd=nwlinux.emc.edu:/d...</td> <td></td> <td></td> <td></td> <td>4</td> <td><unlabeled></td> <td>E03004L4</td> </tr> <tr> <td>rd=nwlinux.emc.edu:/d...</td> <td></td> <td></td> <td></td> <td>5</td> <td><unlabeled></td> <td>E03005L4</td> </tr> <tr> <td>rd=nwlinux.emc.edu:/d...</td> <td></td> <td></td> <td></td> <td>6</td> <td><unlabeled></td> <td>E03006L4</td> </tr> </tbody> </table>	Device	Volume	Write...	Message	Slot	Volume	Barcode	rd=nwlinux.emc.edu:/d...				1	<unlabeled>	E03001L4	rd=nwlinux.emc.edu:/d...				2	<unlabeled>	E03002L4	rd=nwlinux.emc.edu:/d...				3	<unlabeled>	E03003L4	rd=nwlinux.emc.edu:/d...				4	<unlabeled>	E03004L4	rd=nwlinux.emc.edu:/d...				5	<unlabeled>	E03005L4	rd=nwlinux.emc.edu:/d...				6	<unlabeled>	E03006L4
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7	<p>Right-click each library resource and edit the properties to make the following change:</p> <p>Library Properties</p> <p>Configuration Tab</p> <ul style="list-style-type: none"> • <u>Auto media management</u>: Check the box  <p>Click OK and perform the same operation on the second library.</p>																																																	
8	<p>From the Configuration tab, right-click groups and create a new group with the following options:</p> <p>Create Group</p> <p>Setup Tab</p> <ul style="list-style-type: none"> • <u>Name</u>: LibTest <p>Advanced Tab</p> <ul style="list-style-type: none"> • <u>Level</u>: full • <u>Force incremental</u>: Unchecked <p>Click OK.</p>																																																	

Step	Action
9	<p>From the Configuration tab modify the client instance for your storage node to make the following changes:</p> <p>Client Properties - <Storage Node Client></p> <p>General Tab</p> <ul style="list-style-type: none"> Group: Ensure only the LibTest group is selected  <ul style="list-style-type: none"> Pool: Clear any selection so that a blank field is displayed  <p>Click OK.</p>
10	<p>From the Media tab, right-click Media Pools and create a New media pool with the following options:</p> <p>Create Media Pool</p> <p>Basic Tab</p> <ul style="list-style-type: none"> Name: LibTest Groups: LibTest  <p>Selection Criteria Tab</p> <ul style="list-style-type: none"> Target Devices: Select all tape devices (Names include Tape or NST)  <p>Click OK, click OK to acknowledge all pop-ups, and finally click OK again to allow NetWorker to automatically create a label for this pool.</p>

Step	Action
11	<p>From the Configuration tab, edit the properties of the client resource for your storage node and validate that the following property is configured:</p> <p>Client Properties - <storage node client> Globals (2 of 2)</p> <ul style="list-style-type: none"> • Storage Nodes: <FQDN of Storage Node> <p>Click OK.</p>
12	<p>From the Devices tab, select one of the tape libraries you have configured. Right-click one of the tape volumes and select Label.</p>  <p>Label the tape with the following options:</p> <p>Label Library Media</p> <ul style="list-style-type: none"> • Target Media Pool: LibTest • Prompt to Overwrite Existing Label: Uncheck the box  <p>Click OK.</p>

Step	Action														
13	<p>From the Monitoring tab start a backup of the LibTest group and validate that data is sent to the newly configured tape devices.</p> <div data-bbox="349 300 1515 415" style="border: 1px solid black; padding: 5px;"> <p>Save Sessions</p> <table border="1"> <thead> <tr> <th>Client Name</th> <th>Save Set</th> <th>Group / Policy</th> <th>Level</th> <th>Start Time ▼</th> <th>Duration</th> <th>Device</th> </tr> </thead> <tbody> <tr> <td> nwlunix.emc....</td> <td>etc</td> <td>LibTest</td> <td>full</td> <td>10/1/13 4:31:01 PM</td> <td>00:02:30</td> <td><input type="checkbox"/> rd=nwlunix.emc.edu:/dev/nst3</td> </tr> </tbody> </table> </div> <p><u>Note:</u> You may receive an error stating that one or more of the tapes already contains a valid NetWorker label. These errors can be disregarded and the volumes associated with them can be relabeled without issue. This merely indicates that NetWorker has identified that these tapes were used in a NetWorker environment previously and by default does not automatically re-label them in case you need the data on them.</p>	Client Name	Save Set	Group / Policy	Level	Start Time ▼	Duration	Device	 nwlunix.emc....	etc	LibTest	full	10/1/13 4:31:01 PM	00:02:30	<input type="checkbox"/> rd=nwlunix.emc.edu:/dev/nst3
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End of Lab Exercise 6-4

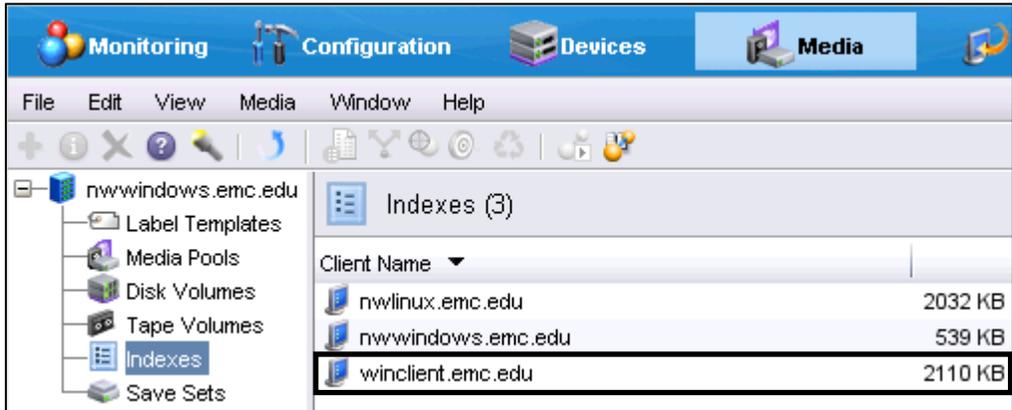
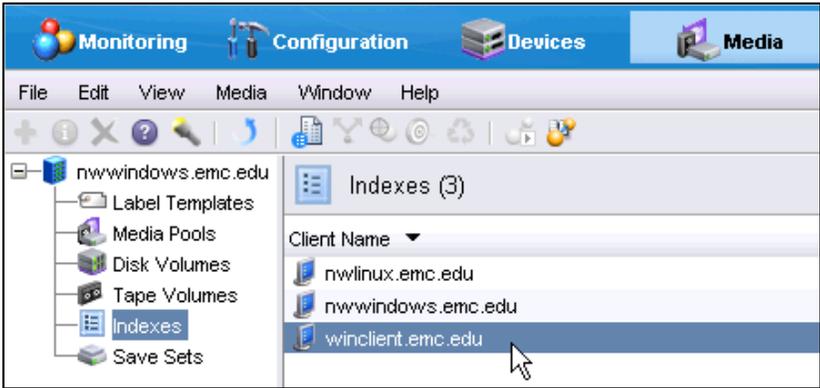
End of Lab 6

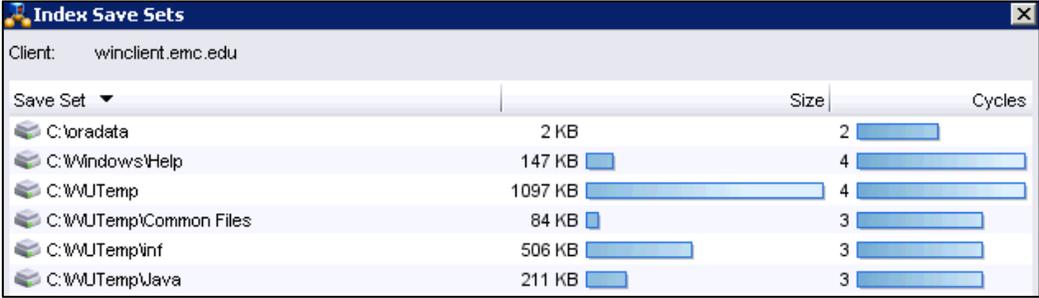
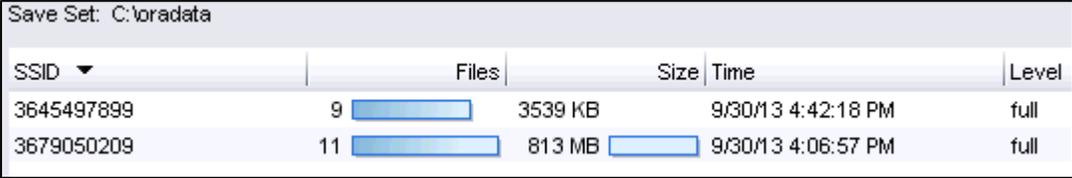
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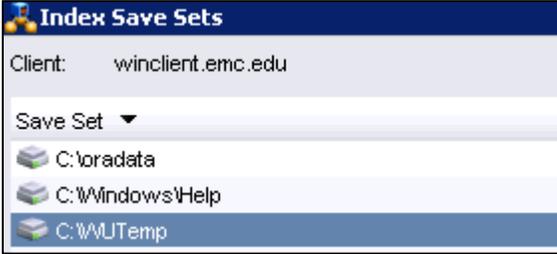
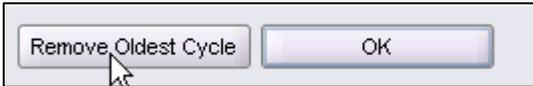
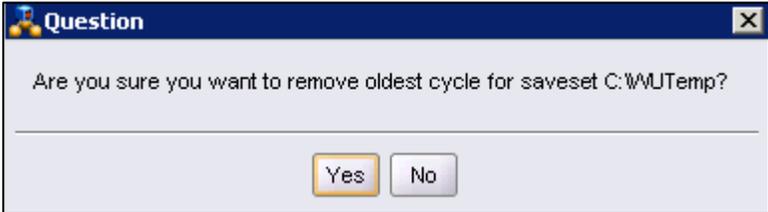
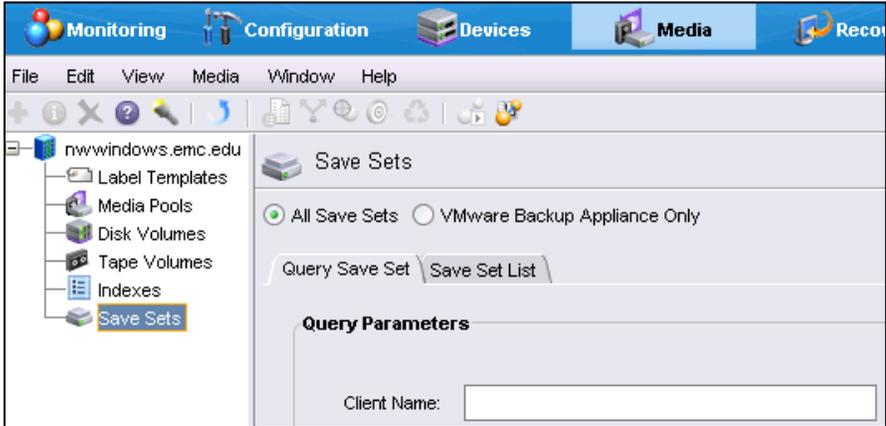
Lab 7: Manage the Media Database and Client File Indexes

Purpose:	In this lab, you will use the NetWorker Administration GUI to display the contents of volumes, review client file indexes, and search for save sets.
Tasks:	In this lab you: <ul style="list-style-type: none">• View the size of client file indexes.• Determine the number of files in most recent backup.• Determine size of most backups of a single client• Use the save set query tool

Lab Exercise 7-1: NetWorker Databases – Part 1

Step	Action
1	<p>From the Media tab select Indexes on the left and determine the total size of the client file index (CFI) for the winclient.emc.edu server.</p> <div style="text-align: center;">  </div> <p>Size of CFI for winclient.emc.edu: _____</p>
2	<p>Display a list of all save sets for winclient.emc.edu by double-clicking on the winclient.emc.edu entry in the Indexes box on the right side of the Media tab.</p> <div style="text-align: center;">  </div> <p>Keep the window open and proceed to Step 3.</p>

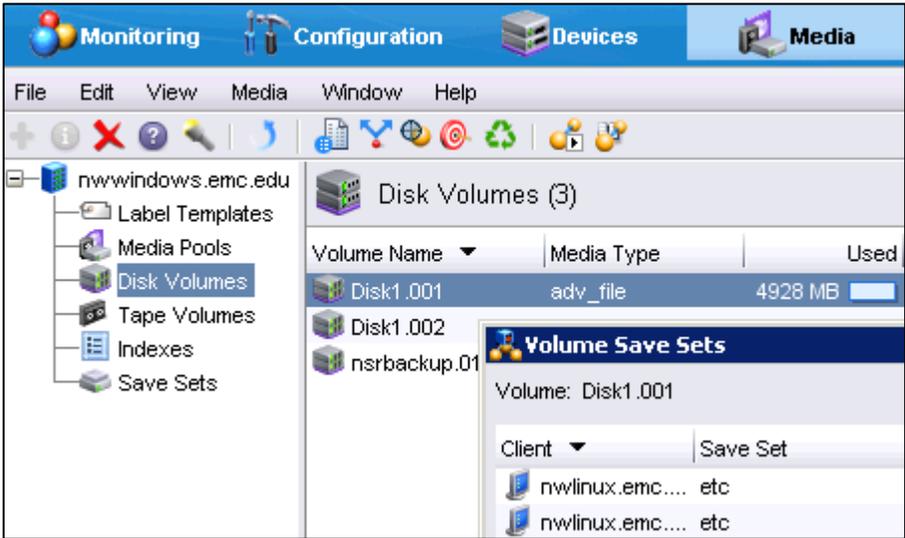
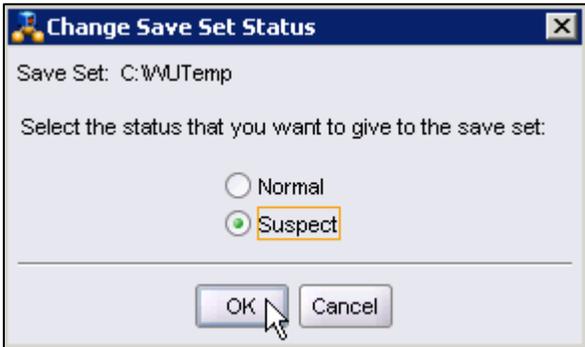
Step	Action																					
3	<p>Identify the save set that has been backed up the least often. (Hint: Cycle = Backup)</p>  <table border="1" data-bbox="407 264 1446 562"> <thead> <tr> <th>Save Set</th> <th>Size</th> <th>Cycles</th> </tr> </thead> <tbody> <tr> <td>C:\oradata</td> <td>2 KB</td> <td>2</td> </tr> <tr> <td>C:\Windows\Help</td> <td>147 KB</td> <td>4</td> </tr> <tr> <td>C:\WUTemp</td> <td>1097 KB</td> <td>4</td> </tr> <tr> <td>C:\WUTemp\Common Files</td> <td>84 KB</td> <td>3</td> </tr> <tr> <td>C:\WUTemp\inf</td> <td>506 KB</td> <td>3</td> </tr> <tr> <td>C:\WUTemp\Java</td> <td>211 KB</td> <td>3</td> </tr> </tbody> </table> <p>Name of least frequently backed up save set(s): _____</p>	Save Set	Size	Cycles	C:\oradata	2 KB	2	C:\Windows\Help	147 KB	4	C:\WUTemp	1097 KB	4	C:\WUTemp\Common Files	84 KB	3	C:\WUTemp\inf	506 KB	3	C:\WUTemp\Java	211 KB	3
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4	<p>Click the save set that was identified in the previous step.</p>  <table border="1" data-bbox="391 758 1463 936"> <thead> <tr> <th>SSID</th> <th>Files</th> <th>Size</th> <th>Time</th> <th>Level</th> </tr> </thead> <tbody> <tr> <td>3645497899</td> <td>9</td> <td>3539 KB</td> <td>9/30/13 4:42:18 PM</td> <td>full</td> </tr> <tr> <td>3679050209</td> <td>11</td> <td>813 MB</td> <td>9/30/13 4:06:57 PM</td> <td>full</td> </tr> </tbody> </table> <p>Identify the number of files and size of each backup.</p>	SSID	Files	Size	Time	Level	3645497899	9	3539 KB	9/30/13 4:42:18 PM	full	3679050209	11	813 MB	9/30/13 4:06:57 PM	full						
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Step	Action
5	<p>In the Index Save Sets window that you already have open, select the C:\WUTemp save set for winclient.emc.edu.</p>  <p>Remove the oldest backup of this save set by clicking the Remove Oldest Cycle button.</p>  <p>Click Yes to confirm you are sure you want to remove the oldest cycle for the save set C:\WUTemp.</p>  <p>Note the number of SSID's now listed for the C:\WUTemp Save Set.</p> <p>Click OK.</p>
6	<p>From the Media tab click Save Sets from the tree on the left side. This opens the Query Save Set window on the right side.</p> 

