



# **Installation and Setup for UNIX for Data ONTAP Operating in 7-mode**

## **SnapManager Oracle**

NetApp

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# Installation and Setup Guide for UNIX®

This guide describes initial tasks you need to perform to deploy SnapManager 3.4.2 for Oracle with Data ONTAP operating in 7-Mode in a UNIX environment. Topics include how to install and configure the product and how to back up the databases.

## Product overview

automates and simplifies the complex, manual, and time-consuming processes associated with the backup, recovery, and cloning of Oracle databases. You can use SnapManager with Data ONTAP SnapMirror technology to create copies of backups on another volume and with Data ONTAP SnapVault technology to archive backups efficiently to disk.

SnapManager integrates with native Oracle technologies such as Oracle Real Application Clusters (Oracle RAC), Automatic Storage Management (ASM), and Direct NFS across FC, iSCSI, and NFS protocols. Optionally, backups created by using SnapManager can be cataloged with Oracle Recovery Manager (RMAN) to preserve the backup information; these backups can be used later in block-level restore or tablespace point-in-time recovery operations.

## SnapManager highlights

SnapManager features seamless integration with Oracle databases on the UNIX host and with NetApp Snapshot, SnapRestore, and FlexClone technologies on the back end. It offers an easy-to-use user interface (UI) as well as command-line interface (CLI) for administrative functions.

SnapManager enables you to perform the following database operations and manage data efficiently:

- Creating space-efficient backups on primary or secondary storage  
SnapManager enables you to back up the data files and archive log files separately.
- Scheduling backups
- Restoring full or partial databases by using a file-based or volume-based restore operation
- Recovering databases by discovering, mounting, and applying archive log files from backups
- Pruning archive log files from archive log destinations when creating backups of only the archive logs
- Retaining a minimum number of archive log backups automatically by retaining only the backups that contain unique archive log files
- Tracking operation details and generating reports
- Verifying backups to ensure that backups are in a valid block format and that none of the backed-up files are corrupted
- Maintaining a history of operations performed on the database profile

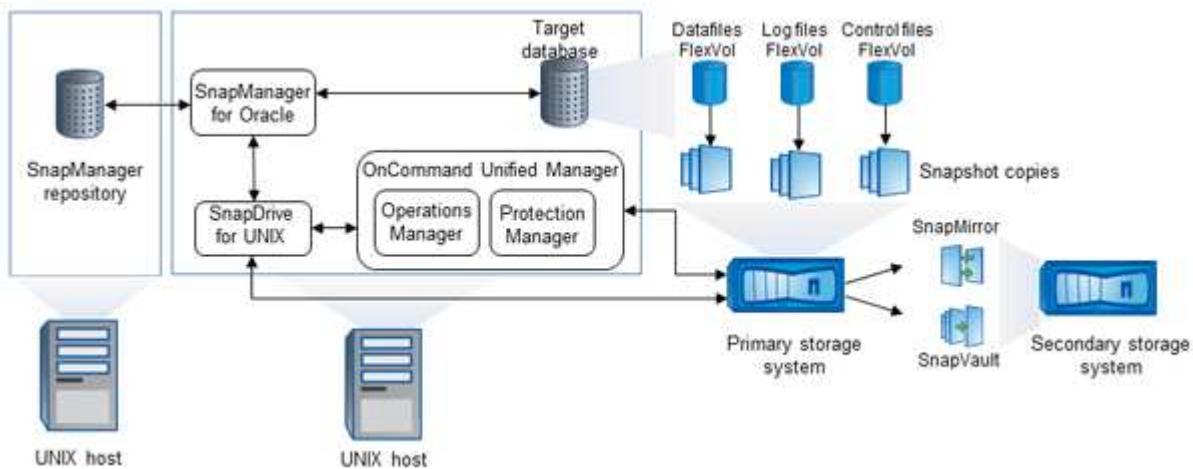
A profile contains information about the database to be managed by SnapManager.

- Protecting backups on the secondary and tertiary storage systems.
- Creating space-efficient clones of backups on primary or secondary storage

SnapManager enables you to split a clone of a database.

## SnapManager architecture

SnapManager for Oracle includes components that work together to provide a comprehensive and powerful backup, restore, recovery, and cloning solution for Oracle databases.



### SnapDrive for UNIX

SnapManager requires SnapDrive to establish connection with the storage system. You must install SnapDrive for UNIX on every target database host before installing SnapManager.

### SnapManager for Oracle

You must install SnapManager for Oracle on every target database host.

You can either use the command-line interface (CLI) or UI from the database host where SnapManager for Oracle is installed. You can also use the SnapManager UI remotely by using a web browser from any system running on an operating system supported by SnapManager.



The supported JRE versions are 1.5, 1.6, 1.7, and 1.8.

