Overview of SnapCenter Plug-in for Oracle Database

SnapCenter software

NetApp
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What can you do with the Plug-in for Oracle Database

The SnapCenter Plug-in for Oracle Database is a host-side component of the NetApp SnapCenter Software that enables application-aware data protection management of Oracle databases.

The Plug-in for Oracle Database automates the backup, cataloging and uncataloging with Oracle Recovery Manager (RMAN), verification, mounting, unmounting, restore, recovery, and cloning of Oracle databases in your SnapCenter environment. The Plug-in for Oracle Database installs SnapCenter Plug-in for UNIX to perform all the data protection operations.

You can use the Plug-in for Oracle Database to manage backups of Oracle databases running SAP applications. However, SAP BR*Tools integration is not supported.

- Back up datafiles, control files, and archive log files.

  Backup is supported only at container database (CDB) level.

- Restore and recovery of databases, CDBs, and pluggable databases (PDBs).

  Incomplete recovery of PDBs are not supported.

- Create clones of production databases up to a point-in-time.

  Cloning is supported only at CDB level.

- Verify backups immediately.
- Mount and unmount data and log backups for recovery operation.
- Schedule backup and verification operations.
- Monitor all operations.
- View reports for backup, restore, and clone operations.
- Automates application-aware backup, restore, recovery, verify, mount, unmount, and clone operations for Oracle databases in your SnapCenter environment
- Supports Oracle databases for SAP, however, SAP BR*Tools integration is not provided

Features of Plug-in for Oracle Database

The Plug-in for Oracle Database integrates with the Oracle database on the Linux or AIX host and with NetApp technologies on the storage system.

- Unified graphical user interface

  The SnapCenter interface provides standardization and consistency across plug-ins and environments. The SnapCenter interface enables you to complete consistent backup, restore, recovery, and clone operations across plug-ins, use centralized reporting, use at-a-glance dashboard views, set up role-based

access control (RBAC), and monitor jobs across all plug-ins.

- Automated central administration

  You can schedule backup and clone operations, configure policy-based backup retention, and perform restore operations. You can also proactively monitor your environment by configuring SnapCenter to send email alerts.

- Nondisruptive NetApp Snapshot technology

  SnapCenter uses NetApp Snapshot technology with the Plug-in for Oracle Database and Plug-in for UNIX to back up databases. Snapshots consume minimal storage space.

The Plug-in for Oracle Database also offers the following benefits:

- Support for backup, restore, clone, mount, unmount, and verification workflows
- Automatic discovery of Oracle databases configured on the host
- Support for cataloging and uncataloging using Oracle Recovery Manager (RMAN)
- RBAC-supported security and centralized role delegation

  You can also set the credentials so that the authorized SnapCenter users have application-level permissions.

- Support for Archive Log Management (ALM) for restore and clone operations
- Creation of space-efficient and point-in-time copies of production databases for testing or data extraction by using NetApp FlexClone technology

  A FlexClone license is required on the storage system where you want to create the clone.

- Support for consistency group (CG) feature of ONTAP as part of creating backups in SAN and ASM environments
- Nondisruptive and automated backup verification
- Capability to run multiple backups simultaneously across multiple database hosts

  In a single operation, Snapshots are consolidated when databases in a single host share the same volume.

- Support for physical and virtualized infrastructures
- Support for NFS, iSCSI, Fibre Channel (FC), RDM, VMDK over NFS and VMFS, and ASM over NFS, SAN, RDM, and VMDK
- Support for the Selective LUN Map (SLM) feature of ONTAP

  Enabled by default, the SLM feature periodically discovers the LUNs that do not have optimized paths and fixes them. You can configure SLM by modifying the parameters in the scu.properties file located at /var/opt/snapcenter/scu/etc.

  - You can disable this by setting the value of ENABLE_LUNPATH_MONITORING parameter to false.
  - You can specify the frequency in which the LUN paths will be fixed automatically by assigning the value (in hours) to LUNPATH_MONITORING_INTERVAL parameter. For information about SLM, see the ONTAP 9 SAN Administration section.

- Support for non-volatile memory express (NVMe) on Linux

- NVMe util should be installed on the host.

  You must install NVMe util to clone or mount to alternate host.

- Backup, restore, clone, mount, unmount, catalog, uncatalog, and verification operations are supported on the NVMe hardware except for the virtualized environments like RDM.

  The above operations are supported on devices without partitions or with single partition.

  > You can configure multipathing solution for NVMe devices by setting the native multipathing option in the kernel. Device Mapper (DM) multipathing is not supported.

- Backup, restore, clone, mount, unmount, catalog, uncatalog, and verification workflows workflows are supported on NVMe over TCP/IP.
- Backup, restore, clone, mount, unmount, catalog, uncatalog, and verification workflows are supported on VMDK layout created on NVMe over TCP/IP.

- Supports SnapMirror active sync (initially released as SnapMirror Business Continuity [SM-BC]) that enables business services to continue operating even through a complete site failure, supporting applications to fail over transparently using a secondary copy. Neither manual intervention nor additional scripting is required to trigger a failover with SnapMirror active sync.
- Supports any non-default user instead of oracle and grid.