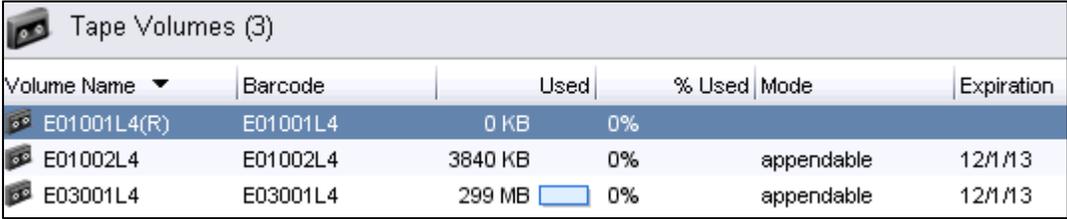
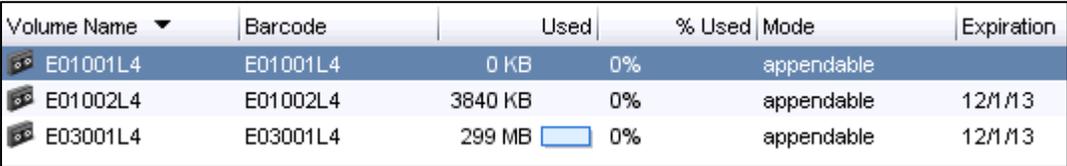
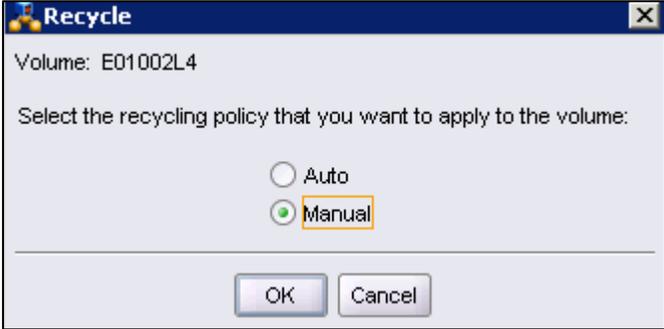
Step	Action																																																																																				
7	<p>Using the Query Save Set tool, generate a list of all save sets in the Disk1 pool since the start of class by entering the following options:</p> <p>Query Parameters</p> <ul style="list-style-type: none"> • <u>Pool</u>: Disk1 • <u>Save Time From</u>: Select the first day of class • <u>Save Time To</u>: Select tomorrow <div data-bbox="581 445 1268 779" style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>Pool: <input type="text" value="Disk1"/></p> <p>Checkpoint ID: <input type="text"/></p> <p>Copies: <input type="text" value=">"/> <input type="text" value="0"/></p> <p>Save Time:</p> <p>From <input type="text" value="Sep 30, 2013 12:00:00"/> To <input type="text" value="Oct 3, 2013 11:59:59 F"/></p> </div> <p>Leave all other fields blank, and select Save Set List to run the query and see the results.</p> <div data-bbox="423 886 1425 1415" style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>Query Save Set Save Set List</p> <table border="1"> <thead> <tr> <th>Client</th> <th>Save Set</th> <th>SSID</th> <th>Clone ID</th> <th>Level</th> <th>Status</th> <th>Type</th> </tr> </thead> <tbody> <tr><td>nwlinux.emc.edu</td><td>etc</td><td>3897130489</td><td>1380548024</td><td>full</td><td>brows...</td><td></td></tr> <tr><td>nwlinux.emc.edu</td><td>etc</td><td>3611966131</td><td>1380596331</td><td>incr</td><td>brows...</td><td></td></tr> <tr><td>nwlinux.emc.edu</td><td>etc</td><td>3393906282</td><td>1380640283</td><td>full</td><td>brows...</td><td></td></tr> <tr><td>nwlinux.emc.edu</td><td>etc</td><td>3310030171</td><td>1380650250</td><td>full</td><td>brows...</td><td></td></tr> <tr><td>nwlinux.emc.edu</td><td>etc</td><td>3226144413</td><td>1380650572</td><td>full</td><td>brows...</td><td></td></tr> <tr><td>nwwindows.emc...</td><td>index:nwlinu...</td><td>3880353293</td><td>1380548109</td><td>full</td><td>recove...</td><td></td></tr> <tr><td>nwwindows.emc...</td><td>index:wincle...</td><td>3830021709</td><td>1380548173</td><td>9</td><td>recove...</td><td></td></tr> <tr><td>nwwindows.emc...</td><td>C:\Program Fi...</td><td>3813244611</td><td>1380548291</td><td>full</td><td>brows...</td><td></td></tr> <tr><td>nwwindows.emc...</td><td>index:nwwin...</td><td>3796467452</td><td>1380548348</td><td>full</td><td>recove...</td><td></td></tr> <tr><td>nwwindows.emc...</td><td>bootstrap</td><td>3779690238</td><td>1380548350</td><td>full</td><td>recove...</td><td></td></tr> <tr><td>nwwindows.emc...</td><td>index:wincle...</td><td>3662273033</td><td>1380571657</td><td>full</td><td>recove...</td><td></td></tr> </tbody> </table> </div> <p>Verify that only save sets in the Disk1 pool are reported by looking at the Pool heading.</p>	Client	Save Set	SSID	Clone ID	Level	Status	Type	nwlinux.emc.edu	etc	3897130489	1380548024	full	brows...		nwlinux.emc.edu	etc	3611966131	1380596331	incr	brows...		nwlinux.emc.edu	etc	3393906282	1380640283	full	brows...		nwlinux.emc.edu	etc	3310030171	1380650250	full	brows...		nwlinux.emc.edu	etc	3226144413	1380650572	full	brows...		nwwindows.emc...	index:nwlinu...	3880353293	1380548109	full	recove...		nwwindows.emc...	index:wincle...	3830021709	1380548173	9	recove...		nwwindows.emc...	C:\Program Fi...	3813244611	1380548291	full	brows...		nwwindows.emc...	index:nwwin...	3796467452	1380548348	full	recove...		nwwindows.emc...	bootstrap	3779690238	1380548350	full	recove...		nwwindows.emc...	index:wincle...	3662273033	1380571657	full	recove...	
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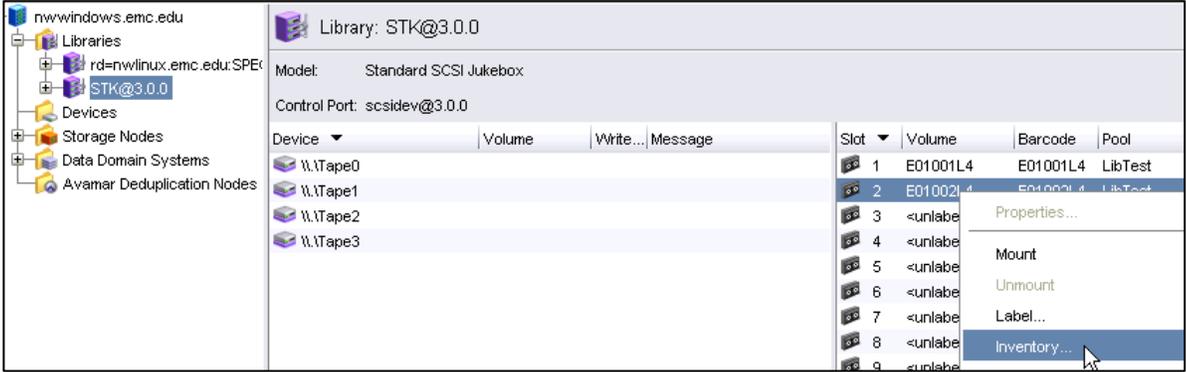
End of Lab Exercise 7-1

Lab Exercise 7-2: NetWorker Databases – Part 2

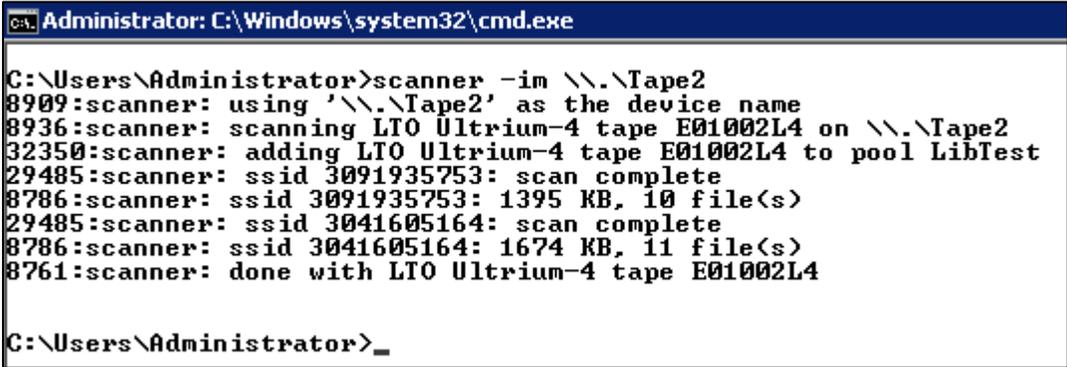
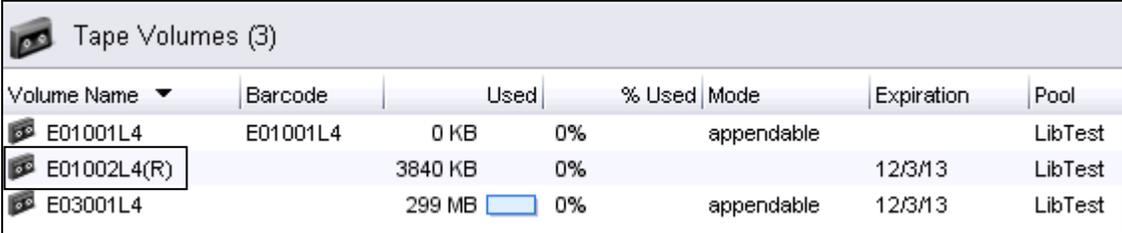
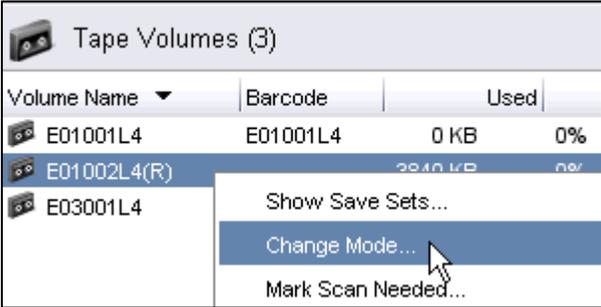
Step	Action
1	<p>From the Media tab select Disk Volumes on the left and double-click the Disk1.001 volume to display the save sets on that volume.</p>  <p>The screenshot shows the NetWorker Media console. The left pane shows a tree view with 'Disk Volumes' selected. The main pane shows 'Disk Volumes (3)' with a table listing 'Disk1.001', 'Disk1.002', and 'nsrbackup.01'. The 'Disk1.001' volume is selected, and a 'Volume Save Sets' pop-up is displayed for it. The pop-up shows 'Volume: Disk1.001' and a table with columns 'Client' and 'Save Set', listing 'nwlinux.emc.... etc'.</p> <p>Click on one of the C:\WUTemp save sets and note the SSID.</p> <p>SSID: _____</p>
2	<p>With the SSID identified in the previous step selected, click the change status button to bring up the Change Save Set Status pop-up and make the following change:</p> <p>Change Save Set Status</p> <ul style="list-style-type: none"> • <u>Status</u>: Suspect  <p>The screenshot shows the 'Change Save Set Status' dialog box. The title bar says 'Change Save Set Status'. The main text says 'Save Set: C:\WUTemp' and 'Select the status that you want to give to the save set:'. There are two radio buttons: 'Normal' and 'Suspect'. The 'Suspect' radio button is selected and highlighted with a yellow box. At the bottom, there are 'OK' and 'Cancel' buttons. A mouse cursor is pointing at the 'OK' button.</p> <p>Click OK.</p>

Step	Action
3	<p>In the Volume Save Sets window, select the previously identified save set and change the status back to normal.</p> <div data-bbox="634 298 1214 642" data-label="Image"> </div> <p>Click OK.</p>
4	<p>From the Media tab, select Tape Volumes to display a list of currently labeled tapes.</p> <div data-bbox="548 837 1300 1089" data-label="Image"> </div> <p>Set the mode of any of the volumes to read-only by right-clicking on one of the volumes and selecting Change Mode.</p> <p>In the change mode dialog box enter the following options:</p> <p>Change Mode</p> <ul style="list-style-type: none"> • <u>Select Mode:</u> Read Only <div data-bbox="639 1375 1208 1757" data-label="Image"> </div> <p>Click OK.</p>

Step	Action
5	<p>Look at the volume you just changed in the Tape Volumes window.</p>  <p>What changes do you see in the Name and Mode of the volume?</p>
6	<p>Change the mode of the volume back to Appendable and again note the changes in the Name and Mode of the volume.</p>
7	<p>From the Media tab, select Tape Volumes and select a volume from the Tape Volumes window that has an expiration date and data written to it.</p>  <p>Right-click the selected volume and click Recycle to bring up the Recycled Dialog Box and make the following change:</p> <p>Recycle</p> <ul style="list-style-type: none"> Select Recycling Policy: Manual  <p>Click OK, and note the change in the Expiration field of the volume you just modified.</p>
8	<p>Change the Recycle Policy of the volume back to Auto.</p>

Step	Action
9	<p>From the Media tab, select tape volumes on the left, and right-click an individual volume of your choice. Select the Set Location option and enter the following information:</p> <p>Set Location</p> <ul style="list-style-type: none"> • <u>Volume:</u> Offsite  <p>Click OK and note the Location field for the volume in the Tape Volumes window.\</p> <p>Enter the Volume Name you modified: _____</p>
10	<p>From the Devices tab, select the tape library that contains the volume you modified in the previous step. Inventory the volume in the library by right-clicking on it in the Library window and selecting Inventory</p>  <p>Enter the following options to inventory the tape:</p> <p>Inventory Library</p> <ul style="list-style-type: none"> • <u>Slot Range:</u> Ensure your volume is selected • <u>Check Box:</u> Force load and verify labels <p>Click OK and monitor the operation in the library status window.</p>
11	<p>Return to the Media tab, select Tape Volumes and validate that the location of the tape has been changed automatically from offsite to the name of the tape library.</p>

Step	Action
12	<p>From the Media tab select a tape volume that is located in the tape library attached to the NetWorker server. <u>Note:</u> Location should NOT have “rd=” in the name.</p> <p>Right-click the volume selected and delete it. Enter the following information in the dialog box:</p> <p>Delete</p> <ul style="list-style-type: none"> • <u>Selection:</u> File and Media Index Entries <div data-bbox="656 478 1192 814" data-label="Image"> </div> <p>Click OK, then click OK again to confirm you want to delete the volume from the database.</p> <p>Notice the volume has been removed from the list of volumes, and is displayed in the library as <not in media index>.</p>
13	<p>From the Devices tab, select the Local Library and right-click the tape volume you just deleted. Select Load Without Mount from the pop-up menu.</p> <div data-bbox="708 1155 1140 1474" data-label="Image"> </div> <p>Monitor the load operation and write down the name of the device that the tape was loaded into.</p> <p>Device Name: _____</p>