### Target database

The target database is an Oracle database that you want to manage using SnapManager by performing backup, restore, recovery, and clone operations.

The target database can be a standalone, Real Application Clusters (RAC), or reside on Oracle Automatic Storage Management (ASM) volumes. For details about the supported Oracle database versions, configurations, operating systems, and protocols, see the NetApp Interoperability Matrix Tool.

### SnapManager repository

The SnapManager repository resides in an Oracle database and stores metadata about profiles, backups, restore, recovery, and clone. A single repository can contain information about operations performed on multiple database profiles.

The SnapManager repository cannot reside in the target database. The SnapManager repository database and the target database must be online before performing SnapManager operations.

## **OnCommand Unified Manager Core Package**

OnCommand Unified Manager core package integrates the capabilities of Operations Manager, Protection Manager, and Provisioning Manager. It centralizes provisioning, cloning, backup and recovery, and disaster recovery (DR) policies. Integrating all of these capabilities makes it possible to perform many management functions from a single tool.

### **Operations Manager**

Operations Manager is the web-based user interface (UI) of the OnCommand Unified Manager core package. It is used for day-to-day storage monitoring, issue alerts, and reporting on storage and storage system infrastructure. SnapManager integration leverages the RBAC capabilities of Operations Manager.

### **Protection Manager**

Protection Manager gives administrators an easy-to-use management console for quick configuration and control of all SnapMirror and SnapVault operations. The application allows administrators to apply consistent data protection policies, automate complex data protection processes, and pool backup and replication resources for higher utilization.

The interface for Protection Manager is the NetApp Management Console, the client platform for NetApp management software applications. The NetApp Management Console runs on a Windows or Linux system that is different from the server on which the OnCommand server is installed. It enables storage, application, and server administrators to perform daily tasks without having to switch between different UIs. The applications that run in the NetApp Management Console are Protection Manager, Provisioning Manager, and Performance Advisor.

### **Primary storage system**

SnapManager backs up the target databases on the primary NetApp storage system.

### **Secondary storage system**

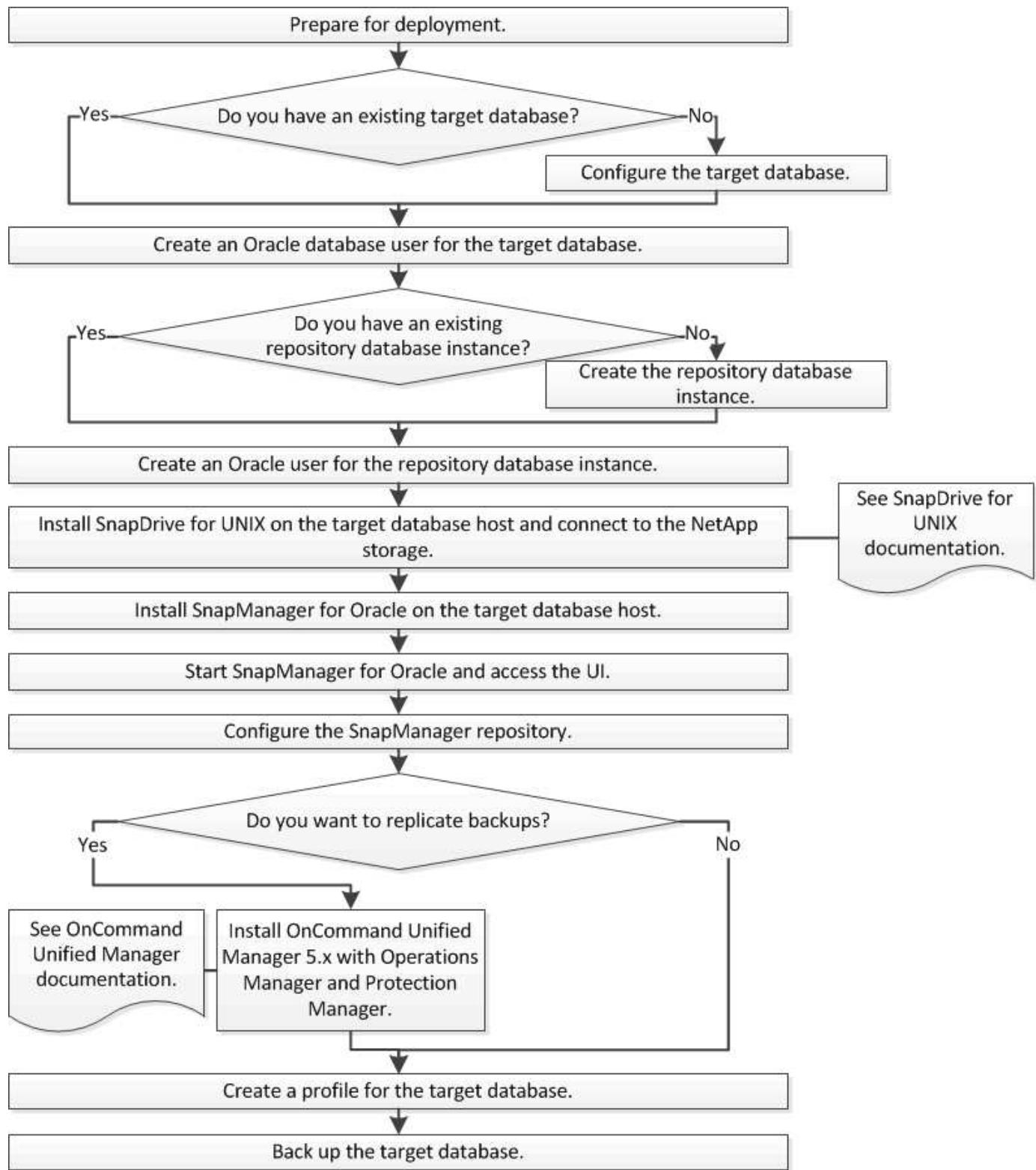
When you enable data protection on a database profile, the backups created on the primary storage system by SnapManager are replicated to a secondary NetApp storage system using SnapVault and SnapMirror technologies.

