



**EMC® NetWorker®  
Module for Oracle**

**Release 4.5  
Multiplatform Version**

**Command Reference Guide**

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**Audience** This document is part of the NetWorker Module for Oracle (NMO) documentation set, and is intended for use by system administrators and Oracle database administrators (DBAs) who are responsible for installing software and maintaining the Oracle Server backup and recovery systems. Operators who monitor the Oracle database backups may also find this document useful.

Readers of this document are expected to be familiar with the following topics:

- ◆ Oracle terminology and concepts, especially those related to Oracle database backup and recovery.
- ◆ Backup and recovery procedures on an Oracle Server.
- ◆ Disaster recovery procedures on an Oracle Server.

**Related documentation** Documentation related to the use of this product can be found at the EMC website, <http://Powerlink.EMC.com>, including:

- ◆ The NetWorker Module for Oracle release 4.5 documentation set:
  - Administration guide
  - Installation guide
  - Release notes
  - Command reference guide
- ◆ The NetWorker documentation set:
  - Administration guide
  - Installation guide
  - Release notes
  - Command reference guide
  - Disaster recovery guide
- ◆ Other EMC documentation:
  - NetWorker PowerSnap Module documentation
  - Software compatibility guide
  - UNIX man pages

The following additional documentation may be useful:

- ◆ Oracle Server documentation
- ◆ Oracle database backup and recovery documentation

**Where to get help**

EMC support, product, and licensing information can be obtained as follows.

**Product information** — For documentation, release notes, software updates, or for information about EMC products, licensing, and service, go to the EMC Powerlink website (registration required) at:

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## Maintenance Commands

nsrnmomo (1m)

## NAME

**nsrnmomo** - NetWorker Module for Oracle scheduled backup command script

## SYNOPSIS

**nsrnmomo** <save options>

## DESCRIPTION

The **nsrnmomo** shell script is used by the NetWorker server program **savegrp**(1m) to trigger scheduled backups on an Oracle database server. The **nsrnmomo** script sets specific environment variables for the scheduled Oracle backup and invokes the Oracle Recovery Manager (RMAN), the backup interface provided by Oracle.

The **nsrnmomo** script is usually run by **savegrp** only. It is not run manually. To use the **nsrnmomo** script for a scheduled Oracle backup, you must specify **nsrnmomo** in the Backup command attribute of the client resource (see **nsr\_client**(5)) for the scheduled Oracle backup.

To modify the **nsrnmomo** command script, you should copy the template file `/etc/nsrnmomo.sh` to the **nsrnmomo** file and modify the **nsrnmomo** file. Do not modify the template file `/etc/nsrnmomo.sh`. Keep the template file unchanged, as a reference to the original **nsrnmomo** script.

For information on how to create a separate **nsrnmomo** script file for each Oracle instance, refer to scheduled Oracle backups chapter in the latest NetWorker Module for Oracle Administrator's Guide.

There are several environment variables in the **nsrnmomo** script that you can customize for a particular scheduled Oracle backup. The variables `ORACLE_HOME` and `PATH` are *mandatory* for each scheduled Oracle backup. The variable `ORACLE_SID` is only required by proxy copy backups when catalog synchronization is enabled. The other variables are *optional*, and you can leave them undefined in the script, if desired. Note that the variables in the **nsrnmomo** file are all initially undefined. Please refer to the `/etc/nsrnmomo.sh` template, your site-specific **nsrnmomo** script, and the latest NetWorker Module for Oracle Administrator's Guide for descriptions of the various environment variables.

## OPTIONS

Please see the **save**(1m) man page for a description of options supported by **nsrnmomo**.

## FILES

`/etc/nsrnmomo.sh` - A template of this command is provided in `/etc`.

## SEE ALSO

**nsrnmomostart**(1m), **nsrnmoadmin**(1m), **mminfo**(1m), **nsr\_client**(5), **nsr\_pool**(5), **save**(1m), **savegrp**(1m)



## Maintenance Commands

nsrnmoadmin(1m)

## NAME

**nsrnmoadmin** - NMO resource database management command

## SYNOPSIS

```

nsrnmoadmin [ -D ] -r list [ ResourceName ] | [ SidName ]
nsrnmoadmin [ -D ] -r add ResourceName ResourceValue
nsrnmoadmin [ -D ] -r add sid=SidName home=OracleHome connect=ConnectFilePath
  [ tns=TNSpath ] [ lib=LibraryPath ]
nsrnmoadmin [ -D ] -r update ResourceName ResourceValue
nsrnmoadmin [ -D ] -r update sid=SidName [ home=OracleHome ]
  [ connect=ConnectFilePath ] [ tns=TNSpath ] [ lib=LibraryPath ]
nsrnmoadmin [ -D ] -r delete SidName

