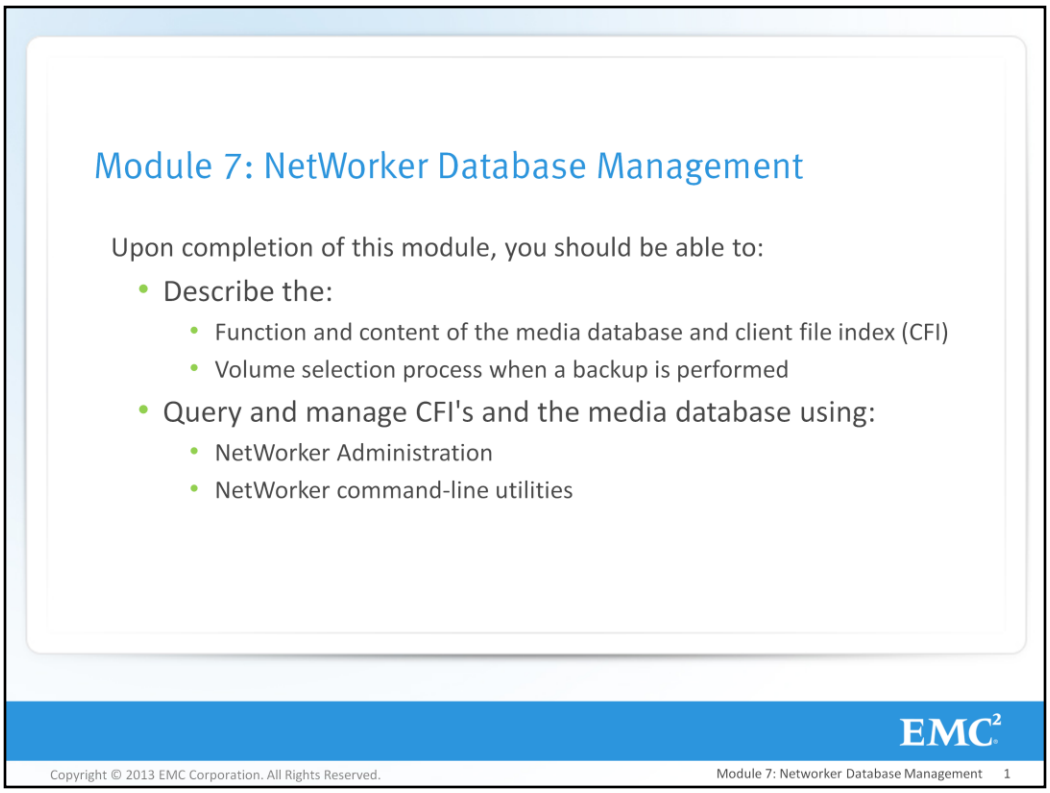
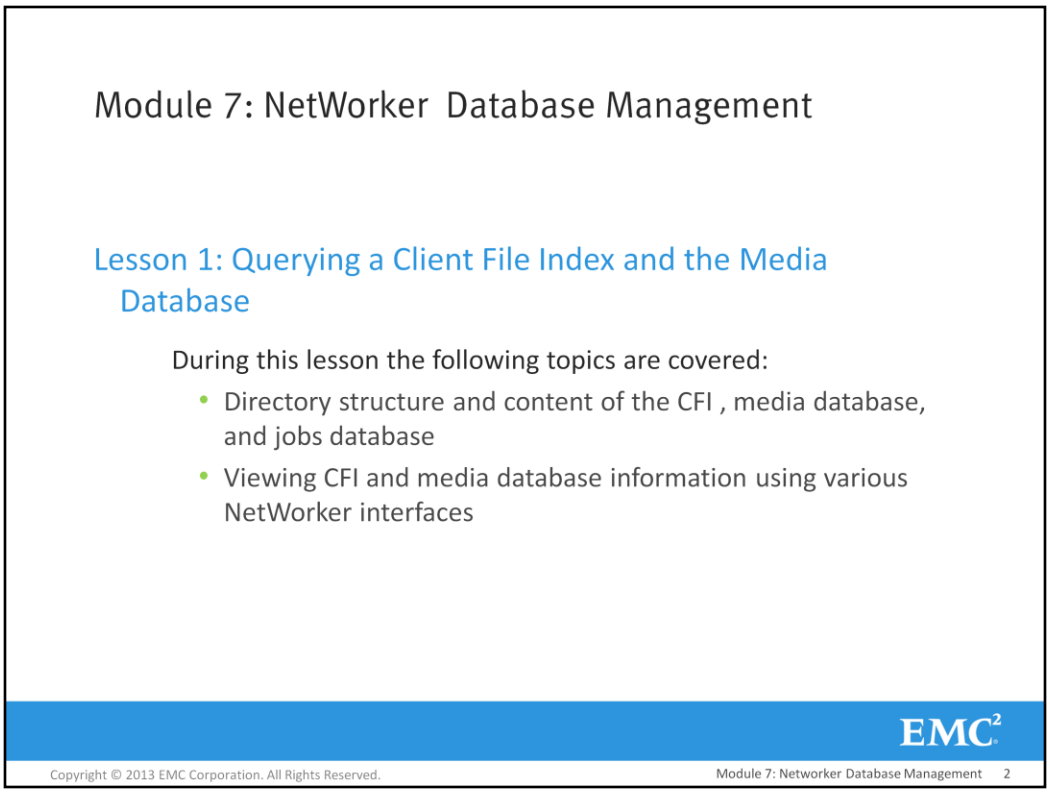
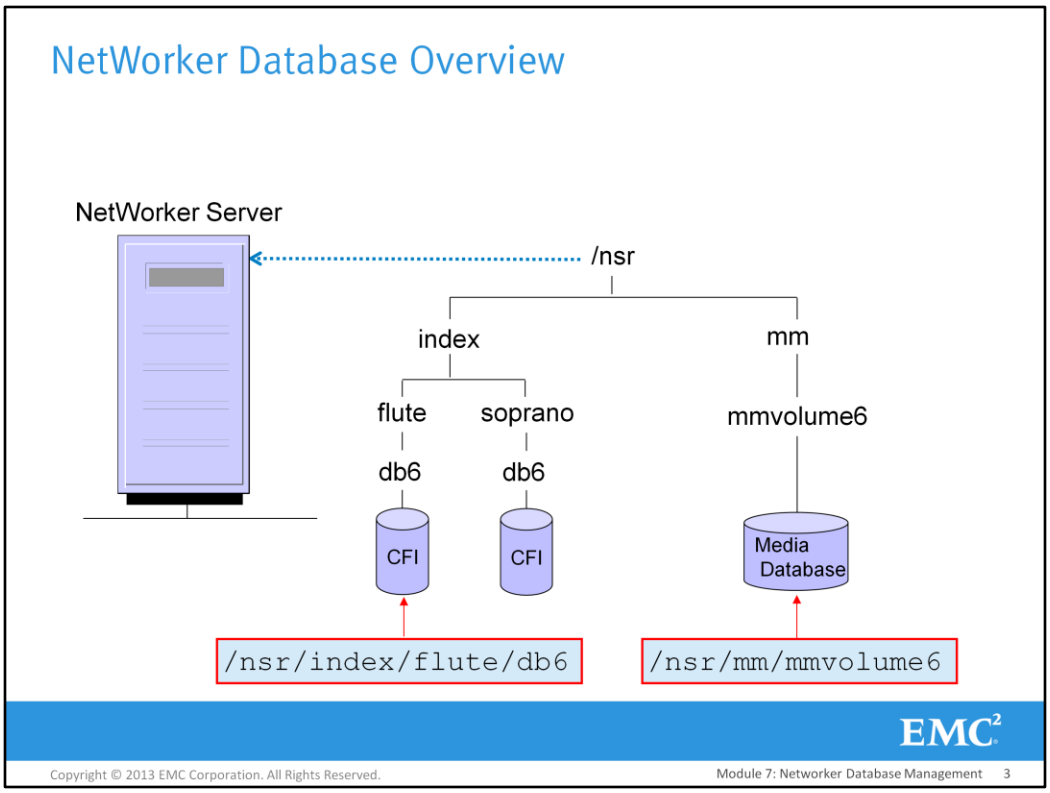


This module focuses on the various management tasks related to the media database and client file indexes.



This lesson covers the CFI, media database and jobs database content and how to view CFI and media database information using various NetWorker interfaces.



The NetWorker server maintains tracking information for save sets in both the client file indexes (CFIs) and in the media database. Volume information is maintained only in the media database.

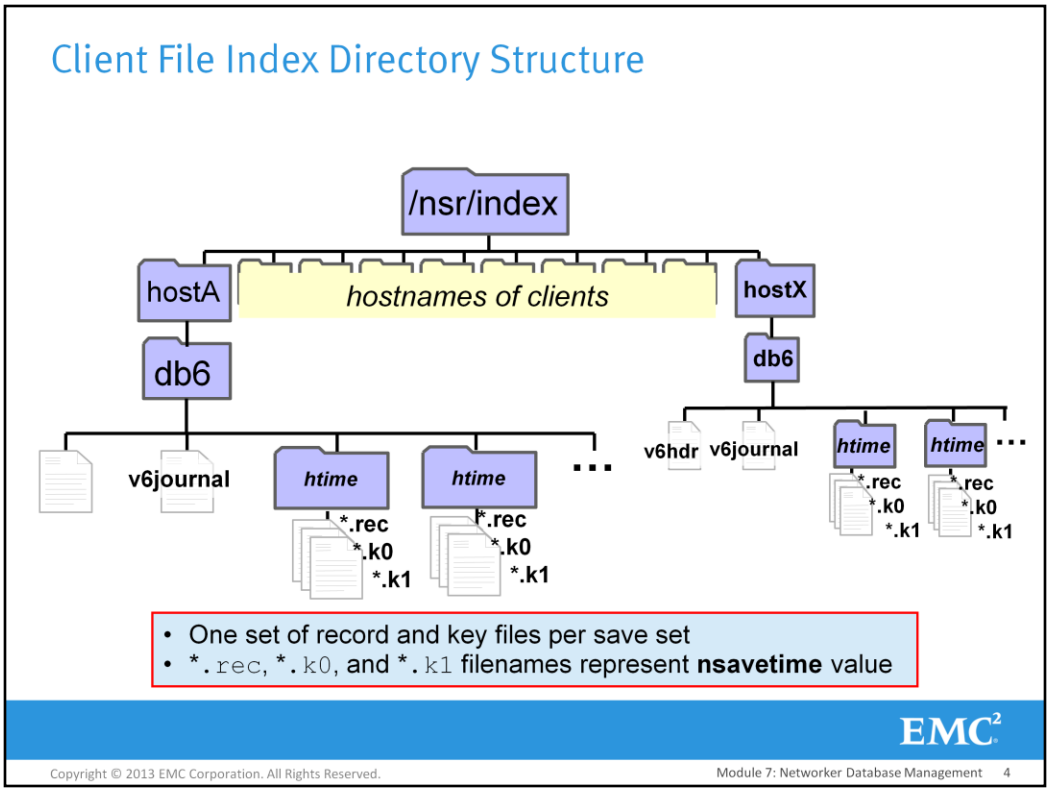
Client File Index (CFI)

A CFI stores information about each file backed up by a NetWorker client. There is one CFI per physical NetWorker client. The stored information includes file characteristics such as owner, size, permissions, and modification and access times, as well as the timestamp of when the file was backed up. All files in a given save set have the exact same backup timestamp. This information is used to support browsable recoveries, which allow you to easily recover a client to a specific point in time.

As a save set ages, its CFI records are automatically purged to save space. The length of time that the records are retained is determined by the **Browse policy** attribute in the client resource. CFIs may require large amounts of space on the NetWorker server. Each record in a CFI uses approximately 160 bytes. The default path of a CFI is `/nsr/index/`*hostname_of_client*`/db6`.

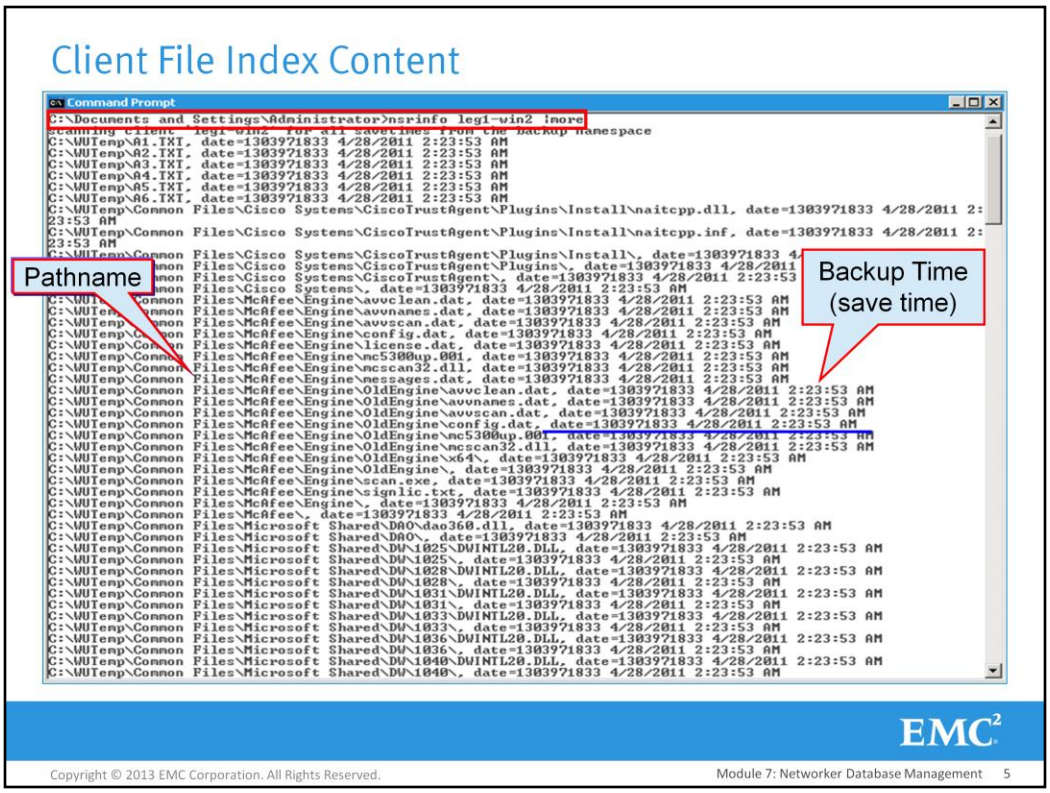
Media Database

The media database contains information about all NetWorker volumes and the save sets on those volumes. For each volume there is a volume record. For each save set on a volume, there is a save set record. This information is critical for supporting recoveries and is also used during level and incremental backups to determine the timestamp of a previous backup. The location of the media database is `/nsr/mm/mmvolume6`.



