



# Protect Oracle databases

## SnapCenter Software 5.0

NetApp  
July 18, 2024

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# Protect Oracle databases

## Add hosts and install SnapCenter plug-in for Oracle database

You can use the Add Host page to add hosts, and then install the SnapCenter Plug-ins Package for Linux or SnapCenter Plug-ins Package for AIX. The plug-ins are automatically installed on the remote hosts.

You can add a host and install plug-in packages either for an individual host or for a cluster. If you are installing the plug-in on a cluster (Oracle RAC), the plug-in is installed on all the nodes of the cluster. For Oracle RAC One Node, you should install the plug-in on both active and passive nodes.

### Steps

1. In the left navigation pane, click **Hosts**.
2. Verify that the **Managed Hosts** tab is selected.
3. Click **Add**.
4. In the Hosts page, perform the following actions:
  - a. In the Host Type field, select the host type.
  - b. In the Host name field, enter the fully qualified domain name (FQDN) or the IP address of the host.
  - c. In the Credentials field, enter the credential that you created.
5. In the Select Plug-ins to Install section, select the plug-ins to install.
6. (Optional) Click **More Options** and specify the details.
7. Click **Submit**.
8. Verify the fingerprint, and then click **Confirm and Submit**.

In a cluster setup, you should verify the fingerprint of each of the nodes in the cluster.

9. Monitor the installation progress.

## Create backup policies for Oracle databases

Before you use SnapCenter to back up Oracle database resources, you must create a backup policy for the resource or the resource group that you want to back up.

### Steps

1. In the left navigation pane, click **Settings**.
2. In the Settings page, click **Policies**.
3. Select Oracle Database from the drop-down list.
4. Click **New**.
5. In the Name page, enter the policy name and description.
6. In the Backup Type page, perform the following steps:
  - a. Select the backup type as either online or offline backup.

- b. Specify the schedule frequency.
  - c. If you want to catalog backup using Oracle Recovery Manager (RMAN), select **Catalog backup with Oracle Recovery Manager (RMAN)**.
  - d. If you want to prune archive logs after backup, select **Prune archive logs after backup**.
  - e. Specify the delete archive log settings.
7. In the Retention page, specify the retention settings.
  8. In the Script page, enter the path and the arguments of the prescript or postscript that you want to run before or after the backup operation, respectively.
  9. In the Verification page, select the backup schedule for which you want to perform the verification operation and enter the path and the arguments of the prescript or postscript that you want to run before or after the verification operation, respectively.
  10. Review the summary and click **Finish**.

## Create resource groups and attach Oracle backup policies

A resource group is the container to which you must add resources that you want to back up and protect.



A resource group enables you to back up all the data that is associated with a given application simultaneously. A resource group is required for any data protection job. You must also attach one or more policies to the resource group to define the type of data protection job that you want to perform.

### Steps

1. In the left navigation pane, click **Resources**, and then select the appropriate plug-in from the list.
2. In the Resources page, click **New Resource Group**.
3. In the Name page, perform the following actions:

For this field...	Do this...
Name	Enter a name for the resource group.
Tags	Enter one or more labels that will help you later search for the resource group.
Use custom name format for Snapshot copy	Select this check box, and enter a custom name format that you want to use for the Snapshot name.
Archive log file destination	Specify the destinations of the archive log files.



4. In the Resources page, select a host name from the **Host** drop-down list and resource type from the **Resource Type** drop-down list.
5. Select the resources from the **Available Resources** section, and then click the right arrow to move them to the **Selected Resources** section.
6. In the Policies page, perform the following steps:
  - a. Select one or more policies from the drop-down list.

- b. In the Configure Schedules column, click  for the policy you want to configure.
  - c. In the Add schedules for policy *policy\_name* dialog box, configure the schedule, and then click **OK**.
7. In the Verification page, perform the following steps:
  - a. Select the verification server.
  - b.
    - Select the policy for which you want to configure your verification schedule, and then click \*  .
  - c. Either select **Run verification after backup** or **Run scheduled verification**.
  - d. Click **OK**.
8. In the Notification page, from the **Email preference** drop-down list, select the scenarios in which you want to send the emails.
9. Review the summary, and then click **Finish**.

## Back up Oracle databases running on Azure NetApp Files

If a resource is not yet part of any resource group, you can back up the resource from the Resources page.

