

SnapManager® for Oracle®

Release Notes

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SnapManager overview

SnapManager overview

SnapManager® for Oracle® is a Network Appliance™ application that lets you back up, restore, and recover host data in an Oracle database. It uses NetApp's Snapshot™ and FlexClone™ technology to enable you to quickly perform operations such as creating a backup of the data, making a clone of the backup, and restoring and recovering the backup.

System setup required to use SnapManager

This release of SnapManager works with hosts running either Red Hat® Enterprise Linux® or Solaris®. You must have the following products installed and running to use SnapManager:

- ◆ Operating system. Either:
 - ❖ Red Hat Enterprise Linux 3 update 4 or later or
 - ❖ Solaris 8 or 9
- ◆ Oracle 9iR2 or Oracle 10gR2 using NFS files or iSCSI LUNs for storage on a Linux host or NFS files or FCP LUNs for storage on a Solaris host
- ◆ NetApp Host Agent 2.2.1
- ◆ NetApp's SnapDrive 2.1 for UNIX
- ◆ Java Runtime Environment (JRE) 1.4.2 from Sun Microsystems®

Note

SnapManager executes on top of the NetApp Host Agent and SnapDrive for UNIX, so you must meet the requirements for those products.

On your storage system, you must have installed and running:

- ◆ NetApp's Data ONTAP® 7.0 or higher

In addition, you must have the following licenses on your storage system

- ◆ Your storage access protocol: iSCSI (Linux host only), FCP (Solaris host only), or NFS
- ◆ FlexClone

Note

You do not need FlexClone to execute SnapManager; however, the operations you can perform with NFS databases are limited without it. SnapManager uses FlexClone to clone NFS databases and to register backups of NFS databases with RMAN (if you are using RMAN).

- ◆ SnapRestore®

If you want to use SnapManager's Graphical User Interface (GUI), you must also have the following:

- ◆ Windows® XP
- ◆ Sun's JRE

Confirming system requirements

The most current information on SnapManager's requirements are available in the compatibility matrices on the NOW site. NetApp adds new components and updates products on an ongoing basis, so it is a good practice to check these matrices.

Links to the matrices are in the Interoperability section of the Access & Order Product Documentation page, which is available at <http://now.netapp.com/NOW/knowledge/docs/docs.shtml>. The matrices you need to check are:

- ◆ *SnapManager & SnapDrive Compatibility Matrix*
- ◆ *The Compatibility and Configuration Guide for NetApp's FCP and iSCSI Products*

SnapManager components

SnapManager is available either on CD-ROM or as software that you can download from the NetApp NOW site (<http://now.netapp.com/>).

The software available for downloading from the NOW site includes the SnapManager software host package and the SnapManager GUI software package. You can also download SnapManager's NetApp prerequisites, the NetApp Host Agent software and SnapDrive for UNIX, from their product locations on the NOW site.

The media kit includes the following items:

- ◆ *SnapManager for Oracle Installation and Administration Guide*
- ◆ *SnapManager for Oracle Release Notes* (this document)
- ◆ CD-ROM. The CD-ROM contains the NetApp software packages for the SnapManager host and its GUI in a standard, installable package formats.

Installing SnapManager

Detailed instructions for installing SnapManager are in the *SnapManager for Oracle Installation and Administration Guide*.

You must install the SnapManager software package on your UNIX host after you have installed the NetApp Host Agent and SnapDrive for UNIX (see the documentation for those products for their installation instructions).

If you want to use the GUI, you must install the SnapManager GUI software package on your Windows host after you have installed the JRE 1.4.2. The SnapManager GUI is qualified for that version of the JRE only. You do not need to install the NetApp Host Agent or SnapDrive for UNIX on the Windows host.

Using SnapManager with IBM® storage systems

SnapManager has been qualified with the IBM System Storage™ N series. You must have the IBM System Storage N series versions of Data ONTAP, SnapDrive for UNIX, and Host Agent, if you want to use SnapManager with this stack.

