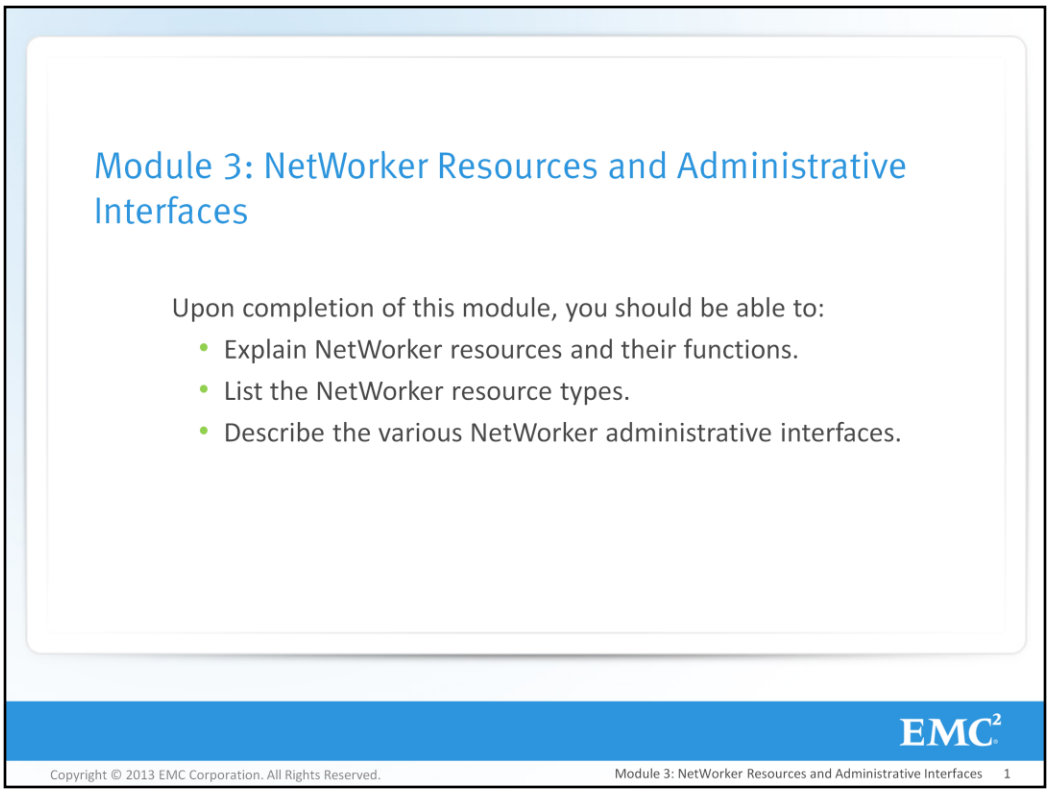
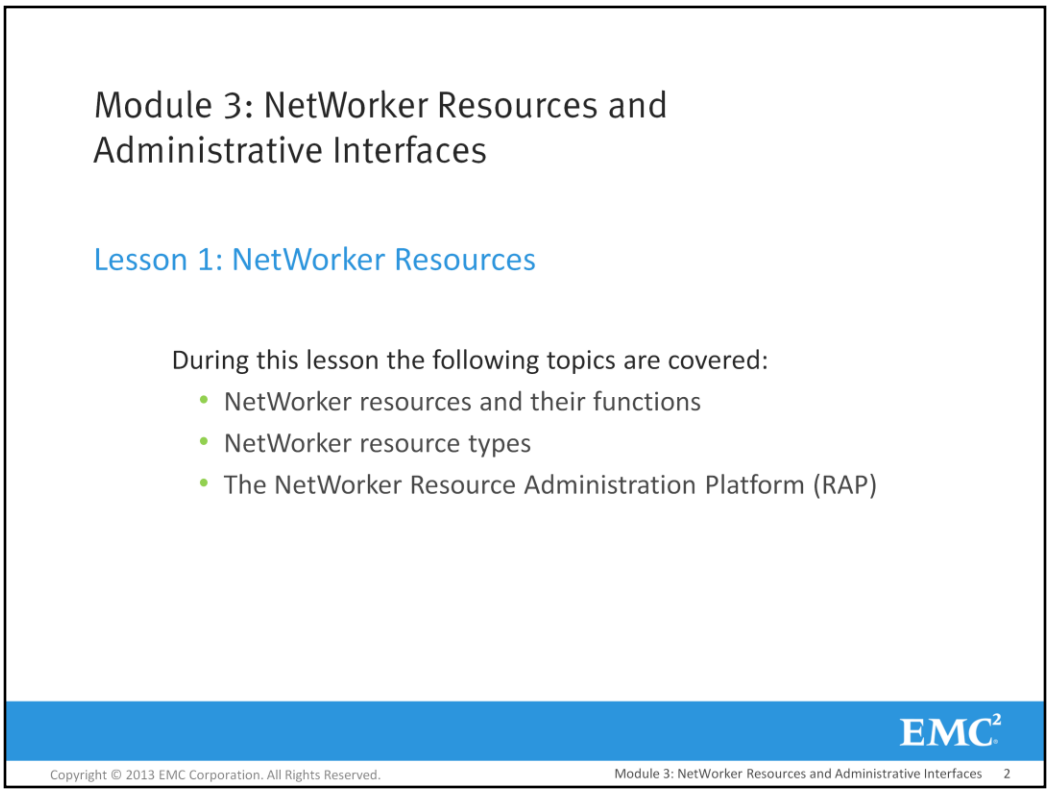
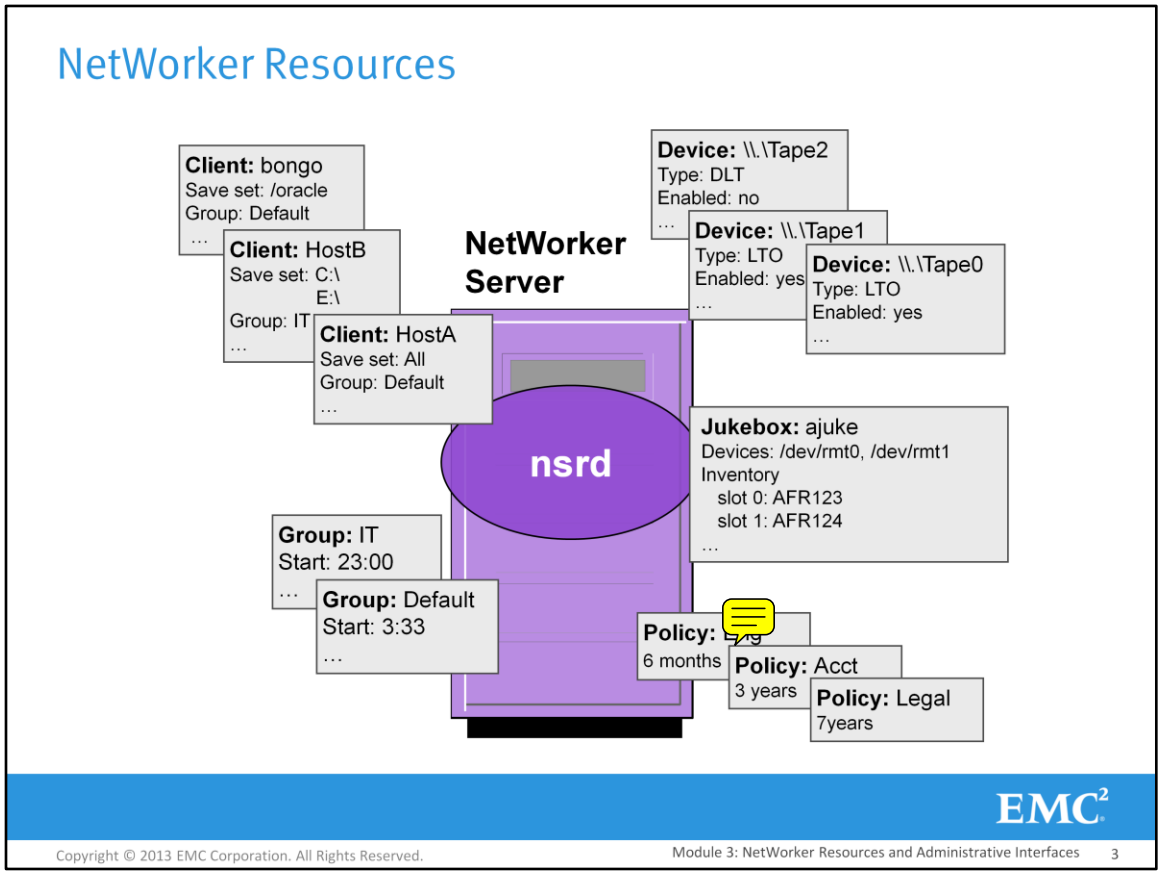


This module focuses on the various NetWorker resource types and their functions. The several NetWorker administrative interfaces are also introduced.



This lesson covers an introduction to NetWorker resources and the Resource Administration Platform (RAP) protocol.



Resources are used to configure a NetWorker environment. These resources are managed as configurable objects by the NetWorker administrator. Resource types include clients, devices, tape libraries, backup policies, backup start times, and numerous other configurable components of the backup environment. Anything configurable to NetWorker is configured as a resource.

A resource is defined by its **attributes** and the values of those attributes. For example, in the slide above, the client resource for **bongo** has a ***Save set*** attribute configured such that the **/oracle** directory is backed up, and a ***Group*** attribute of **Default**, which causes bongo to be backed up at 3:33 am. There can be multiple configurations for each resource type.