### **Related information**

[NetApp Interoperability Matrix Tool](#)

## **Deployment workflow**

Before you can create backups with SnapManager, you need to first install SnapDrive for UNIX and then install SnapManager for Oracle.



## Preparing for deployment

Before you deploy SnapManager, you must ensure your storage system and UNIX hosts meet the minimum resource requirements.

1. Verify that you have the required licenses.

2. Verify the supported configurations.
3. Verify the supported storage types.
4. Verify that your UNIX hosts meet SnapManager requirements.

## SnapManager licensing

A SnapManager license and several storage system licenses are required to enable SnapManager operations. The SnapManager license is available in two licensing models: per-server licensing, in which the SnapManager license resides on each database host; and per-storage system licensing, in which the SnapManager license resides on the storage system.

The SnapManager license requirements are as follows:

License	Description	Where required
SnapManager per-server	A host-side license for a specific database host. Licenses are required only for database hosts on which SnapManager is installed. No SnapManager license is required for the storage system.	On the SnapManager host. A SnapManager license is not required on primary and secondary storage systems when using per-server licensing.
SnapManager per-storage system	A storage-side license that supports any number of database hosts. Required only if you are not using a per-server license on the database host.	On primary and secondary storage systems.
SnapRestore	A required license that enables SnapManager to restore databases.	On primary and secondary storage systems. Required on SnapVault destination systems to restore a file from a backup.
FlexClone	An optional license for cloning databases.	On primary and secondary storage systems. Required on SnapVault destination systems when creating clones from a backup.
SnapMirror	An optional license for mirroring backups to a destination storage system.	On primary and secondary storage systems.
SnapVault	An optional license for archiving backups to a destination storage system.	On primary and secondary storage systems.

License	Description	Where required
Protocols	NFS, iSCSI, or FC license is required depending on the protocol used.	On primary and secondary storage systems. Required on SnapMirror destination systems to serve data if a source volume is unavailable.

## Supported configurations

The hosts on which you are installing SnapManager must meet the specified software, browser, database, and operating system requirements. You must verify support for your configuration before you install or upgrade SnapManager.

For information about supported configurations, see the Interoperability Matrix tool.

### Related information

[NetApp Interoperability Matrix Tool](#)

## Supported storage types

SnapManager supports a wide range of storage types on both physical and virtual machines. You must verify support for your storage type before you install or upgrade SnapManager.

Machine	Storage type
Physical server	<ul style="list-style-type: none"> <li>• NFS-connected volumes</li> <li>• FC-connected LUNs</li> <li>• iSCSI-connected LUNs</li> </ul>
VMware ESX	<ul style="list-style-type: none"> <li>• NFS volumes connected directly to the guest system</li> <li>• RDM LUNs on the guest operating system</li> </ul>

## UNIX host requirements

You must install SnapManager for Oracle on every host where an Oracle database you want to backup is hosted. You must ensure that your hosts meet the minimum requirements for SnapManager configuration.

- You must install SnapDrive on the database host before you install SnapManager.
- You can install SnapManager either on physical or virtual machines.
- You must install the same version of SnapManager on all hosts that share the same repository.
- You must install Oracle patch 13366202 if you are using Oracle databases 11.2.0.2 or 11.2.0.3.

If you are using DNFS, you must also install the patches listed in the My Oracle Support (MOS) report

## Configuring databases

You must configure at least two Oracle databases: a target database that you want to back up using SnapManager; and a repository database to store the target database metadata. The target database and the SnapManager repository database must be configured and online before performing SnapManager operations.