Finding information on known issues and troubleshooting tips

Finding information on known issues for SnapManager

At the time of this release, there were some known problems, limitations, and troubleshooting tips for SnapManager. To locate information on known issues, check the following places:

- ◆ “[Troubleshooting information for SnapManager](#)” on page 5
- ◆ “[Known issues](#)” on page 13
- ◆ The “*Troubleshooting*” chapter of the *SnapManager Installation and Administration Guide*
- ◆ NetApp’s Bugs Online system, which is available on the NOW site

Accessing information about bug fixes

In most cases, if known problems occur, they have a bug ID assigned to them. You can determine the status of a bug or see if any issues have occurred since this document was produced by using the Bugs Online system, which is available on the NOW site.

For a list of fixed bugs, access Bugs Online by completing the following steps.

Step	Action
1	Use a Web browser to go to http://now.netapp.com .
2	Log into NOW and click Service & Support.
3	Click the link for Bugs Online & Release Tools.
4	To perform a Quick Search, complete the following steps: 1. Enter either the bug ID in the ID box or the phrase “SW_SMO” in the Key Word Search box. 2. Click the Go button next to the text box for your search.

Troubleshooting information for SnapManager

Performance issue seen on partitioned Linux LUNs

Symptom: The performance appears to be slower on Linux LUNs using partitions.

Explanation: A misalignment can occur when LUNs, using a block protocol such as iSCSI, are connected to a Linux host that is using partitions.

To get optimal performance, the storage system requires that I/O be aligned to a 4096 boundary. SnapDrive on UNIX creates a single partition in file system-on-raw cases where `fdisk` takes the first sector (512 bytes) for internal partition information. This results in the LUN being misaligned.

What to do: For best performance, you must realign the LUNs. NetApp provides Knowledge Base article (kb8190) that explains this problem and how you can create aligned partitions. The article is available online at <http://now.netapp.com/Knowledgebase/solutionarea.asp?id=kb8190>.

SnapManager uses default directory for transition states

Symptom: When SnapManager restarted the database, it failed.

Your environment is set up so that the `init<SID>.ora` file is located in a directory other than the `$ORACLE_HOME/dbs` directory. Then you started your Oracle database using `startup pfile`. You put the path to this `init<SID>.ora` file in this command; however, SnapManager looked in a different location for this file so the database failed to restart.

Explanation: When SnapManager transitions from a Shutdown state into a Mounted or Open state, it uses the default SPFILE or PFILE. If you normally start your database with a specific PFILE or SPFILE by using the `startup pfile=<file>` syntax, the database restart fails. This is because SnapManager does not use the file you normally specify when it restarts the database. Instead, SnapManager uses the default location to start the database. Normally, this is `ORACLE_HOME/dbs`.

What to do: If the default init<SID>.ora file is not the correct initialization file for your database, either copy the file to default location (for example, \$ORACLE_HOME/dbs/init<SID>.ora) or set up a symbolic link to this location.

Restore fails in SnapMirror configuration

Symptom: The restore operation fails when you attempt to restore a backup of a database volume that was created using SnapMirror.

Explanation: SnapDrive for UNIX has some architectural guidelines for working with mirrored storage systems. Because SnapManager requires SnapDrive for UNIX, these guidelines affect it also.

What to do: Check the SnapDrive for UNIX documentation for information on how it works with SnapMirror and how to handle any issues. In particular, check chapter 1 of the *SnapDrive for UNIX Installation and Administration Guide*.

Space shortages can occur during restore operations

Symptom: SnapManager runs out of space in the /opt/NTAPsmo/smo/tmp directory while it is performing a restore operation.

Explanation: SnapManager uses this directory to hold temporary, safe copies while it performs an operation.

What to do: Make sure you allocate sufficient space for this directory. One option is to set it up on a separate file system. If you need additional space, but no more physical disk space is available on the root file system, then create a symbolic link from the <snapmanager_install_dir>/tmp directory to a disk or files system with more space.

Issue with using LUNs on qtrees

Symptom: SnapManager fails when it attempts to perform operations involving a LUN that is on a qtree. It is unable to register with RMAN. In addition, it cannot clone a backup that was created of a database containing that LUN.

Explanation: This release of SnapManager does not support LUNS on qtrees.

What to do: To avoid encountering these problems, make sure that:

- ◆ You do not attempt to use SnapManager to create a backup of a database residing on a group that contains a LUN located on a qtree.
- ◆ If a database contains a qtree-based LUN as a device:
 - ❖ You cannot create a backup of any profile that uses RMAN.