### Steps

1. In the left navigation pane, select **Resources**, and then select the appropriate plug-in from the list.
2. In the Resource page, select **Database** from the View drop-down list.
3. In the Resource page, select **Use custom name format for Snapshot copy**, and then enter a custom name format that you want to use for the Snapshot name.
4. In the Policies page, perform the following steps:
  - a. Select one or more policies from the drop-down list.
  - b.
    - Select  in the Configure Schedules column for the policy for which you want to configure a schedule.
    - c. In the Add schedules for policy *policy\_name* dialog box, configure the schedule, and then select **OK**.
5. In the Verification page, perform the following steps:
  - a. Select the verification server.
  - b.
    - Select the policy for which you want to configure your verification schedule, and then click  .
  - c. Either select **Run verification after backup** or **Run scheduled verification**.
  - d. Click **OK**.
6. In the Notification page, from the **Email preference** drop-down list, select the scenarios in which you want to send the emails.
7. Review the summary, and then click **Finish**.
8. Select **Back up Now**.
9. In the Backup page, perform the following steps:
  - a. If multiple policies are associated with the resource, from the **Policy** drop-down list, select the policy that you want to use for backup.

- b. Click **Backup**.
10. Monitor the operation progress by clicking **Monitor > Jobs**.

## Back up Oracle resource groups

You can back up the resource groups that consist of multiple resources. A backup operation on the resource group is performed on all resources defined in the resource group.


### Steps

1. In the left navigation pane, select **Resources**, and then select the appropriate plug-in from the list.
2. In the Resources page, select **Resource Group** from the **View** list.
3. In the Resource Groups page, select the resource group that you want to back up, and then select **Back up Now**.
4. In the Backup page, perform the following steps:
  - a. If multiple policies are associated with the resource group, from the **Policy** drop-down list, select the policy that you want to use for backup.
  - b. Select **Backup**.
5. Monitor the operation progress by selecting **Monitor > Jobs**.

## Restore and recover Oracle databases

In the event of data loss, you can use SnapCenter to restore data from one or more backups to your active file system and then recover the database.

### Steps

1. In the left navigation pane, click **Resources**, and then select the appropriate plug-in from the list.
2. In the Resources page, select either **Database** or **Resource Group** from the View list.
3. Select the database or the resource group from the list.
4. From the Manage Copies view, select **Backups** from the primary storage system.
5. Select the backup from the table, and then click  .
6. In the Restore Scope page, perform the following tasks:
  - a. Select RAC if you have selected a backup of a database in RAC environment.
  - b. Perform the following actions:
    - i. Select **All Datafiles** if you want to restore only the database files.
    - ii. Select **Tablespaces** if you want to restore only the tablespaces.
    - iii. Select **Redo log files** if you want to restore the redo log files of the Data Guard standby or Active Data Guard standby databases.
    - iv. Select **Pluggable databases** and specify the PDBs you want to restore.
    - v. Select **Pluggable database (PDB) tablespaces**, and then specify the PDB and the tablespaces of that PDB that you want to restore.

- vi. Select **Restore the database to the same host where the backup was created** if you want to restore the database to the same SQL server where the backups are taken.
  - vii. Select **Restore the database to an alternate host** if you want the database to be restored to a different SQL server in the same or different host where backups are taken.
  - viii. Select **Change database state if needed for restore and recovery** to change the state of the database to the state required to perform restore and recovery operations.
  - ix. Select **Force in place restore** if you want to perform in-place restore in the scenarios where new datafiles are added after backup or when LUNs are added, deleted, or re-created to an LVM disk group.
7. In the Recovery Scope page, select one of the following options:
    - a. Select **All Logs** if you want to recover to the last transaction.
    - b. Select **Until SCN (System Change Number)** if you want to recover to a specific SCN.
    - c. Select **Date and Time** if you want to recover to a specific date and time.
    - d. Select **No recovery** if you do not want to recover.
    - e. Select **Specify external archive log locations** if you want to specify the location of the external archive log files.
  8. In the Pre-Ops and Post Ops page, specify the required details.
  9. In the Notification page, from the **Email preference** drop-down list, select the scenarios in which you want to send the emails.
  10. Review the summary, and then click **Finish**.
  11. Monitor the operation progress by clicking **Monitor > Jobs**.


## Restore and recover tablespaces using point-in-time recovery

You can restore a subset of tablespaces that have been corrupted or dropped without impacting the other tablespaces in the database. SnapCenter uses RMAN to perform point-in-time recovery (PITR) of the tablespaces.