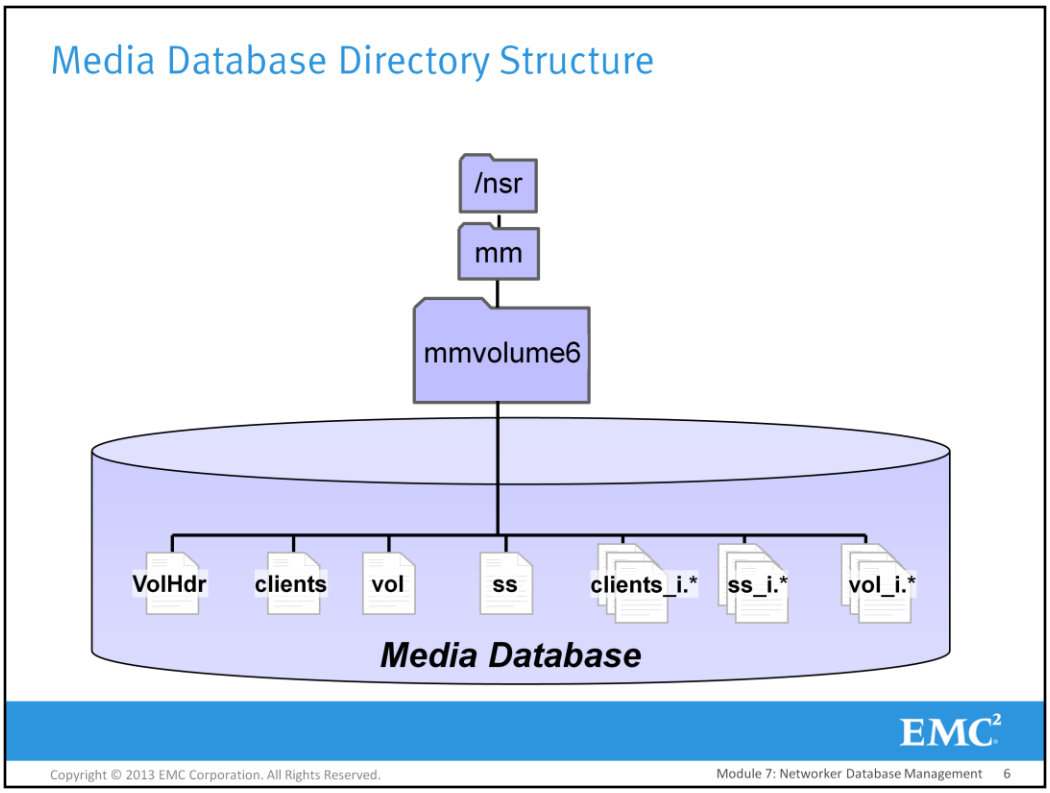
A CFI directory contains a header and journal file as well as a series of directories whose names are hexadecimal time stamps. Each save set tracked in a CFI has a record and a key file which are stored in a subdirectory determined by the time stamp of the save set (*nsavetime* value). The record and key files are named *nsavetime*.`rec`, *nsavetime*.`k0` and *nsavetime*.`k1`.

The data in the CFI files is XDR encoded for NetWorker use. Therefore, only NetWorker GUI/CLI interfaces should be used to view and manage the CFI data.



Each record in a CFI contains the path name of a backed up file or directory, and the timestamp associated with the save set that it is part of. The timestamp matches the timestamp of a save set record in the media database, and is used in determining which save set and volume is needed when recovering the file. File attribute and backup information are also stored in the CFI.

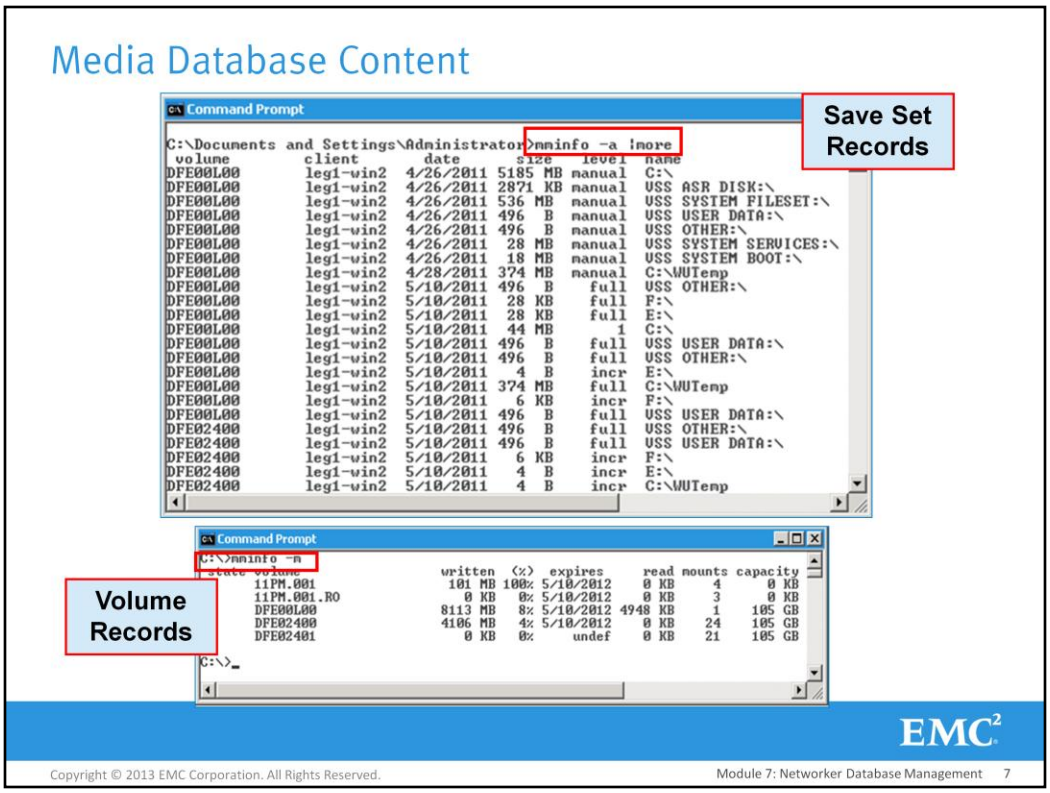
`nsrinfo` displays the timestamp in two formats. The **nsavetime** format is the number of seconds since January 1, 1970. This is the time format used internally by NetWorker. The **savetime** format is a more human-readable form of the date and time.



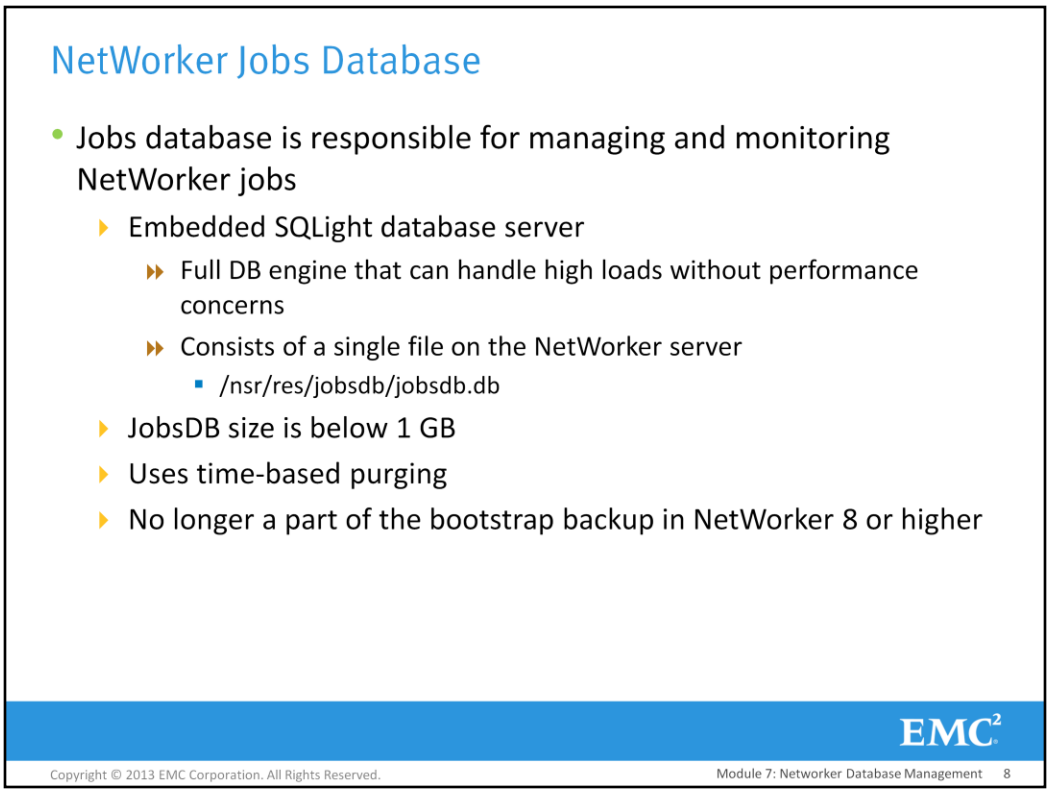
The media database directory structure includes a header file and files to store client records, save set records and volume records. Each client record, save set record, and volume record file has a set of supporting index files.

All the files under `/nsr/mm` make up a Legato WISS (*Wis*consin *S*torage *S*ystem) database.

To maintain its integrity only use NetWorker GUI or CLI interfaces to view and manage the data contained in the media database.

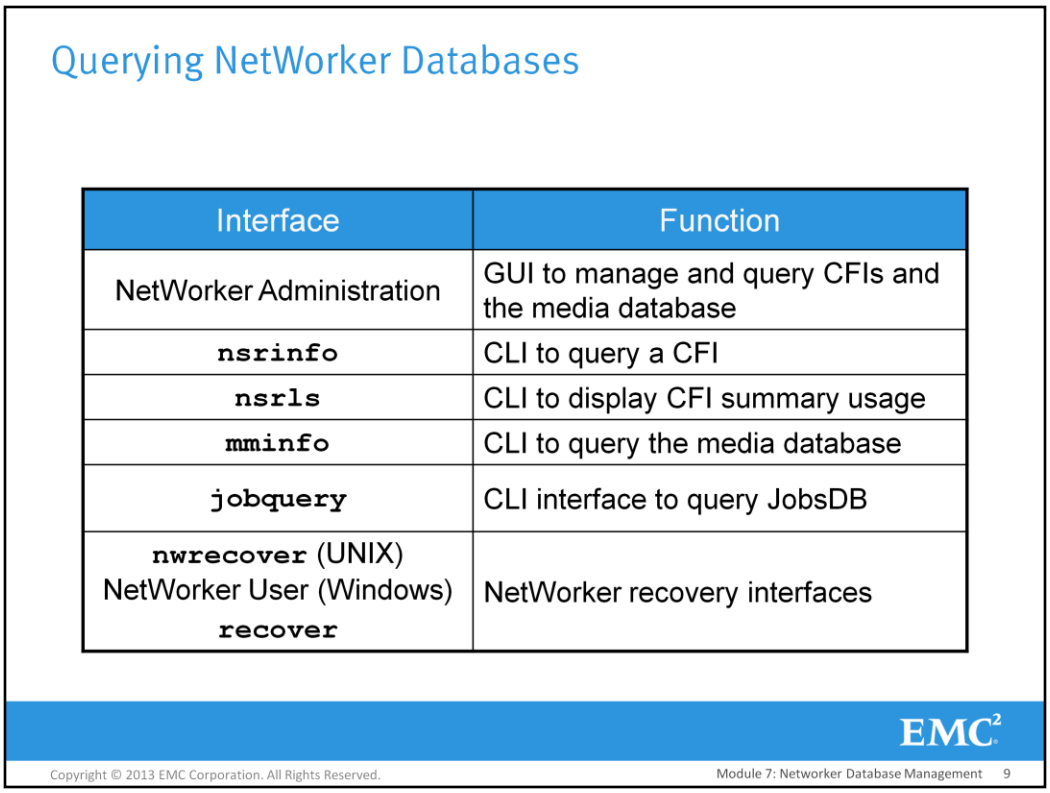


The media database contains a record for each NetWorker volume and for each save set written to a volume.



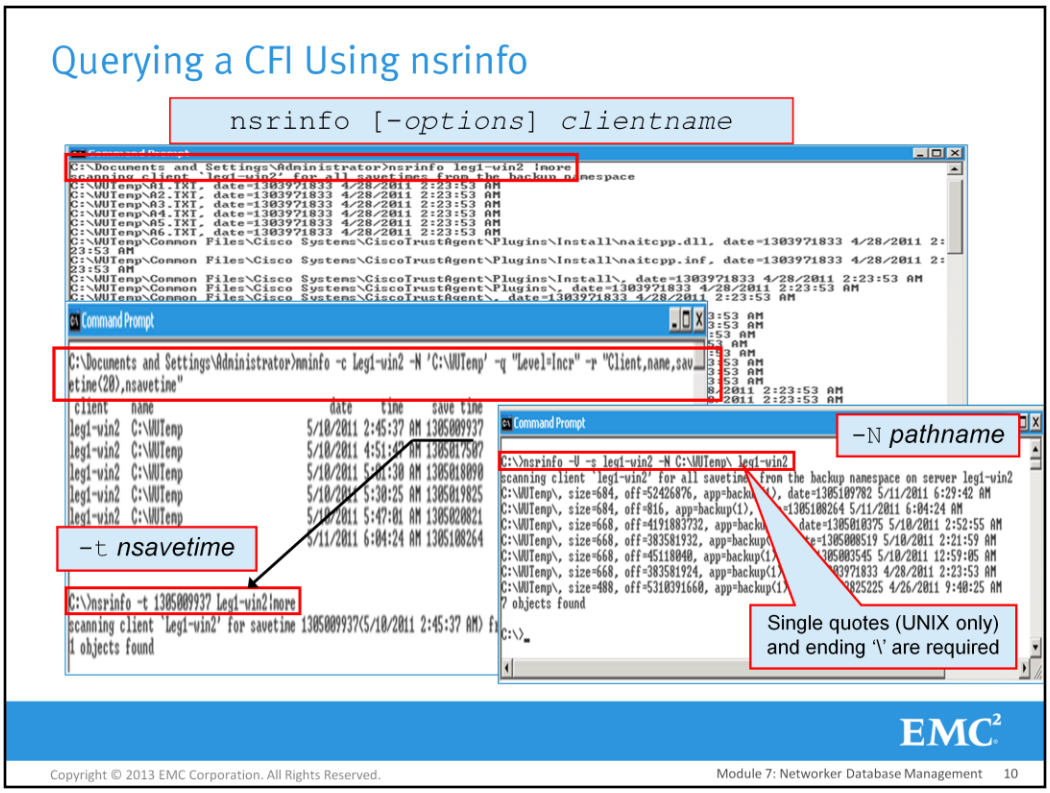
The jobs database in NetWorker is responsible for managing and monitoring all jobs within the environment. These jobs include server activities such as cloning, staging, and recovery operations as well as client activities like save or save groups. When these jobs are started the jobs database collects all the runtime information as well as completion information.

The jobs database consists of an embedded SQLight database server which is a full database engine that can handle high loads without performance concerns. The database itself is stored in a single file on the NetWorker server and is managed via time-based purging. The database should not exceed 1 GB in size. Additionally, beginning with release 8, the jobs database is no longer a part of the bootstrap backup; rather, the jobs database is re-created during NetWorker server disaster recovery procedures.