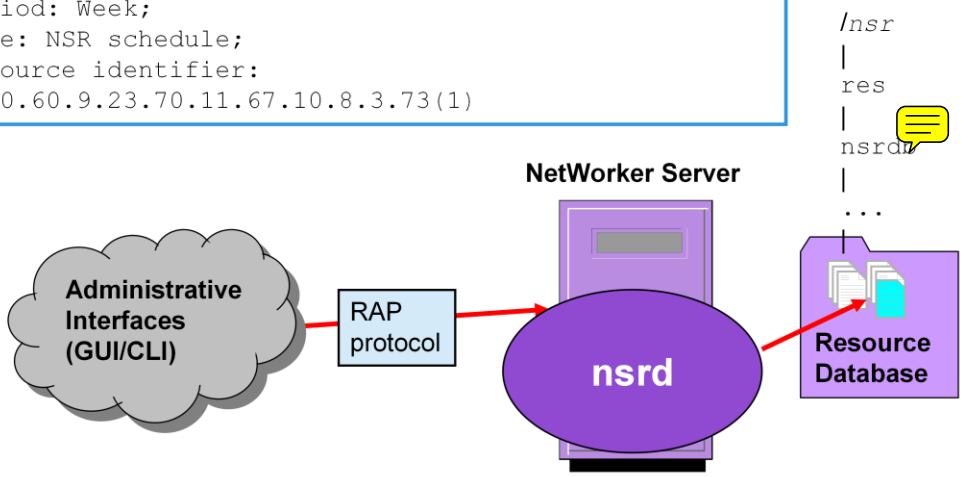
Nearly all of the resources are stored on the NetWorker server and managed by the `nsrd` daemon.

A few resources are managed on the NetWorker client.

NetWorker Resource (RAP) Database

Sample contents of a resource file in `/nsr/res/nsrdb/*/*`

```
action: full incr incr incr incr incr incr;
comment:;
name: Default;
override:;
period: Week;
type: NSR schedule;
resource identifier:
49.0.60.9.23.70.11.67.10.8.3.73(1)
```



EMC²

NetWorker uses the **Resource Database** to store the resources for a NetWorker data zone.

Resource database information is distributed using the Resource Administration Platform (*RAP*) protocol. The information in the resource database is managed via NetWorker administrative interfaces. The resource database exists on the NetWorker server. There is one file per configured resource and each file is stored in any of ten subdirectories (00-09) under /nsr/res/nsrdb. The master NetWorker server daemon, nsrd, handles all queries and update requests to the database.

A small amount of resource information exists on NetWorker clients in the /nsr/res/nsrladb directory.

Important: Resource files are text files and are to be modified only using NetWorker's GUI and command-line interfaces. DO NOT EDIT THEM!

Note: Other files and directories may exist in /nsr/res. These are discussed as necessary later in the course.

NetWorker Resource Types

Resource Type	Function
NSR client	Configure supported clients for backup/recovery.
NSR device	Configure backup devices.
NSR directive	Configure optional directions clients are to follow for backup.
NSR group	Configure start time for scheduled backups. Group clients together.
NSR jukebox	Configure media library/autochanger/jukebox.
NSR label	Configure pool (volume) label templates.
NSR license	Enable (license) a NetWorker product or feature.
NSR notification	Configure actions to be taken when NetWorker events occur.
NSR policy	Configure lengths of time. Used to set aging values for backups and volumes.
NSR pool	Configure characteristics for matching a save set to a set of volumes.
NSR schedule	Set the level (Full, incremental, …) for backups based on day of week or month.
NSR stage	Configure management of save sets stored on file type (disk backup) volumes.
NSR storage node	Configure a remote storage node to be scanned for tape devices.
NSR usergroup	Configure user access privileges.
NSR	Configure the NetWorker server's attributes.

EMC²

NetWorker uses many resource types to define its configuration, with each resource type serving a specific purpose and representing a configuration point for the product. The slide lists **some** of the many resource types managed by the NetWorker server with a brief description of the function of each one. These resource types are discussed within this course.

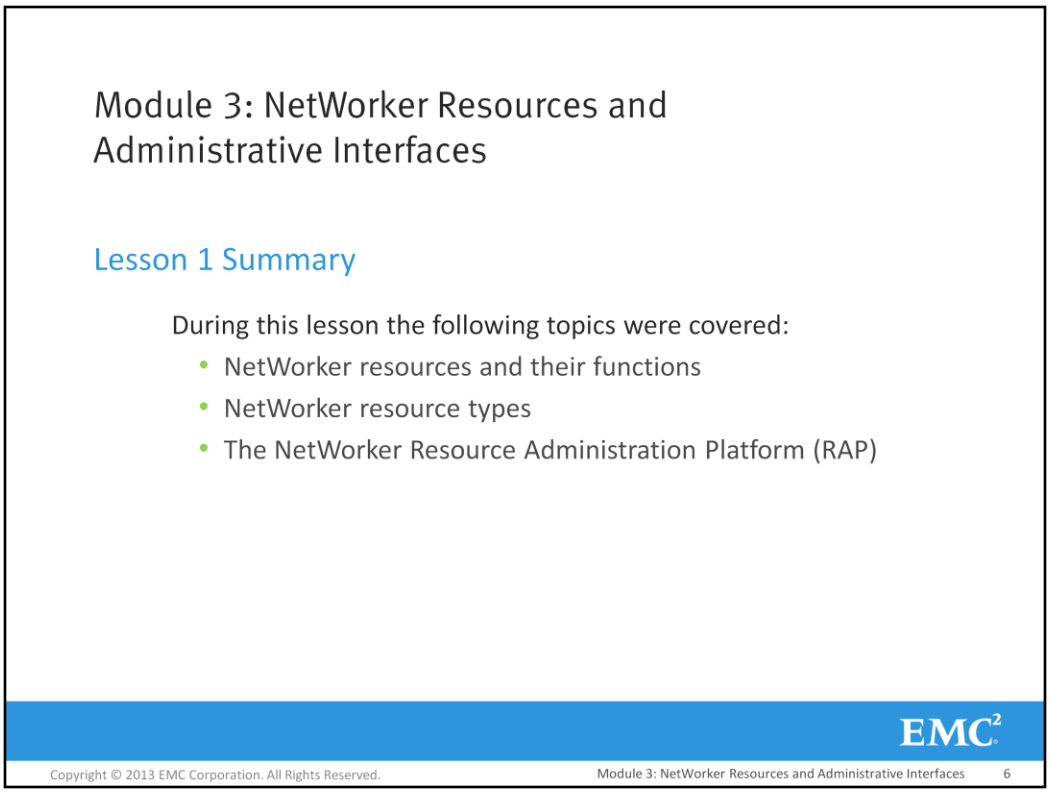
Each NetWorker resource type has a manual page (man page) named **nsr_*resourcetype***(5). For example, the man page nsr_client(5) describes the attributes of a client resource and the function of each attribute. Resources are also documented in the *EMC NetWorker Administration Guide*.

Example - View the man page for the device resource.

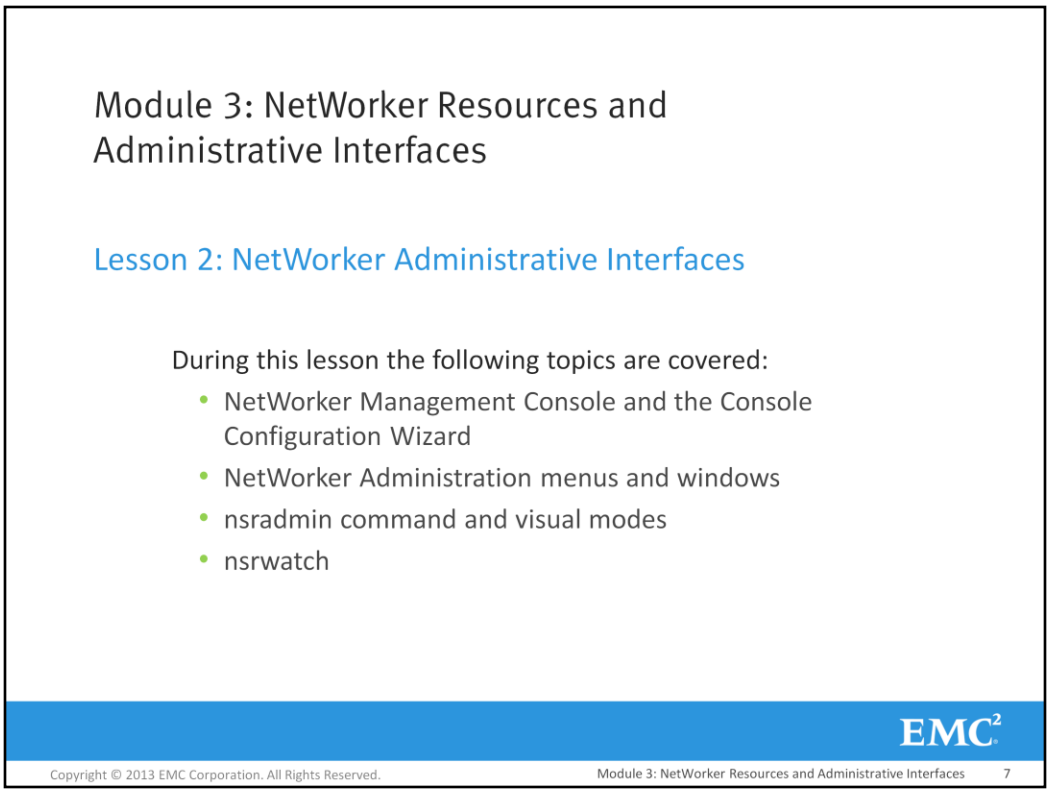
 # man nsr_device

Resource types contained in the nsrladb directory on NetWorker clients are documented in the man page for the utility that uses the resource.

Note: On NetWorker hosts running Microsoft Windows, the manual pages are available in the *EMC NetWorker Command Reference Guide*.