Step	Action																												
14	<p>Open a command prompt on your NetWorker server and run the following command to scan the volume you recently deleted back in to the database.</p> <p>Command Prompt – NetWorker Server</p> <ul style="list-style-type: none"> Type: <code>scanner -im <device_name></code> <p>Note: <device_name> should be replaced with the name of the device you loaded the tape into.</p>  <pre> Administrator: C:\Windows\system32\cmd.exe C:\Users\Administrator>scanner -im \\.\Tape2 8909:scanner: using '\\.\Tape2' as the device name 8936:scanner: scanning LTO Ultrium-4 tape E01002L4 on \\.\Tape2 32350:scanner: adding LTO Ultrium-4 tape E01002L4 to pool LibTest 29485:scanner: ssid 3091935753: scan complete 8786:scanner: ssid 3091935753: 1395 KB, 10 file(s) 29485:scanner: ssid 3041605164: scan complete 8786:scanner: ssid 3041605164: 1674 KB, 11 file(s) 8761:scanner: done with LTO Ultrium-4 tape E01002L4 C:\Users\Administrator>_ </pre>																												
15	<p>Return to the Media tab and select Tape Volumes to display the list of tape volumes in the media database.</p> <p>Identify the volume that you just scanned back in.</p>  <table border="1" data-bbox="362 1045 1484 1278"> <thead> <tr> <th>Volume Name</th> <th>Barcode</th> <th>Used</th> <th>% Used</th> <th>Mode</th> <th>Expiration</th> <th>Pool</th> </tr> </thead> <tbody> <tr> <td>E01001L4</td> <td>E01001L4</td> <td>0 KB</td> <td>0%</td> <td>appendable</td> <td></td> <td>LibTest</td> </tr> <tr> <td>E01002L4(R)</td> <td></td> <td>3840 KB</td> <td>0%</td> <td></td> <td>12/3/13</td> <td>LibTest</td> </tr> <tr> <td>E03001L4</td> <td></td> <td>299 MB</td> <td>0%</td> <td>appendable</td> <td>12/3/13</td> <td>LibTest</td> </tr> </tbody> </table> <p>What do you notice about the name and mode of this volume?</p> <p>Change the volume to appendable.</p> 	Volume Name	Barcode	Used	% Used	Mode	Expiration	Pool	E01001L4	E01001L4	0 KB	0%	appendable		LibTest	E01002L4(R)		3840 KB	0%		12/3/13	LibTest	E03001L4		299 MB	0%	appendable	12/3/13	LibTest
Volume Name	Barcode	Used	% Used	Mode	Expiration	Pool																							
E01001L4	E01001L4	0 KB	0%	appendable		LibTest																							
E01002L4(R)		3840 KB	0%		12/3/13	LibTest																							
E03001L4		299 MB	0%	appendable	12/3/13	LibTest																							

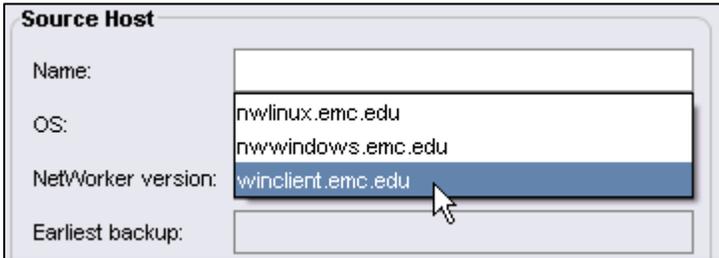
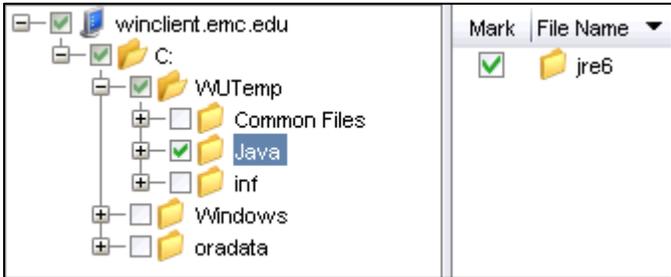
End of Lab Exercise 7-2
End of Lab 7

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Lab 8: Perform Recoveries

Purpose:	In this lab, you perform browsable and save set recoveries using the NetWorker Recovery Wizard
Tasks:	In this lab you: <ul style="list-style-type: none">• Perform a browsable recovery using NetWorker Recovery Wizard• Perform a save set recovery using NetWorker Recovery Wizard• Perform a scheduled recovery using NetWorker Recovery Wizard

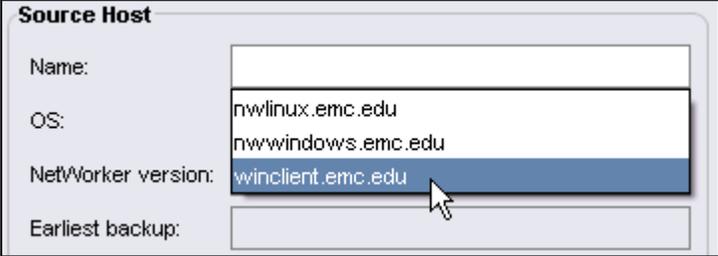
Lab Exercise 8-1: Perform a Browsable Recovery

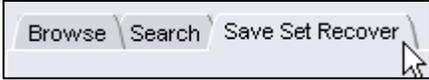
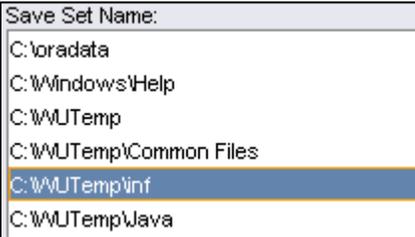
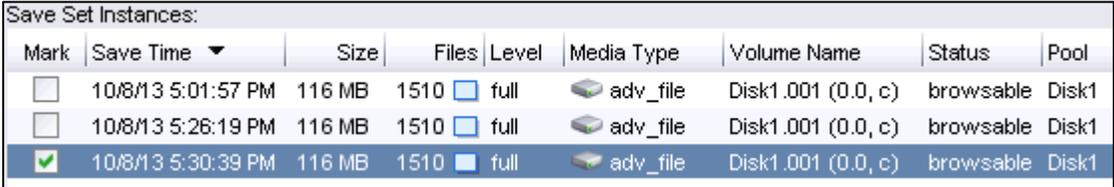
Step	Action
1	<p>From the Recover tab select the green “+” symbol to launch the NetWorker Recovery Wizard.</p> 
2	<p>In the Recovery Configuration wizard, create a new recovery configuration by entering the following information:</p> <p>Recover Configuration</p> <p>Select the Recovery Hosts</p> <ul style="list-style-type: none"> Name: Select winclient.emc.edu  <p>Click Next.</p>
3	<p>In the Select the Data to Recover dialog box, select the C:\WUTemp\Java folder in the folder selection tree.</p>  <p>Click Next.</p>

Step	Action		
4	<p>In the Select the Recovery Options window enter the following options:</p> <p>Recovery Configuration</p> <p>Select the Recovery Options</p> <ul style="list-style-type: none"> • <u>File Path for Recovery:</u> New destination path • <u>Recovery path box:</u> C:\recover <div data-bbox="716 411 1105 634" style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <p>File Path for Recovery</p> <p><input type="radio"/> Original path</p> <p><input checked="" type="radio"/> New destination path</p> <p>C:\recover</p> </div> <p>Click Next.</p> <p>On the Obtain the Volume Information window, leave the default options. Click Next.</p>		
5	<p>In the Perform the Recovery window enter the following information:</p> <p>Recovery Configuration</p> <p>Perform the Recovery</p> <ul style="list-style-type: none"> • <u>Recover Name:</u> JavaRecover • <u>Recovery Start Time:</u> Start recovery now <div data-bbox="326 1050 1497 1194" style="border: 1px solid black; padding: 5px; margin: 10px auto;"> <table border="0" style="width: 100%;"> <tr> <td style="width: 70%; vertical-align: top;"> <p>Identity</p> <p>Recover name: <input type="text" value="JavaRecover"/></p> <p>Comment: <input type="text"/></p> </td> <td style="width: 30%; vertical-align: top;"> <p>Recovery Start Time</p> <p><input checked="" type="radio"/> Start recovery now</p> <p><input type="radio"/> Schedule recovery to start at</p> </td> </tr> </table> </div> <p>Click Run Recovery, and monitor the Recovery Results screen until the recovery is completed.</p> <div data-bbox="586 1339 1235 1640" style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <pre> C:\recover\Java\jre6\LICENSE C:\recover\Java\jre6\LICENSE.txt C:\recover\Java\jre6\README.txt C:\recover\Java\jre6\THIRDPARTYLICENSEREADME.txt C:\recover\Java\jre6\Welcome.html C:\recover\Java\jre6\ C:\recover\Java\ Received 648 file(s) from NSR server 'nwwindows.emc.edu' Recover completion time: 10/4/2013 6:50:21 AM </pre> </div> <p>Click Finish.</p>	<p>Identity</p> <p>Recover name: <input type="text" value="JavaRecover"/></p> <p>Comment: <input type="text"/></p>	<p>Recovery Start Time</p> <p><input checked="" type="radio"/> Start recovery now</p> <p><input type="radio"/> Schedule recovery to start at</p>
<p>Identity</p> <p>Recover name: <input type="text" value="JavaRecover"/></p> <p>Comment: <input type="text"/></p>	<p>Recovery Start Time</p> <p><input checked="" type="radio"/> Start recovery now</p> <p><input type="radio"/> Schedule recovery to start at</p>		

End of Lab Exercise 8-1

Lab Exercise 8-2: Perform Save Set Recoveries

Step	Action
1	<p>From the Recover tab select the green “+” symbol to launch the NetWorker Recovery Wizard.</p> 
2	<p>In the Recovery Configuration wizard, create a new recovery configuration by entering the following information:</p> <p>Recover Configuration</p> <p>Select the Recovery Hosts</p> <ul style="list-style-type: none">• Name: Select winclient.emc.edu  <p>Click Next.</p>

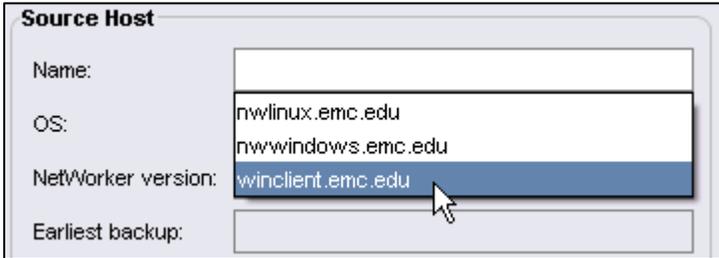
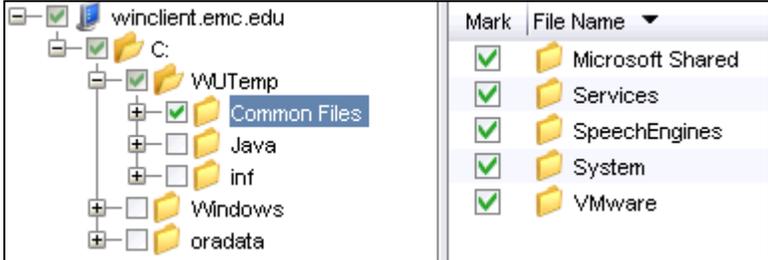
Step	Action
3	<p>In the Select the Data to Recover window, enter the following options:</p> <p>Recover Configuration</p> <p>Select the Data to Recover</p> <ul style="list-style-type: none"> Click: Save Set Recover  <ul style="list-style-type: none"> Found In: Select Last and enter 1 Week  <p>Click Query, to populate the Save Set Name and Save Set Instances windows.</p>
4	<p>In the Save Set Name field select the C:\WUTemp\inf save set.</p>  <p>In the Save Set Instances field, select the most recent instance and mark the box next to it.</p>  <p>Click Next.</p>

Step	Action
5	<p>In the Select the Recovery Options window select the following options:</p> <p>Recover Configuration</p> <p>Select the Recovery Options</p> <ul style="list-style-type: none"> • <u>File Path for Recovery</u>: Original path • <u>Duplicate File Options</u>: Rename the recovered file <div data-bbox="646 411 1175 911" style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>File Path for Recovery</p> <p><input checked="" type="radio"/> Original path</p> <p><input type="radio"/> New destination path</p> <p><input type="text"/></p> <hr/> <p>Duplicate File Options</p> <p><input checked="" type="radio"/> Rename the recovered file</p> <p><input type="radio"/> Do not recover the file</p> <p><input type="radio"/> Overwrite the existing file</p> <p><input type="checkbox"/> If overwrite fails, replace at reboot</p> </div> <p>Click Next.</p> <p>Leave the default options on the Obtain the Volume Information page. Click Next.</p>

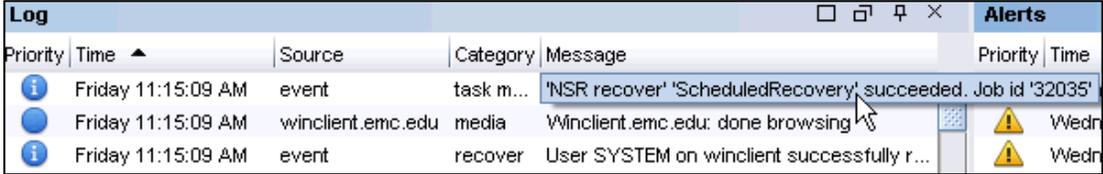
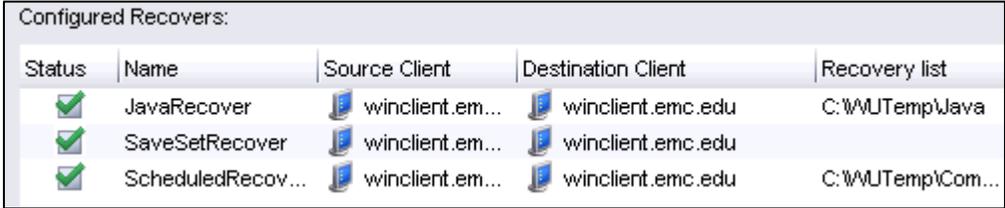
Step	Action		
6	<p>In the Perform the Recovery window enter the following information:</p> <p>Recovery Configuration</p> <p>Perform the Recovery</p> <ul style="list-style-type: none"> • <u>Recover Name:</u> SaveSetRecover • <u>Recovery Start Time:</u> Start recovery now <div data-bbox="323 409 1497 552" style="border: 1px solid black; padding: 5px;"> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 70%; border-right: 1px solid black; padding: 5px;"> <p>Identity</p> <p>Recover name: <input style="width: 90%;" type="text" value="SaveSetRecover"/></p> <p>Comment: <input style="width: 90%;" type="text"/></p> </td> <td style="width: 30%; padding: 5px;"> <p>Recovery Start Time</p> <p><input checked="" type="radio"/> Start recovery now</p> <p><input type="radio"/> Schedule recovery to start at</p> </td> </tr> </table> </div> <p>Click Run Recovery, and monitor the Recovery Results screen until the recovery is completed.</p> <div data-bbox="496 695 1325 1050" style="border: 1px solid black; padding: 5px;"> <pre> C:\WUTemp\inf\wvms_mp.inf C:\WUTemp\inf\wvms_mp.inf: File exists, renaming to C:\WUTemp\inf\~wvms_mp.inf C:\WUTemp\inf\wvms_pp.inf C:\WUTemp\inf\wvms_pp.inf: File exists, renaming to C:\WUTemp\inf\~wvms_pp.inf C:\WUTemp\inf\xnacc.inf C:\WUTemp\inf\xnacc.inf: File exists, renaming to C:\WUTemp\inf\~xnacc.inf C:\WUTemp\inf\xnacc.PNF C:\WUTemp\inf\xnacc.PNF: File exists, renaming to C:\WUTemp\inf\~xnacc.PNF C:\WUTemp\inf\ Received 1507 matching file(s) from NSR server `nwwindows.emc.edu' Recover completion time: 10/4/2013 7:43:04 AM </pre> </div> <p>Review the Recovery Log and determine how the files were renamed.</p> <p><u>Hint:</u> What change was made to the filename when the file was renamed?</p> <p>Click Finish.</p>	<p>Identity</p> <p>Recover name: <input style="width: 90%;" type="text" value="SaveSetRecover"/></p> <p>Comment: <input style="width: 90%;" type="text"/></p>	<p>Recovery Start Time</p> <p><input checked="" type="radio"/> Start recovery now</p> <p><input type="radio"/> Schedule recovery to start at</p>
<p>Identity</p> <p>Recover name: <input style="width: 90%;" type="text" value="SaveSetRecover"/></p> <p>Comment: <input style="width: 90%;" type="text"/></p>	<p>Recovery Start Time</p> <p><input checked="" type="radio"/> Start recovery now</p> <p><input type="radio"/> Schedule recovery to start at</p>		