### Configuring the target database

The target database is an Oracle database that can be configured either as standalone, Real Application Clusters (RAC), Automatic Storage Management (ASM), or any other supported combinations.

1. Configure the target database by referring *TR-3633*.

#### Related information

[NetApp Technical Report 3633: Best Practices for Oracle Databases on NetApp Storage](#)

### Creating an Oracle database user for the target database

An Oracle database user is required to log in to the database and perform SnapManager operations. You must create this user with the `sysdba` privilege if a user with the `sysdba` privilege does not exist for the target database.

SnapManager can use any Oracle user with the `sysdba` privilege that exists for the target database. For example, SnapManager can use the default `sys` user. However, even if the user exists, you can create a new user for the target database and assign the `sysdba` privilege.

You can also use the OS authentication method wherein the operating system (OS) allows the Oracle database to use the credentials that are maintained by the OS to authenticate users to log in to the database and perform SnapManager operations. If you are authenticated by the OS, you can connect to the Oracle database without specifying a user name or password.

1. Log in to SQL \*Plus: `'sqlplus / as sysdba'`
2. Create a new user with an administrator password: `'create user user_name identified by admin_password;'`  
`user_name` is the name of the user you are creating and `admin_password` is the password that you want to assign to the user.
3. Assign the `sysdba` privilege to the new Oracle user: `'grant sysdba to user_name;'`

### Creating the repository database instance

The repository database instance is an Oracle database in which you create the SnapManager repository. The repository database instance must be a stand-alone database and cannot be the target database.

You must have an Oracle database and a user account to access the database.

1. Log in to SQL \*Plus: 'sqlplus / as sysdba'
2. Create a new tablespace for the SnapManager repository: 'create tablespacetablespace\_name datafile '/u01/app/oracle/oradata/datafile/tablespace\_name.dbf' size 100M autoextend on;'  
tablespace\_name is the name of the tablespace.
3. Verify the block size of the tablespace: 'select tablespace\_name, block\_size from dba\_tablespaces;'  
SnapManager requires a minimum 4-K block size for the tablespace.

## Related information

[NetApp Technical Report 3761: 'SnapManager for Oracle: Best Practices'](#)

## Creating an Oracle user for the repository database instance

An Oracle user is required to log in to and access the repository database instance. You must create this user with *connect* and *resource* privileges.

1. Log in to SQL \*Plus: 'sqlplus / as sysdba'
2. Create a new user and assign an administrator password to that user: 'create useruser\_name identified by admin\_password default tablespace tablespace\_name quota unlimited on tablespace\_name;'
  - user\_name is the name of the user you are creating for the repository database.
  - admin\_password is the password you want to assign to the user.
  - tablespace\_name is the name of the tablespace created for the repository database.
3. Assign *connect* and *resource* privileges to the new Oracle user: 'grant connect, resource to user\_name;'

## Verifying the Oracle listener configuration

The listener is a process that listens for client connection requests. It receives incoming client connection requests and manages the traffic of these requests to the database. Before connecting to a target database or repository database instance, you can use the STATUS command to verify the listener configuration.

The STATUS command displays basic status information about a specific listener, including a summary of listener configuration settings, listening protocol addresses, and a summary of services registered with that listener.

1. Enter the following command at the command prompt: 'lsnrctl STATUS'

The default value assigned to the listener port is 1521.

## Installing SnapManager

You must install SnapManager on each host where the database you want to backup is running.

You must have installed SnapDrive for UNIX on the database host and established a connection to the storage system.

For information about how to install SnapDrive and establish connection to storage system, see SnapDrive for UNIX documentation.

You must install one SnapManager instance per database host. If you are using a Real Application Cluster (RAC) database and want to back up the RAC database, you must install SnapManager on all the hosts of the RAC database.

1. Download the SnapManager for Oracle install package for UNIX from the NetApp Support Site and copy it to the host system.

[NetApp Downloads: 'Software'](#)

2. Log in to the database host as the root user.
3. From the command prompt, navigate to the directory where you copied the install package.
4. Make the install package executable: `chmod 755 install_package.bin`
5. Install SnapManager: `'./install_package.bin'`
6. Press Enter to continue.
7. Perform the following steps:
  - a. Press Enter to accept the default value for operating system group.  
The default value for the group is dba.
  - b. Press Enter to accept the default value for the startup type.  
The configuration summary is displayed.
8. Review the configuration summary and press Enter to continue.

SnapManager is installed at

## Related information

[Setting up SnapManager](#)

[NetApp Documentation: 'SnapDrive for UNIX'](#)

# Setting up SnapManager

You can start SnapManager and access it by using either the user interface (UI) or the command-line interface (CLI). After accessing SnapManager, you must create the SnapManager repository before performing any SnapManager operations.

## Starting the SnapManager server

You must start the SnapManager server from the target database host.