- ❖ You can create a backup of the profile if RMAN is not enabled; however, you cannot create a clone of that database.

Backup fails on traditional volume

Symptom: The backup operation failed with the following message:

SMO-09104: Filer "myFiler", volume "myDatabaseVolume" is not a FlexVol.

Explanation: SnapManager requires that you use Data ONTAP with FlexVol enabled. SnapManager does not support traditional volumes.

What to do: Make sure that your version of Data ONTAP includes the FlexVol feature and that you are using a FlexVol.

Operation fails when FlexClone not licensed

Symptom: The SnapManager clone operation failed with the following message:

SMO-09103: Filer "myFiler" does not have FlexClone licensed

Explanation: SnapManager requires that you use Data ONTAP with FlexClone enabled. SnapManager uses FlexClone for creating clones.

What to do: Make sure that FlexClone is licensed in your version of Data ONTAP and that you are creating volumes using FlexVol.

Profile create operation fails if you use an existing name

Symptom: The profile create operation fails when you try to create a profile with the same name as a profile in a different repository on that system.

Explanation: SnapManager uses the same folder for all profiles. As result, even though you're using a different repository, you cannot use the name of an existing profile.

What to do: Make sure each profile name on a system is unique regardless of how many repositories you have on that system.

Restore operation fails saying login denied

Symptom: A SnapManager restore operation fails with a message similar to:

SMO-13040 [ERROR]: Error while handling failed operation: ORA-01017: invalid username/password; logon denied

Explanation: This message indicates that the Oracle database system password changed after the backup occurred. As a result, SnapManager can no longer access the database.

What to do: If you encounter this problem, you need to run the SnapManager `smo manage abort` command to release the resources that were in use when the command failed. Use **one** of the following three scenarios to do this:

- ◆ Change the database password back to the password at the time of the database backup so that SnapManager can access the database. Now run `smo manage abort`.
- ◆ Or update the profile associated with that backup and enter the new database password. Now run `smo manage abort`.
- ◆ Or use the `-force` option and run `smo manage abort -force`. This forces SnapManager to clean up after the failed restore operation.

Backup operation unable to freeze file system

Symptom: SnapManager attempted to back up data files, control files, log files, and archivelog files for an ASM database that is spread across multiple volumes. An error occurred, indicating that SnapManager could not freeze the file system.

Explanation: This is a issue with databases spread across multiple volumes that has been seen with versions of Data ONTAP prior to 7.2. In addition, SnapDrive for UNIX has some architectural guidelines for freezing file systems that span multiple storage system volumes.

What to do: Reconfigure your database so that it does not span multiple volumes. NetApp recommends that you follow the recommendations in the NetApp technical reports TR 3329 (http://www.netapp.com/tech_library/3329.html) and TR 3349 (http://www.netapp.com/tech_library/3349.html) when laying out your database. You may also want to check the SnapDrive for UNIX documentation for information. In particular, see chapter 1 of the *SnapDrive for UNIX Installation and Administration Guide*.

The recovery operation accepts out-of-range SCNs

Symptom: The SnapManager recovery operation completed even though the command used an out-of-range Oracle System Change Number (SCN).

Explanation: Oracle allows you to enter out-of-range SCNs. SnapManager is following Oracle's behavior here.

NetApp Host Agent connection fails

Symptom: While performing an operation such as backup, SnapManager displays an error message similar to:

```
SMO-01044 [ERROR]: Error executing through NetApp Host Agent. Root cause: java.net.ConnectException: Connection refused
```

Explanation: This usually indicates that the NetApp Host Agent is not running.

What to do: Check to see if the NetApp Host Agent on the database host is executing. If it is not, restart it.

To see if the NetApp Host Agent is executing, enter:

```
# ntap_agent query
```

If the NetApp Host Agent is not executing, start it by entering:

```
# ntap_agent start
```

SnapManager fails to execute after installing NetApp Host Agent

Symptom: SnapManager does not execute. This problem started after you re-installed the NetApp Host Agent. You may even see an error message similar to the following one:

```
SMO-12015: Error executing ZAPI command: Unable to find API: smo-request (errno=13001) netapp.manage.NaAPIFailedException: Unable to find API: smo-request (errno=13001)
```

Explanation: This type of error occurs when you install or reinstall the NetApp Host Agent after you install SnapManager. When you install SnapManager, it places a library file in the /opt/NTAPagent directory. If you then uninstall and reinstall the NetApp Host Agent, it removes the contents of this directory, including the file SnapManager placed there.