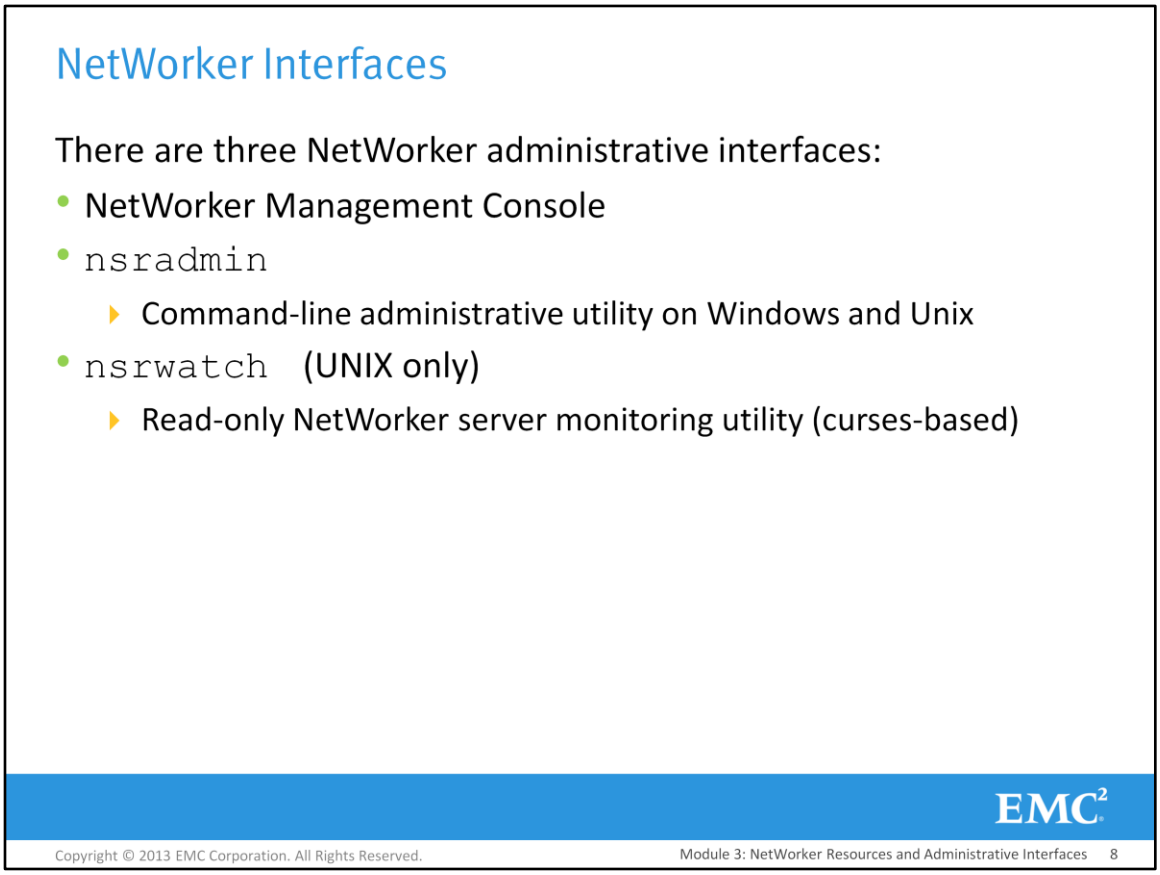


This lesson covered an introduction to NetWorker resources and the Resource Administration Platform (RAP) protocol.



This lesson introduces the three NetWorker administrative interfaces:

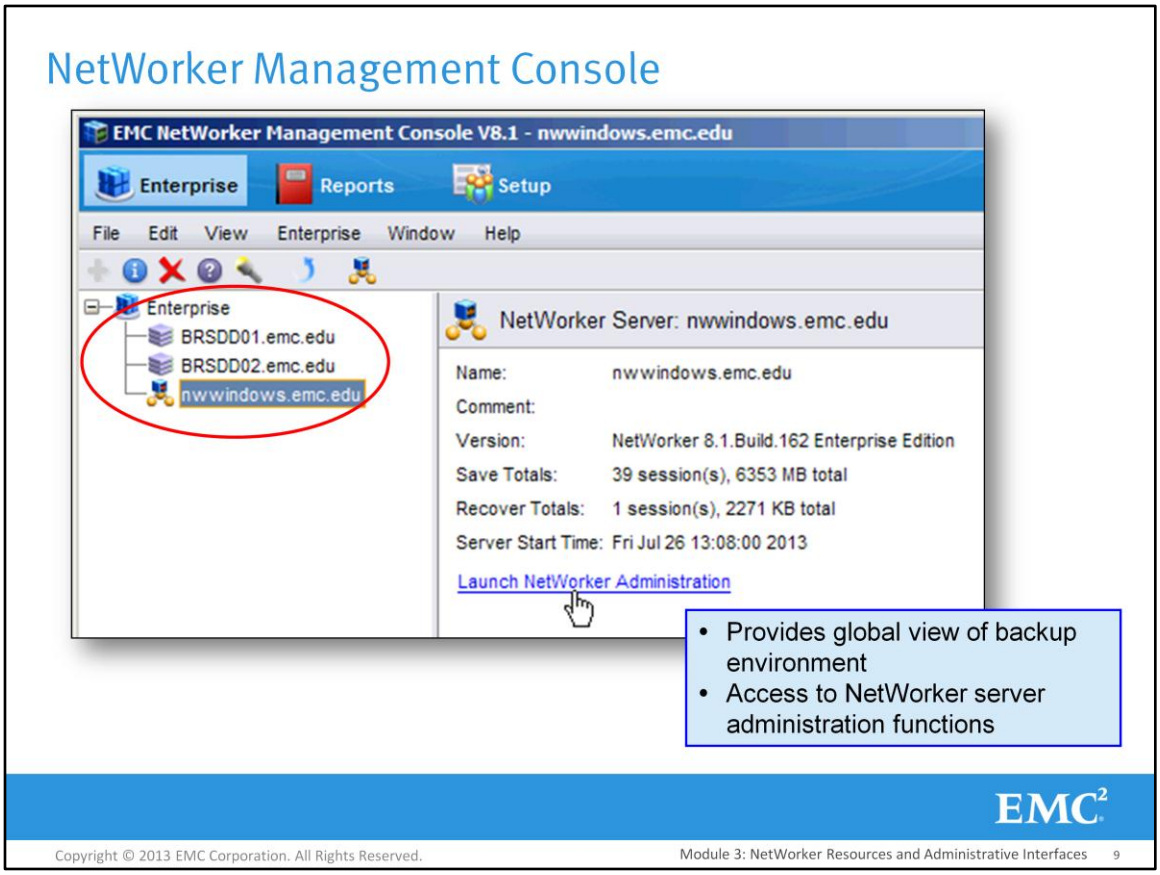
- NetWorker Management Console
- Nsradmin
- nsrwatch



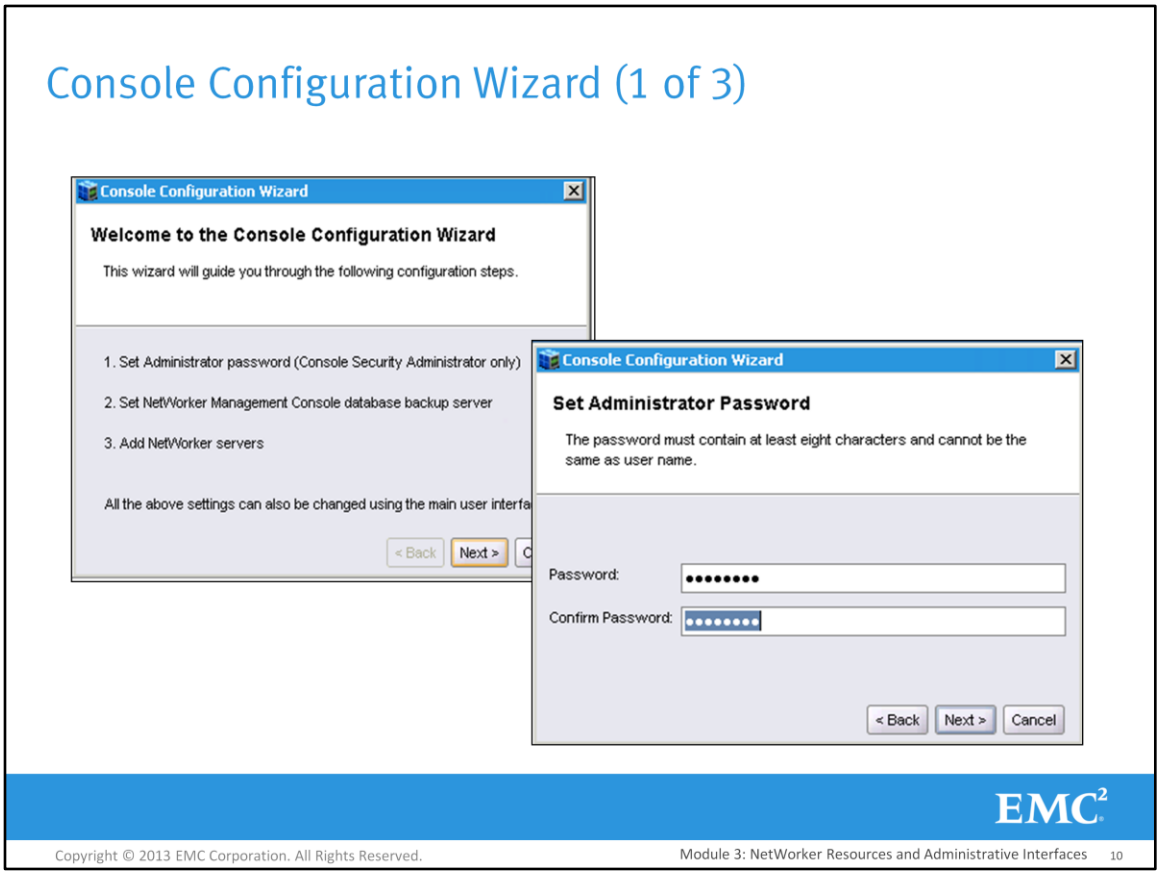
The **NetWorker Management Console** provides a global view of all NetWorker servers in your environment. In addition to the Console, two other administrative interfaces may be available depending on whether you are on a UNIX or Windows host.