End of Lab Exercise 8-2

Lab Exercise 8-3: Perform Scheduled Recovery

Step	Action
1	<p>From the Recover tab select the green “+” symbol to launch the NetWorker Recovery Wizard.</p> 
2	<p>In the Recovery Configuration wizard, create a new recovery configuration by entering the following information:</p> <p>Recover Configuration</p> <p>Select the Recovery Hosts</p> <ul style="list-style-type: none"> Name: Select winclient.emc.edu  <p>Click Next.</p>
3	<p>In the Select the Data to Recover dialog box, select the C:\WUTemp\Common Files folder in the folder selection tree.</p>  <p>Click Next.</p>

Step	Action																												
4	<p>In the Select the Recovery Options window enter the following options: Recovery Configuration Select the Recovery Options</p> <ul style="list-style-type: none"> • <u>File Path for Recovery:</u> New destination path • <u>Recovery path box:</u> C:\recover <div data-bbox="716 409 1105 634" style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <p>File Path for Recovery</p> <p><input type="radio"/> Original path</p> <p><input checked="" type="radio"/> New destination path</p> <p>C:\recover</p> </div> <p>Click Next.</p> <p>On the Obtain the Volume Information window, leave the default options. Click Next.</p>																												
5	<p>In the Perform the Recovery window enter the following information: Recovery Configuration Perform the Recovery</p> <ul style="list-style-type: none"> • <u>Recover Name:</u> ScheduledRecovery • <u>Recovery Start Time:</u> Scheduled recovery to start at • <u>Recovery time box:</u> Select todays date and then set the time to 10 minutes from now <div data-bbox="328 1119 1495 1318" style="border: 1px solid black; padding: 5px; margin: 10px auto;"> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;">Identity</th> <th style="width: 40%;">Recovery Start Time</th> </tr> </thead> <tbody> <tr> <td>Recover name: <input type="text" value="ScheduledRecovery"/></td> <td><input type="radio"/> Start recovery now</td> </tr> <tr> <td>Comment: <input type="text"/></td> <td><input checked="" type="radio"/> Schedule recovery to start at</td> </tr> <tr> <td></td> <td><input type="text" value="Oct 4, 2013 11:15:00 AM"/></td> </tr> </tbody> </table> </div> <p>Note: When selecting the recovery time, select today, then click ok to acknowledge the error and then manually enter the time box to display a time 10 minutes from now.</p> <p>Click Schedule Recovery, and note that a new recovery session is created under Configured Recovers.</p> <div data-bbox="409 1604 1414 1808" style="border: 1px solid black; padding: 5px; margin: 10px auto;"> <p>Configured Recovers:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Status</th> <th>Name</th> <th>Source Client</th> <th>Destination Client</th> <th>Recovery list</th> </tr> </thead> <tbody> <tr> <td></td> <td>ScheduledRecov...</td> <td> winclient.em...</td> <td> winclient.emc.edu</td> <td>C:\WUTemp\Com...</td> </tr> <tr> <td></td> <td>JavaRecover</td> <td> winclient.em...</td> <td> winclient.emc.edu</td> <td>C:\WUTemp\Java</td> </tr> <tr> <td></td> <td>SaveSetRecover</td> <td> winclient.em...</td> <td> winclient.emc.edu</td> <td></td> </tr> </tbody> </table> </div>	Identity	Recovery Start Time	Recover name: <input type="text" value="ScheduledRecovery"/>	<input type="radio"/> Start recovery now	Comment: <input type="text"/>	<input checked="" type="radio"/> Schedule recovery to start at		<input type="text" value="Oct 4, 2013 11:15:00 AM"/>	Status	Name	Source Client	Destination Client	Recovery list		ScheduledRecov...	 winclient.em...	 winclient.emc.edu	C:\WUTemp\Com...		JavaRecover	 winclient.em...	 winclient.emc.edu	C:\WUTemp\Java		SaveSetRecover	 winclient.em...	 winclient.emc.edu	
Identity	Recovery Start Time																												
Recover name: <input type="text" value="ScheduledRecovery"/>	<input type="radio"/> Start recovery now																												
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	JavaRecover	 winclient.em...	 winclient.emc.edu	C:\WUTemp\Java																									
	SaveSetRecover	 winclient.em...	 winclient.emc.edu																										

Step	Action
6	<p>Wait until after the scheduled time and validate that the recovery completes successfully. You should see the NSR recover task complete in the log.</p>  <p>Additionally, once completed the ScheduledRecovery task should have a green check mark next to it.</p> 

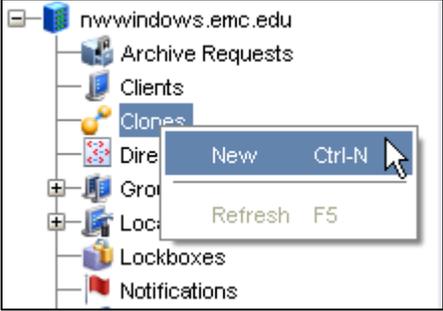
End of Lab Exercise 8-3

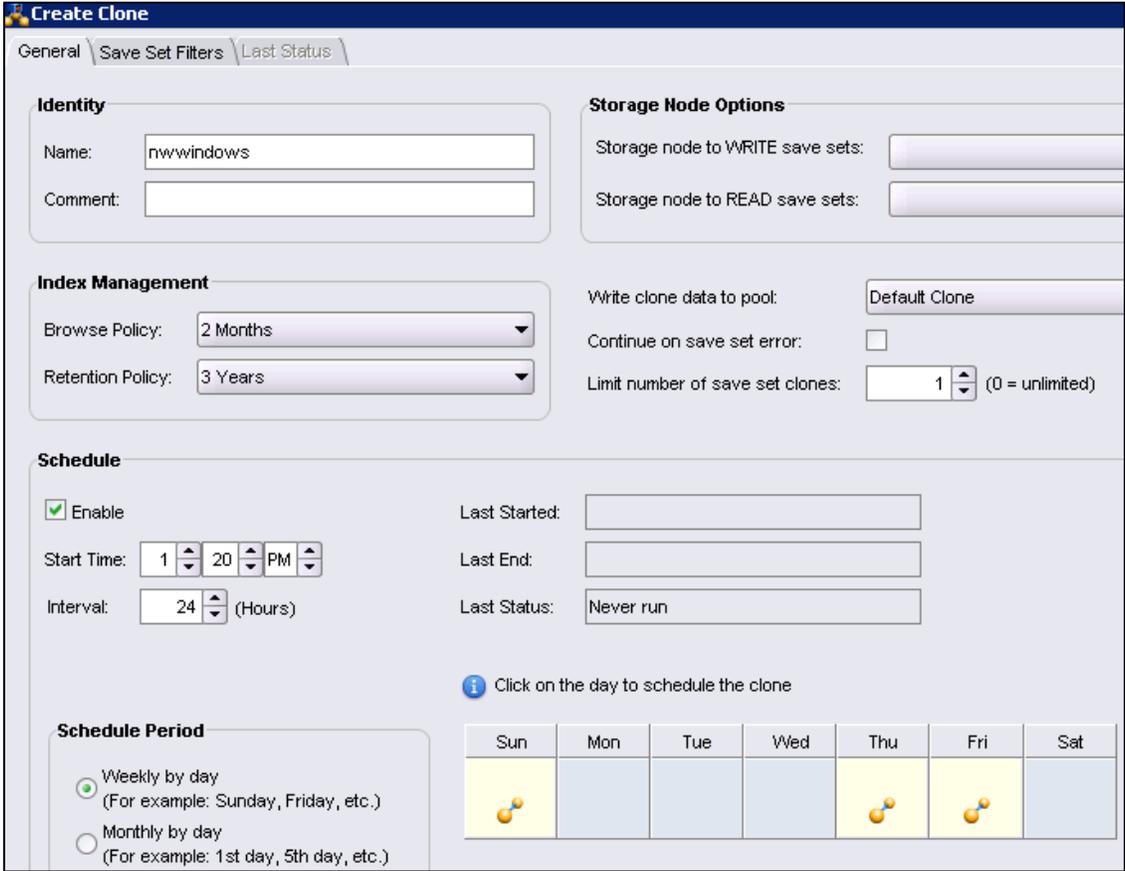
End of Lab 8

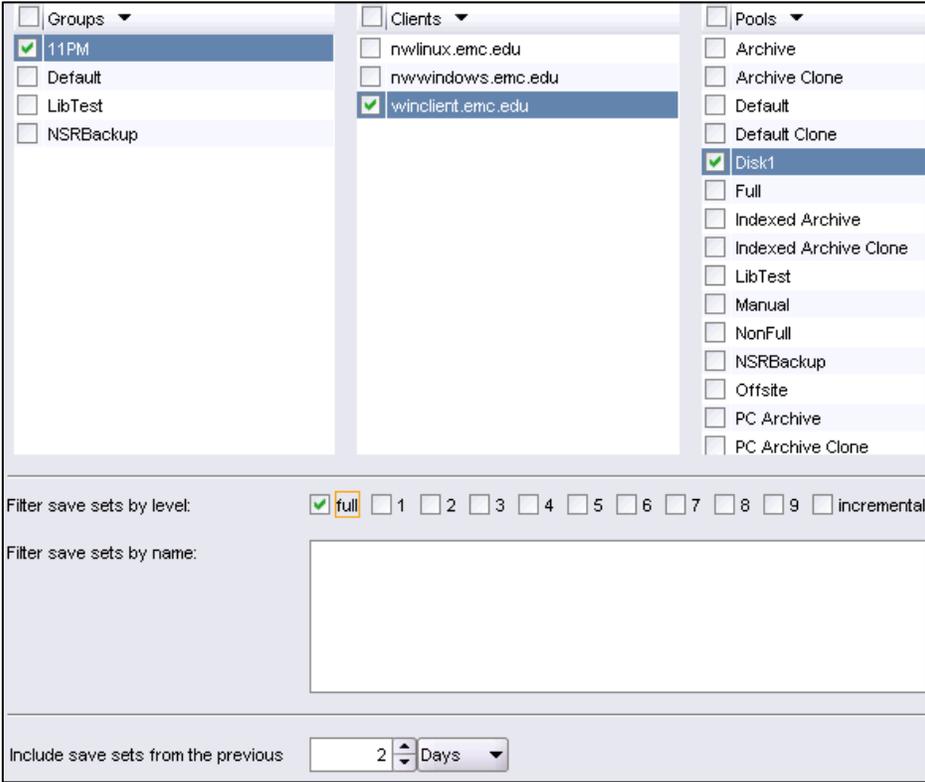
Lab 9: Perform Cloning and Staging

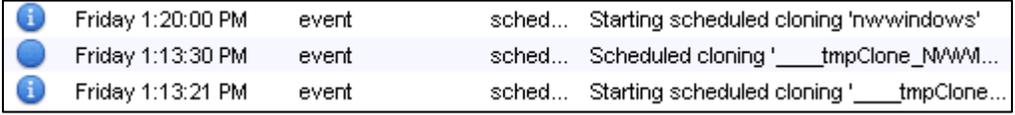
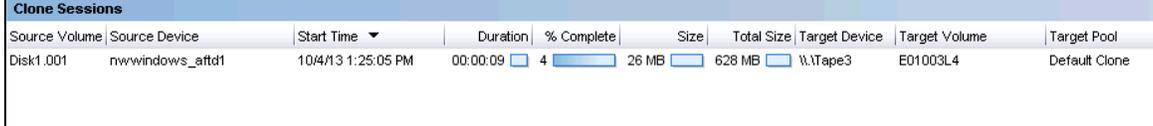
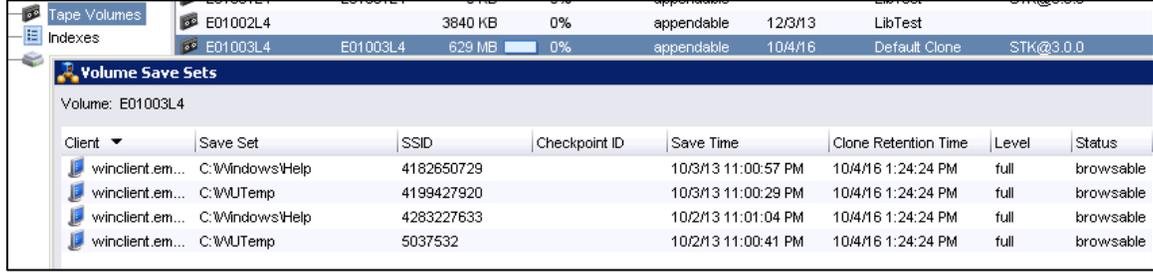
Purpose:	In this lab, you will configure resources for cloning and staging, and use them to perform cloning and staging operations.
Tasks:	In this lab, you will: <ul style="list-style-type: none">• Configure a clone resource.• Run the scheduled clone.• Configure a staging resource.• Manually stage a save set.

Lab Exercise 9-1: Configure a Scheduled Clone Operation

Step	Action
1	<p>From the Configuration tab, Right-click Clones on the left and create a New clone resource.</p>  <p>Continue to Step 2.</p>

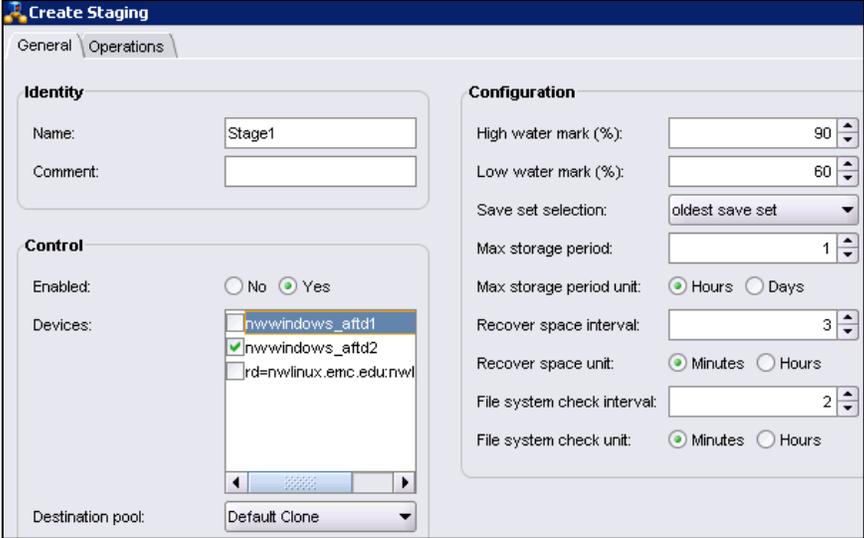
Step	Action
2	<p>Configure the clone resource with the following properties:</p> <p>Create Clone</p> <p>General Tab</p> <ul style="list-style-type: none"> • <u>Name</u>: Enter the short name of your NetWorker server • <u>Browse Policy</u>: 2 Months • <u>Retention Policy</u>: 3 Years • <u>Start Time</u>: 2:00 PM (Choose a time when you can monitor the operation) • <u>Interval</u>: 24 Hours • <u>Write clone data to pool</u>: Default Clone • <u>Days to run scheduled clone</u>: Select Today and Tomorrow  <p>Continue to Step 3.</p>

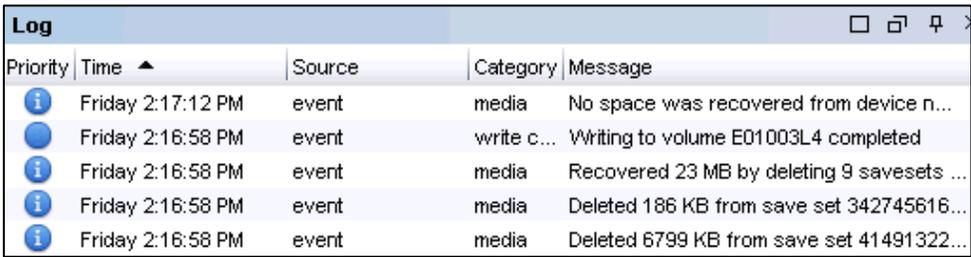
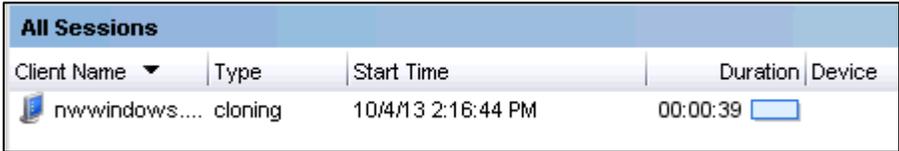
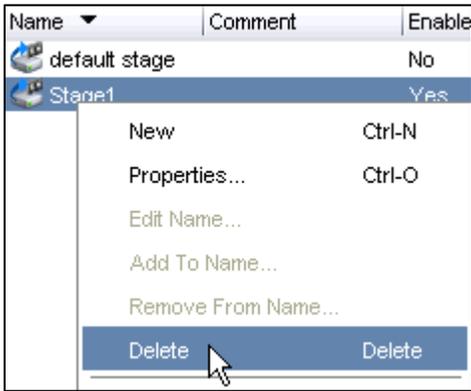
Step	Action
3	<p>In the Create Clone window select the Save Set Filters tab and enter the following:</p> <p>Create Clone</p> <p>Save Set Filters Tab</p> <ul style="list-style-type: none"> • <u>Groups:</u> 11PM • <u>Clients:</u> winclient.emc.edu • <u>Pools:</u> Disk1 • <u>Filter save sets by level:</u> Full • <u>Include save sets from the previous:</u> 2 Days  <p>Click Preview Save Set Selection to see a list of save sets that will be cloned.</p> <p>Click OK to finish creating your clone resource.</p>  <p>Monitor your NetWorker server during the time the clone is scheduled to run.</p> <p><u>Note:</u> Alternatively, you can right-click the clone job from the Monitoring tab to initiate it manually instead of waiting for it to run.</p>