What to do: You should always install SnapManager after you install the NetApp Host Agent. If you must reinstall the NetApp Host Agent after installing SnapManager, you must re-run the SnapManager smo_setup script. This script is in /opt/NetApp/smo/bin/smo_setup.

Check operation fails because of missing SID

Symptom: The check operation fails with a message that SnapManager cannot find the SID in the oratab file. Normally, the path is /var/opt/oracle.

Explanation: SnapManager always looks for the database SID in the /etc/oratab file in order to determine the Oracle home for the database instance.

What to do: Make sure you include the SID for each database instance in the /etc/oratab file. If you manually create the database instance, make sure you put the SID in the /etc/oratab file.

Problem occurs when using RAC with SnapManager

Symptom: SnapManager fails when it attempts to perform operations on Real Application Cluster (RAC) database instances.

Explanation: The Oracle sys password must be the same for all instances of a RAC database that SnapManager handles.

What to do: Check the password on each RAC database instance to make sure that all the instances are using the same password.

SnapManager fails without an error message

Symptom: SnapManager fails, but it does not print an error message to the console.

Explanation: There are several problems that could cause this. One cause could be that SnapManager uses the repository to communicate between the client and server. As a result, any failure that involves the repository can cause SnapManager to exit without printing an error message. However, SnapManager does write this message to the log file.

What to do: Search the smo.log file for the ERROR message. In addition check the information in “[Known issues](#)” on page 13 and the *SnapManager for Oracle Installation and Administration Guide* for more information.

Restore operation fails in ASM configuration

Symptom: A SnapManager restore operation in an ASM configuration fails with the following error:

```
SMO-12018: Error executing RMAN command: [RESTORE DATAFILE
'+DG_EXT1/storasm/datafile/testtab01.dbf' FROM TAG='SMO_storasm_full_1137458676410'];].
The command returned: RMAN-00571:
=====
RMAN-00569: ===== ERROR MESSAGE STACK FOLLOWS =====
RMAN-00571: =====
RMAN-03002: failure of restore command at 01/17/2006 09:45:25
RMAN-06026: some targets not found - aborting restore
RMAN-06023: no backup or copy of datafile 7 found to restore
```

Explanation: You are using an RMAN control file for cataloging. You perform a controlfile restore. Because SnapManager uses RMAN to copy ASM files from cloned disk groups into the active disk groups, it requires that the same controlfile used to register a backup be present at the time of the restore operation.

What to do: Use an external database as the RMAN catalog instead of the controlfile. Another option is to restore a controlfile that contains the necessary RMAN information (i.e., one from after the backup you are trying to restore).

Backup fails for 10g RAC database when remote instance is in MOUNT or NOMOUNT state

Symptom: The SnapManager backup operation hangs on an Oracle 10g RAC database when one of the remote RAC instances is in the NOMOUNT (startup nomount) or MOUNT (startup mount) state. The Oracle commands alter database begin backup and alter database end backup hang when the database is in this state.

What to do: Shut down the RAC instance that is in the NOMOUNT or MOUNT state. NetApp has filed bug report 4956243 with Oracle. Oracle is working on the problem.

Recover fails when controlfiles option set for restore

Symptom: When performing a restore and recover operation, SnapManager fails with an error similar to the following:

```
SMO-12014: Error executing SQL command: [RECOVER DATABASE UNTIL  
TIME '2006-01-12:06:37:26'];]. The command returned: ORA-00283:  
recovery session canceled due to errors  
ORA-01610: recovery using the BACKUP CONTROLFILE option must be  
done
```

Explanation: The recover operation must use a backup controlfile. You cannot include the recover option when you perform a restore operation using the controlfiles option.