1. Log in to the target database host and start the SnapManager server:

The following message is displayed: 'SnapManager Server started on secure port port\_number with PID PID\_number.'



The default port is 27214.

You can verify that SnapManager is running correctly:

The following message is displayed: 'Operation Id operation\_ID\_number succeeded.'

## Accessing the SnapManager user interface

You can access the SnapManager user interface (UI) remotely by using a web browser from any system running on an operating system supported by SnapManager. You can also access the SnapManager UI from the target database host by running the smogui command.

- You must ensure that SnapManager is running.
- You must ensure that the supported operating system and Java are installed on the system where you want to access the SnapManager UI.

For information about the supported operating system and Java, see the Interoperability Matrix tool.

1. In the web browser window, enter the following: [https://server\\_name.domain.com:port\\_number](https://server_name.domain.com:port_number)
  - server\_name is the name of the target database host where SnapManager is installed.

You can also enter the IP address of the target database host.

- port\_number is the port on which SnapManager is running.

The default value is 27214.

2. Click the link.

The UI is displayed.

## Configuring the SnapManager repository

You must configure the SnapManager repository in the repository database instance. The repository database stores metadata for databases managed by SnapManager.

- You must have created the repository database instance.
- You must have created the Oracle user for the repository database instance with required privileges.
- You must have included the repository database instance details in the tnsnames.ora file.

You can configure the SnapManager repository either from the SnapManager user interface (UI) or command-line interface (CLI). These steps show how to create a repository using the SnapManager UI. You can also use the CLI if you prefer.

For information about how to create the repository by using CLI, see the *SnapManager for Oracle Administration Guide for UNIX*.

1. In the left pane of the SnapManager UI, right-click **Repositories**.
2. Select **Create New Repository** and click **Next**.
3. In the Repository Database Configuration Information window, enter the following information:

In this field...	Do this...
<b>User Name</b>	Enter the name of the user you created for the repository database instance.
<b>Password</b>	Enter the password.
<b>Host</b>	Enter the IP address of the host where the repository database instance is created.
<b>Port</b>	Enter the port used to connect to the repository database instance. The default port is 1521.
<b>Service Name</b>	Enter the name that SnapManager uses to connect to the repository database instance. Depending on the details included in the tnsnames.ora file, this might be the short service name or the fully qualified service name. +

4. In the Perform Repository Add Operation window, review the configuration summary and click **Add**.

If the operation fails, click the **Operation Details** tab to view what caused the operation to fail. The error details are also captured in the operation log located at /var/log/smo.

5. Click **Finish**.

The repository is listed in the left pane under the **Repositories** tree. If you do not see the repository, right-click **Repositories** and click **Refresh**.

#### Related information

[SnapManager 3.4 for Oracle Administration Guide for UNIX](#)

## Backing up and verifying your databases

After installing SnapManager, you can create a basic backup of your database and verify that backup to ensure it does not contain any corrupt files.

#### Related information

[SnapManager backup overview](#)

[Defining a backup strategy](#)

[Creating a profile for your database](#)

[Backing up your database](#)

[Verifying database backups](#)

[Scheduling recurring backups](#)

## SnapManager backup overview

SnapManager uses NetApp Snapshot technology to create backups of databases. You can use the DBVERIFY utility, or you can use SnapManager to verify the integrity of the backups.

SnapManager backs up a database by creating Snapshot copies of the volumes containing data files, control files, and archive log files. Together, these Snapshot copies comprise a backup set that SnapManager can use to restore a database.

## Defining a backup strategy

Defining a backup strategy before creating your backups ensures that you have backups to successfully restore your databases. SnapManager provides flexible granular backup schedule to meet your Service Level Agreement (SLA).



For SnapManager best practices, see *TR 3761*.

### What mode of SnapManager backup do you need?

SnapManager supports two modes of backups:

Backup mode	Description
Online backup	Creates a backup of the database when the database is in online state. This backup mode is also called a hot backup.
Offline backup	Creates a backup of the database when the database is either in a mounted or shutdown state. This backup mode is also called a cold backup.

### What type of SnapManager backup do you need?

SnapManager supports three types of backups:

Backup type	Description
Full backup	Creates a backup of the entire database, which includes all the datafiles, control files, and archive log files.

Backup type	Description
Partial backup	Creates a backup of selected datafiles, control files, tablespaces, and archive log files
Archive log-only backup	Creates a backup of only the archive log files. You must select <b>Backup Archivelogs Separately</b> while creating the profile.

### What type of database profile do you need?

SnapManager creates backups based on whether the database profile separates the archive log backups from the data file backups.