Step	Action
4	<p>When the clone job runs, monitor the clone job activity on the monitoring tab.</p> <p>The Log window should show messages indicating the start of the scheduled clone.</p>  <p>The Clones window (opened by clicking the Clones tab in the upper window of the Monitoring tab) should show the clone operation running.</p>  <p>The Clone Sessions window (opened by clicking the Clone Sessions tab in the sessions window) should display the clone operations in progress.</p> 
5	<p>Verify that the save sets were successfully cloned, by switching to the Media tab and viewing the contents of the tape volume in the Default Clone pool.</p> 

End of Lab Exercise 9-1

Lab Exercise 9-2: Configure Automatic Staging

Step	Action
1	<p>From the Monitoring tab of the NetWorker Administration GUI Perform a backup of the 11PM group.</p> <div style="text-align: center;">  </div>
2	<p>From the Configuration tab right-click Staging and create a New staging resource with the following properties:</p> <p>Create Staging</p> <p>General Tab</p> <ul style="list-style-type: none"> • <u>Name</u>: Stage1 • <u>Enabled</u>: Yes • <u>Devices</u>: Select 1 of the 3 AFTD's • <u>Destination Pool</u>: Default Clone • <u>Save Set Selection</u>: oldest save set • <u>Max storage period</u>: 1 Hour • <u>Recover space interval</u>: 3 Minutes • <u>File system check interval</u>: 2 Minutes <div style="text-align: center;">  </div> <p>Click OK.</p>

Step	Action
4	<p>On the Monitoring tab, watch for staging to occur over the next few minutes.</p> <p>The Log window should display messages indicating the staging session is starting and has finished.</p>  <p>Note that clone sessions are running in the Sessions window.</p> <p><u>Note:</u> These are identified as clone sessions however the log will show save sets deleted after the clone operation which is the difference between a clone and a staging operation.</p> 
5	<p>Once the staging has completed, return to the Configuration tab and delete the staging policy that you created.</p> 

End of Lab Exercise 9-2

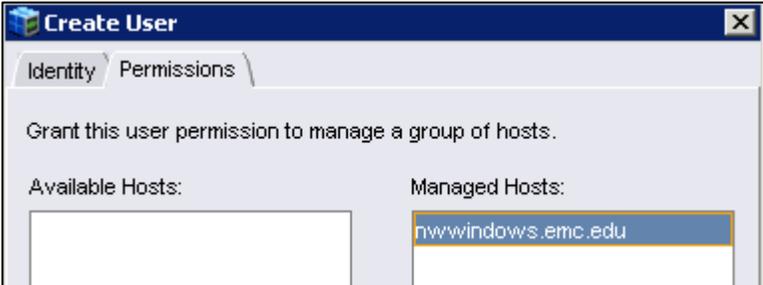
End of Lab 9

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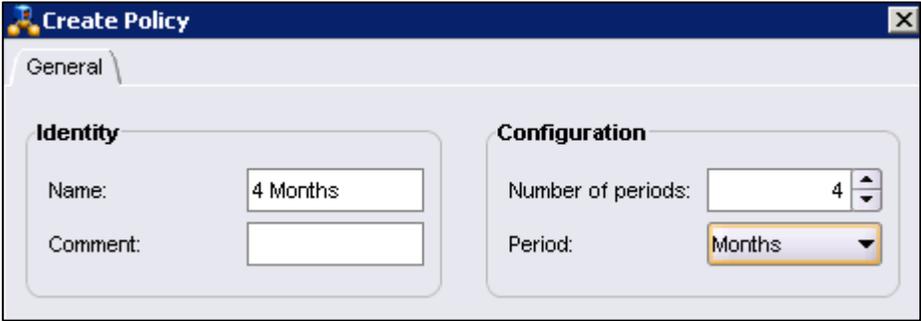
Lab 11: Administer the NetWorker Server

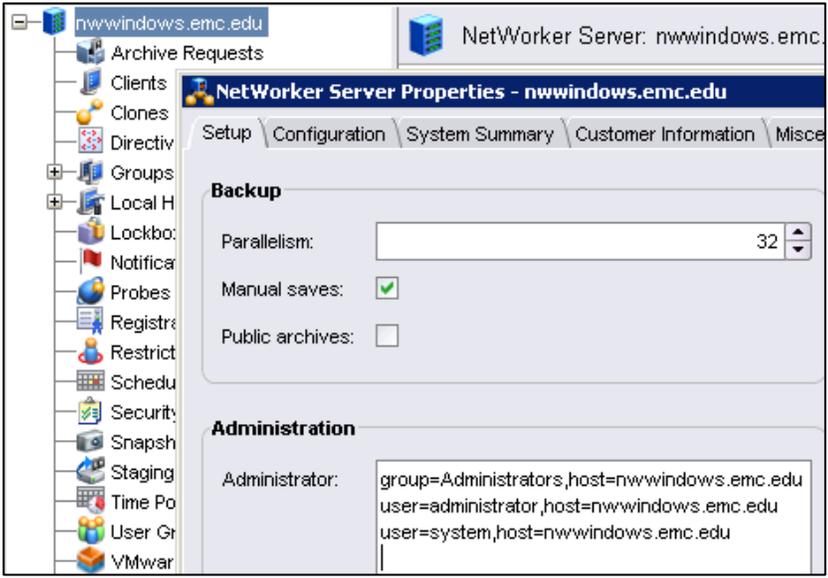
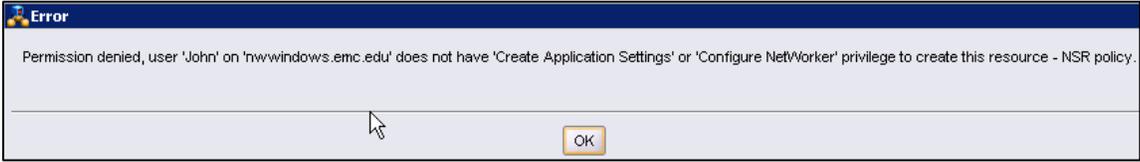
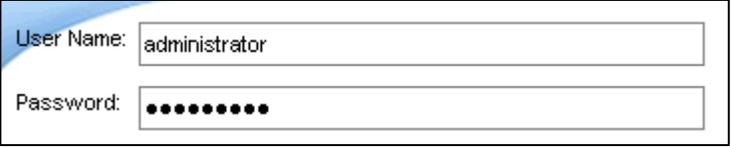
Purpose:	In this lab, you will perform several tasks relating to the management and administration of the NetWorker Server.
Tasks:	In this lab you: <ul style="list-style-type: none">• Create a new Console user.• Generate canned reports and create custom reports.• Back up the Console database.• Enable Resource Update Logging.• View the contents of several NetWorker and GST log files.• Create a new NetWorker user group.• Create an owner notification for the winclient client.

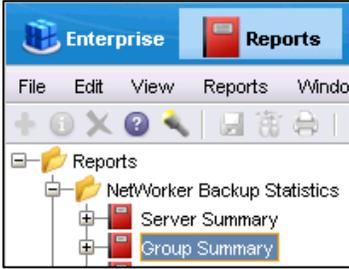
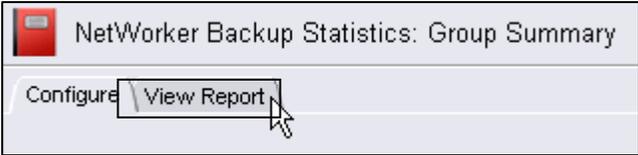
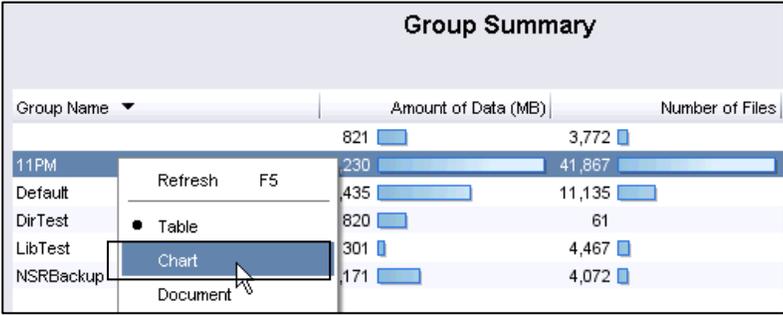
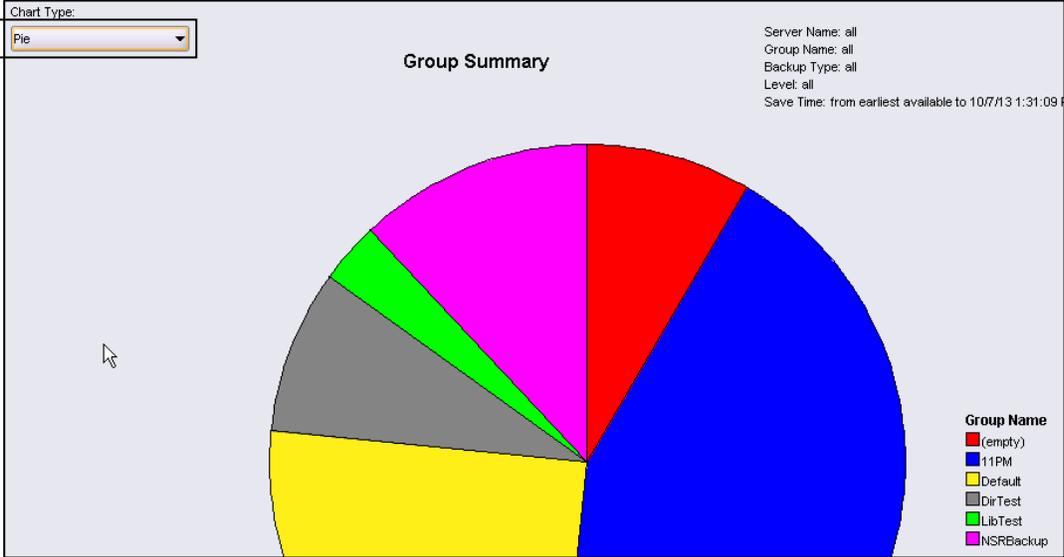
Lab Exercise 11-1: Manage the Console Server

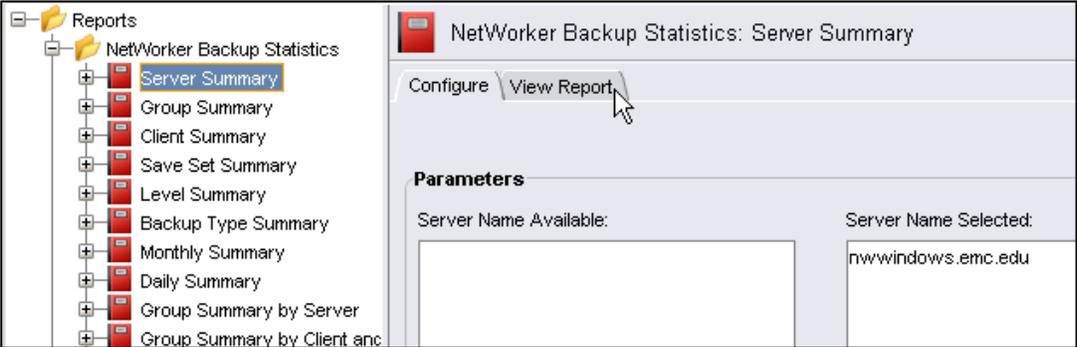
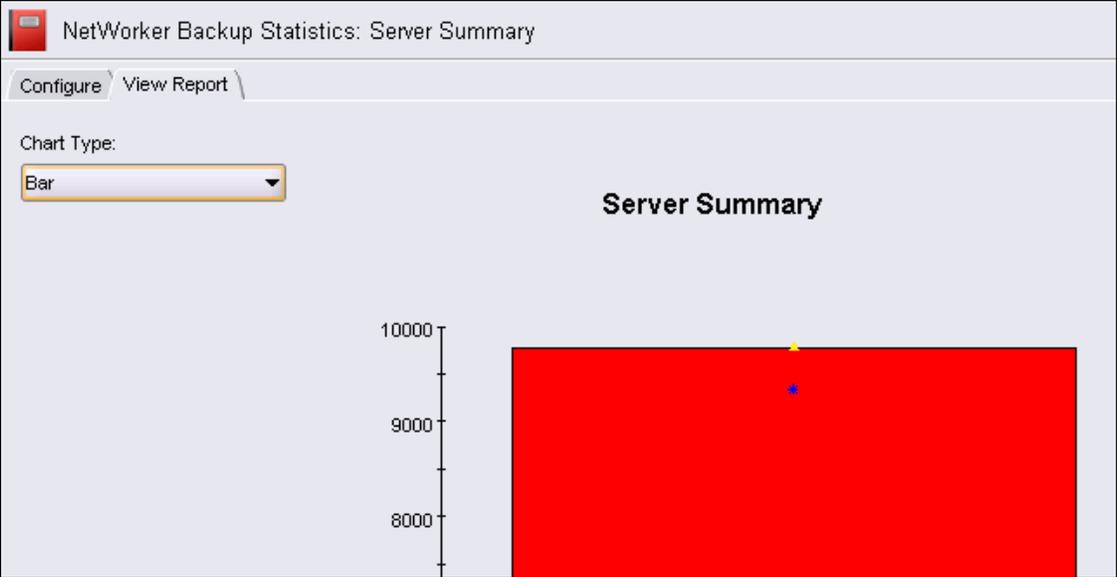
Step	Action
1	<p>From the Setup tab in the NetWorker Management Console right-click Users and create a New Console user with the following properties:</p> <p>Create User</p> <p>Identity Tab</p> <ul style="list-style-type: none">• <u>User Name</u>: John• <u>Password</u>: password1  <p>Permissions Tab</p> <ul style="list-style-type: none">• <u>Managed Hosts</u>: <u>Windows NetWorker Server</u>: nwwindows.emc.edu <u>Linux NetWorker Server</u>: nwlinux.emc.edu  <p>Click OK.</p>

