NetApp

Using BR*Tools with SnapManager for SAP

SnapManager for SAP

NetApp
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You can use SAP BR*Tools commands with SnapManager for SAP. BR*Tools is a SAP program package that contains SAP tools for Oracle database administration, for example, BRARCHIVE, BRBACKUP, BRCONNECT, BRRECOVER, BRRESTORE, BRSPACE, and BRTOOLS.

You can complete the following tasks related to using BR*Tools and SnapManager for SAP:

- Disable client access to Snapshot copies
- Specify the profile for BR*Tools backups
- Create database backups using BRBACKUP and BRARCHIVE
- Schedule backups with SAP transaction DB13
- Restore a database using BRRESTORE and BRRECOVER
- Back up and restore files using BR*Tools
- Restore a backup to a different host

What BR*Tools are

You can find information that you would need to use SAP with the storage systems.

For general information about using BR*Tools, including command syntax, see the SAP documentation such as online BR*Tools for Oracle Database Administration.

Profile requirement

The SnapManager for SAP profile must be named correctly to work with BR*Tools. By default, BACKINT uses the profile, which has the same name as the SAP SID, from the repository determined by the user ID that issues the BR*Tools commands.

You need to use a different profile name, if the SAP SID is not unique in your environment. For more information, see *Profile usage for BR* Tools backups*.

You must have a link from the BR*Tools directory to the `C:\Program Files\NetApp\SnapManager for SAP\bin\backint` file installed by SnapManager for SAP. For information about creating the link, see *Integrating with SAP BR* Tools*.

Backups created with versions before BR*Tools 7.00 cannot be verified. The block size of the tablespace or data file is required to complete the verification; however, versions before BR*Tools 7.00 do not provide this.

About combining BR*Tools and SnapManager for SAP interfaces

You can use a combination of the BR*Tools and the SnapManager for SAP graphical user interface (GUI) or command-line interface (CLI) to perfom following operations:

Operation	Interfaces that you can use
List, restore, recover, and delete database backups (backups that include data files, control files, or online redo log files) created using BRBACKUP	SnapManager for SAP CLI and GUI ⓘ BR*Tools can list and restore only backups created by using BR*Tools.
List and delete backups of other file sets created with BRBACKUP	SnapManager for SAP CLI and GUI
Clone backups of other file sets created with BRBACKUP	A full online or offline backup taken using the BRBACKUP command can be cloned by using the SnapManager for SAP CLI or GUI.

Options available under BR*Tools CLI with SnapManager for SAP

The following options are available under the BR*Tools CLI:

Option	Tasks that can be performed
Instance management	Log all actions in the file system and database tables and also save backup logs and profiles to backup media.
Space management	Allows comprehensive volume management. To use the functions provided in the space management, you must initialize the volumes with BRBACKUP or BRARCHIVE to ensure that they include an SAP-specific label.
Backup and database copy	Create a backup of a database, perform offline redo log (archive log), and verify backups.
Restore and recovery	Restore and recover backups.
Database statistics	Maintain the statistics of tables and indexes.

Similar functions available under BR*Tools GUI

The following operations are available under BR*Tools GUI:

Type of wizard	Tasks that can be performed
Create Repository wizard	Create a repository in a database.
Profile wizard	Create a profile in a repository.

Type of wizard	Tasks that can be performed
Backup wizard	Create a backup of the profile.
Restore and Recovery wizard	Restore and recover a backup of a profile.
SnapManager Clone Delete wizard	Delete the clone of a backup.
SnapManager Backup Delete wizard	Delete the backup of a profile.

About cloning backups created with BR*Tools

A full online or offline backup taken using the **BRBACKUP** command can be cloned using the SnapManager for SAP CLI or GUI.

To create a clone of the database backup created using the BRBACKUP command, ensure that you set the configuration parameter `brbackup.enable.cloneable.backups` to **true** in the `smsap.config` file and then restart the SnapManager for SAP server. Enter the following command:
`brbackup.enable.cloneable.backups=true`

For online backups created using the **BRBACKUP** command, SnapManager for SAP enables you to clone the backup without making any changes from the SnapManager for SAP CLI or GUI.

For offline backups taken created the **BRBACKUP** command, SnapManager for SAP enables you to clone the backup from the SnapManager for SAP CLI or GUI after you perform the following steps:

Steps

1. Add the following configuration variables in the smsap.config file.

   The values for the variables shown below are default values. You can retain these values if you want to set them to default.

   - `brbackup.oracle.maxdatafiles=254`

   - `brbackup.oracle.maxloghistory=1168`

   - `brbackup.oracle.maxinstances=50`

   - `brbackup.oracle.maxlogfiles=255`

   - `brbackup.oracle.maxlogmembers=3`

   - `brbackup.oracle.character_set=UTF8`

2. To change any of these default configuration parameter values in the `smsap.config` file, execute the following command from the SQL command prompt:

   `alter database backup controlfile to trace as file`

   The file can be any user-defined name and is created in the same directory from where SQL*Plus is invoked.

3. Open the *file* to set these values to the corresponding configuration variables in the `smsap.config` file.

4. Restart the SnapManager server.

About deleting backups created with BR*Tools

BR*Tools does not delete backups. Because SnapManager for SAP backups are based on Snapshot copies, there is a limit to the number of backups you can retain. You need to ensure backups are deleted when they are no longer needed.