`nsradmin` is a command-line utility used to view, create, delete, and modify resources. When run on a UNIX host, it can be run in full-screen mode using a curses-based interface. The curses API is not available in Microsoft Windows.

`nsrwatch` is a monitoring tool used to view current device operations, active sessions, messages concerning recent activity, and any "pending" messages such as an unfulfilled volume mount request. `nsrwatch` is curses-based and can be run only on UNIX hosts.



In addition to providing centralized event and library management and reporting capabilities, the **NetWorker Management Console** GUI provides access to each managed NetWorker server in an environment for NetWorker administration functions including configuring clients, devices and other resources, and scheduling, running, and monitoring backups. Additionally, any Data Domain or Avamar servers integrated into the NetWorker environment can be monitored by the NMC.

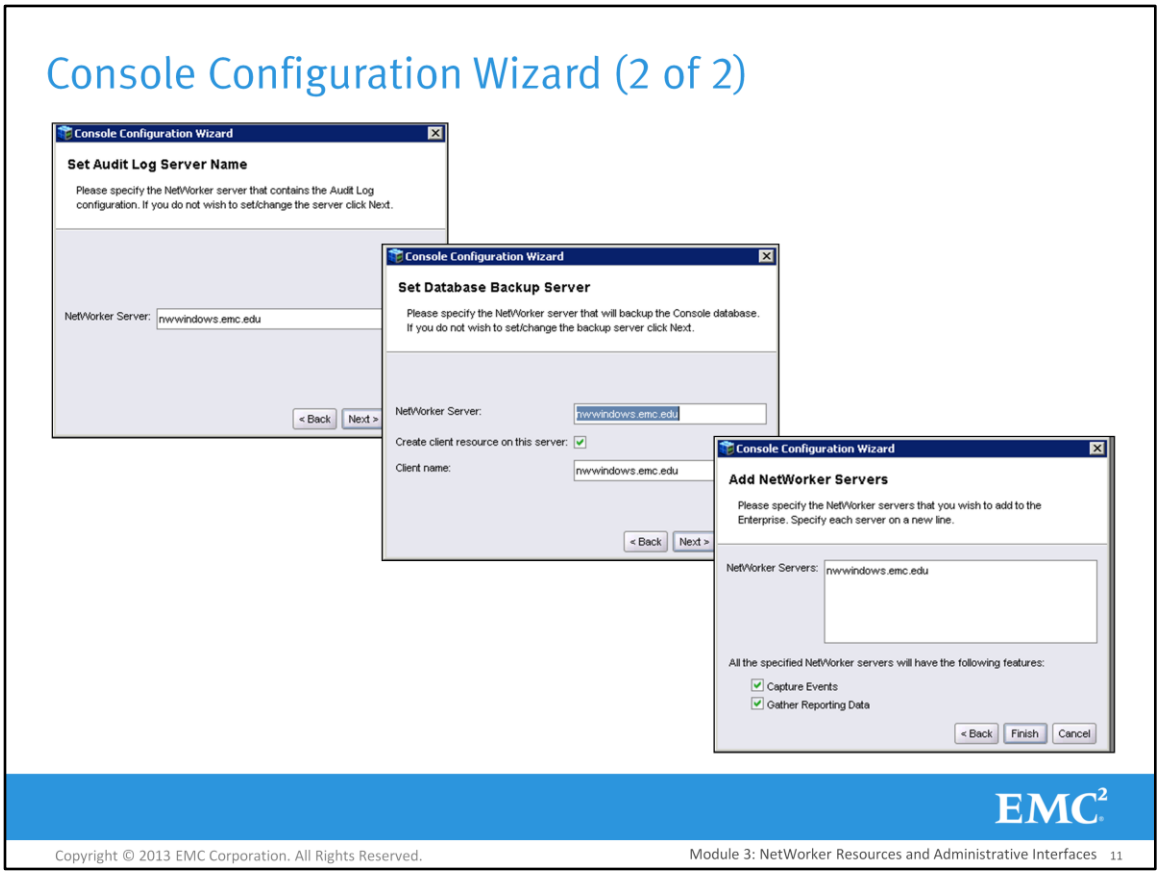


The first time NetWorker Management Console is launched, a *License Agreement* window is displayed. You must accept the agreement before using NetWorker Management Console.

When first launching Console, the ***Console Configuration Wizard*** begins and the ***Welcome to the Console Configuration Wizard*** window is displayed. The wizard will walk you through some initial configuration settings.

The first configuration task is to set the password for the Console server default **administrator** user.

Note: All of the settings in the wizard can also be configured by using the Console menu options. These options are discussed in more detail in the course in the module, *Administering the NetWorker Management Console Server*.

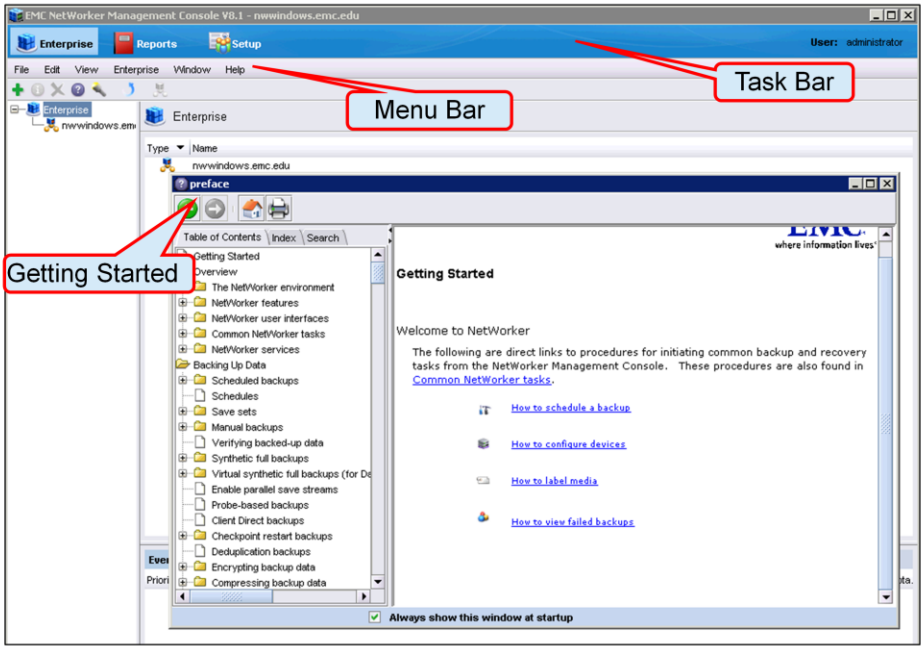


Next, specify the NetWorker server that contains the audit log configuration in the **Set Audit Log Server Name** window.

In the **Set Database Backup Server** window, specify the NetWorker server and client that will be used to backup the NetWorker Management Console server database. Note that the default option is to automatically create a client resource on the specified NetWorker server to backup the Console database.

In the **Add NetWorker Servers** window, define the NetWorker server(s) that the Console server will manage. The features selected by default in the wizard allow the Console server to collect data from the NetWorker servers pertaining to NetWorker events and to gather other data used to generate reports. This information is gathered by default, but may be ignored by de-selecting either or both items.

NMC – Console Window Overview

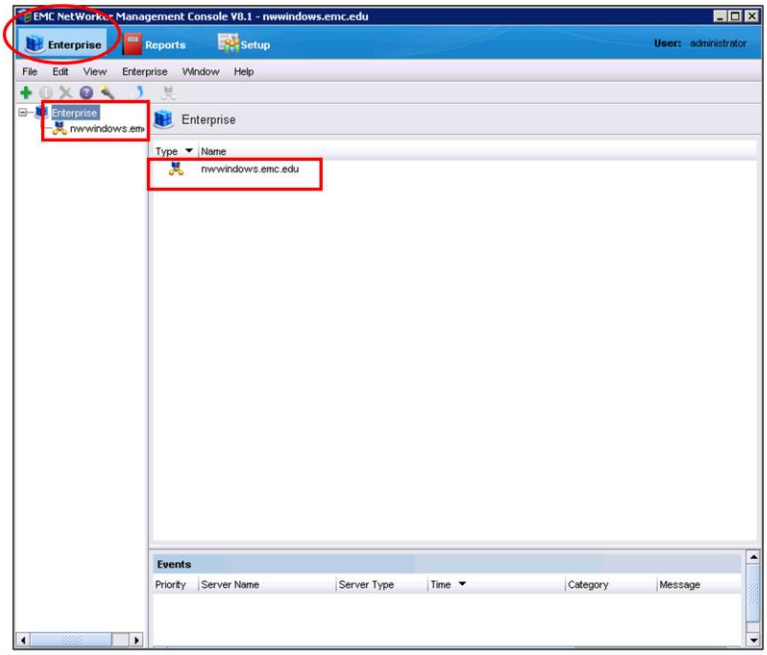


The NetWorker Management Console consists of two main windows: the **Console** window and the **Administration** window.

The main NetWorker Console window consists of a menu bar and task bar with three large buttons labeled **Enterprise**, **Reports** and **Setup**. Clicking one of these buttons invokes a window for performing the tasks specific to that function. These tasks are discussed in more detail in the module, *Administering the NetWorker Server*.

Note: The ***Enterprise*** window is initially displayed when Console is first opened. For subsequent startups of Console, the window that was last active during the previous session is displayed. The **Getting Started** window is automatically displayed when Console opens. It is essentially the online help system with a number of links to common tasks performed when initially configuring a NetWorker data zone. To keep this window from opening each time Console is started, uncheck the box at the bottom of the window.