This slide shows the NetWorker interfaces available for displaying the contents of, and/or querying, the media database and client file indexes.

`nsrinfo`, `nsrls`, and `mminfo` are usually executed on the NetWorker server. However, both `nsrinfo` and `mminfo` have a "`-s` *nw_server*" option which allows you to run the command from any NetWorker host.



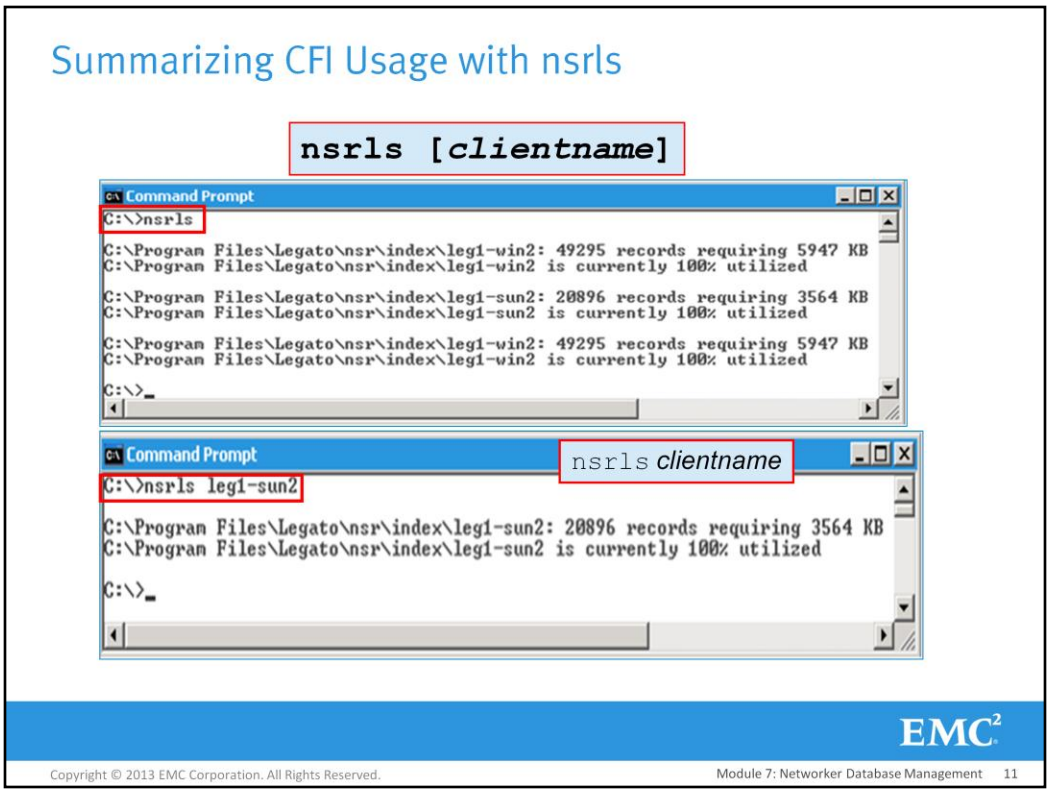
The NetWorker `nsrinfo` command, when specified with only a client name as an argument, displays a list of all files being tracked in that client's CFI. With additional options, `nsrinfo` can list all files backed up at a specific time or with a specific pathname.

When using a Windows pathname on a UNIX command-line, single quotes are required to turn off the special meaning of the backslash. An ending '\' or '/' in a pathname is required to match a directory with that pathname.

`nsrinfo`(1m) syntax:

```
nsrinfo [-options] clientname
```

clientname is the name of a NetWorker client and is a required argument. The output of `nsrinfo` includes the pathname of each file, and the date and time it was backed up, in both **savetime** and **nsavetime** formats.



The NetWorker `nsrls` command displays summary information concerning CFI usage.

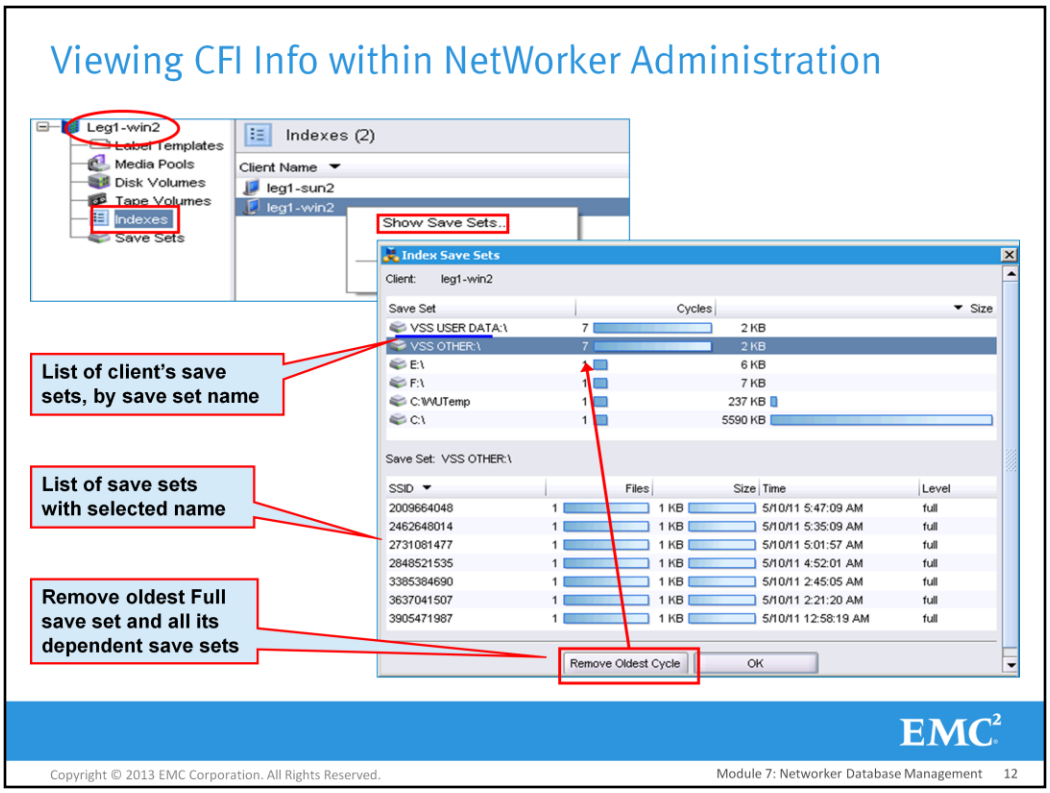
`nsrls`(1m) syntax:

`nsrls [ clientname | -m ]`

clientname is the name of a NetWorker client and, if specified, causes that client's CFI usage to be summarized. If no arguments are specified, summary information is displayed for all CFIs.

Output of `nsrls` includes the total number of records contained in the CFI and the total amount of disk space used by the CFI.

`nsrls` has a `-m` option which displays the number of records in each of the media database files and the amount of disk space used by each file.



To view information about each client's CFI or to manually remove CFI entries, click **Indexes** in the left pane of the NetWorker Administration's *Media* window. A list of all NetWorker clients is displayed along with the overall size of each client's CFI and the number of cycles being tracked.

Right-clicking a client pops up a context menu from which you can display more detailed information about the client's CFI or perform a consistency check on it.

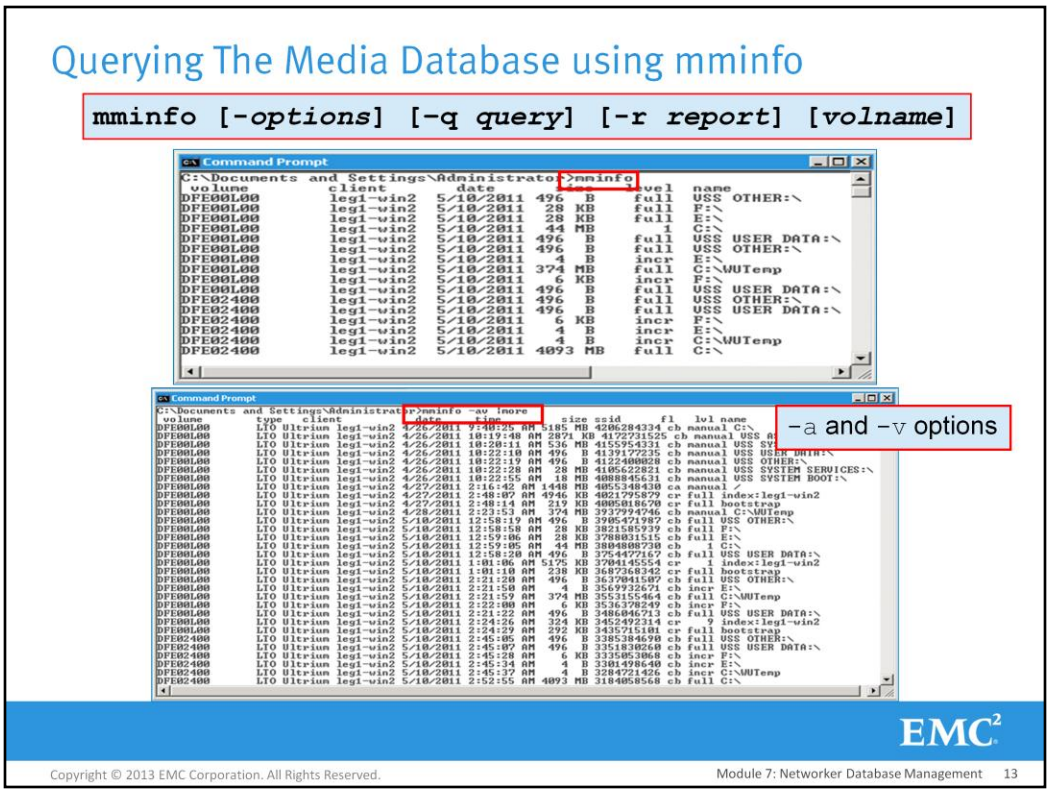
If you choose **Show Save Sets** from the context menu, the *Index Save Sets* window pops up which displays the names of all the client's browsable save sets and the amount of space in the CFI used for file entries from those save sets. Upon selecting a save set name in the upper pane, information for each individual save set with that name is displayed in the bottom pane.

A CFI commonly contains several cycles worth of entries for each save set name.

A ***cycle*** is defined in NetWorker as a Full backup and all its dependent save sets. Incremental and Level 1-9 save sets are dependent on the most recent Full save set for a current recovery of the save set.

To give an example of what a cycle is, if a client has a 28 day browse policy, uses the Default schedule, and has a save set list of **/export/home**, the client's CFI will contain 4 or 5 cycles of the **/export/home** save sets, with each cycle being comprised of a Full backup and its 6 dependent incremental save sets.

To manually remove entries from a CFI prior to the entries being automatically purged due to normal aging of data, **Remove Oldest Cycle** removes all entries belonging to the oldest full save set of the selected save set name and all entries belonging to its dependent save sets. This is commonly done to quickly reduce the size of a CFI.



The NetWorker `mminfo` command is used to display information from media database volume and save set records. It is also used to perform queries of the media database and generate customized reports.

`mminfo`(1m) syntax:

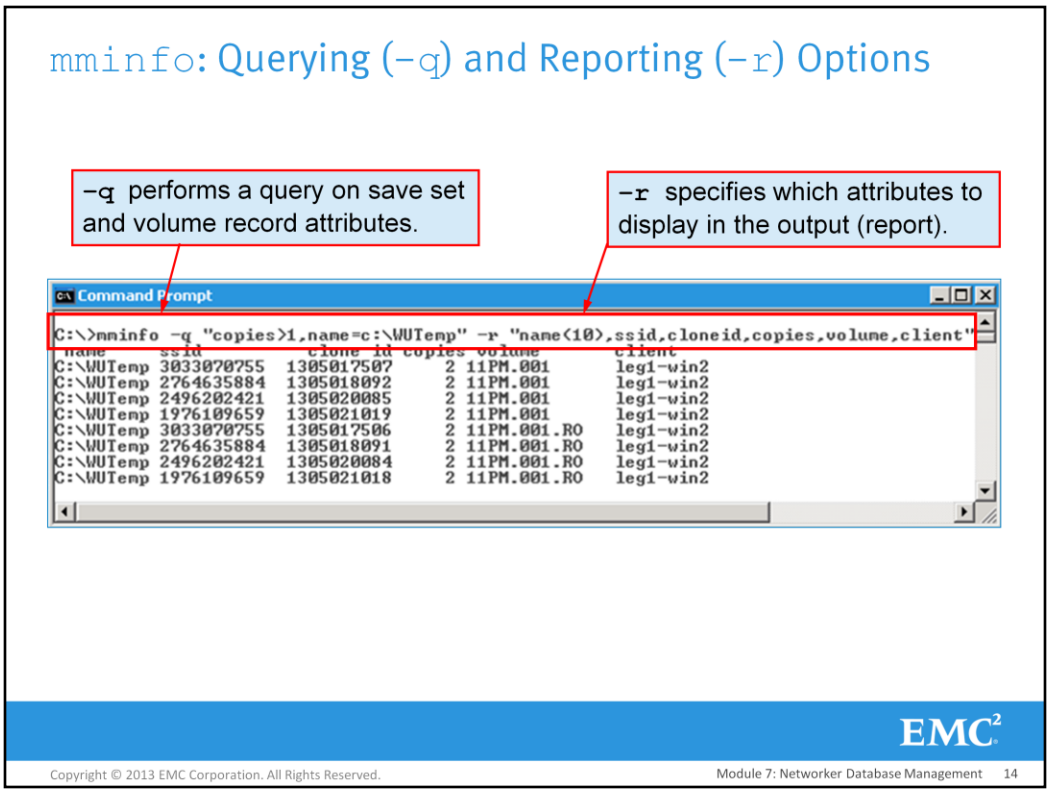
```
mminfo [ -options ] [ -q queryspec ] [ -r reportspec ]
[ volname ]
```

If no arguments are specified, the output includes all browsable save sets created since midnight of the previous day. By default, the fields displayed include the save set name, client name, timestamp, size, backup level, and the name of the volume containing the save set.

If portions of a save set reside on multiple volumes, there is a line of output for each volume.

Options and arguments are used to define other queries and reports. If the *volname* argument is used, the output is restricted to save sets on that volume.

Several common `mminfo` usage examples are shown in the slide.



The query option, `-q` *queryspec*, allows you to specify a custom query on fields (attributes) within the media database. The "\`-r` *reportspec* option allows you to specify which fields to include in the output of matching records.

Queries may use the operators '<', '>', and '=' to compare a field to a value. Commas are used to separate multiple queries. If *queryspec* begins with the negation operator '!', the comparison matches only if the field *does not* match the value.

Reports are generated by providing a comma-separated list of volume or save set attributes which are displayed in the order specified. To specify a field width within a report, append "(*width*)" to the attribute keyword, for example "`name(10)`".