### Steps

1. In the left navigation pane, click **Resources**, and then select the appropriate plug-in from the list.
2. In the Resources page, select either **Database** or **Resource Group** from the View list.
3. Select the database of type single instance (multitenant).
4. From the Manage Copies view, select **Backups** from the storage system.

If the backup is not cataloged, you should select the backup and click **Catalog**.

5. Select the catalogued backup, and then click  .
6. In the Restore Scope page, perform the following tasks:
  - a. Select **RAC** if you have selected a backup of a database in RAC environment.
  - b. Select **Tablespaces** if you want to restore only the tablespaces.
  - c. Select **Change database state if needed for restore and recovery** to change the state of the database to the state required to perform restore and recovery operations.
7. In the Recovery Scope page, select one of the following options:

- a. Select **Until SCN (System Change Number)** if you want to recover to a specific SCN.
  - b. Select **Date and Time** if you want to recover to a specific date and time.
8. In the Pre-Ops and Post Ops page, specify the required details.
9. In the Notification page, from the **Email preference** drop-down list, select the scenarios in which you want to send the emails.
10. Review the summary, and then click **Finish**.
11. Monitor the restore process by using the **Monitor > Jobs** page.


## Restore and recover pluggable database using point-in-time recovery

You can restore and recover a pluggable database (PDB) that has been corrupted or dropped without impacting the other PDBs in the container database (CDB). SnapCenter uses RMAN to perform point-in-time recovery (PITR) of the PDB.

### Steps

1. In the left navigation pane, click **Resources**, and then select the appropriate plug-in from the list.
2. In the Resources page, select either **Database** or **Resource Group** from the View list.
3. Select the database of type single instance (multitenant).
4. From the Manage Copies view, select **Backups** from the storage system.

If the backup is not cataloged, you should select the backup and click **Catalog**.


5. Select the cataloged backup, and then click  .
6. In the Restore Scope page, perform the following tasks:
  - a. Select **RAC** if you have selected a backup of a database in RAC environment.
  - b. Depending on whether you want to restore the PDB or tablespaces in a PDB, perform one of the actions:
    - Select **Pluggable databases (PDBs)** if you want to restore a PDB.
    - Select **Pluggable database (PDB) tablespaces** if you want to restore tablespaces in a PDB.
7. In the Recovery Scope page, select one of the following options:
  - a. Select **Until SCN (System Change Number)** if you want to recover to a specific SCN.
  - b. Select **Date and Time** if you want to recover to a specific date and time.
8. In the Pre-Ops and Post Ops page, specify the required details.
9. In the Notification page, from the **Email preference** drop-down list, select the scenarios in which you want to send the emails.
10. Review the summary, and then click **Finish**.
11. Monitor the restore process by using the **Monitor > Jobs** page.

## Clone Oracle database backup

You can use SnapCenter to clone an Oracle database using the backup of the database.

### Steps



1. In the left navigation pane, click **Resources**, and then select the appropriate plug-in from the list.
2. In the Resources page, select either **Database** or **Resource Group** from the View list.
3. Select the database.
4. From the Manage Copies view page, select the backup from primary storage system.
5. Select the Data backup, and then click .
6. In the Name page, select whether you want to clone a database (CDB or non CDB) or clone a pluggable database (PDB).
7. In the Locations page, specify the required details.

If the Oracle database ANF volumes are configured in a manual QOS capacity pool, specify the QOS for the cloned volumes.

If QOS for the cloned volumes is not specified, the QOS of the source volume will be used. If the automatic QOS capacity pool is used, the QOS value specified will be ignored.

8. In the Credentials page, perform one of the following:
  - a. For Credential name for sys user, select the Credential to be used for defining the sys user password of the clone database.
  - b. For ASM Instance Credential name, select **None** if OS authentication is enabled for connecting to the ASM instance on the clone host.

Otherwise, select the Oracle ASM credential configured with either “sys” user or a user having “sysasm” privilege applicable to the clone host.