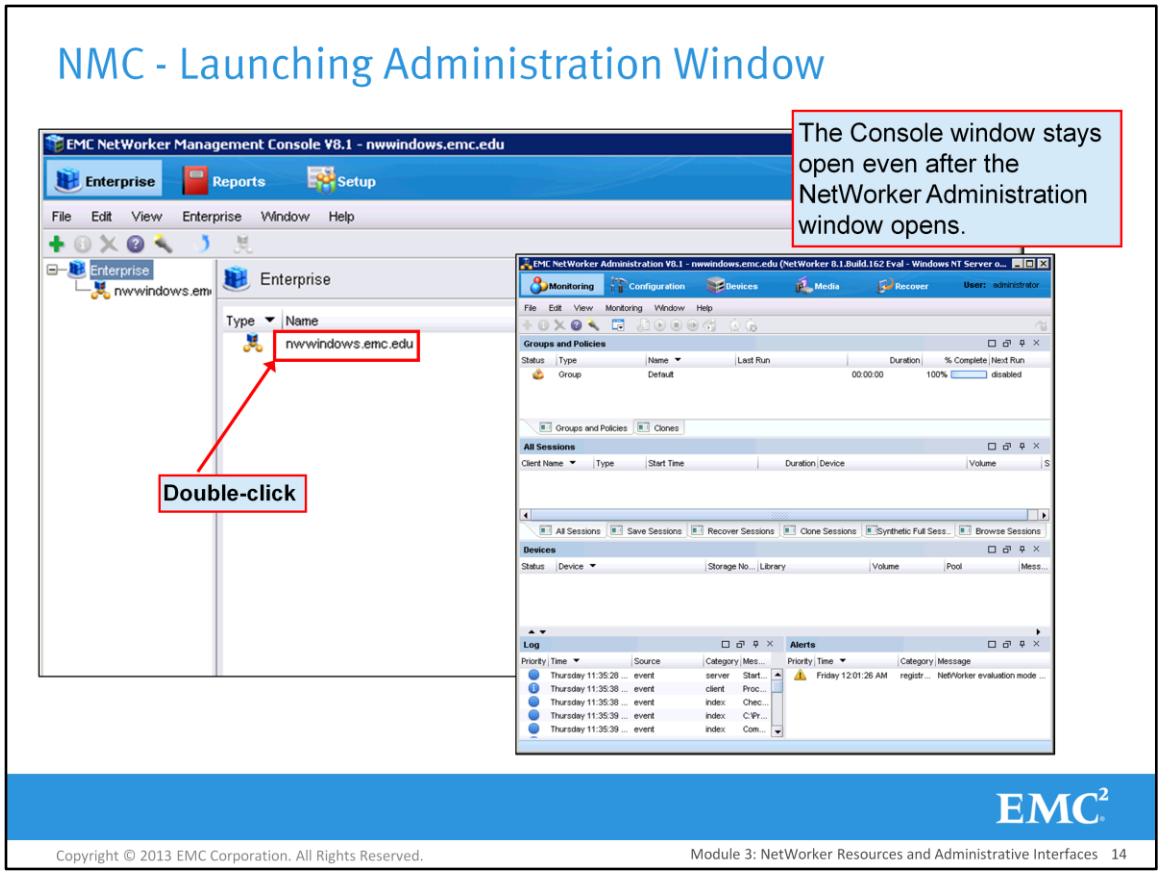
NMC – Viewing Managed Servers & Applications



EMC²

To display a list of NetWorker servers managed by the Console server, click **Enterprise** in the task bar. In the left pane, a hierarchical list of managed NetWorker servers is displayed.

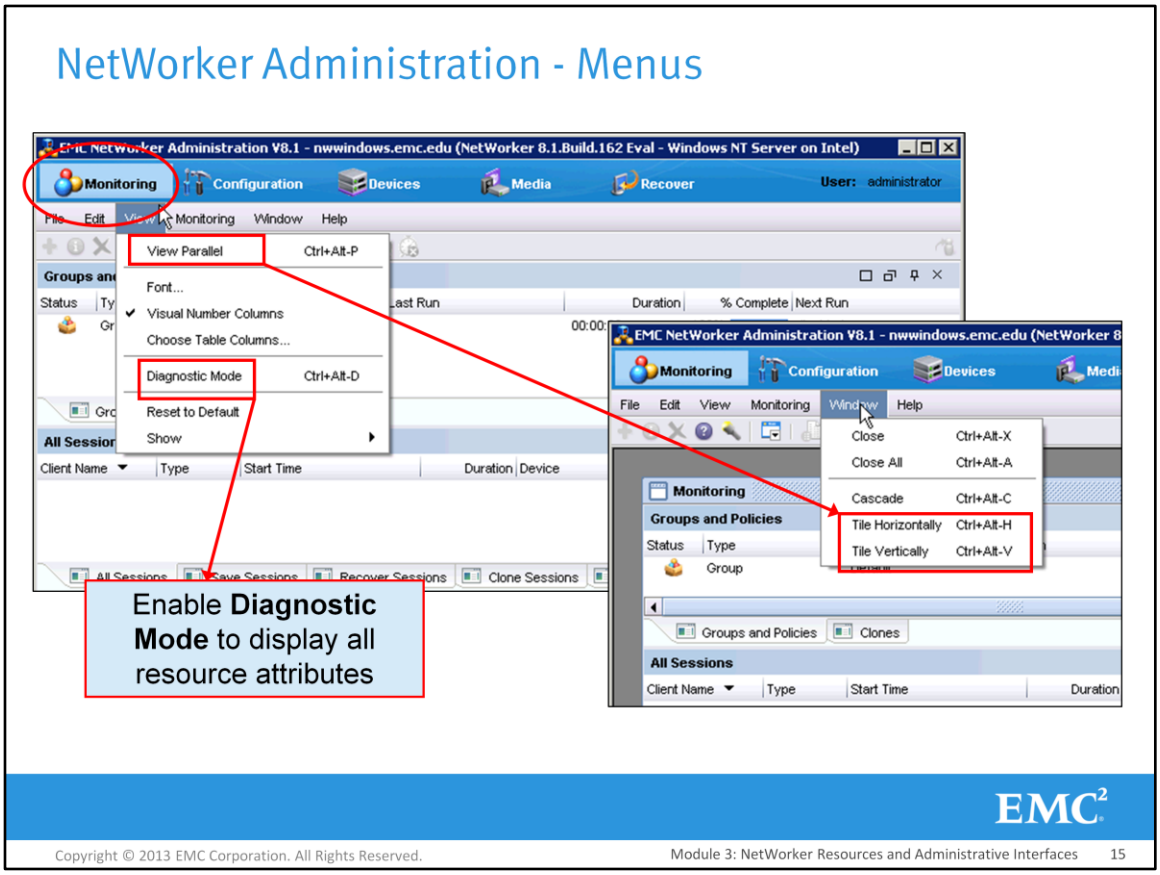
Clicking a server in the list causes its managed application to be displayed in the right pane.



Double-clicking the managed application, **NetWorker**, results in a connection being made to nsrd on the NetWorker server, requesting resource information which is displayed in the **NetWorker Administration** window that is opened. This window is referred to as the **Administration** window for the remainder of the course.

The *Console* window remains open and available after it is used to start NetWorker. This allows you to perform multiple tasks simultaneously, such as running NetWorker Administration for several NetWorker servers. A separate *NetWorker Administration* window is opened for each NetWorker server.

NetWorker servers are managed through the **Administration** window. Notice that the task bar of the **Administration** window is different than that of Console. Upon initial startup, the **Monitoring** task window is displayed. Upon successive startups, whichever window was active during the previous session displays.



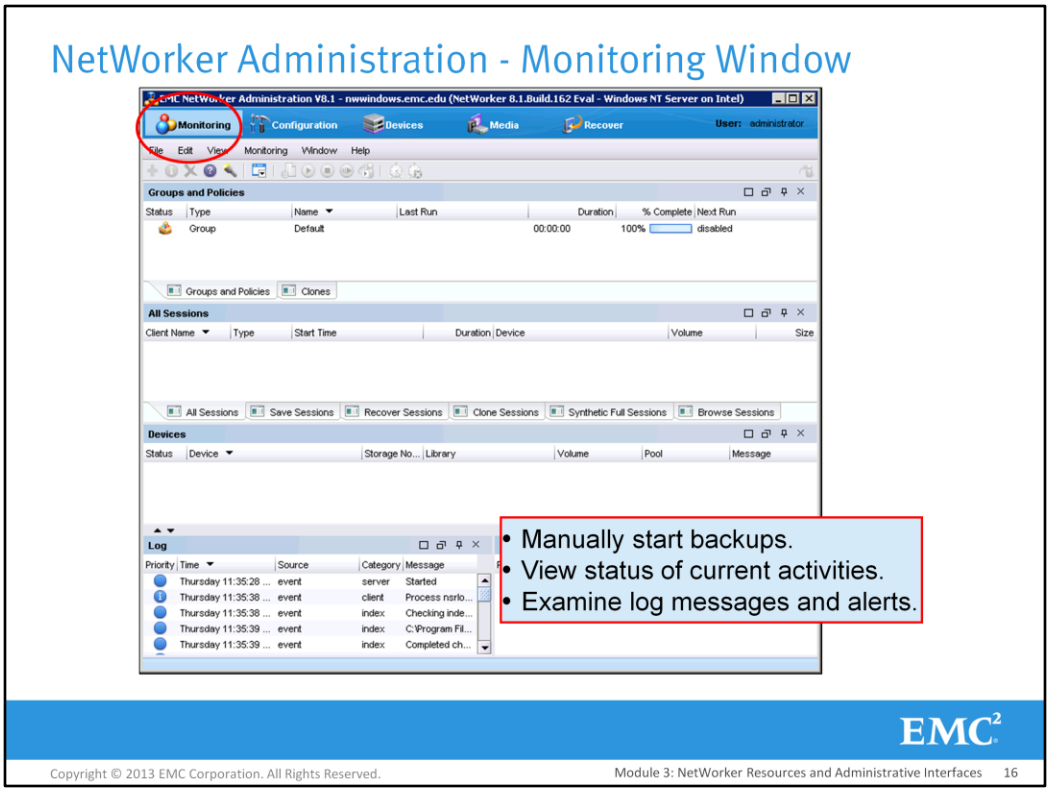
The slide shows the contents of some of the menus available from the **Monitoring** window. These menus also exist in the **Configuration**, **Devices**, and **Media** windows and have many of the same selections. The menus not described above may vary, depending on the task bar selection, or may not exist at all in certain windows. They are discussed as needed during the course.