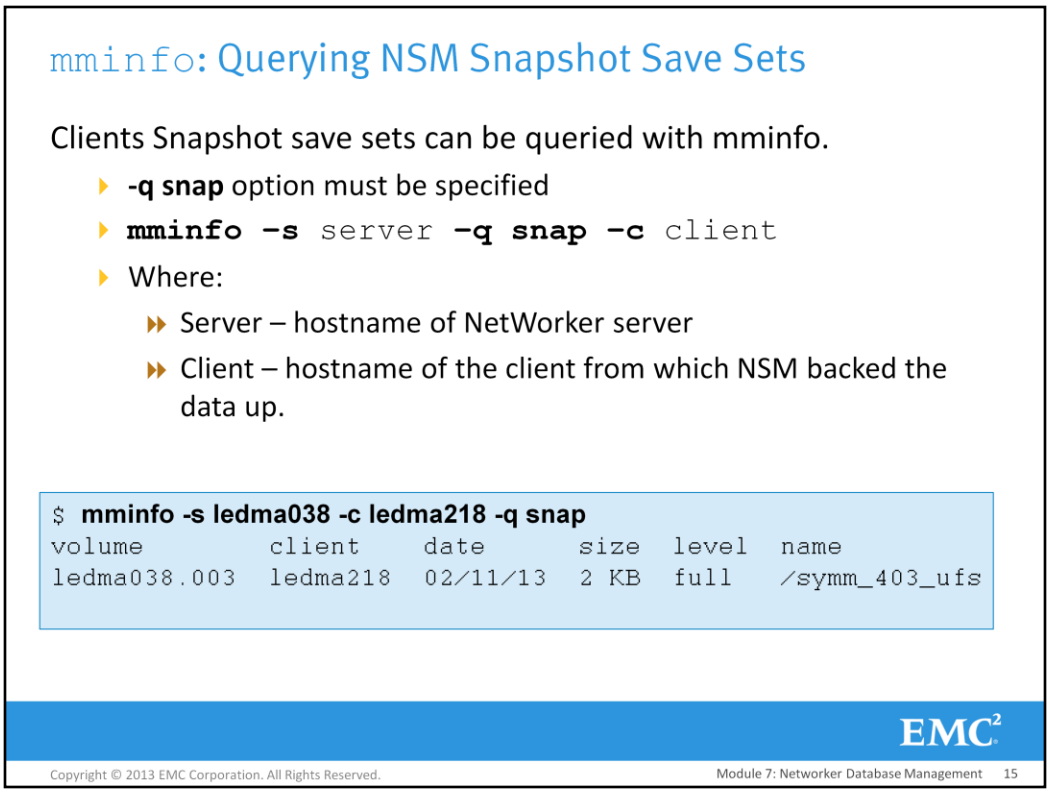
In the slide, the `-q` *queryspec* syntax is used to query the database for save sets named **/etc** that have more than one copy:

```
mminfo -q "copies>1, name=/etc" …
```

"`-r` *reportspec*" is used to display the name of the save set truncated (or blank-padded) to 10 characters, the save set ID, the clone ID, the number of copies, the volume containing the save set, and the client name:

```
mminfo … -r "name(10), ssid, cloneid, copies, volume,
client"
```

Important: There are many volume and save set attributes that may be used for querying and reporting. All of these options are listed and described in the `mminfo`(1m) man page.



Another way to query a client snapshot save sets is with the mminfo command. The **-q snap** option lists all snapshot save sets for a particular client.

To list the snapshot save sets for a client type the following command at the prompt:

mminfo -s server -q snap -c client

The *EMC Command Reference Guide and NetWorker* man pages provide further details on these operations.

Comment mminfo Options

Option	Description
`-a`	Display all complete, browsable save sets
`-v`	Display additional fields of information and, in addition to the default, display aborted, purged, incomplete and recoverable save sets.
`-o` *sort_order*	Sort output by order. (For example, "`-o cn`" sorts primarily by client name and secondarily by save set name.)
`-s` *nw_server*	Query the media database of the specified NetWorker *server*.
`-c` *nw_client*	Show only save sets belonging to the specified NetWorker client.
`-m`	Display media report instead of save set report
`-N` *ss_name*	Show only save sets that match the specified *save set name*
`-p`	Display browse and retention times of save sets.
`-xm` | `-xc`*char*	Write output in XML (`-xm`) or character-separated (`-xc`*char*) format.
`-t` *save_time*	Display only save sets created on or after *time*.

EMC²

The slide lists common `mminfo` options for querying the media database and generating reports.

Additional `mminfo` Examples

Query NetWorker server **bongo**'s media database, reporting on all browsable save sets, with a colon (:) separating each field of output. This can be executed on any NetWorker client.

```
mminfo -s bongo -a -xc:
```

Display all save sets with a name of **`/stardata`** that were backed up from **alto**, generate verbose output and separate the fields with a semi-colon. The semi-colon must be quoted (UNIX only) because it is special to all UNIX shells.

```
mminfo –c alto –N /stardata –v –xc';'
```

Query the database for save sets older than 2 days. The default set of attributes is displayed.

```
mminfo -q "savetime < 2 days ago"
```

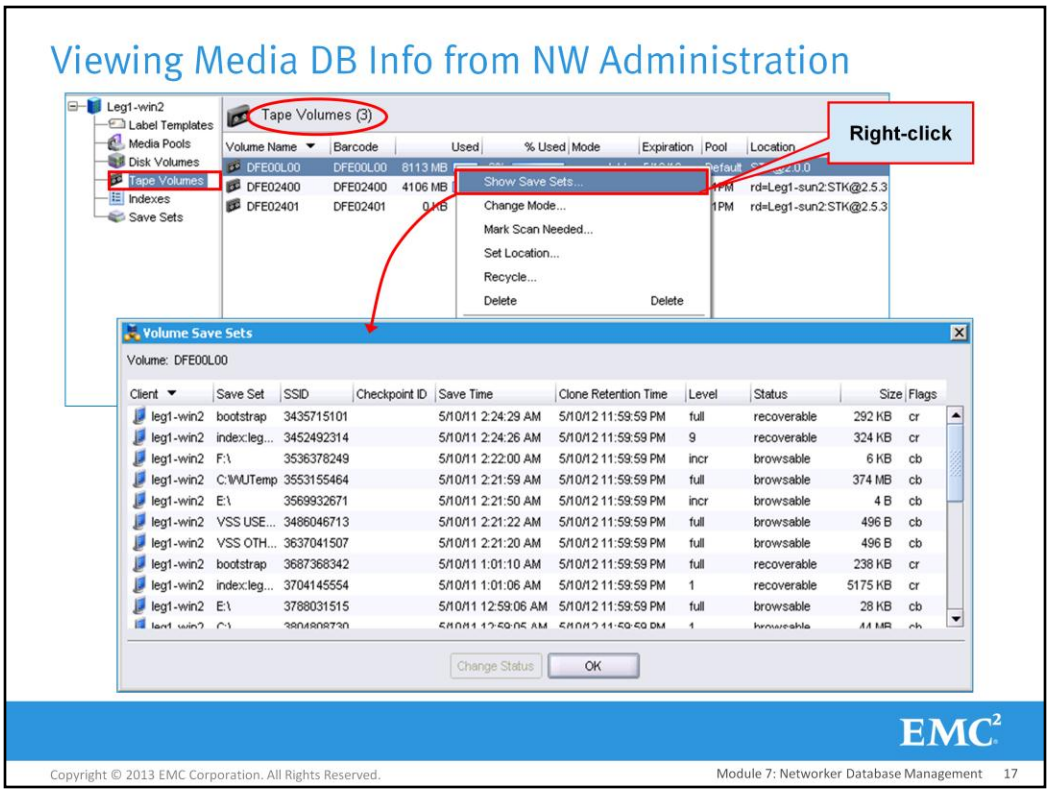
Query the database for save sets backed up from **flute** within the past 2 days.

```
mminfo -q "savetime > 2 days ago, client=flute"
```

Display information on volumes containing save sets backed up from **flute** and which were written to during the past week.

```
mminfo -m -t "last week" -q client=flute
```

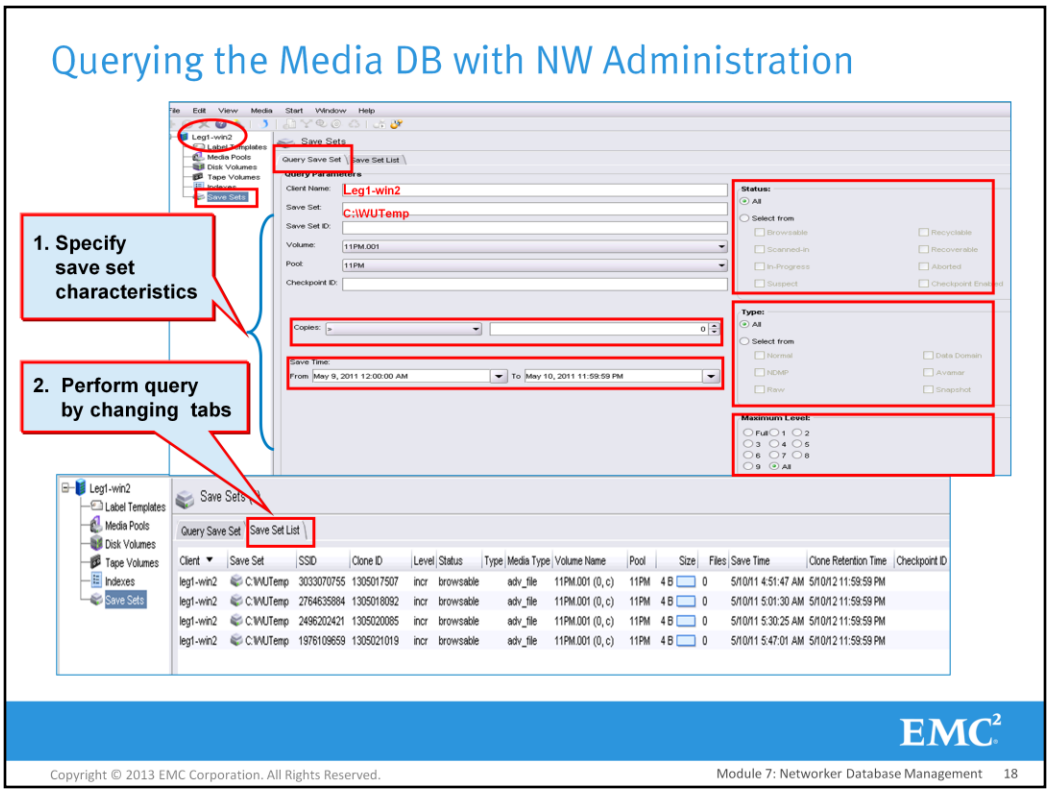
Note: See the `mminfo`(1m) man page for examples and further information.



The NetWorker Administration GUI can be used to display volume and save set information by using the **Volumes** selection in the *Media* window.

When **Volumes** option is selected in the left pane, a list of all volumes is displayed. Right-clicking on a volume pops up a context menu used for performing tasks associated with volumes; such as displaying all save sets on a volume and deleting a volume from the media database.

Double-clicking a volume will also display all save sets on the volume. The information displayed is equivalent to that generated by using "`mminfo -v` *volumename*".



The NetWorker Administration GUI also provides the ability to query the media database and display information concerning save sets matching the query.

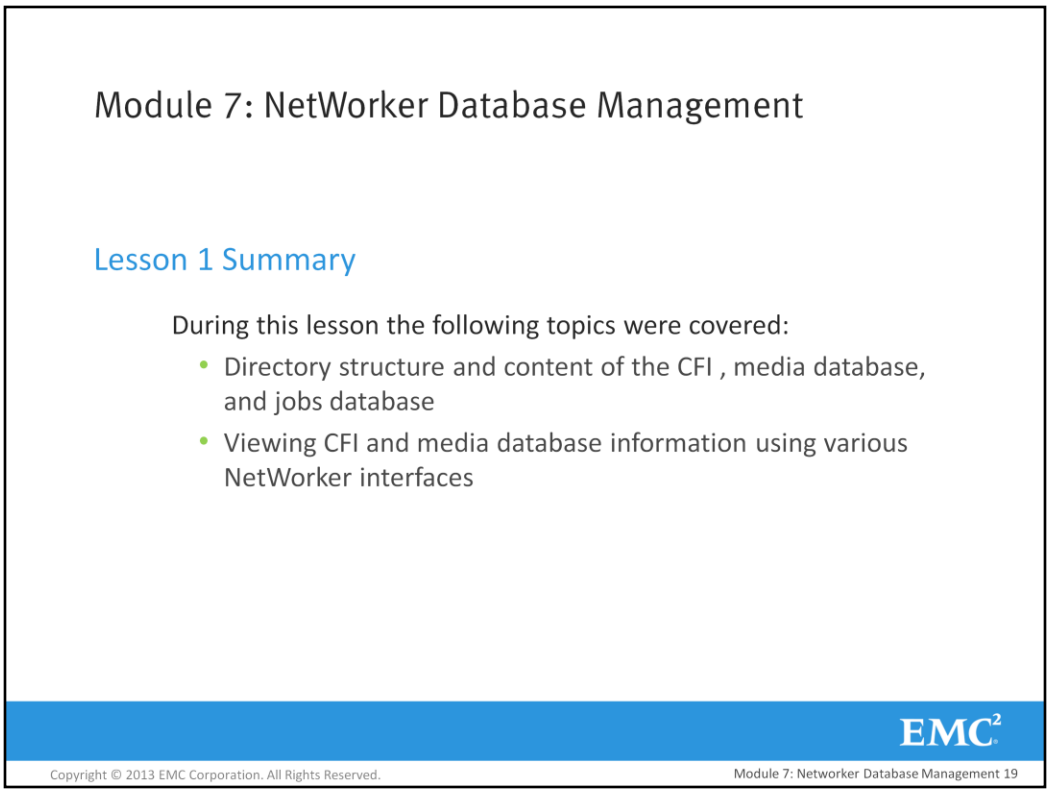
To perform a query, click **Save Sets** in the left pane of the *Media* window. In the right pane, specify the save set characteristics of those save sets you want information about. Change to the *Save Set List* tab to perform the query and report matching save sets.

In the *Query Save Set* tab, you can choose to display only those save sets matching a specific status and type. The default value is **All** for both **Status** and **Type**.