What to do: Do not include the `-recover` option on the command line after a controlfile restore.

controlfile restore fails on 9i RAC setup

Symptom: SnapManager attempts to restore controlfiles for 9i RAC configuration, but the operation fails with the message:

```
SMO-07411 [ERROR]: Oracle RAC srvctl command failed. Command is:  
"srvctl start instance -d <database> -i <instance> -o mount",
```

output is "PRKP-1001 : Error starting instance <instance> on node <node> ORA-01081: cannot start already-running ORACLE - shut it down first"

Explanation: Oracle's `srvctl` utility for Oracle 9i does not correctly handle transitioning an instance from a `NOMOUNT` state to a `SHUTDOWN` state (see Metalink SR 5135325.993). SnapManager requires this transition for a controlfile restore if any remote RAC instance is in the `MOUNTED` or `OPEN` state. Without this transition, SnapManager fails in this task.

What to do: Manually shutdown the remote RAC instances before performing the controlfile restore in SnapManager.

Known issues

Known issues with the product

When working with SnapManager, there are some issues you should be aware of. These involve how different aspects of the product stack, such as Oracle, your host operating system, and Data ONTAP, handle matters such as temporary space, partitions, and LUNs that span multiple volumes. If you encounter one of these issues, you could see different error messages. This section lists some of the issues.

ASM restrictions If you are using ASM, you should be aware of the following ASM restrictions:

- ◆ As recommended by Oracle, make sure you have exactly one partition for each disk that contains the entire disk. If you are using SnapManager, you will encounter an error if you attempt to back up an ASM disk that has multiple partitions.
- ◆ ASM disks must be raw LUNs. Using files on an NFS or host-side file system as ASM disks is not supported.
- ◆ You must manually register an ASM instance with the listener via listener.ora. To your \$ORACLE_HOME/network/admin/listener.ora add:

```
SID_LIST_LISTENER =  
(SID_LIST =  
  (SID_DESC =  
    (ORACLE_HOME = /u01/app/oracle/10.1.0.2/product/10.1.0/db)  
    (SID_NAME = +ASM)  
  )  
)
```

Now restart the both the listener and the ASM instance.

- ◆ If you are using ASM, you must set a profile with RMAN if you want to be able to restore ASM files in all cases. SnapManager needs RMAN to restore the files in the following situations:
 - ❖ The file extents for the file being restored have changed.
 - ❖ The storage system on which the file is stored does not support partial LUN restore.
 - ❖ A full disk group restore is not possible since there are other files on that disk group which are not being restored.
- ◆ When laying out your database, follow the recommendations in the NetApp technical reports TR 3329 (http://www.netapp.com/tech_library/3329.html) and TR 3349 (http://www.netapp.com/tech_library/3349.html). These

reports provide information on how to lay out the LUNs for your ASM disk groups.

Don't perform similar operations on a database simultaneously

You should not execute a SnapManager backup operation at the same time you are working with the database or a remote RAC database instance using another tool. Doing so can cause the SnapManager operation to fail and leave your database in an inconsistent state.

For example, suppose you're performing an offline SnapManager backup operation at the same time you start RMAN to perform a database restore. The SnapManager operation fails, but the RMAN restore succeeds. However, you discover there are now inconsistent files in the database.

This can happen when you've set up SnapManager to work with RMAN. SnapManager catalogs the backed up data files in RMAN. When you're running both SnapManager and RMAN, SnapManager cannot update the files in the RMAN catalog. In addition, RMAN is writing to the database files at the same time SnapManager is. As a result the database becomes corrupted.

Partial restore of an UNDO tablespace not supported

For this release, SnapManager does not support performing a partial restore operation of an UNDO tablespace.

Spaces in file path names not allowed

An error occurs if you configure a database or clonemap using a file path name that includes a space. For example, the following command line fails:

```
# df /mnt/my favorite dir/db01.dbf
```

The reason for the failure is that SnapManager does not escape the space character for host-side interactions using the shell. As a result, when the shell receives the path name with the space, it does not recognize it.

SnapManager displays OutOfMemoryError

If you see an OutOfMemoryError from SnapManager, you need to increase the virtual memory allocated to the Java Virtual Machine. Do this by setting the \$JVM_ARGS environment variable prior to starting the NetApp Host Agent.