There are three selections in the **View** menu worth highlighting at this time:

View Parallel – This selection allows you to view multiple windows simultaneously and is often used in conjunction with **Window** > **Tile Vertically** or **Window** >**Tile Horizontally**.

Choose Table Columns – This selection opens a window from which you can select which columns in the current window to display or hide.

Diagnostic Mode – When viewing resources, many attributes are hidden by default. To display all attributes when viewing a window, enable diagnostic mode.

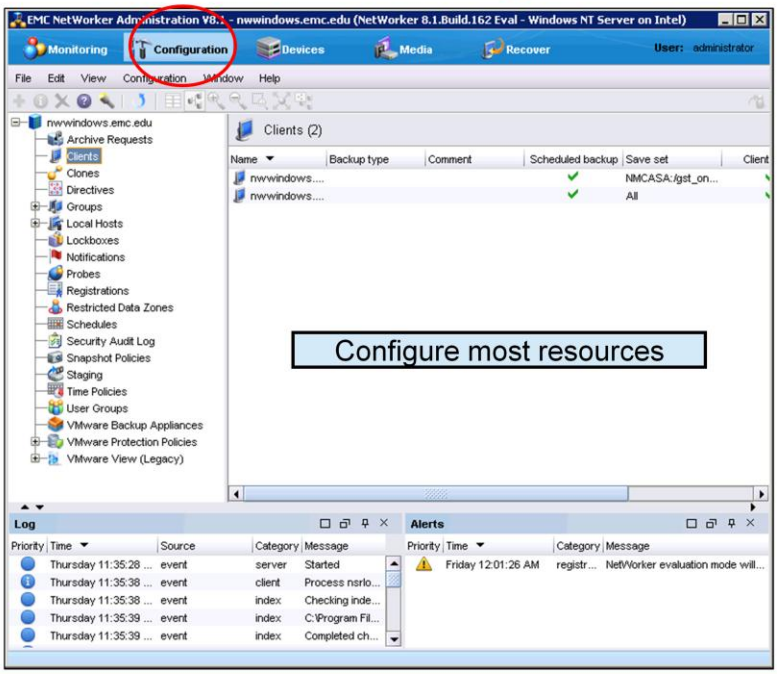


From the **NetWorker Administration Monitoring** window the administrator can view the status of completed backups and those in progress, look at alerts and log messages (always visible by default), and manually start group backups.

The **Monitoring** window has a docking panel which allows you to view several monitoring panes at once. Use the Groups panel to manually start group backups. The Sessions pane is used to view the sessions that are running on the Networker server. The Devices pane is used to monitor the status of all devices.

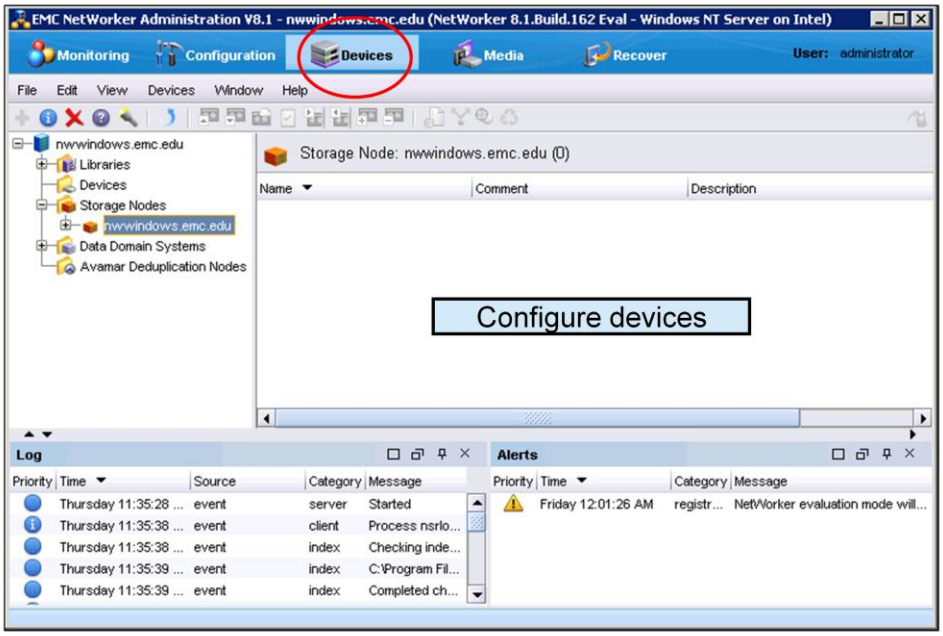
Also, alerts and log messages are displayed in panels at the bottom of every window in **NetWorker Administration**.

NetWorker Administration – Configuration Window



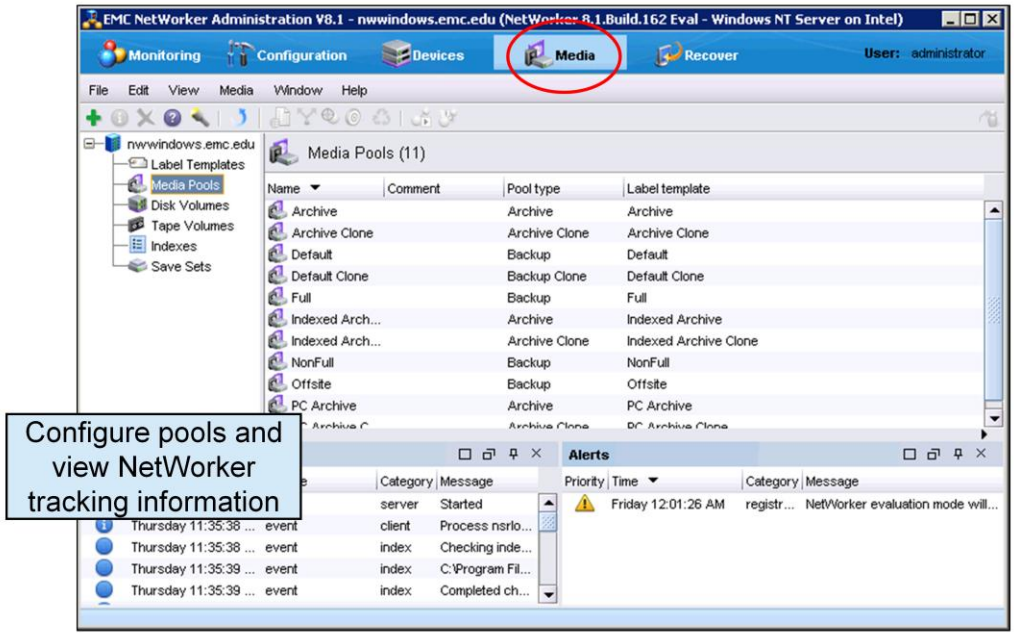
The **Configuration** window is used to access most of the configurable NetWorker resources. Tasks that can be performed from this window include creating new resources, and modifying and deleting existing resources. By double-clicking the resource type (e.g. **Clients**) in the left pane, details about the individual resources created under that type are displayed in the right pane of the window. Double-click a row in the right pane to open the resource's **Properties** window in which you can modify attribute values of the resource. You can also edit an attribute for multiple resources at the same time by selecting each resource and then placing the cursor in the column you want to change.

NetWorker Administration – Devices Window



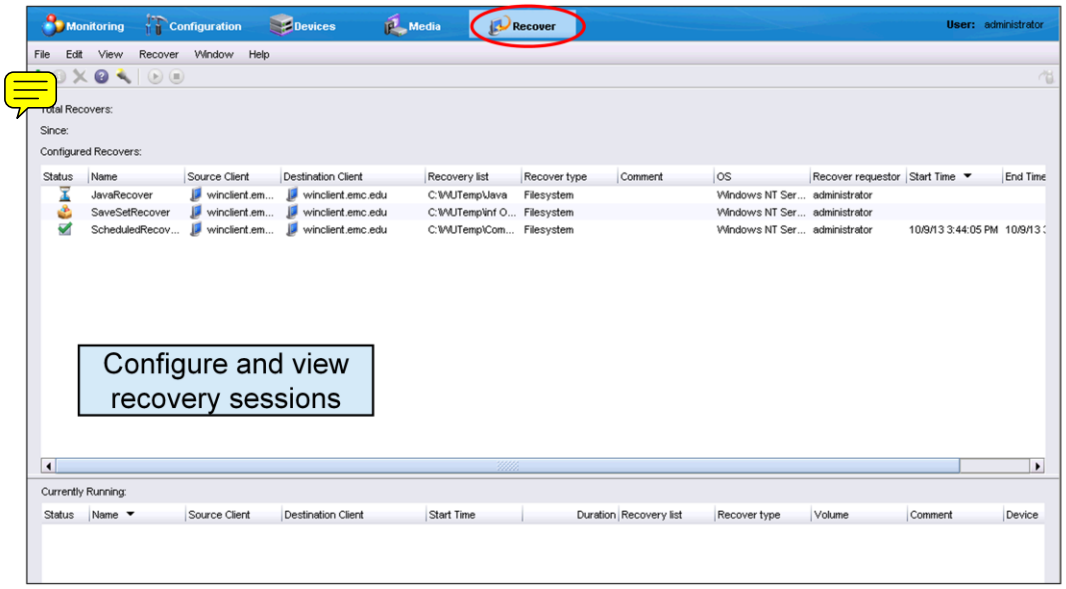
The **Devices** window is used to configure and manage libraries (i.e., jukeboxes, autochangers) and standalone backup devices. Additionally both integrated Avamar deduplication nodes and Data Domain systems are displayed here.