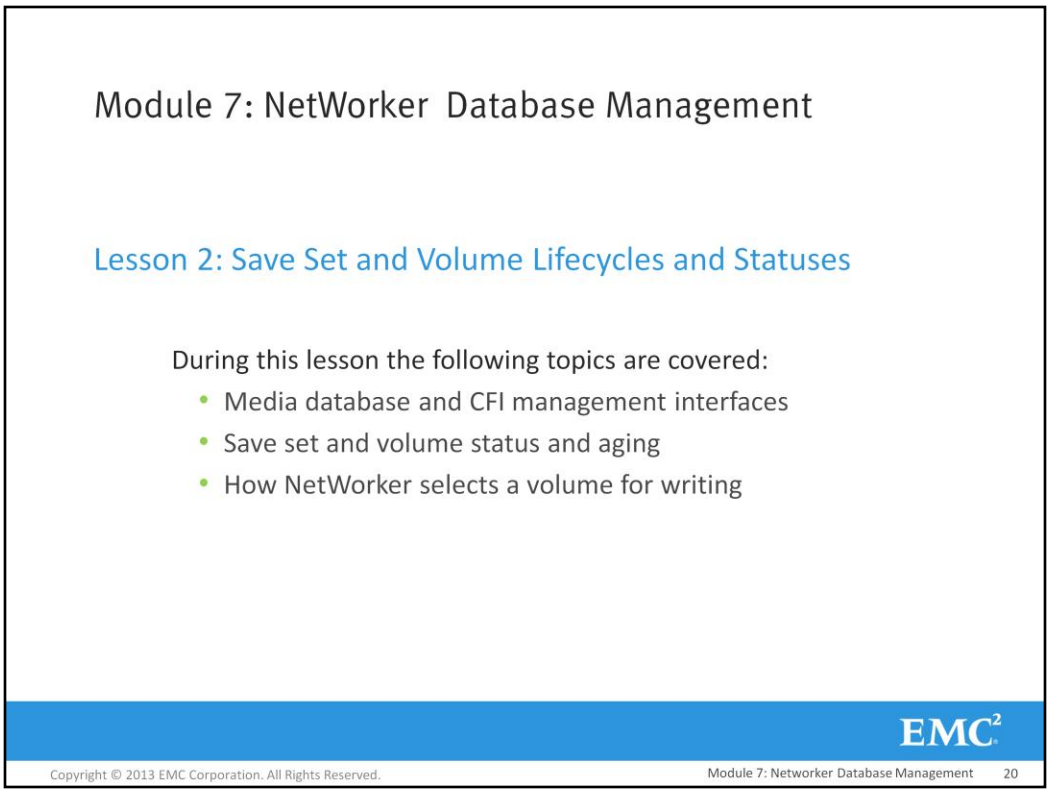
Copies commonly refers to how many times a save set has been cloned. A save set that has been cloned once has 2 copies, the original and one clone. Additionally, any save set written to an advanced file type device is seen as having 2 copies. The drop-down menu in the **Copies** field allows you to perform comparisons using the '=', '>' and '<' operators.

You can specify the maximum backup level of the save set. Since a full backup is equivalent to a level 0, selecting **Full** matches only full level backups. Selecting **9** would match all save sets backed up at a level 9, level 8, level 7, etc. To match incremental and client-initiated save sets, **All** must be selected.

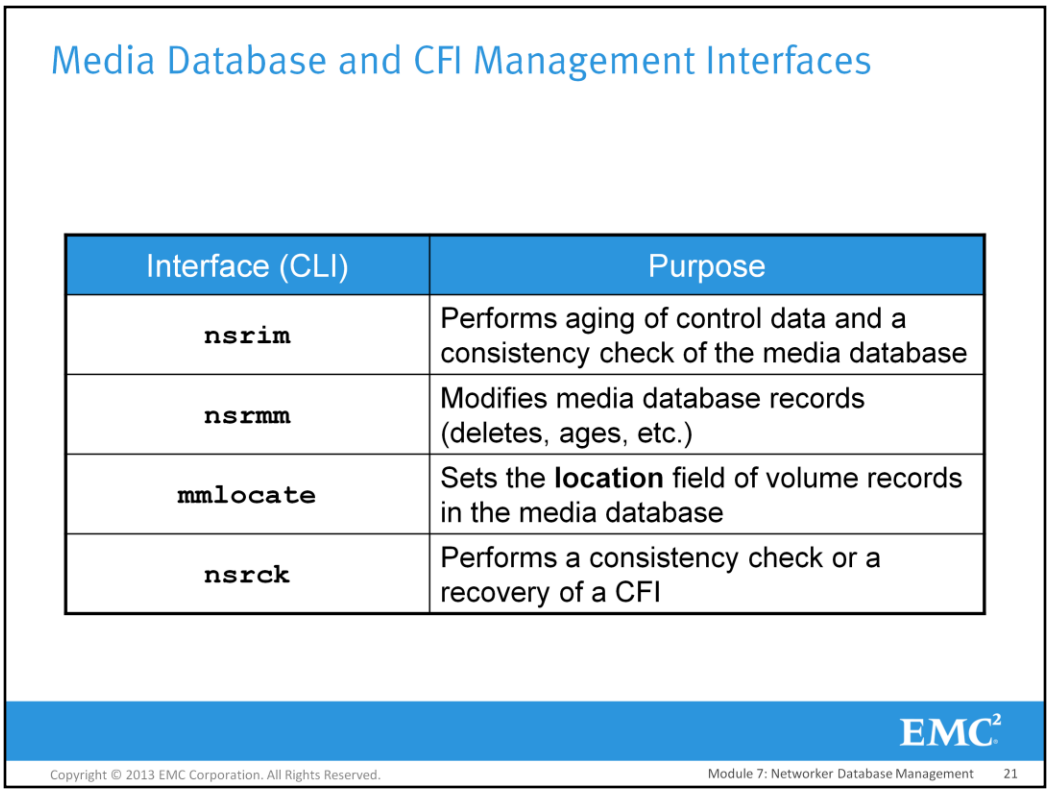
When selecting a range of values for the **Save Time** field, a calendar is displayed from which you select the desired date. A specific time of day can be specified by manually editing the **From** and **To** fields.



This lesson covered the CFI, media database and jobs database content and how to view CFI and media database information using various NetWorker interfaces.



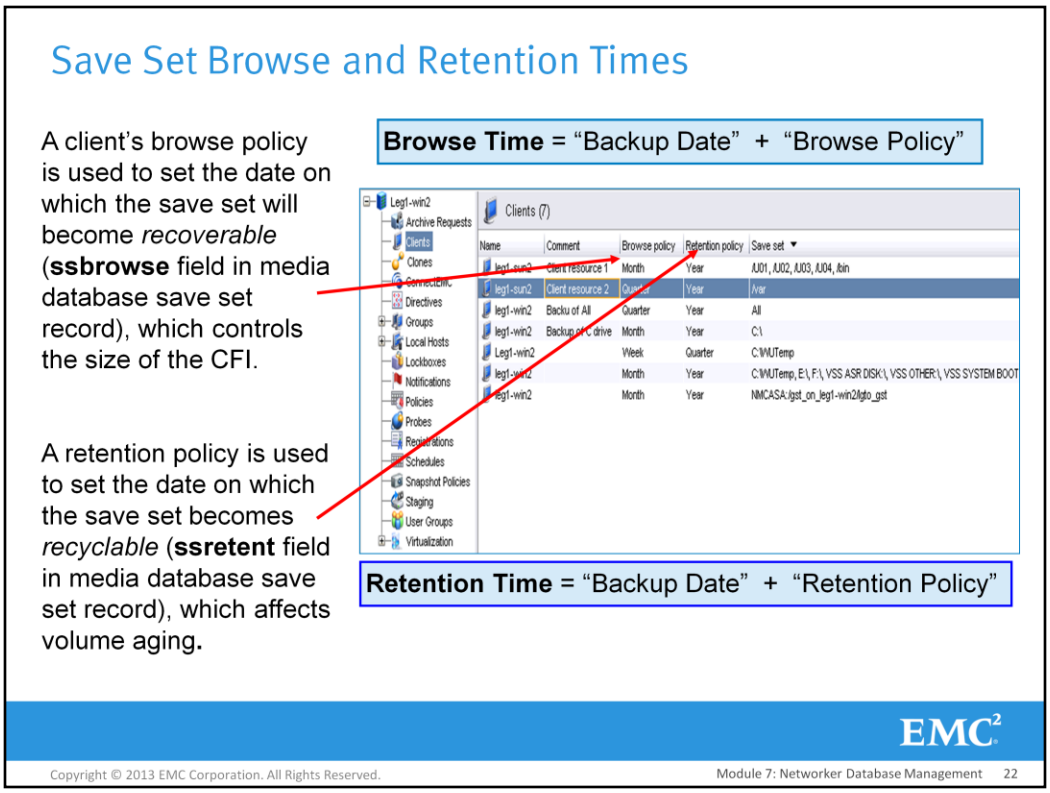
This lesson covers interfaces for managing the media database and CFI; save set and volume status and aging; as well as how NetWorker selects a volume for writing.



Much of the management of the NetWorker databases is performed automatically, such as aging of save sets and volumes, and performing of consistency checks. NetWorker also provides command-line and GUI administrative interfaces for manual administration of the databases and their content. This slide lists these interfaces and their functions.

While the command-line utilities in the slide are usually executed on the NetWorker server, both `nsrmm` and `mmlocate` include a "`-s` *nw_server"* option which allows you to run the command from any NetWorker host.

Note: The `nsrmm command` has numerous functions. In the context of database management, it is used to change the save set and volume status, delete save sets and volume records from the media database, and age save sets. `nsrmm` can also be used to manage standalone devices, including the labeling and mounting of volumes.



The **Browse policy** and **Retention policy** attributes in the client resource are used to set the aging values for the client's save sets. When a save set is backed up, the client's browse and retention policies are added to the current date to determine the save set's **browse time** and **retention time,** respectively. These values are stored in the save set record as the **ssbrowse** and **ssretent** attributes, and are used to determine when the save set changes from one status to another (ages).

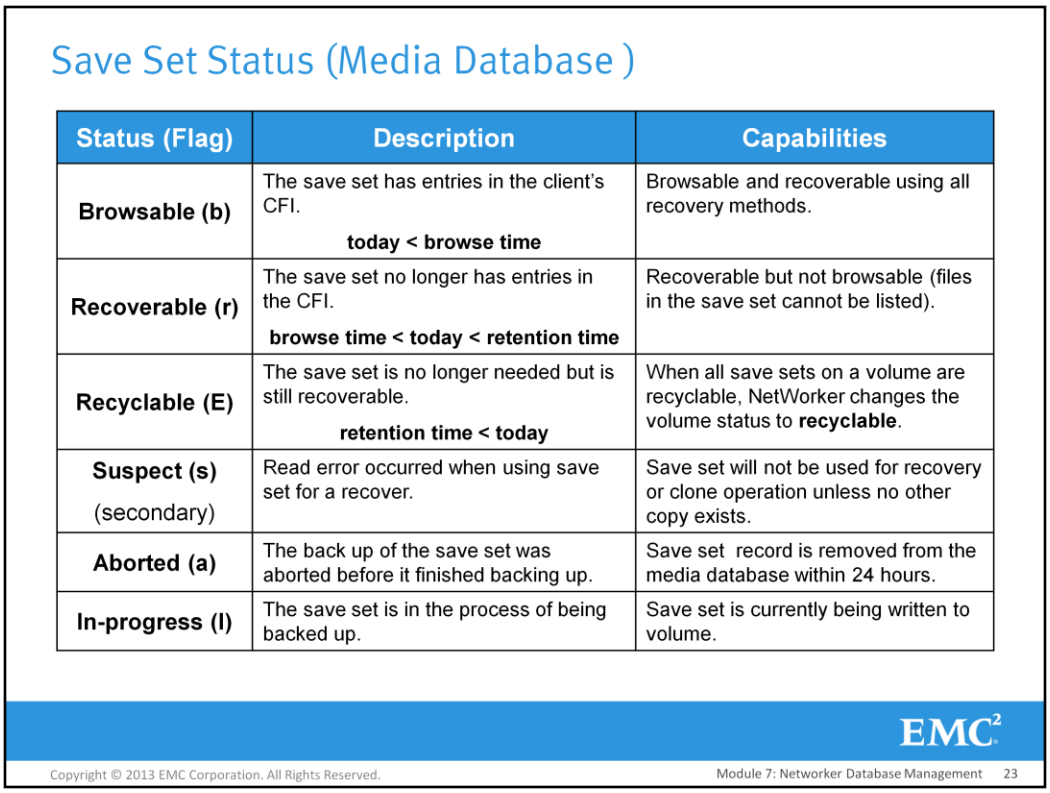
Browse time (**ssbrowse**) = "Backup Date" + "Browse Policy"
Retention time (**ssretent**) = "Backup Date" + "Retention Policy"

The browse time specifies the date when the save set's entries are removed from the client's CFI, thereby making the save set no longer browsable.

The retention time specifies the date when the save set expires and is no longer required by the NetWorker administrator.

Save sets are checked for aging at the end of a group backup or by manually running `nsrim`. Dependent save sets may delay the aging of certain save sets. For example, a level Full save set that has passed its browse time will remain browsable (and therefore tracked in the CFI) until all incremental save sets that depend on the full save set also pass their browse times. Thus, the aging of save sets may be delayed by up to one cycle period, where a cycle is defined as the length of time between full backups.

Important: Changing a client's browse or retention **policy** attribute does not affect the browse and retention times of existing save sets.



All save sets are tracked in the media database. Each save set record has a status field which reflects the save set's aging status. Primary statuses include **browsable**, **recoverable**, and **recyclable**. A save set may also be assigned a secondary status of **suspect** if a read error occurs during a recovery attempt of the save set contents.

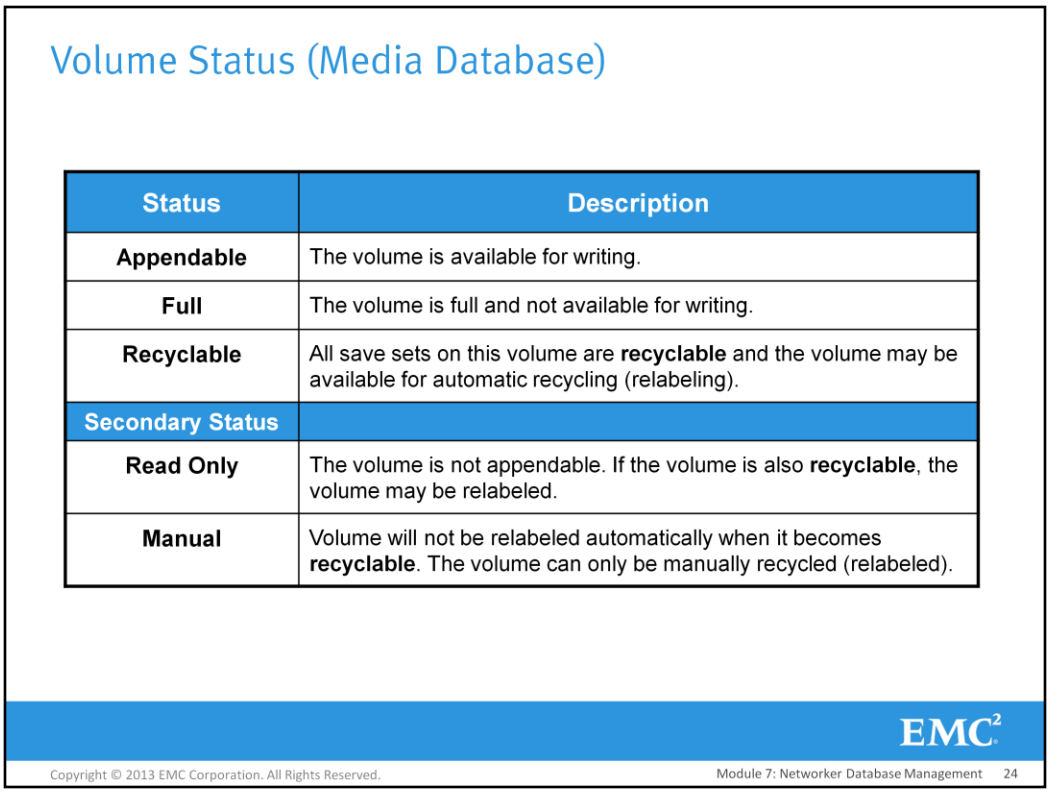
A **browsable** save set has not passed its browse time and is therefore still tracked in both the media database and a client file index. Both a browsable recovery and a save set recovery can be performed on the save set.