Use the JVM argument -Xmx to set the memory size. For example, to set the memory size to 1GB, you would enter:

```
# -Xmx1G
```

To see a list of all the options, run the command `java` with no arguments.

srvctl must be working on all nodes in a RAC cluster

It is possible to create an inconsistent backup if `srvctl` is not set up and working on all nodes in the RAC cluster. When `srvctl` is not correctly set up, SnapManager may not be aware of all the database instances when it creates a backup and may incorrectly report the backup succeeded.

For example, suppose you have RAC cluster consisting of `rac1` and `rac2`. `rac1` is a local database instance and is mounted. `rac2` is a remote a database instance and is open. Because `rac2` was removed from `srvctl`, SnapManager does not know it exists. As a result, if you use SnapManager to create a full, offline backup, the operation succeeds even though the database is open on `rac2`.

Database must be in correct state for a restore

During a restore operation, SnapManager only copies the files from the backup to the database. It does not check to make sure all the mount points in the backup are mounted. The Database Administrator (DBA) must make sure that the Oracle database is in the correct state for SnapManager to perform a restore operation. For example, the file systems and disk groups must be mounted and the LUNs must be mapped.

Temporary files not backed up, restored, or cloned

SnapManager follows Oracle behavior in that it does not back up, restore, or clone temporary files or tablespaces.

You can use Oracle commands to manually perform these tasks, if necessary. For example you can execute a command such as:

```
ALTER TABLESPACE TEMP ADD TEMPFILE '/oracle/my_system/temp01.dbf'  
SIZE 41943040 REUSE AUTOEXTEND ON NEXT 655360 MAXSIZE 32767M;
```

Backup fails if controlfiles are raw devices

SnapManager does not support backing up controlfiles that are raw devices. If you use SnapManager for creating backups, make sure the controlfiles are not raw devices.

Problem accessing a database after a restore operation

SnapManager does not transition the state of database when it performs an operation. You must include the `-force` option if you want to specify a state change. Without this option, SnapManager leaves the database in the same state that it was in before the operation started.

Obtaining the latest version of the NetApp software

Getting the most up-to-date SnapManager software

The SnapManager software that you download from the NOW site is the most recent version of the software. You can check the NOW site to see whether the software available there is more recent than the file you have on CD-ROM. If so, download the software instead of using the CD-ROM version of the software.

Obtaining the software from NOW

To download the software from the NOW site, complete the following steps.

Step	Action
1	Log in to the NOW site at http://now.netapp.com . In the fields on the right side of the page, complete the following steps: 1. Enter your user name and password. 2. From the Select Start Page list box, click Download Software. 3. Click the Login button.
2	Go to the SnapManager product row of the Software Download table and select your SnapManager host platform from the Select Platform drop-down list.
3	Click Go!
4	Follow the prompts to reach the software download page.
5	Download the software to a local directory. If you did not download the file to your host machine, move it to that machine. To install SnapManager, you must have: ◆ The SnapManager host software, which is either: ❖ (Linux host) <code>netapp.smo.linux-1.1.1.rpm</code> ❖ (Solaris host) <code>netapp.smo.solaris-1.1.1.tar.Z</code> ◆ The SnapManager GUI software: <code>netapp.smo.windows-1.1.1.zip</code>
6	For instructions about installing the software, see the <i>SnapManager Installation and Administration Guide</i> .

Obtaining other NetApp documentation

Obtaining additional NetApp documentation

NetApp's NOW site contains the most current documentation for SnapManager, the NetApp Host Agent, SnapDrive for UNIX, attach kits and support kits, SAN storage system components, and various interconnect methods. For information, see the following:

- ◆ The online *SnapManager & SnapDrive Compatibility* matrix at <http://now.netapp.com/NOW/knowledge/docs/docs.shtml/>
- ◆ The online *Compatibility and Configuration Guide for NetApp's FCP and iSCSI Products* at http://now.netapp.com/NOW/knowledge/docs/san/fcp_iscsi_config/
- ◆ The online NOW Description Pages for SnapManager, NetApp Host Agent, and SnapManager for UNIX
- ◆ The *SnapManager Installation and Administration Guide* (available as a downloadable PDF file from the NOW site)

The documentation for SnapManager, the NetApp Host Agent, SnapDrive for UNIX, and Data ONTAP is also available from the Access & Order Product Documentation page (<http://now.netapp.com/NOW/knowledge/docs/docs.shtml>).