  To support the non-default users, you should set the non-default users by modifying the values of the parameters in the **sco.properties** file located at *file /var/opt/snapcenter/sco/etc/*.

  The default values of the parameters are set as oracle and grid.

  - DB_USER=oracle
  - DB_GROUP=oinstall
  - GI_USER=grid
  - GI_GROUP=oinstall

Storage types supported by Plug-in for Oracle Database

SnapCenter supports a wide range of storage types on both physical and virtual machines. You must verify the support for your storage type before installing the SnapCenter Plug-ins Package for Linux or SnapCenter Plug-ins Package for AIX.

SnapCenter does not support storage provisioning for Linux and AIX.

Storage types supported on Linux

The following table lists the storage types supported on Linux.

Machine	Storage type
Physical server	• FC-connected LUNs • iSCSI-connected LUNs • NFS-connected volumes • NVMe-FC • NVMe/TCP
VMware ESXi	• RDM LUNs connected by an FC or iSCSI ESXi HBAScanning of host bus adapters (HBAs) might take long time to complete because SnapCenter scans all the host bus adaptors present in the host. You can edit the **LinuxConfig.pm** file located at */opt/NetApp/snapcenter/spl/plugins/scu/scucore/modules/SCU/Config* to set the value of the **SCSI_HOSTS_OPTIMIZED_RESCAN** parameter to 1 to rescan only those HBAs that are listed in HBA_DRIVER_NAMES. • iSCSI LUNs connected directly to the guest system by the iSCSI initiator • VMDKs on NFS datastores • VMDKs on VMFS created over NVMe/TCP RAC is supported on ESX 8.0U2 which has the support for shared VMDK • NFS volumes connected directly to the guest system • vVol datastores on both NFS and SAN vVol datastore can only be provisioned with ONTAP Tools for VMware vSphere.

Storage types supported on AIX

The following table lists the storage types supported on AIX.

Machine	Storage type
Physical server	• FC-connected and iSCSI-connected LUNs. In a SAN environment, ASM, LVM, and SAN file systems are supported. NFS on AIX and filesystem is not supported. • Enhanced Journaled File System (JFS2) Supports inline logging on SAN filesystems and LVM layout.

Prepare storage systems for SnapMirror and SnapVault replication for Plug-in for Oracle

You can use a SnapCenter plug-in with ONTAP SnapMirror technology to create mirror copies of backup sets on another volume, and with ONTAP SnapVault technology to perform disk-to-disk backup replication for standards compliance and other governance-related purposes. Before you perform these tasks, you must configure a data-protection relationship between the source and destination volumes and initialize the relationship.

SnapCenter performs the updates to SnapMirror and SnapVault after it completes the Snapshot operation. SnapMirror and SnapVault updates are performed as part of the SnapCenter job. If you are using SnapMirror active sync, then go with default SnapMirror or SnapVault schedules for both SnapMirror active sync and asynchronous relationships.

If you are coming to SnapCenter from a NetApp SnapManager product and are satisfied with the data protection relationships you have configured, you can skip this section.

A data protection relationship replicates data on primary storage (the source volume) to secondary storage (the destination volume). When you initialize the relationship, ONTAP transfers the data blocks referenced on the source volume to the destination volume.

SnapCenter does not support cascade relationships between SnapMirror and SnapVault volumes (**Primary** > **Mirror** > **Vault**). You should use fanout relationships.

SnapCenter supports the management of version-flexible SnapMirror relationships. For details about version-flexible SnapMirror relationships and how to set them up, see the ONTAP documentation.

Minimum ONTAP privileges required for Plug-in for Oracle

The minimum ONTAP privileges that are required vary according to the SnapCenter plug-ins you are using for data protection.

- All-access commands: Minimum privileges required for ONTAP 9.12.1 and later

- event generate-autosupport-log
- job history show
- job stop
- lun
- lun attribute show
- lun create
- lun delete
- lun geometry
- lun igroup add
- lun igroup create
- lun igroup delete
- lun igroup rename
- lun igroup show
- lun mapping add-reporting-nodes
- lun mapping create
- lun mapping delete
- lun mapping remove-reporting-nodes
- lun mapping show
- lun modify
- lun move-in-volume
- lun offline
- lun online
- lun persistent-reservation clear
- lun resize
- lun serial
- lun show
- snapmirror policy add-rule
- snapmirror policy modify-rule
- snapmirror policy remove-rule
- snapmirror policy show
- snapmirror restore
- snapmirror show
- snapmirror show-history
- snapmirror update
- snapmirror update-ls-set
- snapmirror list-destinations
- version

- volume clone create
- volume clone show
- volume clone split start
- volume clone split stop
- volume create
- volume destroy
- volume file clone create
- volume file show-disk-usage
- volume offline
- volume online
- volume modify
- volume qtree create
- volume qtree delete
- volume qtree modify
- volume qtree show
- volume restrict
- volume show
- volume snapshot create
- volume snapshot delete
- volume snapshot modify
- volume snapshot rename
- volume snapshot restore
- volume snapshot restore-file
- volume snapshot show
- volume unmount
- vserver
- vserver cifs
- vserver cifs shadowcopy show
- vserver show
- network interface
- network interface show
- metrocluster show

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