A **recoverable** save set has passed its browse time but has not exceeded its retention time. Because it has passed its browse time it is no longer tracked in a client file index. Only a saveset recovery can be performed without rebuilding the client file index for that saveset.

A **recyclable** save set has passed both its browse and retention times. A recyclable save set is treated exactly like a recoverable save set except it will not keep the volume it is on from being automatically recycled (relabeled).

Note: The `mminfo`(1m) man page contains more information for the other `mminfo` status flags.

Important: A recyclable save set on a tape volume is only removed when that tape is relabeled. A recyclable save set residing on a file type or an adv_file type device is removed by `nsrim` on the same day it becomes recyclable.



NetWorker volumes are also tracked in the media database and have one or more statuses (modes) assigned to them reflecting their age and other conditions. The slide lists the major volume modes.

When NetWorker labels a volume, the volume is assigned a status of **appendable**. Backups can only be written to **appendable** volumes.

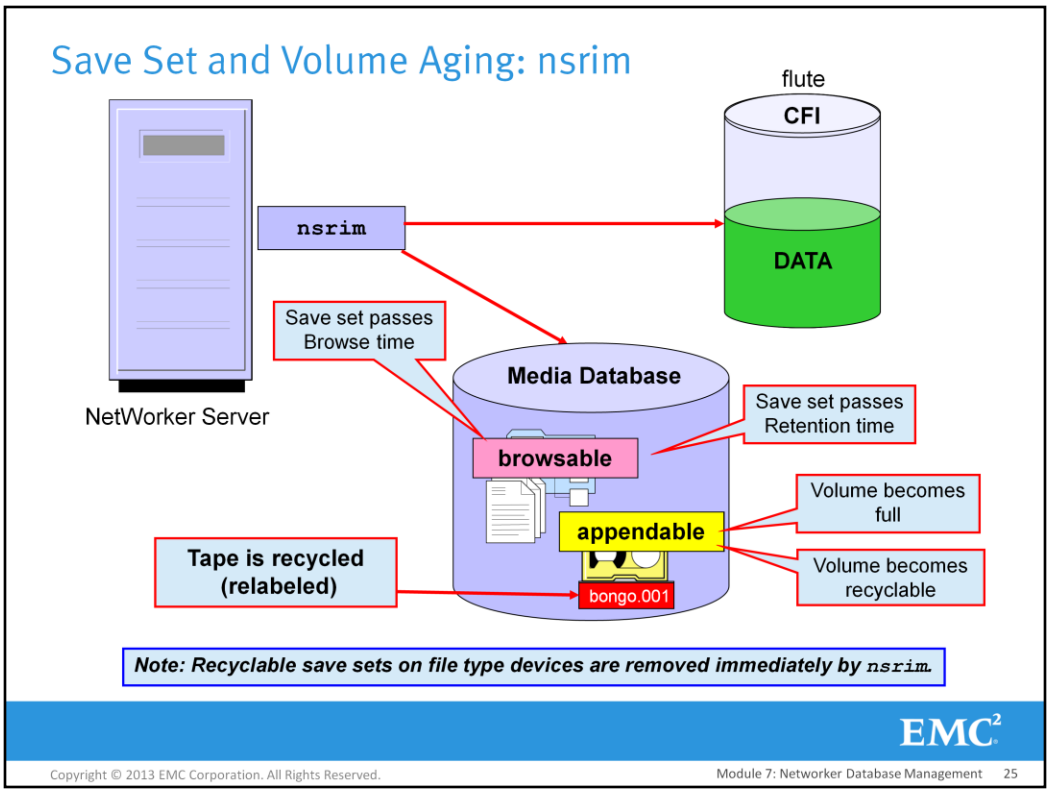
When a volume becomes full, it is assigned a status of full and can no longer be used for backups. A tape volume will become full when the physical EOM (end of media) marker is encountered during a save or when a write error results in the save being directed to another volume.

When all save sets on a volume become **recyclable**, the status of the volume itself changes to **recyclable**. Recyclable volumes may be automatically recycled (relabeled) by NetWorker in the event that no **appendable** volumes are available to satisfy a backup request.

An administrator may assign a secondary mode of **manual** *(*recycle) to a volume. A volume with a status of **manual** will never be automatically relabeled by NetWorker, even if the primary mode of the volume is **recyclable** and a pending backup is waiting for another volume.

A volume can be manually assigned a status of **read only**. This will keep additional data from being written to the volume. **Full** and **recyclable** volumes are automatically given a secondary status of **read only**.

Important: Manually setting a volume to **read only** does not keep it from being recycled, it only prevents further data from being written to it.

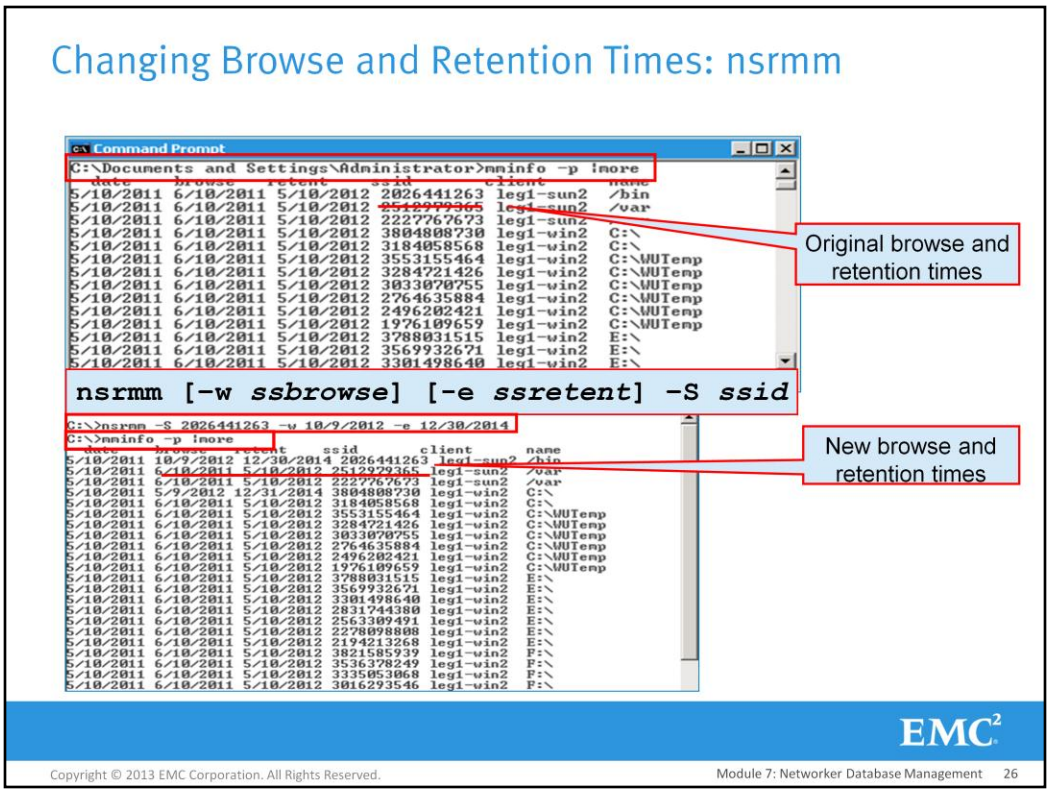


nsrim handles aging of save set and volume records within the media database, and is responsible for enforcing browse and retention times for all clients. `nsrim` also removes tracking information from the CFI when a save set changes from browsable to recoverable (or recyclable). The `nsrim` command is typically only invoked automatically at the completion of `savegrp`. However, you can also run `nsrim` manually from the command line.

`nsrim` syntax:

```
nsrim [ -option arg ] [ -option ]
```

Note: See the `nsrim`(1m) man page for more information.



You can use `nsrmm` to change an existing save set browse or retention time, using `-w` *browse_time* and `-e` *retention_time*, respectively. Using these options sets the save set **ssbrowse** and **ssretent** fields in the media database, which are used by `nsrim` for aging of the save set. Changing an existing save set's browse and retention times is useful for extending or shortening the life cycle of a specific save set.

`nsrmm` syntax pertaining to browse and retention times:

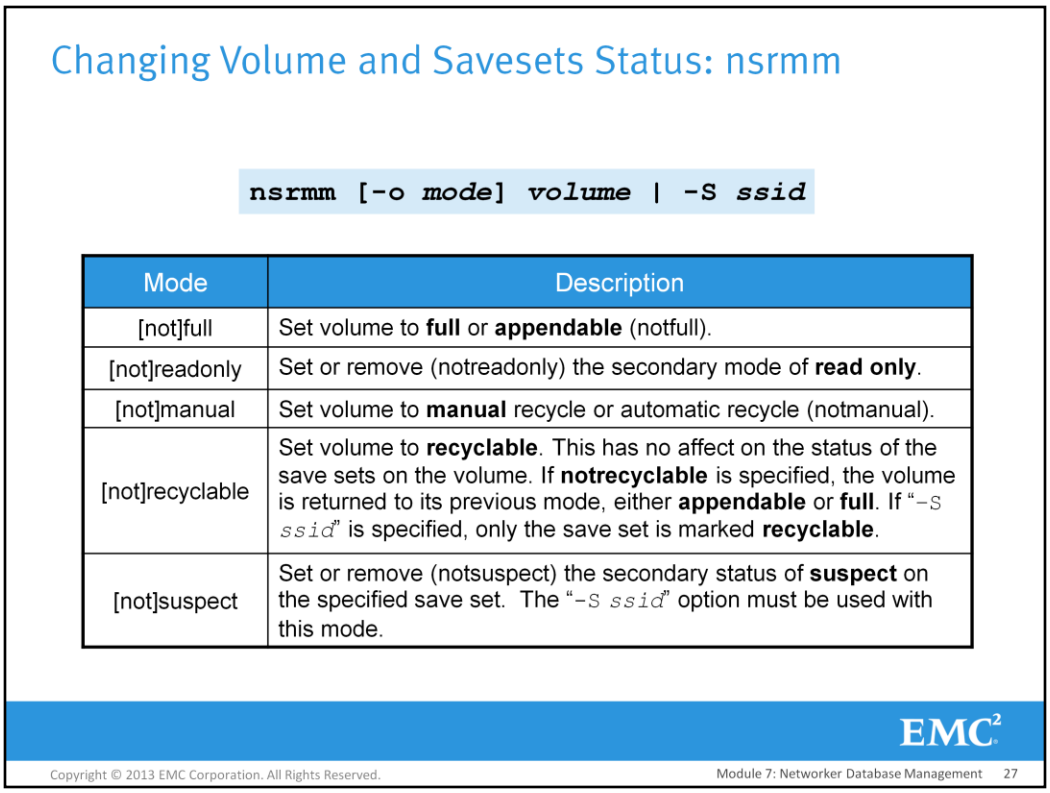
`nsrmm [-w` *`browse_time`*`] [-e` *`retention_time`*`] -S` *`ssid`*

You can specify *browse_time* and *retention_time* in any format described in the `nsr_getdate`(3) man page. The time can be an absolute time such as *MM*/*DD*/*YY*, or a time relative to the current date, such as "2 Months" or "4 years".

The `-S` *`ssid`* option specifies the save set(s) to modify.

Changing the browse or retention time for a save set changes the dates for all instances of the save set.

Note: See the `nsrmm`(1m) man page for more information.



You can manually change the status of volumes and save sets by using `nsrmm` with the `-o` *`mode`* option.

`nsrmm` syntax pertaining to the -o *mode* option:

```
nsrmm -o mode volume | -S ssid
```

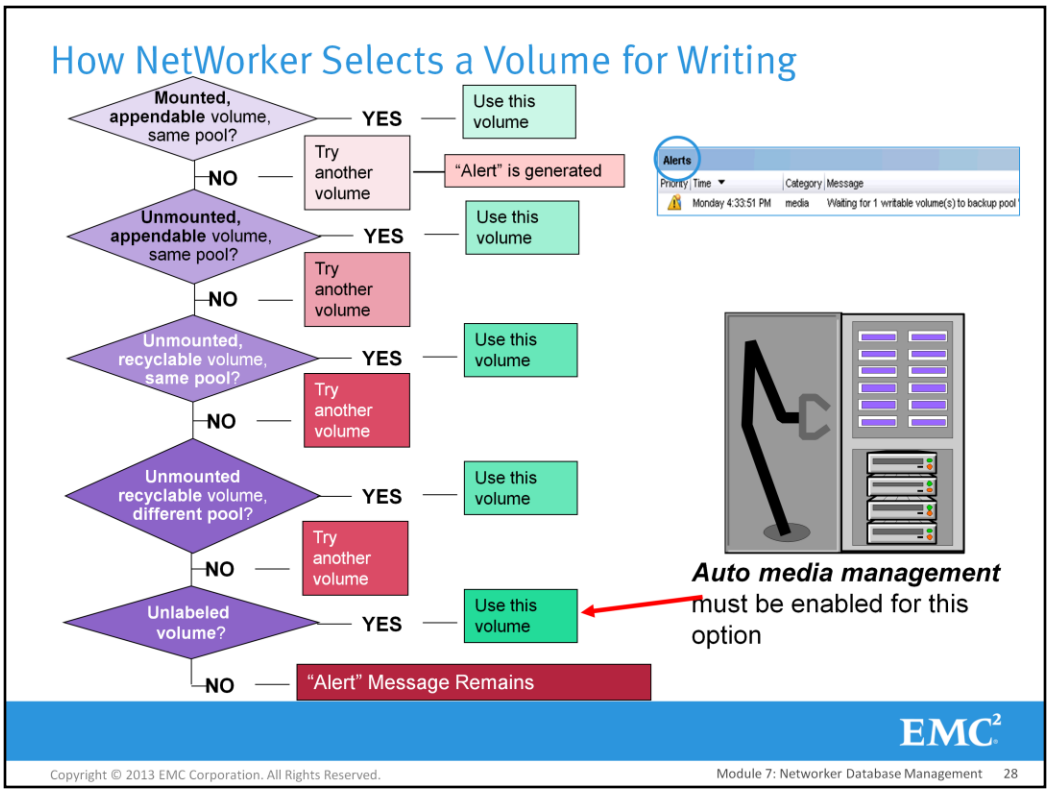
where *mode* can be any of the modes listed in the slide. The *volume* argument is the name of the volume whose record you want to change.

If a write error occurs when writing to a volume, the volume mode is changed to full to avoid trying to write additional data to a volume which is possibly damaged. However, if the error was actually caused by the device, using `nsrmm` with the notfull argument can be used to make the volume appendable again.