9. In the Pre-Ops page specify the path and arguments of the prescripts and in the Database Parameter settings section, modify the values of prepopulated database parameters that are used to initialize the database.
10. In the Post-Ops page, **Recover database** and **Until Cancel** are selected by default to perform recovery of the cloned database.
  - a. If you select **Until Cancel**, SnapCenter performs recovery by mounting the latest log backup having the unbroken sequence of archive logs after that data backup that was selected for cloning.
  - b. If you select **Date and time**, SnapCenter recovers the database up to a specified date and time.
  - c. If you select **Until SCN**, SnapCenter recovers the database up to a specified SCN.
  - d. If you select **Specify external archive log locations**, SnapCenter identifies and mounts optimal number of log backups based on the specified SCN or the selected date and time.
  - e. By default, **Create new DBID** check box is selected to generate a unique number (DBID) for the cloned database differentiating it from the source database.

Clear the check box if you want to assign the DBID of the source database to the cloned database. In this scenario, if you want to register the cloned database with the external RMAN catalog where the source database is already registered, the operation fails.


- f. Select **Create tempfile for temporary tablespace** check box if you want to create a tempfile for the default temporary tablespace of the cloned database.
- g. In **Enter sql entries to apply when clone is created**, add the sql entries that you want to apply when the clone is created.

- h. In **Enter scripts to run after clone operation**, specify the path and the arguments of the postscript that you want to run after the clone operation.
11. In the Notification page, from the **Email preference** drop-down list, select the scenarios in which you want to send the emails.
12. Review the summary, and then select **Finish**.
13. Monitor the operation progress by selecting **Monitor > Jobs**.

## Clone a pluggable database

You can clone a pluggable database (PDB) to a different or same target CDB on the same host or alternate host. You can also recover the cloned PDB to a desired SCN or date and time.

### Steps

1. In the left navigation pane, click **Resources**, and then select the appropriate plug-in from the list.
2. In the Resources page, select either **Database** or **Resource Group** from the View list.
3. Select the database of type single instance (multitenant).
4. From the Manage Copies view page, select the backup from primary storage system.
5. Select the backup, and then click .
6. In the Name page, select **PDB Clone** and specify the other details.
7. In the Locations page, specify the required details.
8. In the Pre-Ops page specify the path and arguments of the prescripts and in the Database Parameter settings section, modify the values of prepopulated database parameters that are used to initialize the database.
9. In the Post-Ops page, **Until Cancel** is selected by default to perform recovery of the cloned database.
  - a. If you select **Until Cancel**, SnapCenter performs recovery by mounting the latest log backup having the unbroken sequence of archive logs after that data backup that was selected for cloning.
  - b. If you select **Date and time**, SnapCenter recovers the database up to a specified date and time.
  - c. If you select **Specify external archive log locations**, SnapCenter identifies and mounts optimal number of log backups based on the specified SCN or the selected date and time.
  - d. By default, **Create new DBID** check box is selected to generate a unique number (DBID) for the cloned database differentiating it from the source database.


Clear the check box if you want to assign the DBID of the source database to the cloned database. In this scenario, if you want to register the cloned database with the external RMAN catalog where the source database is already registered, the operation fails.
  - e. Select **Create tempfile for temporary tablespace** check box if you want to create a tempfile for the default temporary tablespace of the cloned database.
  - f. In **Enter sql entries to apply when clone is created**, add the sql entries that you want to apply when the clone is created.
  - g. In **Enter scripts to run after clone operation**, specify the path and the arguments of the postscript that you want to run after the clone operation.
10. In the Notification page, from the **Email preference** drop-down list, select the scenarios in which you want to send the emails.

11. Review the summary, and then select **Finish**.
12. Monitor the operation progress by selecting **Monitor > Jobs**.

## Split an Oracle database clone

You can use SnapCenter to split a cloned resource from the parent resource. The clone that is split becomes independent of the parent resource.


### Steps

1. In the left navigation pane, click **Resources**, and then select the appropriate plug-in from the list.
2. In the Resources page, select **Database** from the View list.
3. Select the cloned resource, (for example, the database or LUN) and then click .
4. Review the estimated size of the clone that is to be split and the required space available on the aggregate, and then click **Start**.
5. Monitor the operation progress by clicking **Monitor > Jobs**.

## Split clone of a pluggable database

You can use SnapCenter to split a cloned pluggable database (PDB).

### Steps

1. In the left navigation pane, click **Resources**, and then select the appropriate plug-in from the list.
2. Select the source container database (CDB) from the resource or resource group view.
3. From the Manage Copies view, select **Clones** from the primary storage systems.
4. Select the PDB clone (targetCDB:PDBClone) and then click .
5. Review the estimated size of the clone that is to be split and the required space available on the aggregate, and then click **Start**.
6. Monitor the operation progress by clicking **Monitor > Jobs**.

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