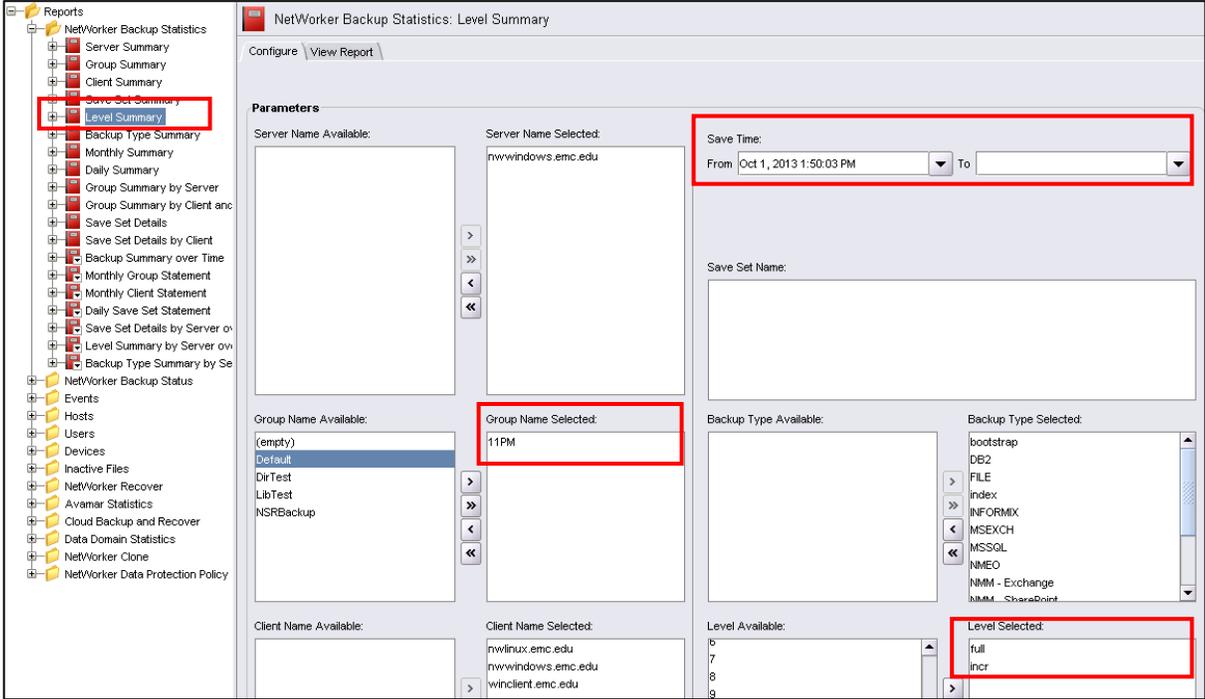
Step	Action
2	<p>From the Configuration tab right-click the name of your NetWorker server in the top of the tree and select Properties. Make the following additions:</p> <p>NetWorker Server Properties Setup Tab</p> <ul style="list-style-type: none"> • <u>Administrator</u>: append user=John,host=<FQDN of NetWorker Server> <div data-bbox="553 409 1292 993" data-label="Image"> </div> <p>Click OK.</p>
3	Close all NetWorker Administration and Console windows.
4	<p>Launch NMC and log in as John.</p> <div data-bbox="509 1278 1336 1671" data-label="Image"> </div>

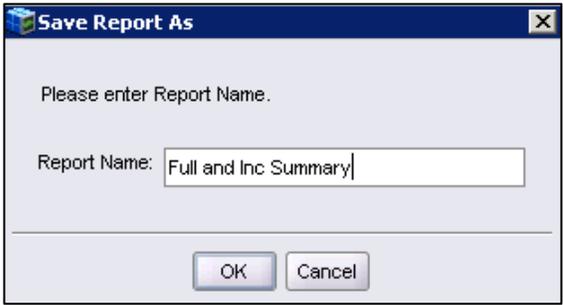
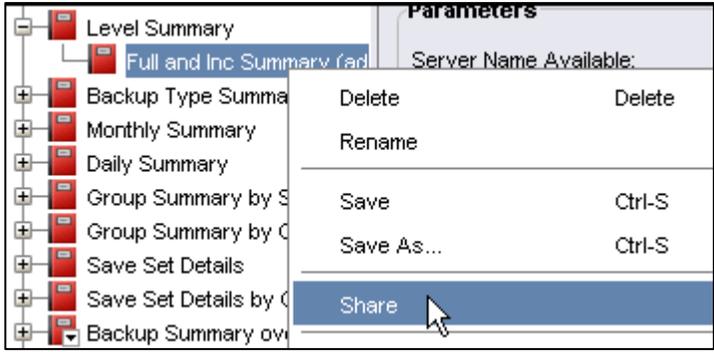
Step	Action
5	<p>From the Setup tab, attempt to create a new console user named Sally. Attempt to create another Console user named Sally. Why are you not able to?</p>  <p><u>Note:</u> Only users with the role of Console Security Administrator are allowed to create, modify, or delete a Console user.</p>
6	<p>While still logged in as John, launch the NetWorker Administration GUI for your NetWorker server.</p>
7	<p>Create a new time policy resource with the following properties:</p> <p>Create Policy</p> <ul style="list-style-type: none"> • <u>Name:</u> 4 Months • <u>Number of periods:</u> 4 • <u>Period:</u> Months  <p>Click OK.</p>

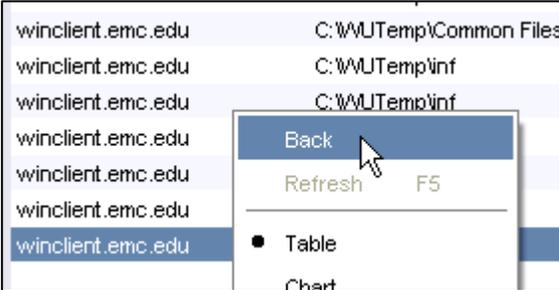
Step	Action
8	<p>Remove John from your NetWorker server's administrator list.</p> 
9	<p>Try to create a new 5 Months policy resource.</p>  <p>Notice that you no longer have permission to create a new resource.</p>
10	<p>Close all NetWorker and Console windows.</p>
11	<p>Launch NMC and log in as administrator.</p> 

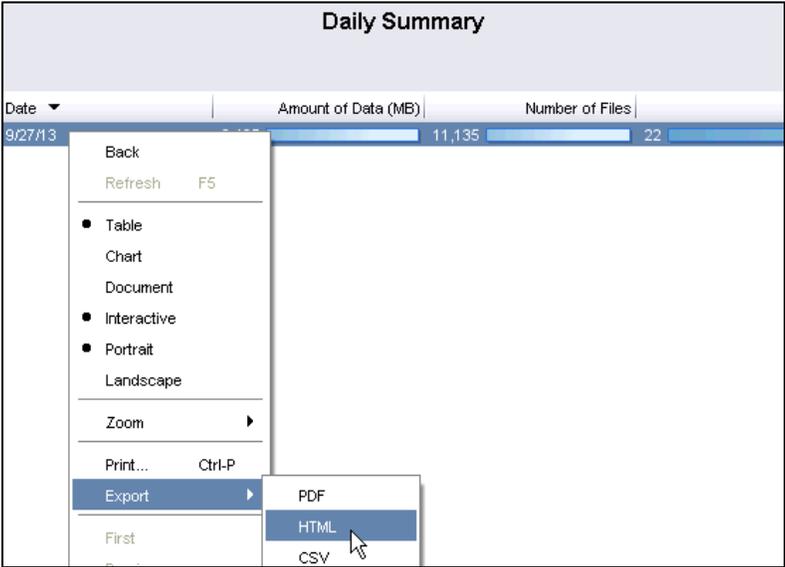
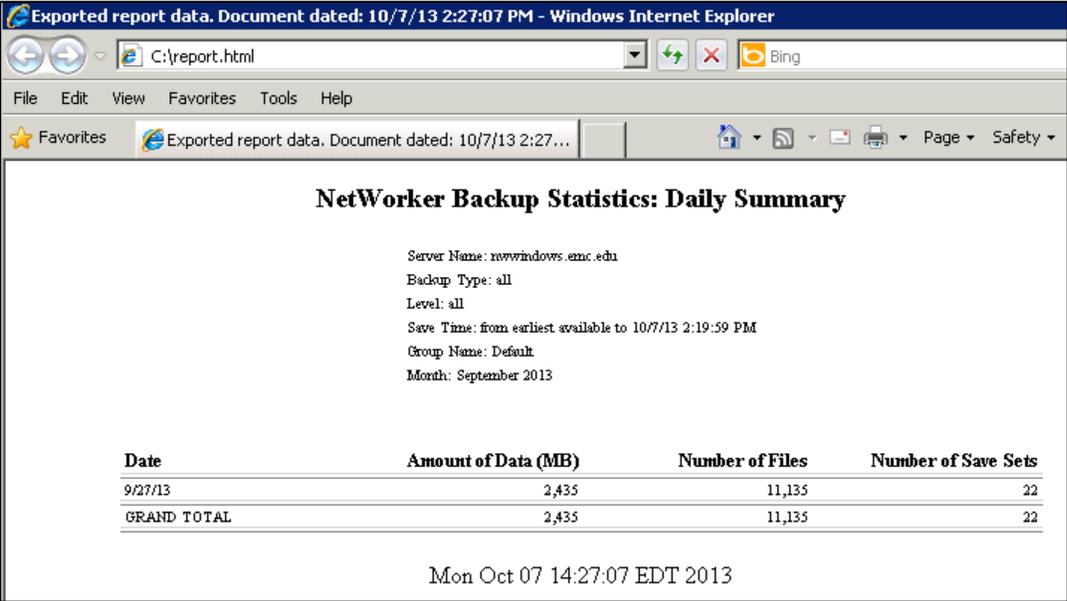
Step	Action
12	<p data-bbox="321 197 1409 260">From the Reports tab, expand the NetWorker Backup Statistics folder and select the Group Summary report.</p>  <p data-bbox="321 604 1198 636">Select the View Report tab to run the report with the default parameters.</p>  <p data-bbox="321 865 1279 896">Right-click anywhere on the report and select Chart to change the report format.</p>  <p data-bbox="321 1268 898 1299">From the Chart Type pull-down menu select Pie.</p> 

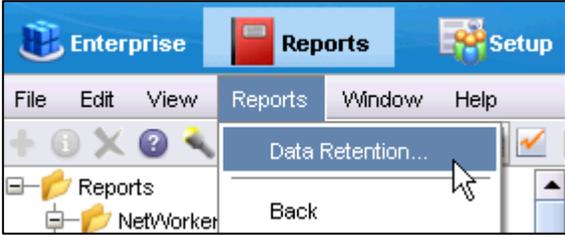
Step	Action
13	<p data-bbox="321 195 1312 226">From the Reports tab run the Server Summary report with the default parameters.</p>  <p data-bbox="321 653 898 684">Modify the report to be displayed as a bar chart.</p> 

Step	Action
14	<p>Run the Level Summary report and configure it to show only full and incr save sets backed up by the NetWorker server as part of the 11pm group within the last week.</p>  <p>Click View Report and go to the next step.</p>

Step	Action
15	<p data-bbox="321 193 1448 226">Right-click the report you just ran and select Save As. Save the report as Full and Inc Summary.</p> <div data-bbox="597 262 1250 436">  <p>A screenshot of a report menu. The menu items are: Save Set Summary, Level Summary, Backup Type Summary, Monthly Summary, and Daily Summary. The 'Save As...' option is highlighted in blue, and a mouse cursor is pointing at it. The keyboard shortcut 'Ctrl-S' is shown to the right of 'Save As...'. Below the menu items is the option 'Hide Other Users' Reports'.</p> </div> <div data-bbox="646 472 1209 777">  <p>A screenshot of the 'Save Report As' dialog box. The title bar says 'Save Report As'. The main text says 'Please enter Report Name.' Below this is a text input field containing 'Full and Inc Summary'. At the bottom of the dialog are 'OK' and 'Cancel' buttons.</p> </div> <p data-bbox="321 814 1318 848">Right-click the report you created and select Share to share it with all console users.</p> <div data-bbox="565 882 1279 1234">  <p>A screenshot of a report menu. The menu items are: Level Summary, Full and Inc Summary (selected), Backup Type Summary, Monthly Summary, Daily Summary, Group Summary by S, Group Summary by C, Save Set Details, Save Set Details by C, and Backup Summary over. The 'Share' option is highlighted in blue, and a mouse cursor is pointing at it. To the right of the menu is a 'Parameters' section with 'Server Name Available:' and two 'Delete' buttons.</p> </div>

Step	Action																																														
16	<p data-bbox="321 195 1352 226">View the default output generated by the Save Set Details by Server over Time report.</p> <div data-bbox="688 264 1159 405" style="border: 1px solid black; padding: 5px; margin: 10px 0;">  <ul style="list-style-type: none"> Monthly Client Statement Daily Save Set Statement <li style="background-color: #e0e0e0;">Save Set Details by Server over Time Level Summary by Server over Time </div> <p data-bbox="321 443 1495 510">Drill down through all the reports until you see details about each individual save set backed up for the Default group on a single day.</p> <div data-bbox="331 548 1515 915" style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <h3 style="text-align: center; margin: 0;">Save Set Details by Client</h3> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Client Name ▼</th> <th style="text-align: left;">Save Set Name</th> <th style="text-align: left;">Save Time</th> <th style="text-align: left;">Save Set ID</th> <th style="text-align: left;">Level</th> </tr> </thead> <tbody> <tr> <td>nwwindows.emc.edu</td> <td>bootstrap</td> <td>9/27/13 2:25:03 PM</td> <td>4182101373</td> <td>full</td> </tr> <tr> <td>nwwindows.emc.edu</td> <td>bootstrap</td> <td>9/27/13 2:54:41 PM</td> <td>4031108208</td> <td>full</td> </tr> <tr> <td>nwwindows.emc.edu</td> <td>bootstrap</td> <td>9/27/13 3:09:29 PM</td> <td>3913668584</td> <td>full</td> </tr> <tr> <td>nwwindows.emc.edu</td> <td>C:\Program Files\EMC NetW...</td> <td>9/27/13 2:23:16 PM</td> <td>4282764568</td> <td>full</td> </tr> <tr> <td>nwwindows.emc.edu</td> <td>C:\Program Files\EMC NetW...</td> <td>9/27/13 2:44:51 PM</td> <td>4165325349</td> <td>full</td> </tr> </tbody> </table> </div> <p data-bbox="321 993 1417 1024">Go back to the Daily Summary by right-clicking on the report and selecting the Back button.</p> <div data-bbox="644 1062 1203 1352" style="border: 1px solid black; padding: 5px; margin: 10px 0;">  <table border="1" style="width: 100%; border-collapse: collapse;"> <tbody> <tr> <td>winclient.emc.edu</td> <td>C:\WUtemp\Common Files</td> </tr> <tr> <td>winclient.emc.edu</td> <td>C:\WUtemp\inf</td> </tr> <tr> <td>winclient.emc.edu</td> <td>C:\WUtemp\inf</td> </tr> <tr> <td>winclient.emc.edu</td> <td></td> </tr> </tbody> </table> </div>	Client Name ▼	Save Set Name	Save Time	Save Set ID	Level	nwwindows.emc.edu	bootstrap	9/27/13 2:25:03 PM	4182101373	full	nwwindows.emc.edu	bootstrap	9/27/13 2:54:41 PM	4031108208	full	nwwindows.emc.edu	bootstrap	9/27/13 3:09:29 PM	3913668584	full	nwwindows.emc.edu	C:\Program Files\EMC NetW...	9/27/13 2:23:16 PM	4282764568	full	nwwindows.emc.edu	C:\Program Files\EMC NetW...	9/27/13 2:44:51 PM	4165325349	full	winclient.emc.edu	C:\WUtemp\Common Files	winclient.emc.edu	C:\WUtemp\inf	winclient.emc.edu	C:\WUtemp\inf	winclient.emc.edu									
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Step	Action
17	<p data-bbox="321 195 1474 226">Right-click the report and export it as an HTML file named report.html in the C:\ directory.</p>  <p data-bbox="321 869 841 900">Open the report.html file in a web browser.</p> 