The `-S` *ssid* option is used to change the status of specific save sets. A common use is to reset the status of a suspect save set after determining that the volume really is not damaged.

It is important to use caution when manually specifying a volume as recyclable. If the volume being modified contains browsable recoverable savesets the status of those will not be changed. However, the volume itself will become recyclable and any savesets on the volume may be recycled when the volume is recycled, regardless of their status.

Note: You must unmount a volume to change its status.



After a backup starts and the NetWorker server determines what pool the save set should be written to, it is then necessary to determine what volume within that pool to use.

The volume used falls in one of the five categories listed below in order of priority. Each of these categories requires the volume be available on an appropriate storage node.

1. **Mounted**, **appendable** volume from the required pool.

   If there is no appendable volume currently mounted, the NetWorker server generates an alert stating that a volume from the appropriate pool is not immediately available. The server then continues its search for a volume to use.

2. **Unmounted**, **appendable** volume from the required pool.
3. **Unmounted**, **recyclable** volume from the required pool.
4. **Unmounted**, **recyclable** volume from a different pool. (This is disabled by default.)

   If **Auto media management** is not enabled, the volume request is not cleared from the Alerts window, and the NetWorker administrator must manually provide a volume to satisfy the request before the backup can continue. If **Auto media management** is enabled, NetWorker looks for one more type of volume, listed below.

5. **Unmounted**, **unlabeled** volume.

   Any volume without a NetWorker or EDM (EMC Data Manager) label is considered unlabeled.

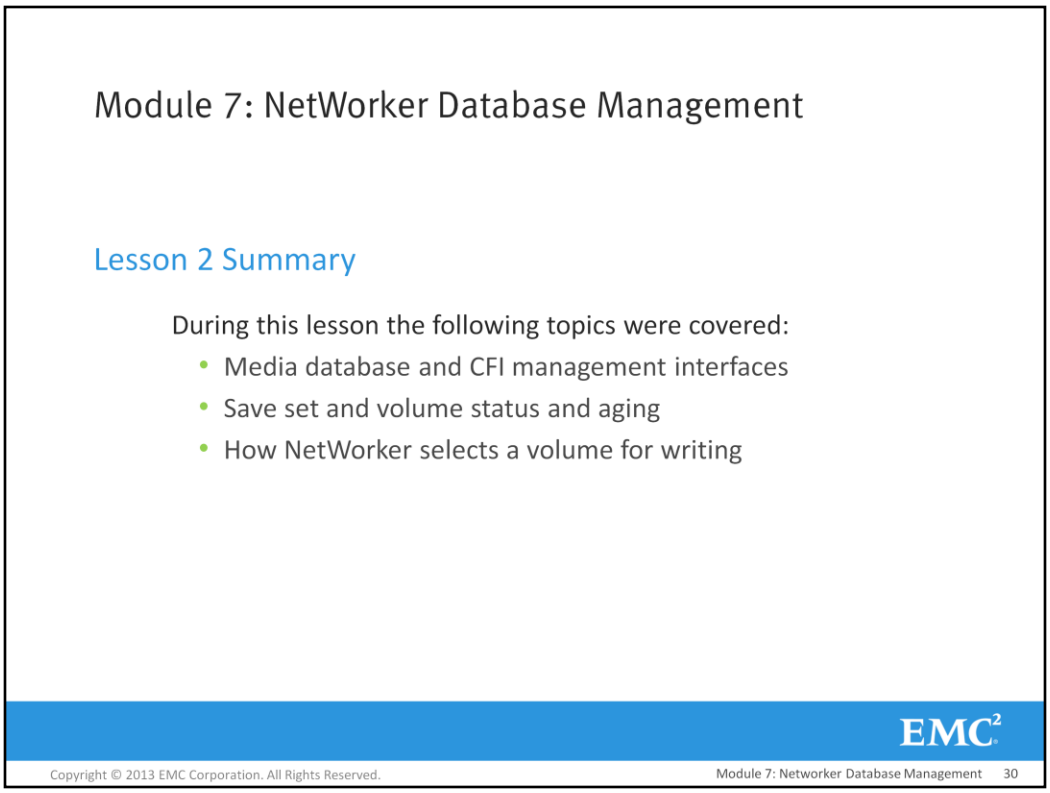
Lab Exercise 7-1: NetWorker Databases - Part 1

In this lab you will display NetWorker database contents, perform database queries and generate reports, and modify a save set record.

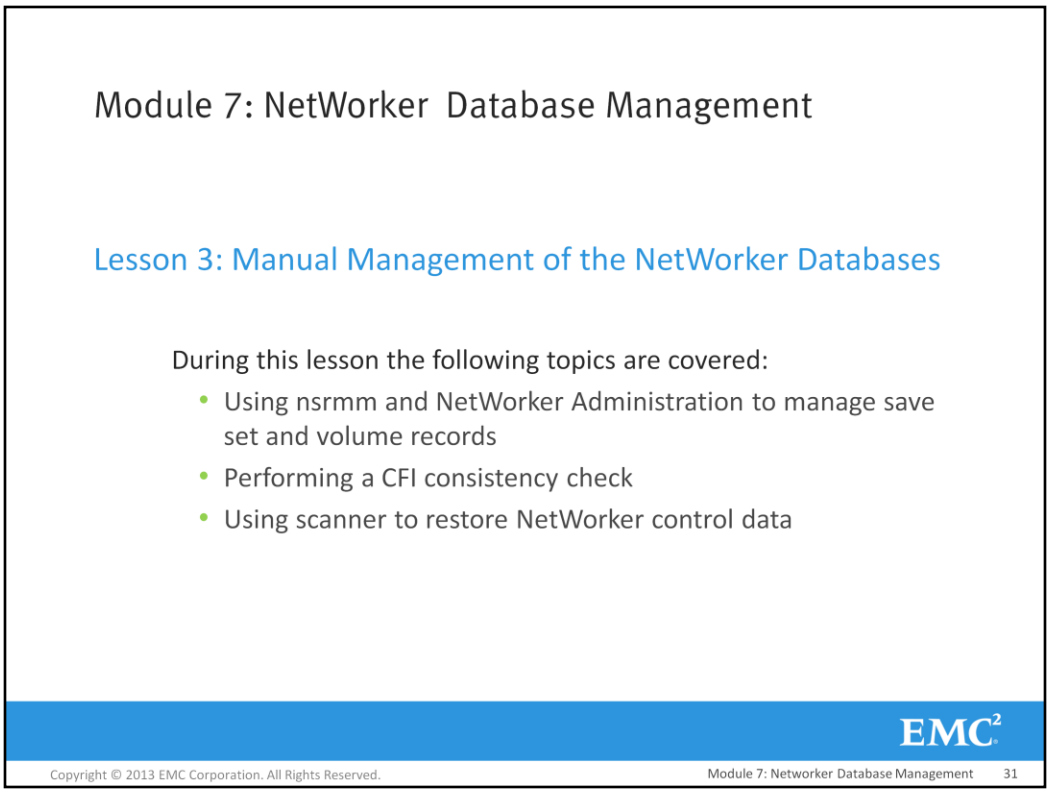
EMC²

In this lab, you will:

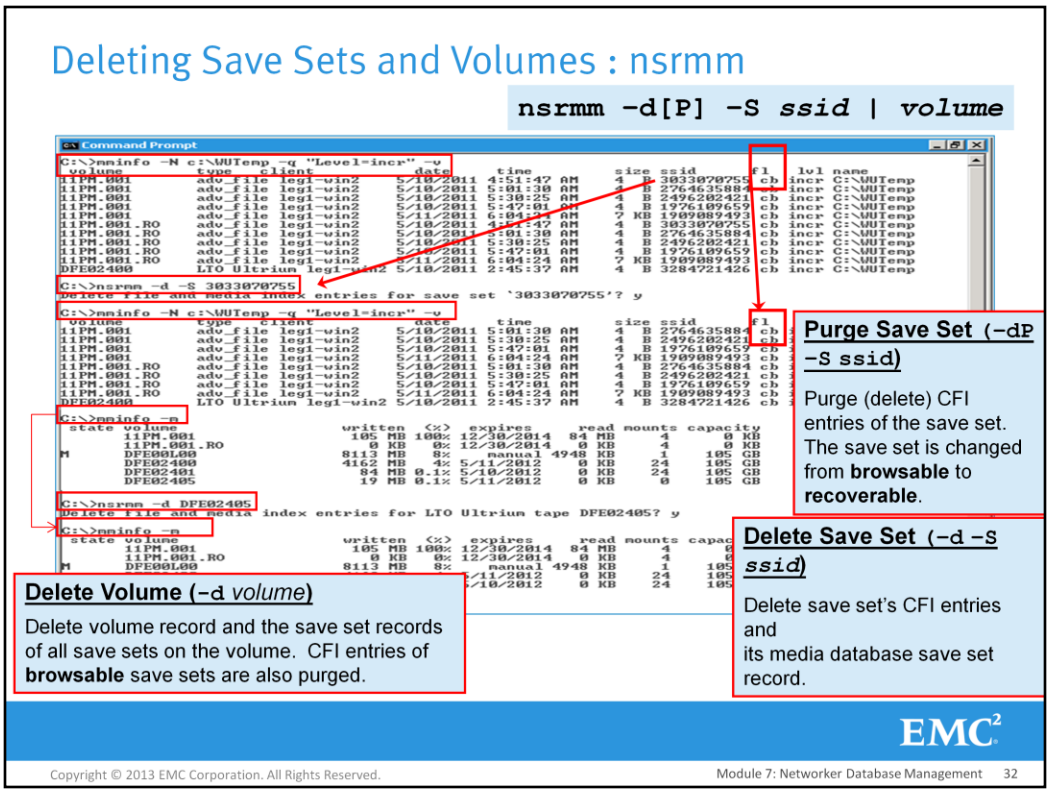
- Query and display media database information.
- Query and display CFI information.



This lesson covered interfaces for managing the media database and CFI; save set and volume status and aging; and how NetWorker selects a volume for writing.

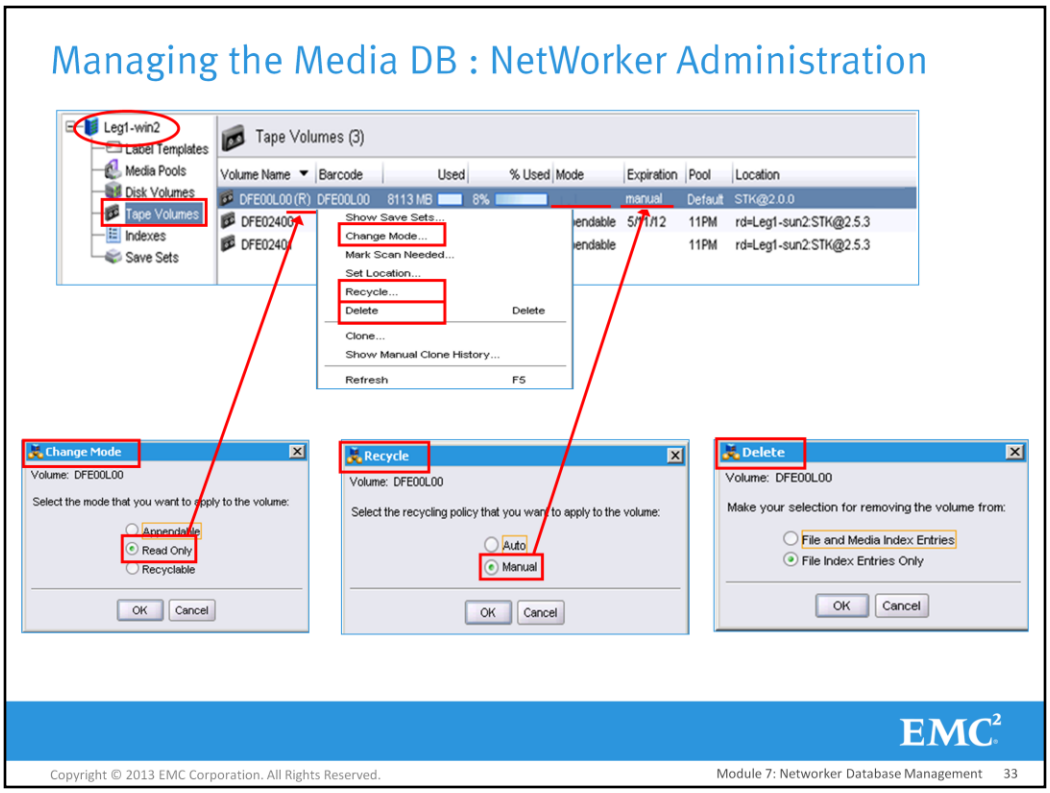


This lesson covers managing save set and volume records, performing a CFI consistency check, and restoring NetWorker control data with scanner.



`nsrmm` can be used to remove information from CFIs and the media database. Combining the `-d` and `-P` options allows you to remove CFI entries of individual save sets or of all save sets on a volume. Removal of CFI records is commonly referred to as **purging**. Using the `-d` option without `-P` removes save set and/or volume records from the media database.

Note: To avoid accidental removal of data, be extremely careful when using the `-y` option. The NetWorker `scanner` command can be used to restore database information for save sets and volumes that are inadvertently deleted.



You can also manage save set and volume records from the NetWorker Administration *Media* window. Choose either **Disk Volumes** or **Tape Volumes** in the left pane to display a list of volumes. Then, right-click a volume to bring up a context menu. From the context menu, you can perform the same set of media database management tasks as `nsrmm`.

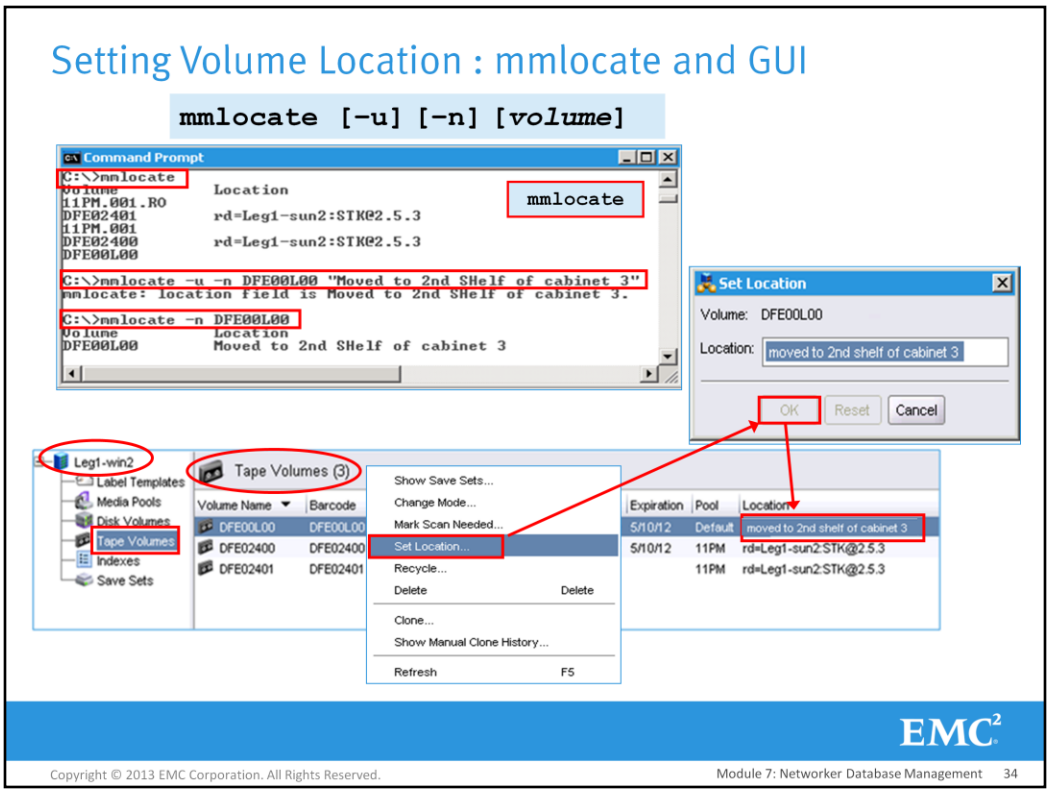
Change Mode - Allows you to change a volume's mode to either **appendable** or **recyclable**, or set/unset the secondary mode of **read only**. This is the same as

`nsrmm -o` { *readonly* | *notreadonly* }.