NetWorker Administration – Media Window



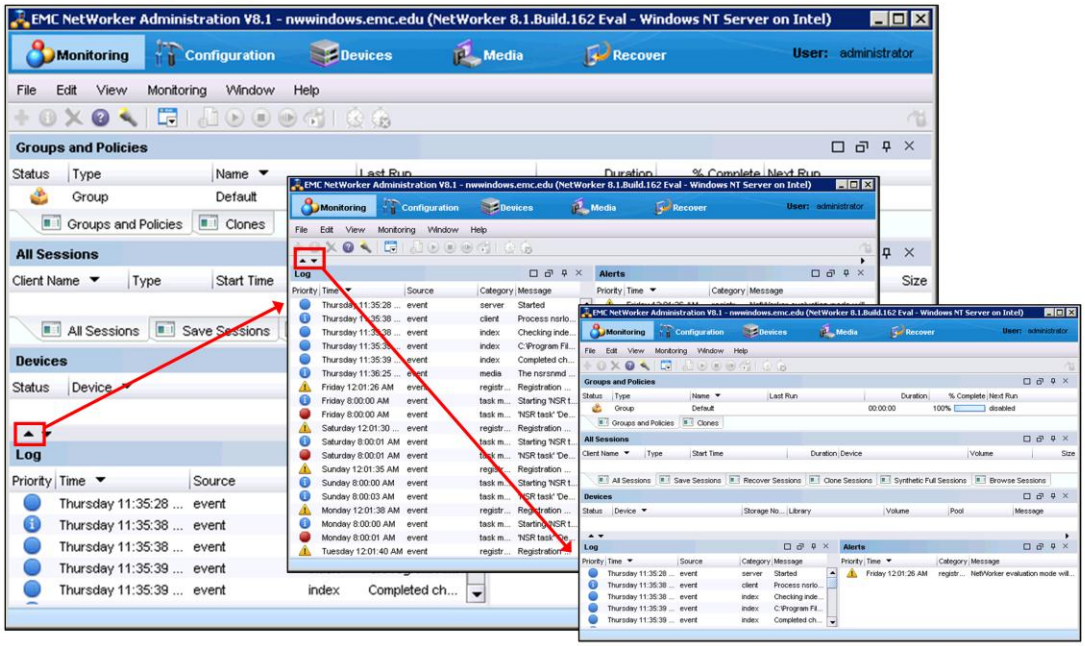
The **Media** window is used to manage pools and to view information contained in the media database and client file indexes.

NetWorker Administration – Recover Window



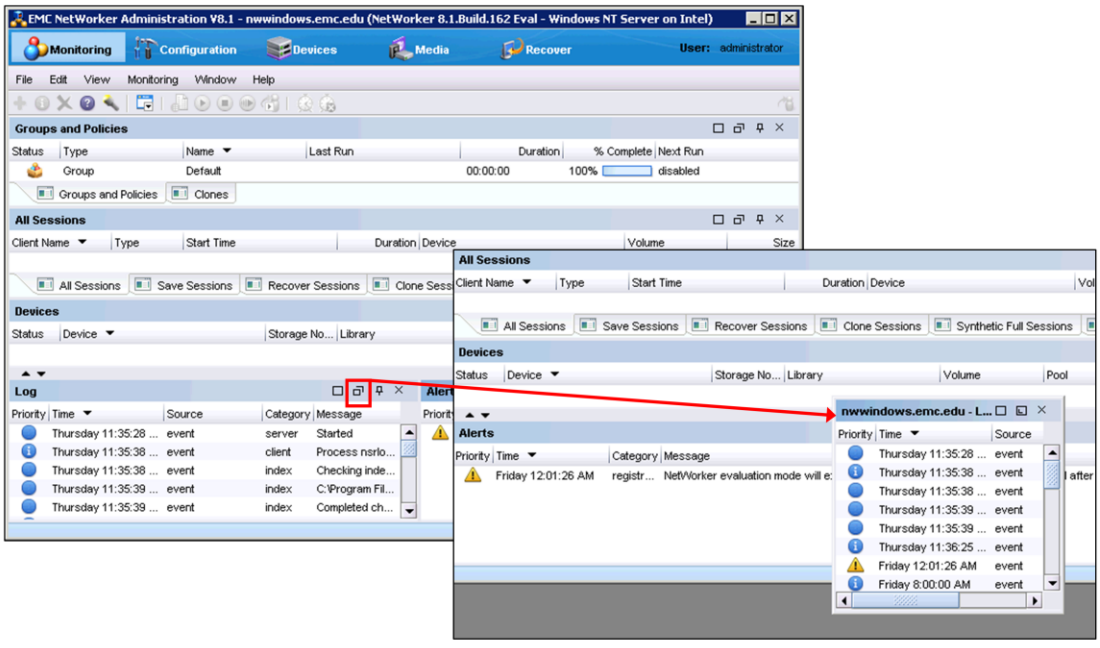
The **Recovery** window is used to configure, manage, and monitor scheduled and on demand recovery sessions.

Viewing Log and Alert Windows

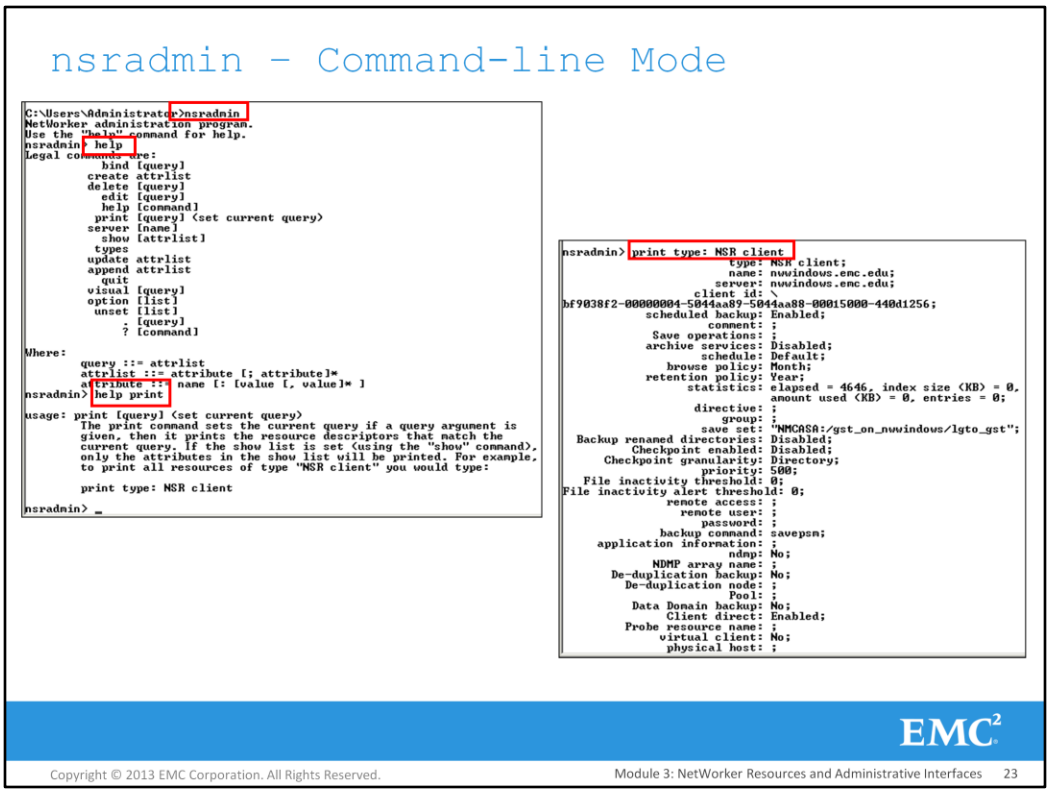


This slide demonstrates how to view log messages and Alerts in the GUI. By using the up and down arrows we can maximize and minimize the windows to view the **Log** and **Alert** windows.

Floating Log and Alert Windows



This slide demonstrates how to float windows in NetWorker Administration. As an example, with the float windows option, we can maximize and minimize the windows to float the *Log* and *Alert* windows.



nsradmin is a command-line utility used to view, create, delete, and modify NetWorker resources. It can be run from any NetWorker host. To open a connection to a specific NetWorker server, run the command with the -s server option.