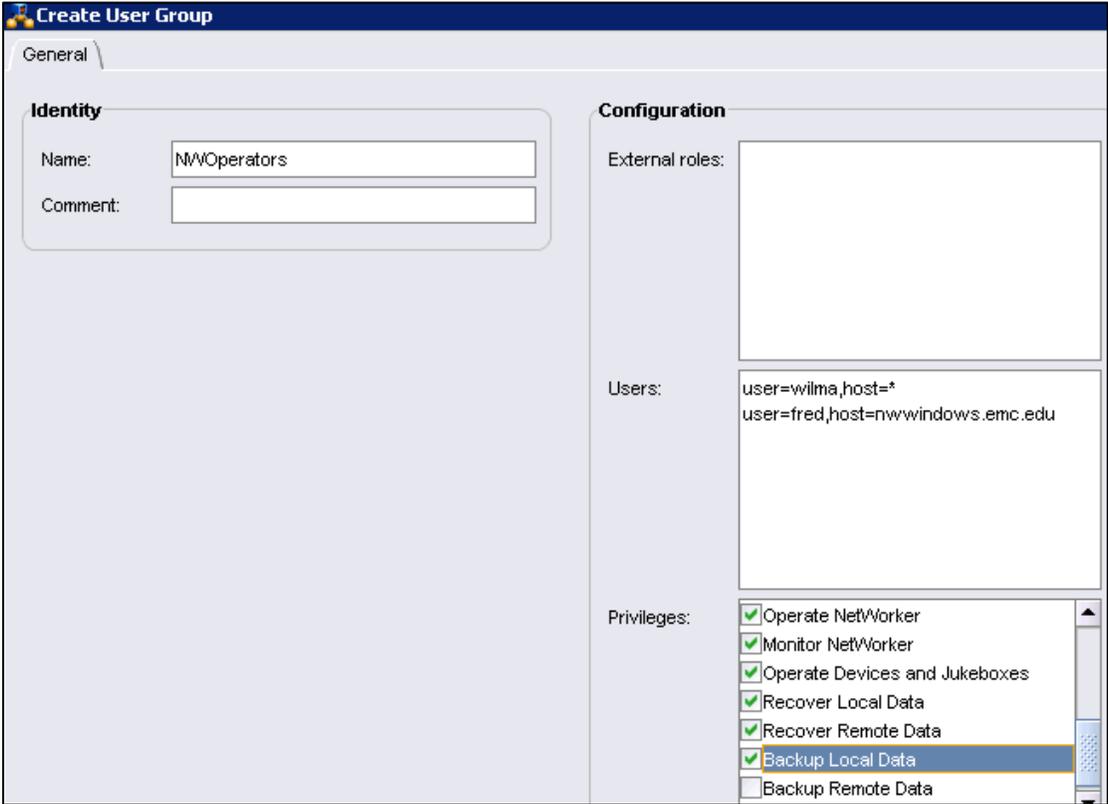
Step	Action
18	<p>Modify the Console database by selecting the Reports pull-down menu and selecting Data Retention.</p>  <p>Modify the Recover Statistics fields with the following options:</p> <p>Data Retention</p> <p>Recover Statistics</p> <ul style="list-style-type: none"> • <u>Number of Periods</u>: 3 • <u>Period</u>: Month  <p>Click OK.</p>

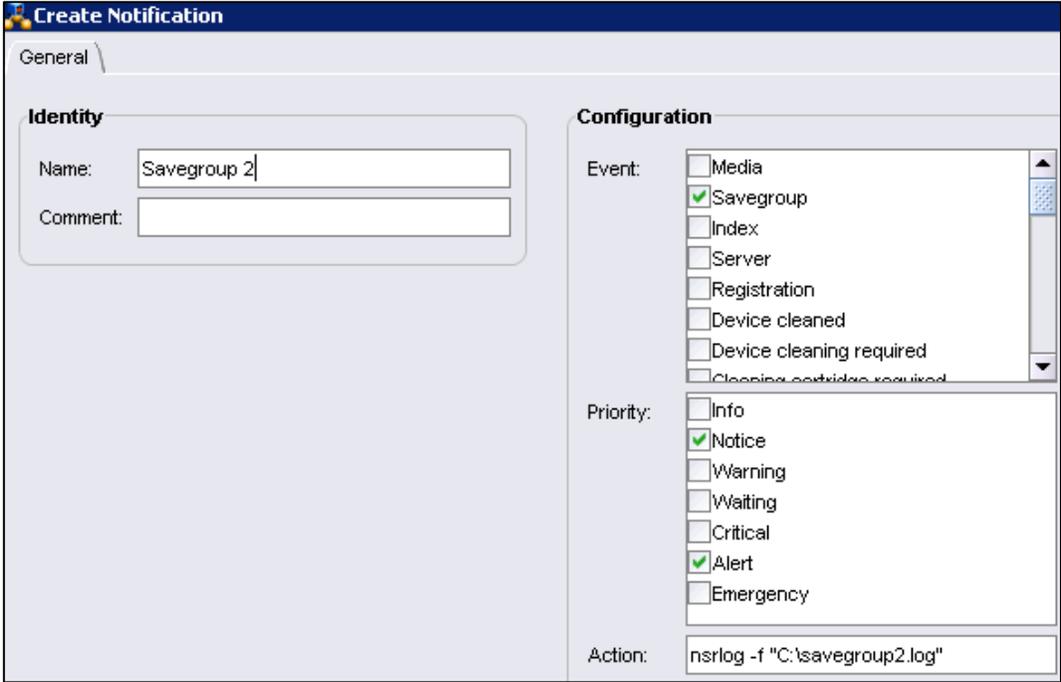
Step	Action																				
19	<p>From the Configuration tab in NetWorker Administration select Clients and modify the properties of your NetWorker server client that is currently not part of any group.</p> <p><u>Note:</u> The save set for this client should contain NMCASA: If the client selected does not contain this save set select the correct client.</p> <div data-bbox="483 369 1362 730" data-label="Image"> <table border="1"> <thead> <tr> <th>Name</th> <th>Scheduled backup</th> <th>Save set</th> </tr> </thead> <tbody> <tr> <td>nwlinux.emc...</td> <td>✓</td> <td>etc</td> </tr> <tr> <td>nwwindows...</td> <td>✓</td> <td>NMCASA:/qst on nwwindows/igto qst</td> </tr> <tr> <td>nwwindows...</td> <td>✓</td> <td></td> </tr> <tr> <td>winclient.emc...</td> <td>✓</td> <td></td> </tr> </tbody> </table> </div> <p>Add this client to the 11PM Group.</p> <div data-bbox="670 837 1174 999" data-label="Image"> </div> <p>Click OK.</p>	Name	Scheduled backup	Save set	nwlinux.emc...	✓	etc	nwwindows...	✓	NMCASA:/qst on nwwindows/igto qst	nwwindows...	✓		winclient.emc...	✓						
Name	Scheduled backup	Save set																			
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nwwindows...	✓	NMCASA:/qst on nwwindows/igto qst																			
nwwindows...	✓																				
winclient.emc...	✓																				
20	<p>From the Monitoring tab, run another backup of the 11PM group.</p>																				
21	<p>View the Details of the 11PM group and validate that the console backup completes successfully.</p> <div data-bbox="548 1251 1297 1499" data-label="Image"> <table border="1"> <thead> <tr> <th>Client Name</th> <th>Save Set</th> <th>Level</th> <th>Type</th> </tr> </thead> <tbody> <tr> <td>nwwindows...</td> <td>nwwindows.emc.edu:index</td> <td>full</td> <td></td> </tr> <tr> <td>nwwindows...</td> <td>CONSOLE_BACKUP_FILES</td> <td></td> <td></td> </tr> <tr> <td>nwwindows...</td> <td>NMCASA:/qst on nwwindows/igto_...</td> <td>full</td> <td></td> </tr> <tr> <td>winclient.emc...</td> <td>C:\Windows\Help</td> <td>full</td> <td></td> </tr> </tbody> </table> </div>	Client Name	Save Set	Level	Type	nwwindows...	nwwindows.emc.edu:index	full		nwwindows...	CONSOLE_BACKUP_FILES			nwwindows...	NMCASA:/qst on nwwindows/igto_...	full		winclient.emc...	C:\Windows\Help	full	
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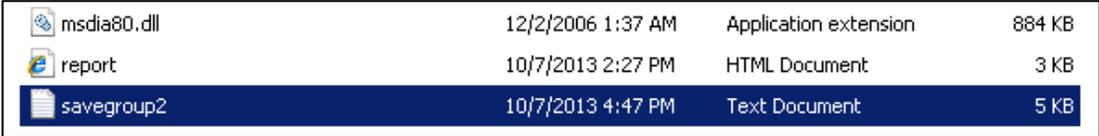
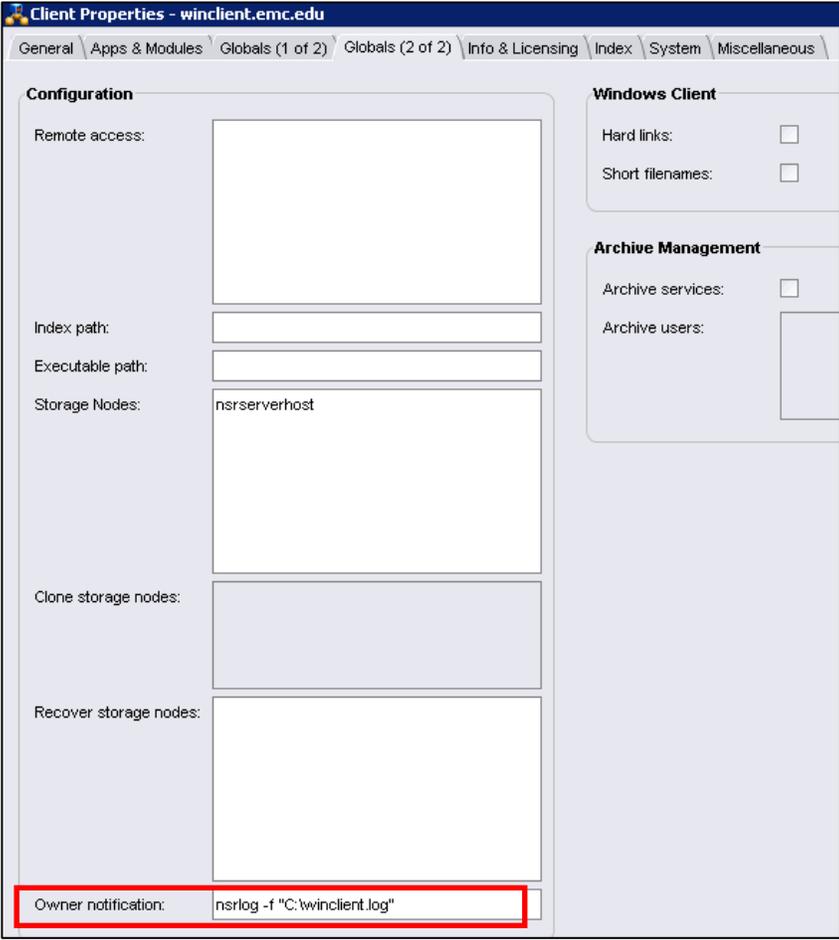
End of Lab Exercise 11-1

Lab Exercise 11-2: Administer the NetWorker Server

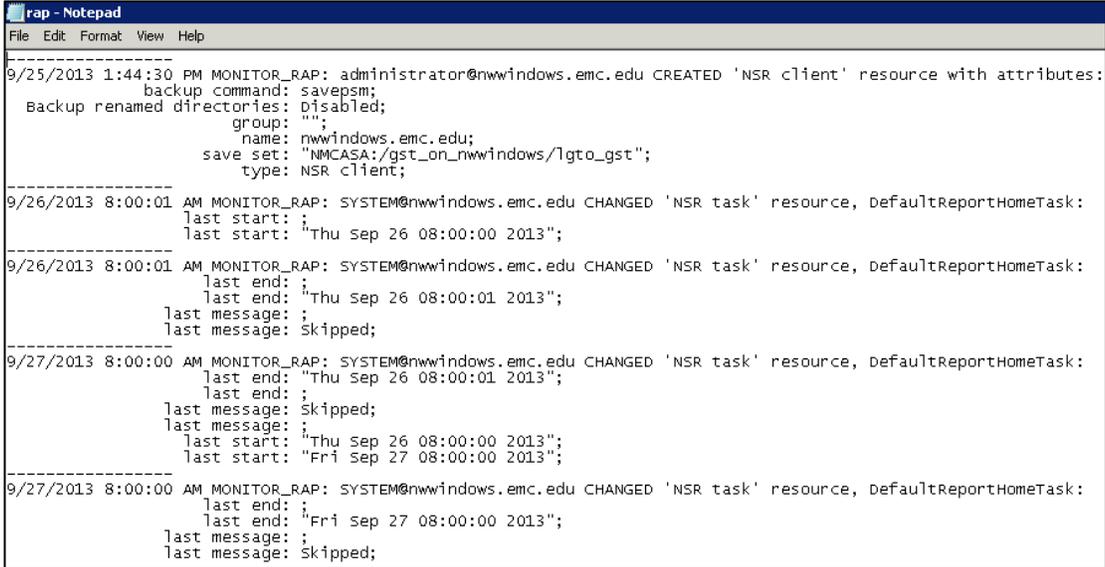
Step	Action
1	<p>On your NetWorker server view the contents of the following NetWorker log files:</p> <ul style="list-style-type: none"> ○ messages ○ summary <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <pre> messages - Notepad File Edit Format View Help Sep 25 11:03:00 nwwindows.emc.edu: NetWorker server: (notice) started Sep 25 11:03:01 nwwindows.emc.edu: NetWorker index: (notice) checking index for 'nwwindows.emc.edu' Sep 25 11:03:30 nwwindows.emc.edu: NetWorker media: (info) The nrsnmnd process is started on host 'nwwindows.emc.edu' Sep 25 11:17:20 nwwindows.emc.edu: NetWorker server: (notice) started Sep 25 11:17:20 nwwindows.emc.edu: NetWorker index: (notice) checking index for 'nwwindows.emc.edu' Sep 25 11:17:20 nwwindows.emc.edu: NetWorker index: (notice) C:\Program Files\EMC NetWorker\nsr\index\nwwindows.emc.edu Sep 25 11:17:20 nwwindows.emc.edu: NetWorker index: (notice) Completed checking 1 client(s) Sep 25 11:17:50 nwwindows.emc.edu: NetWorker media: (info) The nrsnmnd process is started on host 'nwwindows.emc.edu' Sep 25 13:16:59 nwwindows.emc.edu: NetWorker server: (notice) started Sep 25 13:16:59 nwwindows.emc.edu: NetWorker index: (notice) checking index for 'nwwindows.emc.edu' Sep 25 13:16:59 nwwindows.emc.edu: NetWorker index: (notice) C:\Program Files\EMC NetWorker\nsr\index\nwwindows.emc.edu Sep 25 13:16:59 nwwindows.emc.edu: NetWorker index: (notice) Completed checking 1 client(s) Sep 25 13:17:28 nwwindows.emc.edu: NetWorker media: (info) The nrsnmnd process is started on host 'nwwindows.emc.edu' Sep 26 00:02:31 nwwindows.emc.edu: NetWorker registration: (warning) NetWorker evaluation mode will expire in 30 da Sep 26 00:02:31 nwwindows.emc.edu: NetWorker registration: (warning) NetWorker evaluation mode will expire in 30 da Sep 26 08:00:01 nwwindows.emc.edu: NetWorker task manager: (info) Starting 'NSR task' 'defaultReportHomeTask' Sep 26 08:00:01 nwwindows.emc.edu: NetWorker task manager: (critical) 'NSR task' 'defaultReportHomeTask' failed: UR Sep 27 08:00:00 nwwindows.emc.edu: NetWorker task manager: (info) Starting 'NSR task' 'defaultReportHomeTask' Sep 27 08:00:00 nwwindows.emc.edu: NetWorker task manager: (critical) 'NSR task' 'defaultReportHomeTask' failed: UR Sep 27 14:00:21 nwwindows.emc.edu: NetWorker media: (info) The storage node nwwindows.emc.edu is ready for use. </pre> </div> <p>If your NetWorker server is on Linux, these log files will be empty as these messages will be logged to syslog or emailed the root user on the system, depending on the particular notification. This behavior varies from Windows based NetWorker servers where these messages are logged in the displayed files.</p>
2	<p>View the contents of the NetWorker daemon.raw log file between yesterday and today. (Adjust the times in order to view some log messages.)</p> <p>First, change to the NetWorker log directory:</p> <ul style="list-style-type: none"> • /nsr/logs (Linux NetWorker server) • C:\Program Files\EMC NetWorker\nsr\logs (Windows NetWorker server) <pre>nsr_render_log -S "month day time" -E "month day time" daemon.raw</pre> <p>For example,</p> <pre>nsr_render_log -S "yesterday" -E "today" daemon.raw</pre> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <pre>c:\Program Files\EMC NetWorker\nsr\logs>nsr_render_log -S "yesterday" -E "today" daemon.raw_</pre> </div>
3	<p>View the last 50 lines of the GST log file, gstd.raw</p> <ul style="list-style-type: none"> • <code>cd /opt/lgtonmc/logs</code> • <code>nsr_render_log -B -50 gstd.raw</code>

Step	Action
4	<p>From the Configuration tab, select User Groups. In the User Groups window right-click and create a New user group with the following properties:</p> <p>Create User Group</p> <p>General Tab</p> <ul style="list-style-type: none"> • Name: NWOperators • Users: user=wilma,host=* user=fred,host=<networker_server_name> • Privileges: Operate NetWorker Monitor NetWorker Operate Devices and Jukeboxes Recover Local data Backup Local data  <p>Click OK.</p>

Step	Action
5	<p>From the Configuration tab, select Notifications. Make a copy of the Savegroup completion notification.</p>  <p>Enter the following information in the Create Notification window:</p> <p>Create Notification General Tab</p> <ul style="list-style-type: none"> • <u>Name:</u> Savegroup 2 • <u>Action:</u> nsrlog -f "c:\savegroup2.log" (Windows) /bin/cat >> /tmp/savegroup2.log (Linux)  <p>Click OK.</p>
6	Perform a backup of the 11PM group.