Set Location - This is discussed on the next page.

Recycle - Allows you to set a volume to manual or automatic recycle. This is the same as `nsrmm -o` { *manual* | *notmanual* }.

Delete - Allows you to purge CFI entries of all save sets on the volume. You can additionally remove the volume record and all the corresponding save set records. This is the same as `nsrmm -dP` *volume*.



Volume records in the media database have a **location** field that you can use to track the volume's location. The location can be a string of up to 64 characters. This field is useful for tracking volumes which have been removed from the jukebox and for volumes moved offsite.

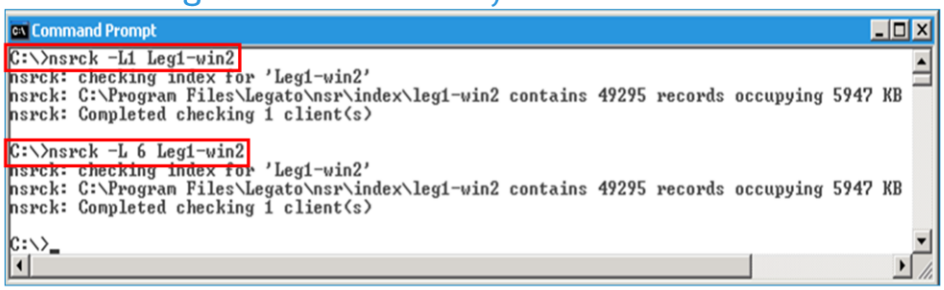
If a volume is labeled in a jukebox, the **location** field is automatically set to the name of the jukebox. The field can be manually updated using NetWorker Administration or `mmlocate`.

`mmlocate` syntax:

```
mmlocate [ -options ] [ location ]
```

The *location* argument specifies what to set the location to or which volumes to manage based on location. The default (no options/arguments) lists all volumes and their location values.

Performing a CFI Consistency Check: nsrck



Level	Description
-L1	Merge the journal with the index header
-L2	Clean up cancelled saves and rebuild the index header
-L3	Cross-check the client file index with the media database
-L4	Check the key files
-L5	Verify the list of save times against key files
-L6	Rebuild the key files
-L7	Recover the client file index from available backup media

EMC²

Use `nsrck` to check, recover, or remove a client file index. `nsrck` also cross-checks the media database with the contents of each CFI. `nsrck -L 3` is automatically invoked by `nsrim` at the end of group backups. Also, each time the NetWorker server starts, it runs `nsrck -L 1`.

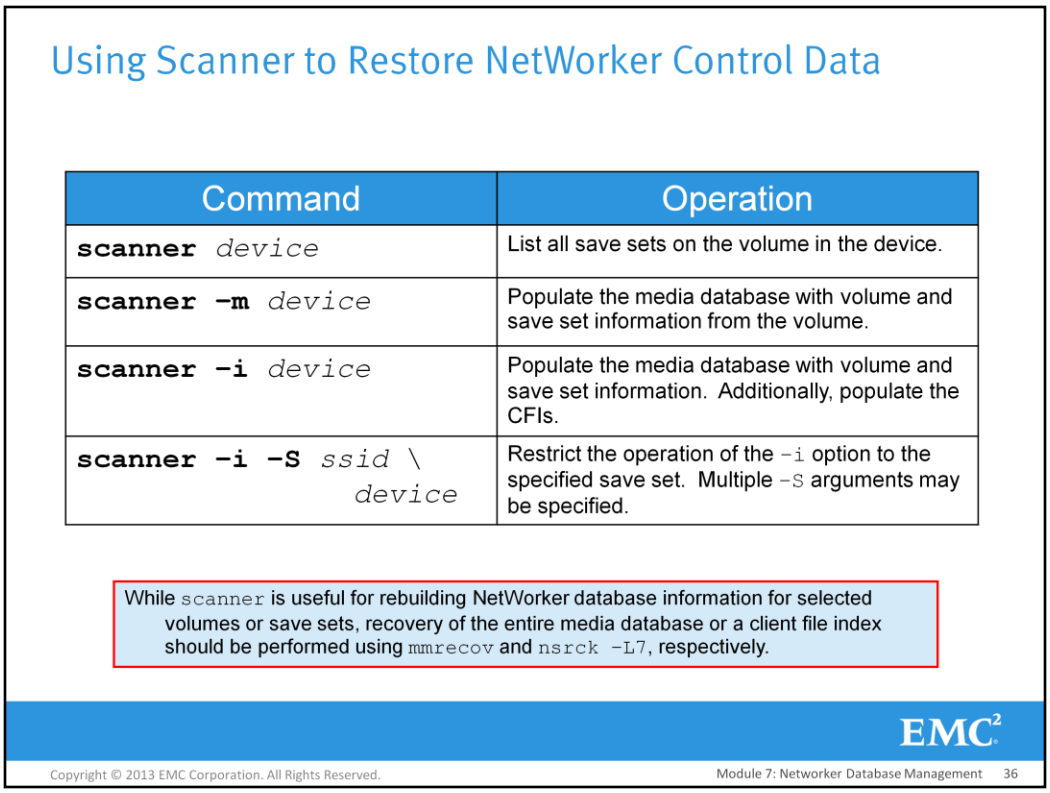
`nsrck` syntax:

`nsrck [ -L level ] [ -options ] [ clientname ]`

With no arguments, `nsrck` performs a level 3 check of all CFIs.

The slide shows the seven levels of consistency checking that `nsrck` can perform. Each level incorporates the actions of the lower levels.

Level 7 is different from all other levels in that it is used only for recovery of a CFI. This level is discussed in the module, *Recovering a NetWorker Server*.



scanner can perform numerous functions. Before executing `scanner`, you must load a volume into a NetWorker device. You then provide the pathname of the device as an argument to `scanner`, which is executed on the storage controlling the device.

With no options, `scanner` reads the entire volume and displays a list of save sets found. Information displayed includes save set name, SSID, and date and time of the backup. Additionally any media errors that occur will be reported as well.

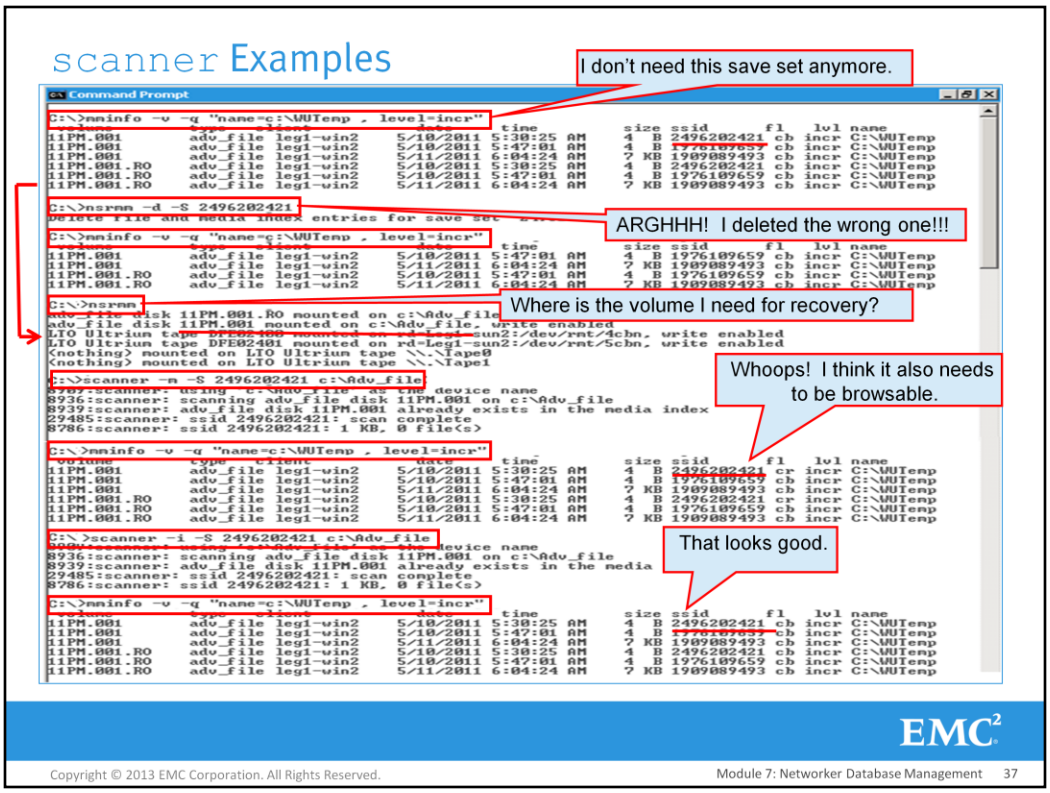
The `-m` option causes `scanner` to read the entire volume, creating save set records in the media database for any save sets not currently tracked. If the media database does not have a volume record for the volume being scanned, a volume record is created.

When the `-i` option is used, `scanner` populates the media database with volume and save set information, just like with `-m`, but additionally populates the appropriate client file indexes with file information read from each save set on the volume. This operation can be very time consuming if there are many save sets with lots of files.

When used in combination with the `-i` option, `-S` *ssid* is used to restrict which save set(s) the operation is performed on. For example, to populate a CFI with the list of files from save sets 1289372 and 1236738, located on a volume in device `\\.\Tape1`, the command would be:

```
scanner -i -S 1289372 -S 1236738 \\.\Tape1
```

To recover the entire media database or an entire CFI, you should use `mmrecov` and `nsrck -L7`, respectively. These are discussed in the module, *Recovering a NetWorker Server*.



The following scenario is presented in the slide:

1. A recent full backup of a save set is not needed because the data was corrupted before the backup took place. It was written to a file device and needs to be deleted to free up space. `mminfo` is used to determine the SSID of the save set.
2. `nsrmm` is used to delete the save set record. Unfortunately, the administrator specifies the wrong SSID. `mminfo` is executed again just to verify that the save set is indeed gone. It is now necessary to rebuild the deleted save set record.
3. `nsrmm`, with no arguments, is used to locate the volume containing the save set. From the output, it is determined that the volume is already loaded in device `C:\Adv_File`. If the volume were in an autochanger, `nsrjb` would be used instead of `nsrmm`.
4. `scanner` is used to recreate the media database save set record. The output is redirected because when the `-m` option is used, `scanner` oddly enough generates a recover stream that is not needed in this situation.
5. The administrator runs `mminfo` to see if the save set is once again being tracked and discovers that although the save set record is back, the save set is not browsable. The save set needs to be returned to its original status, which was browsable.
6. `scanner` is executed again, but with the `-i` option. Lastly, `mminfo` is used to verify that the save set information is completely and properly restored.

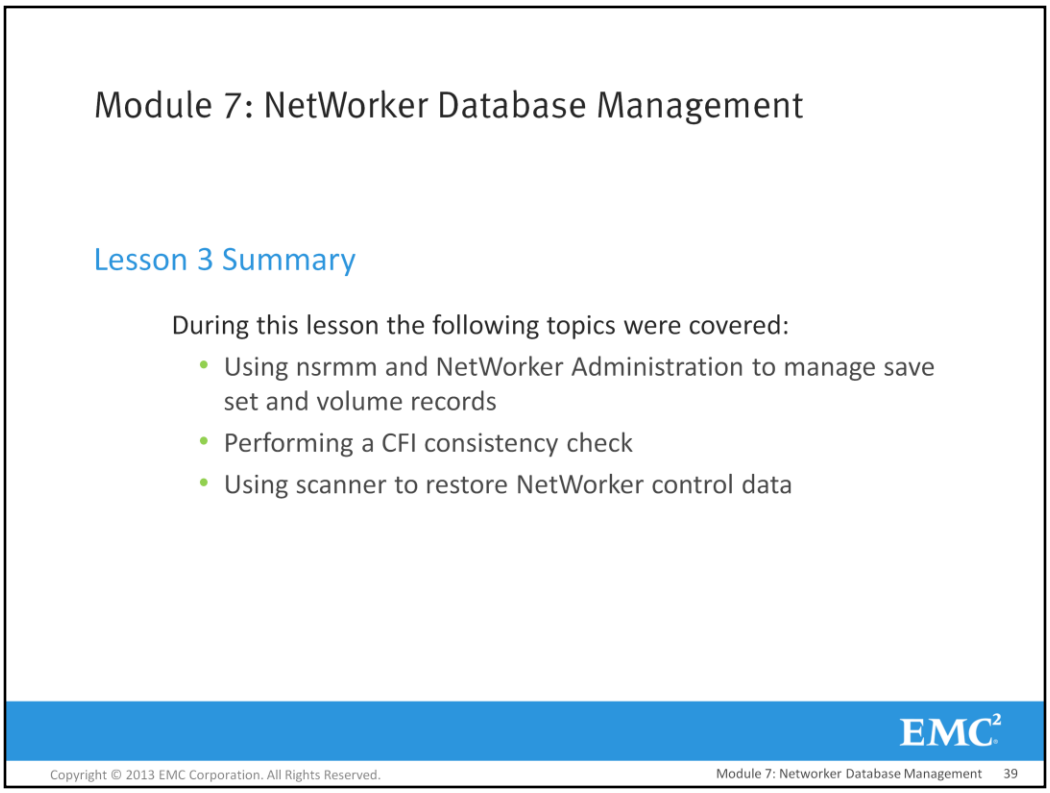
Lab Exercise 7-2: NetWorker Databases - Part 2

In this lab you will manipulate save sets and volume details in the Media database.

EMC²

In this lab, you will:

- Manipulate save sets
- Manipulate volumes



This lesson covered managing save set and volume records, performing a CFI consistency check, and restoring NetWorker control data with scanner.

Module 7: Summary

Key points covered in this module:

- The function and content of the media database and a client file index (CFI)
- The volume selection process when performing a backup
- How to query and manage CFI's and the media database using the NetWorker administration GUI
- How to query and manage CFI's and the media database using NetWorker command-line utilities

EMC²

This module covered the management of the media database and client file indexes.