```

## DESCRIPTION

**nsrnmoadmin** creates, updates and deletes resources from the NMO resource file. **nsrnmoadmin** can only be run by the root user. The NMO resource file is located at /nsr/res/nwora.res on the host where NMO is installed. An NMO resource file is automatically created during the NMO installation process when NMO is not installed to the default location. The NMO resource file created during installation only contains the NMO resources required for a regular (non-proxy) NMO backup. The NMO resource file must be updated or created before performing proxy copy backups.

When **nsrnmoadmin** accesses the NMO resource file for the first time the NMO resources required for proxy copy backups are automatically added to the NMO resource file. The added NMO resources are initialized with default values. If the file does not exist it is created and the NMO resources are initialized with default values.

There are two types of NMO resources. The first type is the NMO parameter resource. An NMO parameter resource is a single line that follows the *NAME=VALUE* format, where *NAME* is the name of the parameter and *VALUE* is what the parameter is set to.

The second type of NMO resource is the NMO SID resource. An NMO SID resource contains all the information **nsroraclecat**(1m) requires to synchronize an RMAN repository. An NMO SID resource contains several NMO parameters which are described in the **nsroraclecat**(1m) man page. Each parameter is represented by a keyword on the **nsrnmoadmin** command line:

```

sid: NSR_ORACLE_SID
home: NSR_ORACLE_HOME
connect: NSR_ORACLE_CONNECT_FILE
tns: NSR_ORACLE_TNS_ADMIN
lib: NSR_ORACLE_LIB_PATH

```

The NMO resource file is automatically backed up by **nsrnmstart**(1m) during scheduled backups.

## OPTIONS

**-D**

Specifies that debug information should be printed to stdout.

**-r**

Several keywords specify the operation the **-r** option will perform:

**list**

The **list** keyword causes **nsrnmoadmin** to list the contents of the NMO resource file. If *ResourceName* is specified only the NMO parameter resource that matches *ResourceName* will be printed. If *SidName* is specified only the NMO SID resource for the specified Oracle SID will be printed.

**add**

The **add** keyword causes **nsrnmoadmin** to add a new NMO resource to the NMO resource file. If the '**sid**', '**home**' and '**connect**' keywords appears in the parameters following **add** an NWORA SID resource is added to the NMO resource file. The '**tns**' and '**lib**' keywords are optional. If the parameters following **add** do not contain the '**sid**', '**home**' and '**connect**' keywords it is assumed that the parameters are the *ResourceName* and *ResourceValue* of an NMO parameter resource.

**update**

The **update** keyword causes **nsrnmoadmin** to change the value of the specified NMO resource. An NMO parameter resource is specified with the same semantics used by the **add** keyword. When updating NMO SID resources only the '**sid**' keyword is mandatory. The '**sid**' keyword specifies which NMO SID resource will be updated. The '**sid**' of an NMO SID resource cannot be changed. The '**home**', '**connect**', '**tns**' and '**lib**' keywords specify which parameters will be updated. See the **EXAMPLES** section for more information.

**delete**

The **delete** keyword causes **nsrnmoadmin** to delete an NMO SID resource from the NMO resource file. The parameter after the **delete** keyword is the name of the NMO SID resource without the '**sid=**' prefix. Only NMO SID resources can be deleted.

## EXAMPLES

The following lists the entire contents of the NMO resource file:

```
nsrnmoadmin -r list
```

The following lists the NMO parameter resource NSR\_ORACLECAT\_MODE:

```
nsrnmoadmin -r list NSR_ORACLECAT_MODE
```

The following lists the NMO SID parameter resource for the ORACLE\_SID 'orcl815':

```
nsrnmoadmin -r list orcl815
```

The following adds the NMO parameter resource NSR\_ORACLECAT\_MODE:

```
nsrnmoadmin -r add NSR_ORACLECAT_MODE enabled
```

The following adds the NMO SID resource 'orcl815':

```
nsrnmoadmin -r add sid=orcl815 home=/dbapps/orcl815
connect=/dbapps/orcl815/connect.file
```

The following updates the NMO parameter resource NSR\_ORACLECAT\_MODE:

```
nsrnmoadmin -r update NSR_ORACLECAT_MODE disabled
```



The following updates the NSR\_ORACLE\_TNS\_ADMIN parameter of the NMO SID resource 'orcl815':

```
nsrnmoadmin -r update sid=orcl815 tns=/dbapps/orcl815/orcl815net8
```

The following deletes the NMO SID resource 'orcl815':

```
nsrnmoadmin -r delete orcl815
```

**FILES**

/nsr/res/nwora.res - The NMO resource file.