After starting **nsradmin**, enter **nsradmin**-specific commands at the **nsradmin>** prompt. The format of a nsradmin command is:

cmd [argument [;argument]]

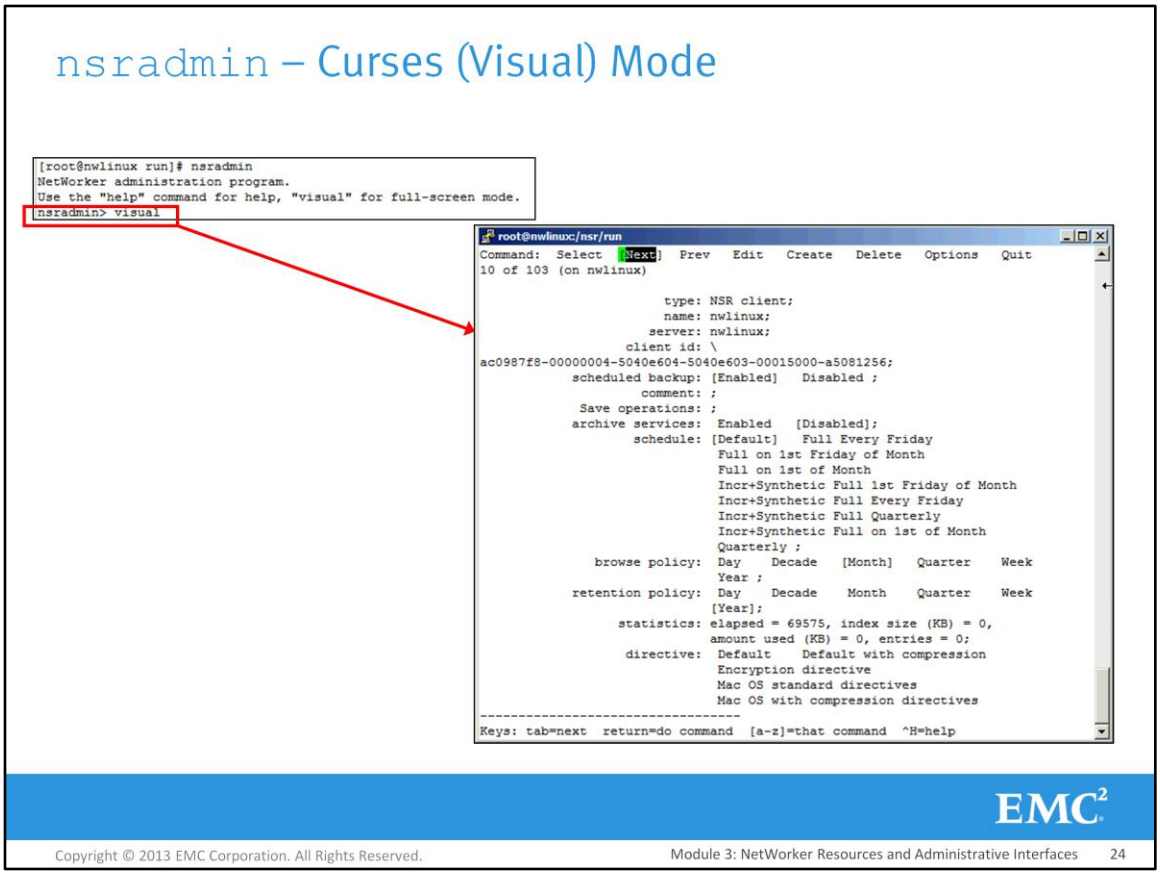
where **cmd** is a name of a command and argument is specified in the form of an attribute list. An attribute is a name optionally followed by a colon, followed by one or more values separated by commas. One or more attributes are separated by semicolons.

For example, in the screen shot on the right, the print type: NSR client command is used to display all the attributes of all client resources in the resource database. To limit the output to a single client, for example, leg-win1, the command is:

print type: NSR client; name: leg-win1

nsradmin can also run in a non-interactive mode using a specified text file for the command list.

See the **nsradmin** topic in the *EMC NetWorker Command Reference Guide* or the UNIX/Linux man pages for a list of nsradmin options, resources and commands.



On a UNIX NetWorker host, nsradmin can be run in full-screen (visual) mode which uses a curses(3) interface.

You can run **nsradmin** in visual mode by using either of two methods.

- Use the **–c** option.

  # nsradmin -c

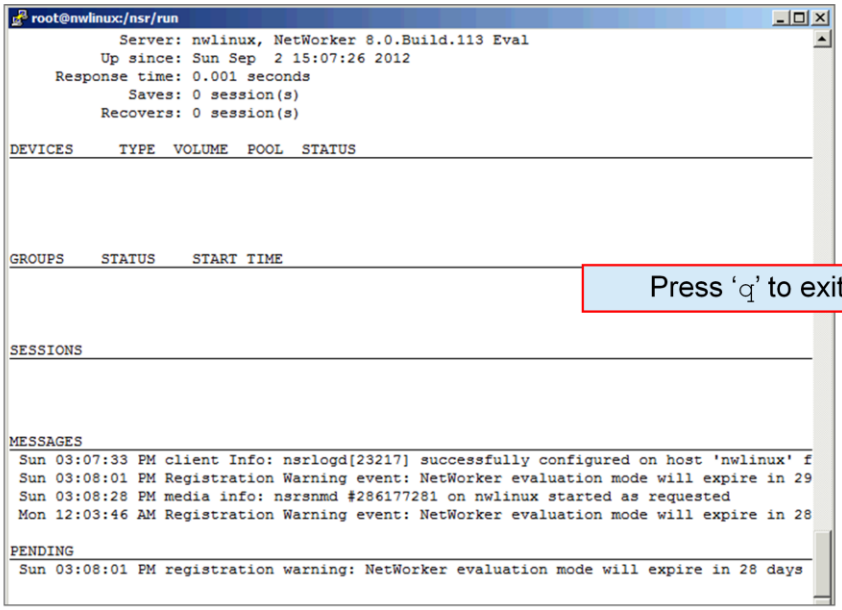
- Run **nsradmin** without the **–c** option and enter **visual** at the **nsradmin>** prompt.

The tab key, as well as the arrow keys, can be used to move the cursor to the appropriate piece of information on the screen. Menu items on the top line of the window can be selected either by moving the cursor to the item and hitting <**ENTER/RETURN**> or pressing the first character of the item. Once positioned at the desired attribute, use the arrow keys to go left or right, and the **<DEL>** key to remove the character to the left of the cursor.

For more information about nsradmin, see the *EMC NetWorker Command Reference Guide* or the UNIX/Linux man pages.

Note: To use visual mode for a Windows NetWorker server, run nsradmin with the -s *nwserver* option on any UNIX NetWorker host. Replace *nwserver* with the name of the Windows NetWorker server. This requires giving special privileges, which will be discussed later, to the UNIX host.

nsrwatch – UNIX only



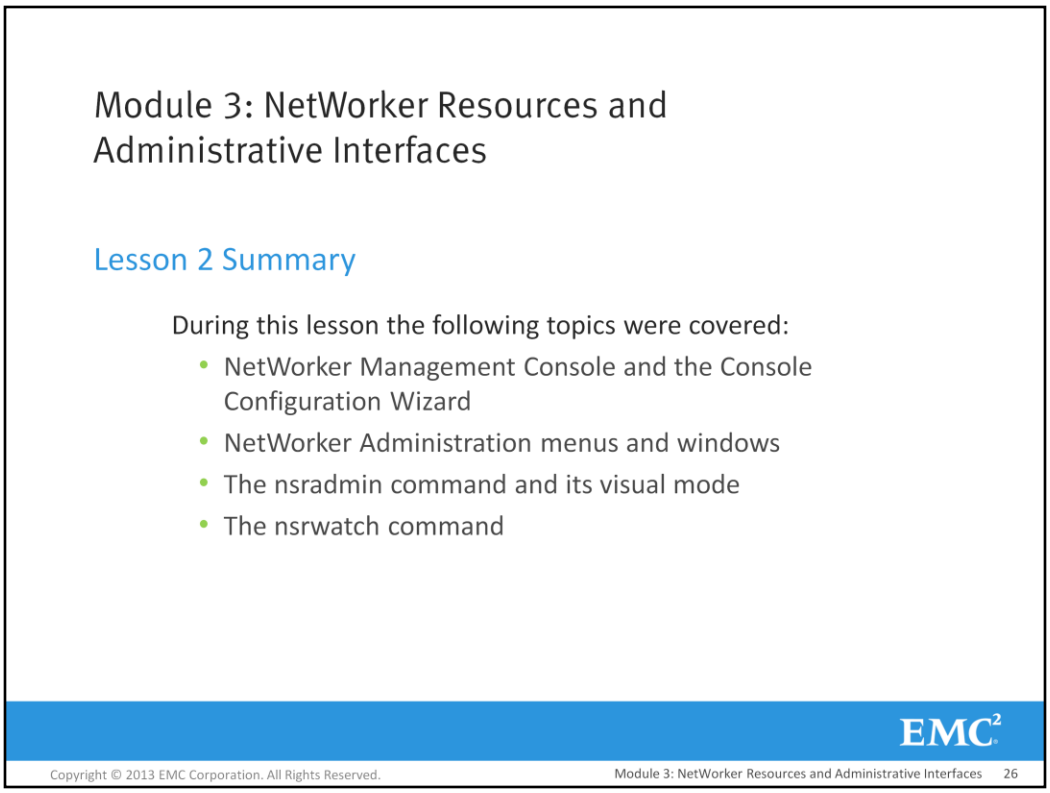
EMC²

`nsrwatch` is a curses-based utility used to monitor NetWorker server status and activity. It can be run from any UNIX terminal window having full-screen functionality.

Performing an *interrupt* (usually <**CTRL**>**c)** or pressing **q** quits the program. Pressing any other key updates the information displayed.

See the *EMC NetWorker Command Reference Guide* or the UNIX man pages for more information about `nsrwatch`.

Note: To monitor a Windows NetWorker server, run `nsrwatch` with the `-s` *`nwserver`* option on any UNIX NetWorker host. Replace *nwserver* with the name of the Windows NetWorker server.



This lesson covered an introduction to the three NetWorker administrative interfaces: NetWorker Management Console, nsradmin and nsrwatch.

Lab 3: Using the NetWorker Management Console

In this lab, you will explore the Console GUI used for administering the NetWorker environment.

- Lab Exercise 3-1: Connect to the Console Server from the Windows Host
- Lab Exercise 3-2: Customize the NetWorker Management Console

EMC²

In this lab, you will:

- Launch Console and define a NetWorker server to manage.

Module 3: Summary

Key points covered in this module include:

- NetWorker resources and their functions.
- NetWorker resource types.
- The Resource Administration Platform (RAP) protocol.
- Several NetWorker administrative interfaces: NetWorker Administration, `nsradmin` and `nsrwatch`.

EMC²

This module covered the various NetWorker resource types and their functions. The several NetWorker administrative interfaces were also introduced.