Profile type	Description
A single database profile for combined backup of data files and archive logs	<p>Allows you to create:</p> <ul style="list-style-type: none"> <li>Full backup containing all the data files, archive log files, and control files</li> <li>Partial backup containing selected data files, tablespaces, archive log files, and control files</li> </ul>
Separate database profiles for archive log backups and data file backups	<p>Allows you to create:</p> <ul style="list-style-type: none"> <li>Combined backup with different labels for data file backup and archive log backup</li> <li>Data-files-only backup of all the data files along with the control files</li> <li>Partial data-files-only backup of selected data files or tablespaces along with the control files</li> <li>Archive-logs-only backup</li> </ul>

### What naming conventions should be used for Snapshot copies?

Snapshot copies created by backups can follow a custom naming convention. Custom text or built-in variables such as the profile name, the database name, and the database SID provided by SnapManager can be used to create the naming convention. You can create the naming convention while creating the policy.



You must include the smid variable in the naming format. The smid variable creates a unique Snapshot identifier.

The Snapshot copy naming convention can be changed during or after the creation of a profile. The updated pattern applies only to Snapshot copies that have not yet been created; existing Snapshot copies retain the previous pattern.

## How long do you want to retain backup copies on the primary storage system and the secondary storage system?

A backup retention policy specifies the number of successful backups to retain. You can specify the retention policy while creating the policy.

You can select hourly, daily, weekly, monthly, or unlimited as the retention class. For each retention class, you can specify the retention count and retention duration, either together or individually.

- Retention count determines the minimum number of backups of a particular retention class that should be retained.

For example, if backup schedule is *daily* and retention count is *10*, then 10 daily backups are retained.



The maximum number of Snapshot copies that Data ONTAP allows you can retain is 255. After it reaches the maximum limit, by default the creation of new Snapshot copies fail. However, you can configure the rotation policy in Data ONTAP to delete older Snapshot copies.

- Retention duration determines the minimum number of days for which the backup should be retained.

For example, if backup schedule is *daily* and retention duration is *10*, then 10 days of daily backups are retained.

If you set up SnapMirror replication, the retention policy is mirrored on the destination volume.



For long-term retention of backup copies, you should use SnapVault.

## Do you want to verify backup copies using the source volume or a destination volume?

If you use SnapMirror or SnapVault, you can verify backup copies using the Snapshot copy on the SnapMirror or SnapVault destination volume rather than the Snapshot copy on the primary storage system. Using a destination volume for verification reduces the load on the primary storage system.

### Related information

[NetApp Technical Report 3761: SnapManager for Oracle: Best Practices](#)

## Creating a profile for your database

You must create a profile for your database to perform any operation on that database. The profile contains information about the database and can reference only one database; however, a database can be referenced by multiple profiles. A backup that is created using one profile cannot be accessed from a different profile, even if both profiles are associated with the same database.

You must ensure that target database details are included in the /etc/oratab file.

These steps show how to create a profile for your database using the SnapManager UI. You can also use the CLI if you prefer.

For information about how to create profiles using the CLI, see the *SnapManager for Oracle Administration Guide for UNIX*.

1. From the Repositories tree, right-click the repository or the host and select **Create Profile**.
2. On the Profile Configuration Information page, enter the custom name and password for the profile.
3. On the Database Configuration Information page, enter the following information:

In this field...	Do this...
<b>Database Name</b>	Enter the name of the database you want to backup.
<b>Database SID</b>	Enter the secure ID (SID) of the database. The database name and the database SID can be the same.
<b>Host</b>	Enter the IP address of the host where the target database resides. You can also specify the host name if the host name is specified in the Domain Name System (DNS).
<b>Host Account</b>	Enter the Oracle user name of the target database. The default value for the user is oracle.
<b>Host Group</b>	Enter the Oracle user group name. The default value is dba. +

4. On the Database Connection Information page, select one of the following:

Choose this...	If you want to...
<b>Use O/S Authentication</b>	Use the credentials maintained by the operating system to authenticate users who access the database.
<b>Use Database Authentication</b>	<p>Allow Oracle to authenticate an administrative user using password file authentication. Enter the appropriate database connection information.</p> <ul style="list-style-type: none"> <li>• In the <b>SYSDBA Privileged User Name</b> field, enter the name of the database administrator with administrative privileges.</li> <li>• In the <b>Password</b> field, enter the password of the database administrator.</li> <li>• In the <b>Port</b> field, enter the port number used to connect to the host where the database resides.</li> </ul> <p>The default value is .</p>

Choose this...	If you want to...
<b>Use ASM Instance Authentication</b>	<p>Allow Automatic Storage Management (ASM) database instance to authenticate an administrative user. Enter the appropriate ASM instance authentication information.</p> <ul style="list-style-type: none"> <li>• In the <b>SYSDBA/SYSASM Privileged User Name</b> field, enter the user name of the ASM instance administrator with administrative privileges.</li> <li>• In the <b>Password</b> field, enter password of the administrator.</li> </ul>