Step	Action												
7	<p>When the backup completes, view the contents of the savegroup2.log created by your new notification.</p>  <table border="1" data-bbox="362 300 1461 436"> <tr> <td>msdia80.dll</td> <td>12/2/2006 1:37 AM</td> <td>Application extension</td> <td>884 KB</td> </tr> <tr> <td>report</td> <td>10/7/2013 2:27 PM</td> <td>HTML Document</td> <td>3 KB</td> </tr> <tr> <td>savegroup2</td> <td>10/7/2013 4:47 PM</td> <td>Text Document</td> <td>5 KB</td> </tr> </table>	msdia80.dll	12/2/2006 1:37 AM	Application extension	884 KB	report	10/7/2013 2:27 PM	HTML Document	3 KB	savegroup2	10/7/2013 4:47 PM	Text Document	5 KB
msdia80.dll	12/2/2006 1:37 AM	Application extension	884 KB										
report	10/7/2013 2:27 PM	HTML Document	3 KB										
savegroup2	10/7/2013 4:47 PM	Text Document	5 KB										
8	<p>From the Configuration tab edit the properties of the winclient.emc.edu client in the 11PM group and make the following changes:</p> <p>Client Properties – winclient.emc.edu Globals (2 of 2)</p> <ul style="list-style-type: none"> Owner notification: <u>Windows:</u> <code>nsrlog -f "C:\winclient.log"</code> <u>Linux:</u> <code>/bin/mail -s "Winclient Backed up" root</code> 												
9	Perform a backup of the 11PM group.												

Step	Action
10	<p>Validate that the client notification occurred by checking for the file on the NetWorker server if the NetWorker server is on Windows, or checking the mail on the Linux NetWorker server by typing the command mail.</p> <p><u>Windows</u>: View log file created</p> <div data-bbox="735 371 1086 518" style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;">  </div> <p><u>Linux</u>: Type mail and note the message was sent showing backup completion.</p> <div data-bbox="418 625 1403 1199" style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <pre> root@nwlinux:/tmp [root@nwlinux tmp]# mail Mail version 8.1 6/6/93. Type ? for help. "/var/spool/mail/root": 99 messages 5 new 99 unread U 81 root@nwlinux.emc.edu Wed Oct 9 14:55 24/1178 "nwlinux.emc.edu's Boo" U 82 root@nwlinux.emc.edu Wed Oct 9 14:55 60/4232 "nwlinux.emc.edu's sav" U 83 root@nwlinux.emc.edu Wed Oct 9 14:55 17/837 "Space occupied by ina" U 84 root@nwlinux.emc.edu Wed Oct 9 15:00 17/877 "Space occupied by ina" U 85 root@nwlinux.emc.edu Wed Oct 9 15:01 25/1247 "nwlinux.emc.edu's Boo" U 86 root@nwlinux.emc.edu Wed Oct 9 15:01 17/837 "Space occupied by ina" U 87 root@nwlinux.emc.edu Wed Oct 9 15:01 60/4232 "nwlinux.emc.edu's sav" U 88 root@nwlinux.emc.edu Wed Oct 9 15:06 17/877 "Space occupied by ina" U 89 root@nwlinux.emc.edu Wed Oct 9 15:07 26/1316 "nwlinux.emc.edu's Boo" U 90 root@nwlinux.emc.edu Wed Oct 9 15:07 17/837 "Space occupied by ina" U 91 root@nwlinux.emc.edu Wed Oct 9 15:07 60/4232 "nwlinux.emc.edu's sav" U 92 root@nwlinux.emc.edu Wed Oct 9 15:12 17/877 "Space occupied by ina" U 93 root@nwlinux.emc.edu Wed Oct 9 15:13 60/4232 "nwlinux.emc.edu's sav" U 94 root@nwlinux.emc.edu Wed Oct 9 15:13 38/2360 "Winclient Backed Up" >N 95 root@nwlinux.emc.edu Wed Oct 9 15:16 16/867 "Space occupied by ina" N 96 root@nwlinux.emc.edu Wed Oct 9 15:17 27/1444 "nwlinux.emc.edu's Boo" N 97 root@nwlinux.emc.edu Wed Oct 9 15:17 16/827 "Space occupied by ina" N 98 root@nwlinux.emc.edu Wed Oct 9 15:17 59/4222 "nwlinux.emc.edu's sav" N 99 root@nwlinux.emc.edu Wed Oct 9 15:17 37/2350 "Winclient Backed Up" </pre> </div>

Step	Action
11	<p>From a command prompt or Windows explorer view the contents of the RAP log. Note the entries for the objects created.</p> <p>RAP Log Path</p> <ul style="list-style-type: none"> • /nsr/logs/rap.log (Linux) • C:\Program Files\EMC NetWorker\nsr\logs\rap.log (Windows)  <pre> rap - Notepad File Edit Format View Help 9/25/2013 1:44:30 PM MONITOR_RAP: administrator@nwwindows.emc.edu CREATED 'NSR client' resource with attributes: backup command: savepsm; Backup renamed directories: Disabled; group: ""; name: nwwindows.emc.edu; save set: "NMCASA:/gst_on_nwwindows/lgto_gst"; type: NSR client; ----- 9/26/2013 8:00:01 AM MONITOR_RAP: SYSTEM@nwwindows.emc.edu CHANGED 'NSR task' resource, DefaultReportHomeTask: last start: ; last start: "Thu Sep 26 08:00:00 2013"; ----- 9/26/2013 8:00:01 AM MONITOR_RAP: SYSTEM@nwwindows.emc.edu CHANGED 'NSR task' resource, DefaultReportHomeTask: last end: ; last end: "Thu Sep 26 08:00:01 2013"; last message: ; last message: Skipped; ----- 9/27/2013 8:00:00 AM MONITOR_RAP: SYSTEM@nwwindows.emc.edu CHANGED 'NSR task' resource, DefaultReportHomeTask: last end: ; last end: "Thu Sep 26 08:00:01 2013"; last message: Skipped; last message: ; last start: "Thu Sep 26 08:00:00 2013"; last start: "Fri Sep 27 08:00:00 2013"; ----- 9/27/2013 8:00:00 AM MONITOR_RAP: SYSTEM@nwwindows.emc.edu CHANGED 'NSR task' resource, DefaultReportHomeTask: last end: ; last end: "Fri Sep 27 08:00:00 2013"; last message: ; last message: Skipped; </pre>

End of Lab Exercise 11-2

End of Lab 11

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Lab 13: Recover NetWorker Server Control Data

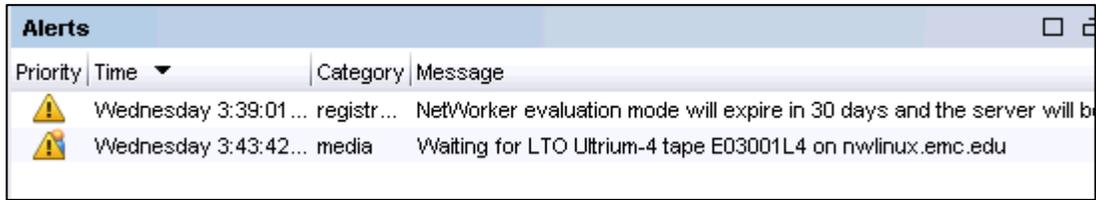
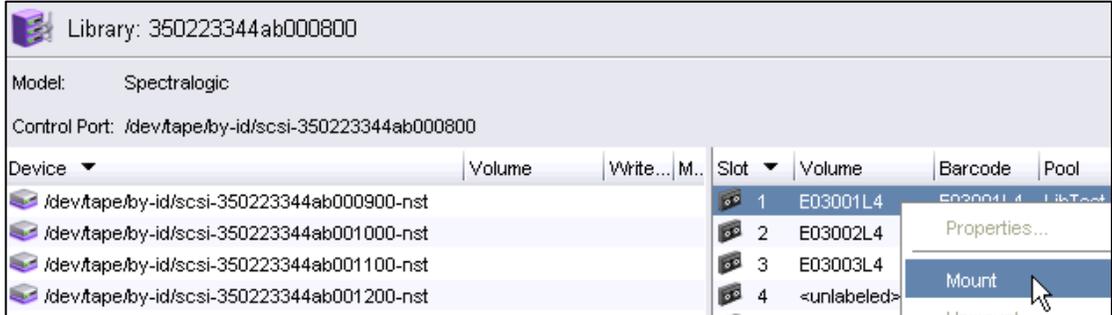
Purpose:	In this lab, you perform a recovery of the NetWorker media and resource databases and a client CFI.
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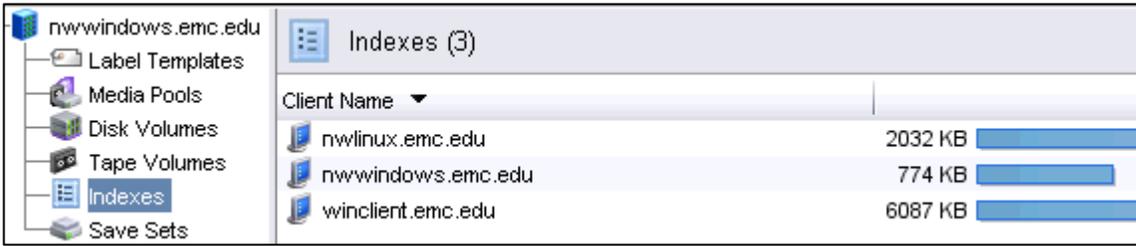
Tasks:	In this lab you: <ul style="list-style-type: none">• Perform a recovery of the bootstrap save set.• Perform a recovery of the client file indexes.• Verify that the recoveries were successful.
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Lab Exercise 13-1: Recover the Bootstrap and CFI Save Sets

Step	Action
	<p>Simulate a Disaster</p>
1	<p>Use the mminfo command to identify the necessary bootstrap information.</p> <pre>mminfo -B</pre> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <pre>[root@nwlinux tmp]# mminfo -B date time level ssid file record volume 10/08/2013 05:03:11 PM full 4183061260 0 0 Disk1.001 10/08/2013 05:27:32 PM full 4015290561 0 0 Disk1.001 10/08/2013 05:31:45 PM full 3897850302 0 0 Disk1.001 10/09/2013 10:02:42 AM full 3763692031 0 0 Disk1.001 10/09/2013 11:05:07 AM full 3545591969 8 0 E03002L4 10/09/2013 02:45:11 PM full 3075843124 0 0 Disk1.001 10/09/2013 02:55:44 PM full 2958403246 0 0 Disk1.001 10/09/2013 03:01:39 PM full 2840963088 0 0 Disk1.001 10/09/2013 03:07:05 PM full 2723522903 0 0 Disk1.001 10/09/2013 03:13:30 PM full 2606082775 0 0 Disk1.001 10/09/2013 03:17:47 PM full 2488642521 0 0 Disk1.001</pre> </div> <p>Write down the following information pertaining to the bootstrap save set.</p> <p>SSID: _____</p> <p>Volume Name: _____</p> <p>File Number: _____</p> <p><u>Note</u>: This information is typically obtained from the bootstrap notification via email or log depending on how you have it configured. This lab illustrated an alternative way to retrieve it in case the bootstrap report is not available.</p>
2	<p>Shut down all NetWorker processes on the NetWorker server.</p> <p style="text-align: center;">nsr_shutdown or shut down the NetWorker Remote Exec service</p>
3	<p>Simulate a disaster by renaming the following directories under /nsr or C:\Program Files\EMC NetWorker\nsr:</p> <ul style="list-style-type: none"> • <u>Rename</u>: mm to mm.orig • <u>Rename</u>: res to res.orig • <u>Rename</u>: index to index.orig

Step	Action										
4	<p>Start the NetWorker and NMC server daemons.</p> <p><u>Start the following services:</u> (Windows)</p> <ul style="list-style-type: none"> • NetWorker Remote Exec Service • NetWorker Backup and Recover Server • EMC GST Service <p><u>Run the following commands:</u> (Linux)</p> <ul style="list-style-type: none"> • <code>/etc/init.d/networker start</code> 										
5	<p>Notice that the directories you renamed were recreated. However, the media database and CFIs are now empty and the resource database contains only the preconfigured resources created during installation.</p> <div data-bbox="542 701 1295 940" data-label="Table"> <table border="1"> <tr> <td>mm</td> <td>10/8/2013 9:36 AM</td> </tr> <tr> <td>mm.orig</td> <td>10/8/2013 9:01 AM</td> </tr> <tr> <td>plugins</td> <td>9/25/2013 11:01 AM</td> </tr> <tr> <td>res</td> <td>10/8/2013 9:36 AM</td> </tr> <tr> <td>res.orig</td> <td>10/8/2013 9:00 AM</td> </tr> </table> </div> <p>Log in to the NetWorker Management Console and validate that your custom configuration is no longer there.</p>	mm	10/8/2013 9:36 AM	mm.orig	10/8/2013 9:01 AM	plugins	9/25/2013 11:01 AM	res	10/8/2013 9:36 AM	res.orig	10/8/2013 9:00 AM
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res.orig	10/8/2013 9:00 AM										
	<p>Recover the bootstrap save set.</p>										
6	<p>From the Devices tab configure the local AFTD device that had the nsrbackup.01 volume mounted in it before the “Disaster”.</p> <p><u>Note:</u> Do <i>not</i> label your AFTD’s as this erases all data on them.</p> <div data-bbox="472 1402 1367 1675" data-label="Image"> </div>										

Step	Action
7	<p>From a command prompt execute nsrdr and respond to the prompts.</p> <pre data-bbox="337 262 1498 409">Using the device: nwlinux_aftd1 to recover the bootstrap Enter the latest bootstrap save set id [0]: 2488642521 Scanning nwlinux_aftd1 for save set 2488642521; this may take a while... █</pre> <p>When prompted to replace the res database select Yes.</p>
8	<p>When prompted to recover client file indexes, select Yes to all clients.</p> <pre data-bbox="337 609 1498 693">The NetWorker server is operational after the disaster recovery completed. Do you want to do client file index recovery? (Clients having indexes for Server nwlinux.emc.edu will be recovered Y(yes)/N(no)? [Y] █</pre> <p>When prompted if you are sure you want to continue, type Y.</p> <pre data-bbox="337 798 1498 955">You have selected the option to recover the client file indexes for all configur ed clients. This process is lengthy and will overwrite current client file inde x entries for all the clients Do you want to continue? Y(yes)/N(no)? [N] Y█</pre> <p>While this is running, log in to the NetWorker Management Console and look for any alerts.</p> 
9	<p>If an alert is pending requesting a tape to be mounted, mount the tape.</p> 

Step	Action										
10	<p>Monitor the nsrdr recovery and validate that it completes successfully.</p> <pre data-bbox="324 262 1510 588"> Waiting for client file Index recovery to complete.It may take some time Recover start time: Wed 09 Oct 2013 03:43:42 PM EDT Recover start time: Wed 09 Oct 2013 03:43:42 PM EDT Recover completion time: Wed 09 Oct 2013 03:43:42 PM EDT Recover completion time: Wed 09 Oct 2013 03:43:42 PM EDT Recover start time: Wed 09 Oct 2013 03:53:43 PM EDT Recover completion time: Wed 09 Oct 2013 03:53:43 PM EDT The client file index recovery completed. You have new mail in /var/spool/mail/root [root@nwlinux nsr]# █ </pre>										
11	<p>From the Media tab of the NetWorker Administration GUI select Indexes and note that the client file indexes have been rebuilt.</p>  <table border="1" data-bbox="349 751 1485 997"> <thead> <tr> <th colspan="2">Indexes (3)</th> </tr> <tr> <th>Client Name</th> <th>Size</th> </tr> </thead> <tbody> <tr> <td>nwlinux.emc.edu</td> <td>2032 KB</td> </tr> <tr> <td>nwwindows.emc.edu</td> <td>774 KB</td> </tr> <tr> <td>winclient.emc.edu</td> <td>6087 KB</td> </tr> </tbody> </table>	Indexes (3)		Client Name	Size	nwlinux.emc.edu	2032 KB	nwwindows.emc.edu	774 KB	winclient.emc.edu	6087 KB
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End of Lab Exercise 13-1

End of Lab 13

End of Labs for EMC NetWorker Installation, Configuration and Administration