**SEE ALSO**

`nsrnmoo(1m)`, `nsrnmstart(1m)`, `nsroraclecat(1m)`



## Maintenance Commands

nsrnmoinfo(1m)

## NAME

**nsrnmoinfo** - Lists the NetWorker volumes required for a restore.

## SYNOPSIS

**nsrnmoinfo** [ **-s** *server* ] [ **-c** *client* ] [ **-f** *file* ] [ *backup\_piece ...* ]

## DESCRIPTION

The **nsrnmoinfo** binary lists the NetWorker volumes required to restore the backup pieces specified on the command line or in a file. The volumes listed are the ones the NetWorker server intends to use at the time the **nsrnmoinfo** command is run. If volumes are removed from NetWorker devices or if volumes are deleted after the **nsrnmoinfo** command was run the NetWorker server may use different volumes than those specified by **nsrnmoinfo** when restore is performed.

The **nsrnmoinfo** command will list clones of volumes if the original volumes are not available.

## OPTIONS

**-s** *server*

The NetWorker server to query.

**-c** *client*

The NetWorker client index that contains the backup pieces.

**-f** *file*

A file containing a list of backup pieces to query.

## EXAMPLES

Display the volumes for backup piece 'bckupc\_1' for the client mars on the NetWorker server jupiter:

```
nsrnmoinfo -s jupiter -c mars bckupc_1
```

Display the volumes for backup pieces 'bckupc\_1', 'bckupc\_2' and 'bckupc\_3' for the client mars on the NetWorker server jupiter:

```
nsrnmoinfo -s jupiter -c mars bckupc_1 bckupc_2 bckupc_3
```

Display the volumes for the backup pieces listed in file bckupc.txt for the client mars on the NetWorker server jupiter:

```
nsrnmoinfo -s jupiter -c mars -f bckupc.txt
```

Display the volumes for the backup pieces listed in file bckupc.txt and for 'bckupc\_1' for the client mars on the NetWorker server jupiter:

```
nsrnmoinfo -s jupiter -c mars -f bckupc.txt bckupc_1
```

## SEE ALSO

**nsrnmoinfo(1m)**, **nsrnmoadmin(1m)**, **save(1m)**, **savegrp(1m)**



## Maintenance Commands

nsrnmstart(1m)

## NAME

**nsrnmstart** - NetWorker Module for Oracle scheduled backup executable program

## SYNOPSIS

**nsrnmstart** <backup options>

## DESCRIPTION

The **nsrnmstart** executable program is used by the **nsrnmo** script to invoke scheduled backups on an Oracle database server. The **nsrnmstart** program launches Oracle Recovery Manager (RMAN) by passing the appropriate arguments.

The **nsrnmo** script runs the **nsrnmstart** program. Do not run it manually. **nsrnmstart** uses environment variables set in the **nsrnmo** script and backup options passed by **nsrnmo** (see **nsrnmo(1m)**). If the mandatory environment variables are not set in the **nsrnmo** script, **nsrnmstart** returns a nonzero status code. For details on the environment variables to set in the **nsrnmo** script, see scheduled Oracle backups chapter in the NetWorker Module for Oracle Administrator's Guide.

The directory where **nsrnmstart** is located must be included in the PATH environment variable in the **nsrnmo** script.

The **nsrnmstart** program writes debugging information into the debug file specified by the NSR\_SB\_DEBUG\_FILE environment variable in the **nsrnmo** script.

The **nsrnmstart** program runs a pre-command script specified by the PRECMD environment variable--if the variable is set in the **nsrnmo** script. If the pre-command does not run successfully, **nsrnmstart** returns a nonzero status code to **nsrnmo** without performing the scheduled Oracle backup.

The **nsrnmstart** program invokes RMAN for Oracle database backups based on the inputs from **nsrnmo** and **savegrp** (see **nsrnmo(1m)** and **savegrp(1m)**).