**Note:** You can select the ASM authentication mode only if you have an ASM instance on the database host.

5. On the RMAN Configuration Information page, select one of the following:

Choose this...	If...
<b>Do not use RMAN</b>	<p>You are not using RMAN to manage backup and restore operations.</p>
<b>Use RMAN via the control file</b>	<p>You are managing the RMAN repository using control files.</p>
<b>Use RMAN via Recovery Catalog</b>	<p>You are managing the RMAN repository using recovery catalog database. Enter the user name who has access to recovery catalog database, password, and the Oracle net service name of the database that manages the Transparent Network Substrate (TNS) connection.</p> <p>+</p>

6. On the Snapshot Naming Information page, select the variables to specify a naming format for the Snapshot copy.

You must include the smid variable in the naming format. The smid variable creates a unique Snapshot identifier.

7. On the Policy Settings page, perform the following:

- Enter the retention count and duration for each retention class.
- From the **Protection Policy** drop-down list, select the Protection Manager policy.
- If you want to back up archive logs separately, select the **Backup Archivelogs Separately** checkbox, specify the retention, and select the protection policy.

You can select a policy which is different from the policy associated for datafiles. For example, if you have selected one of the Protection Manager policy for datafiles, you can select a different Protection

Manager policy for archive logs.

8. On the Configure Notification Settings page, specify the email notification settings.
9. On the History Configuration Information page, select one of the options to maintain the history of SnapManager operations.
10. On the Perform Profile Create Operation page, verify the information and click **Create**.
11. Click **Finish** to close the wizard.

If the operation fails, click **Operation Details** to view what caused the operation to fail.

## Related information

[SnapManager 3.4 for Oracle Administration Guide for UNIX](#)

## Backing up your database

After creating a profile, you must back up your database. You can schedule recurring backups after the initial backup and verification.

These steps show how to create a backup of your database using the SnapManager user interface. You can also use the command-line interface (CLI) if you prefer.

For information about how to create backups using CLI, see the *SnapManager for Oracle Administration Guide for UNIX*.

1. From the Repositories tree, right-click the profile containing the database you want to back up, and select **Backup**.
2. In **Label**, enter a custom name for the backup.

You must not include spaces or special characters in the name. If you do not specify a name, SnapManager automatically creates a backup label.

From SnapManager 3.4, you can modify the backup label created automatically by SnapManager. You can edit the `override.default.backup.pattern` and `new.default.backup.pattern` configuration variables to create your own default backup label pattern.

3. Select **Allow startup or shutdown of database, if necessary** to modify the state of the database, if required.

This option ensures that if the database is not in the required state to create a backup, SnapManager automatically brings the database to the desired state to complete the operation.

4. On the Database, Tablespaces or Datafiles to Backup page, perform the following:
  - a. Select **Backup Datafiles** to back up either the full database, selected data files, or selected tablespaces.
  - b. Select **Backup Archivelogs** to back up the archive log files separately.
  - c. Select **Prune Archivelogs** if you want to delete the archive log files from the active file system that is already backed up.



If Flash Recovery Area (FRA) is enabled for archive log files, then SnapManager fails to prune the archive log files.

- d. Select **Protect the backup** if you want to enable backup protection.

This option is enabled only if the protection policy was selected while creating the profile.

- e. Select **Protect Now** if you want to protect the backup immediately to the secondary storage overriding Protection Manager's protection schedule.
- f. From the **Type** drop-down list, select the type of backup (offline or online) you want to create.

If you select Auto, SnapManager creates a backup based on the current state of the database.

- g. From the **Retention Class** drop-down list, select the retention class.
- h. Select the **Verify backup using the Oracle DBVERIFY utility** check box if you want to ensure that the backed-up files are not corrupted.

5. On the Task Enabling page, specify whether you want to perform tasks before and after backup operations are completed.
6. On the Perform Backup Operation page, verify the information and click **Backup**.
7. Click **Finish** to close the wizard.

If the operation fails, click **Operation Details** to view what caused the operation to fail.

## Verifying database backups

You can verify the backup of your database to ensure that the backed-up files are not corrupted.

If you did not select the **Verify backup using the Oracle DBVERIFY utility** check box while creating a backup, you must perform these steps manually to verify the backup. However, if you selected the check box, SnapManager automatically verifies the backup.

1. From the **Repositories** tree, select the profile.
2. Right-click the backup that you want to verify, and select **Verify**.
3. Click **Finish**.

If the operation fails, click **Operation Details** to view what caused the operation to fail.

In the **Repository** tree, right-click the backup, and then click **Properties** to view the results of the verify operation.

You can use backed-up files to perform restore operations. For information about how to perform restore operations using the SnapManager user interface (UI), see the *Online Help*. If you want to use the command-line interface (CLI) to perform restore operations, see the *SnapManager for Oracle Administration Guide for UNIX*.