When RMAN execution is finished, the **nsrnmstart** program runs a post-command script specified by the POSTCMD environment variable--if the variable is set in the **nsrnmo** script. If the post-command does not run successfully **nsrnmstart** returns a nonzero status code to **nsrnmo**. Even if RMAN fails, the post-command is executed.

At the end of each scheduled Oracle proxy backup, the **nsrnmstart** program also backs up the NetWorker Module for Oracle (NMO) resource file.

## SEE ALSO

**nsrnmo(1m)**, **nsrnmoadmin(1m)**, **save(1m)**, **savegrp(1m)**



## Maintenance Commands

nsroraclecat(1m)

## NAME

**nsroraclecat** - Synchronizes the RMAN repository with the NetWorker indexes.

## SYNOPSIS

**nsroraclecat**

## DESCRIPTION

NMO proxy copy backups are periodically pruned from the NetWorker indexes when the snapshots they are stored on expire. The **nsroraclecat** binary keeps RMAN repositories and the NetWorker indexes synchronized during the pruning operations by removing the backup piece entries of the snapshot backup from the RMAN repository. **nsroraclecat** is started automatically by **nsrsnapck(1m)** during pruning. The RMAN repository entries are removed by forking an RMAN session. The **nsroraclecat** binary should never be run manually.

The configuration of **nsroraclecat** is stored in the NMO resource file which is administered by **nsrnmoadmin(1m)**. The following NMO resources specify the **nsroraclecat** configuration:

## NSR\_ORACLEAT\_MODE

The default setting of NSR\_ORACLECAT\_MODE is 'undetermined'. When NSR\_ORACLECAT\_MODE is set to 'undetermined' NMO will not perform proxy copy backups. To use proxy copy backups the NMO administrator must set NSR\_ORACLECAT\_MODE to 'enabled' or 'disabled'. If NSR\_ORACLECAT\_MODE is set to 'disabled' catalog synchronization will not be performed.

## NSR\_REMOVE\_ON\_FAILURE

When NSR\_REMOVE\_ON\_FAILURE is set to 'FALSE' **nsrsnapck(1m)** will not remove the NetWorker index entries for backup pieces that were not successfully synchronized.

## NSR\_ORACLECAT\_LOG\_FILE

Designates the location of the **nsroraclecat** operations log file. All operational messages are written to this file. If NSR\_ORACLECAT\_LOG\_FILE is not set the operations messages go to the default log file `/nsr/applogs/nsroraclecat.log`.

## NSR\_ORACLECAT\_DEBUG\_FILE

Designates the location of the **nsroraclecat** debug log file. All debugging messages are written to this file. If NSR\_ORACLECAT\_DEBUG\_FILE is not set no debug logging is done.

An NMO SID resource must be configured for each Oracle database that has an RMAN repository that will be synchronized. An NMO SID resource has the following parameters:

## NSR\_ORACLE\_CONNECT\_FILE

Specifies the location of the file that contains the connection strings for the RMAN repository.

## NSR\_ORACLE\_HOME

The ORACLE\_HOME of the Oracle Server installation. It is used to locate the copy of RMAN that is used to prune the RMAN repository entries.

## NSR\_ORACLE\_LIB\_PATH

Some Oracle Server installations require the system shared library path to be set when using NMO. The name of the environment variable used to set the shared library path varies from system to system (It is LD\_LIBRARY\_PATH on Solaris and HP-UX 64-bit, SHLIB\_PATH on HP-UX 32-bit, LIBPATH on AIX, etc).

NSR\_ORACLE\_LIB\_PATH must be set to the value of the shared library path environment variable. If Oracle Server installation does not require the shared

library path NSR\_ORACLE\_LIB\_PATH does not have to be set.

**NSR\_ORACLE\_SID**

The ORACLE\_SID of the Oracle database instance that performed the NMO proxy copy backup. NMO caches the ORACLE\_SID in the NetWorker online indexes when NMO proxy copy backups are performed. The cached copy of the ORACLE\_SID is then used by **nsroraclecat** as a key to locate the required NMO SID resource during catalog synchronizations.

**NSR\_ORACLE\_TNS\_ADMIN**

The location of the Oracle Net configuration files required by the Oracle Server installation whose RMAN will perform the catalog synchronization. If the Oracle Net configuration files are in the default location NSR\_ORACLE\_TNS\_ADMIN does not have to be set.

**FILES**

/nsr/appllogs/nsroraclecat.log - The default **nsroraclecat** log file.

**SEE ALSO**

**nsrnmoadmin**(1m), **nsrsnapck**(1m)