## Related information

[SnapManager 3.4 for Oracle Administration Guide for UNIX](#)

## Scheduling recurring backups

You can schedule backup operations so that the backups are initiated automatically at regular intervals. SnapManager allows you to schedule backups on an hourly, daily, weekly, monthly, or one-time basis.

You can assign multiple backup schedules for a single database. However, when scheduling multiple backups for the same database, you must ensure that the backups are not scheduled at the same time.

These steps show how to create a backup schedule for your database using the SnapManager user interface (UI). You can also use the command-line interface (CLI) if you prefer. For information about how to schedule backups using the CLI, see the *SnapManager for Oracle Administration Guide for UNIX*.

1. From the Repositories tree, right-click the profile containing the database for which you want to create a backup schedule, and select **Schedule Backup**.
2. In **Label**, enter a custom name for the backup.

You must not include spaces or special characters in the name. If you do not specify a name, SnapManager automatically creates a backup label.

From SnapManager 3.4, you can modify the backup label created automatically by SnapManager. You can edit the `override.default.backup.pattern` and `new.default.backup.patternconfiguration` variables to create your own default backup label pattern.

3. Select **Allow startup or shutdown of database, if necessary** to modify the state of the database, if required.

This option ensures that if the database is not in the required state to create a backup, SnapManager automatically brings the database to the desired state to complete the operation.

4. On the Database, Tablespaces or Datafiles to Backup page, perform the following:
  - a. Select **Backup Datafiles** to back up either the full database, selected data files, or selected tablespaces.
  - b. Select **Backup Archivelogs** to back up the archive log files separately.
  - c. Select **Prune Archivelogs** if you want to delete the archive log files from the active file system that is already backed up.



If Flash Recovery Area (FRA) is enabled for archive log files, then SnapManager fails to prune the archive log files.

- d. Select **Protect the backup** if you want to enable backup protection.

This option is enabled only if the protection policy was selected while creating the profile.

- e. Select **Protect Now** if you want to protect the backup immediately to the secondary storage overriding Protection Manager's protection schedule.
- f. From the **Type** drop-down list, select the type of backup (offline or online) you want to create.

If you select Auto, SnapManager creates a backup based on the current state of the database.

- g. From the **Retention Class** drop-down list, select the retention class.

- h. Select the **Verify backup using the Oracle DBVERIFY utility** check box if you want to ensure that the backed-up files are not corrupted.
5. In the **Schedule Name** field, enter a custom name of the schedule.

You must not include spaces in the name.
6. On the Configure Backup Schedule page, perform the following:
  - a. From the **Perform this operation** drop-down list, select the frequency of the backup schedule.
  - b. In the **Start Date** field, specify the date when you want to initiate the backup schedule.
  - c. In the **Start Time** field, specify the time when you want to initiate the backup schedule.
  - d. Specify the interval in which backups will be created.

For example, if you have selected the frequency as hourly and specify the interval as 2, then backups will be scheduled every 2 hours.
7. On the Task Enabling page, specify whether you want to perform tasks before and after backup operations are completed.
8. On the Perform Backup Schedule Operation page, verify the information and click **Schedule**.
9. Click **Finish** to close the wizard.

If the operation fails, click **Operation Details** to view what caused the operation to fail.

## Related information

[SnapManager 3.4 for Oracle Administration Guide for UNIX](#)

## Where to go next

After installing SnapManager and successfully creating a backup, you can use SnapManager to perform restore, recovery, and cloning operations. In addition, you might want to find information about other SnapManager features such as scheduling, managing SnapManager operations, and maintaining a history of operations.

You can find more information about these features as well as release-specific information for SnapManager in the following documentation, all of which is available on the [NetApp Support](#).

- [SnapManager 3.4 for Oracle Administration Guide for UNIX](#)

Describes how to configure and administer SnapManager for Oracle. Topics include how to configure, back up, restore, and clone databases, perform secondary protection, plus an explanation of CLI commands and instructions on how to upgrade and uninstall the product.

- [SnapManager 3.4 for Oracle Release Notes](#)

Describes new features, fixed issues, important cautions, known issues, and limitations for SnapManager for Oracle.

- [SnapManager for Oracle Online Help](#)

Describes the step-by-step procedures for performing different SnapManager operations using the

## SnapManager UI.



The *Online Help* is integrated with the SnapManager UI and is not available on the Support Site.

- [NetApp Technical Report 3761: SnapManager for Oracle: Best Practices](#)

Describes SnapManager for Oracle best practices.

- [NetApp Technical Report 3633: Best Practices for Oracle Databases on NetApp Storage](#)

Describes best practices to configure Oracle databases on NetApp storage system.

## Related information

[NetApp Support](#)

[NetApp Documentation: Product Library A-Z](#)

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