On the NetApp storage system, each volume can have a maximum of 255 Snapshot copies. If a volume reaches the limit, backups will fail. A backup made with BRBACKUP typically creates two Snapshot copies of each affected volume.

To prevent reaching the 255 Snapshot copy maximum, you can manage backups in the following ways:

- You can set the retain options in the profile used for BR*Tools operations.

  SnapManager for SAP then automatically deletes older backups as needed.

- You can manually delete backups that are no longer needed by using the SnapManager for SAP CLI or GUI.

Set the path for BR*Tools

You must set the path for BR*Tools to use the BR*Tools command.

About this task

If the path is not set and you try to perform the system dump operation by using BR*Tools, the following error message is logged in `config_summary.txt`: `'brtools' is not recognized as an internal or external command, operable program or batch file`

Steps

1. Click **Start** > **My Computer** and then right-click **Properties** > **Advanced** > **Environmental Variables**.
2. In the **Environmental Variables** window, click **New** to add new BR*tools path or **Edit** to edit the existing BR*Tools path for both the system variables and user variables.
3. Click **OK** to save your changes.

Disabling client access to Snapshot copies

For any storage system volume that uses the NFS protocol and contains SAP data backed up using BR*Tools, you must disable client access to the Snapshot copies of that volume. If client access is enabled, BR*Tools will attempt to create backups of the hidden .snapshot directories that contain previous backups.

To disable client access, use one of the following methods.

- Using Data ONTAP: Using the Data ONTAP command line interface, enter the following command: `vol options volume_name nosnapdir on` wherein `volume_name` is the name of the volume containing SAP data, for example, `/vol/falls_sap_cer9i_data1`
- Using FilerView: To disable access using the FilerView graphical user interface, you must already have a

Snapshot copy of the volume.

    a. In the FilerView left pane, select **Volumes** > **Snapshots** > **Manage**.

    b. On the Manage Snapshots page, click the volume name in the Volume column.

    c. On the Configure Snapshots page, clear the Snapshot Directory Visible check box, and click **Apply.**

For more information about disabling client access to Snapshot copies, see the chapter about Snapshot Management of the *Data ONTAP Data Protection Online Backup and Recovery Guide* for your version of Data ONTAP.

Profile usage for BR*Tools backups

When you run a BR*Tools command that uses the BACKINT interface, SnapManager uses a profile from the repository. The repository is determined by the SnapManager credentials of the user running the BR*Tools command.

By default, SnapManager uses the profile with the same name as the SAP database system identifier.

About creating credentials to access the repository

You can use the `smsap credential set` command to set the repository credentials for the BR*Tools user.

About specifying a different SnapManager profile name

As long as the system identifier is unique for all hosts whose SnapManager profiles are in a given repository, the default profile name is sufficient. You can create the SnapManager profile and name it by using the database system identifier value.

However, if the same system identifier is used on different hosts, or if you want to specify more than one SnapManager profile for use with BR*Tools on a given SAP instance, then you need to define the profile name for BR*Tools commands.

Database operations scheduled within the SAP application run as user. BR*Tools operations scheduled within the SAP applications run as `SAPServiceSID`. These users must have access to the repository and the profile.

The SAP service user SAPServiceSID does not allow the user to log in locally. To change this, you must modify the Local Security Policy by performing the following steps:

Steps

1. Click **Start** > **Programs** > **Administrative Tools** > **Local Security Policy**.

2. Expand **Local Policies** and select**User Rights Assignment**

3. Search for the **Deny log on locally** policy.

4. Right-click and select **Properties**.

5. Delete **SAP Service user** from this list.

About creating the backup utility parameter file

The BR*Tools command can optionally pass a backup utility parameter (`.utl` parameter) file to the BACKINT interface. By default, the name of this file is `initSID.utl`, where SID is the system identifier of the database.

By default, BR*Tools uses the parameter file specified by the `util_par_file` parameter in the `initSID.sap` file. The backup utility parameter file is normally stored in the same directory as the `initSID.sap` file.

Add `profile_name = <profile>` to the .utl file and save. The profile is the name of the SnapManager *profile* you want to use for the BR*Tools commands.

The following table lists additional backup utility parameters included in the `.utl` file for operations like backup retention, fast restore, and data protection:

Operations	Backup utility parameters
Backup retention	• Key: retain • Value: unlimited
hourly	daily
weekly	monthly

The following table describes the different backup utility parameters for these operations:

Operation	Key	Value
Backup retention	fast=	fallback

Adding the backup utility parameter to the BR*Tools initialization file

SAP creates a backup profile file named `initSID.sap` for each SAP database instance in `$ORACLE_HOME\database\`. You can use this file to specify the default backup utility parameter (`.utl`) file used for BR*Tools commands.

Steps

1. Edit the initSID.sap file and locate the line starting with `util_par_file =`.

2. Uncomment this line and add the path to the backup utility parameter file that contains the name of the profile, for example, `util_par_file = initSA1.utl`.

3. If you specify a value for the `util_par_file`, be sure that the file exists.

   If the file is not found, the BRBACKUP commands fail because they attempt to include that file in a backup.

If any of the following error conditions are found, then you need to use the `-u` option as the profile name:

- `Parameter files does not exist`

- `No profile_name entry`

Both `orasid` and `sidadm` need access to the profile that would be used for creating or managing backups created with BR*Tools.

Specifying the backup utility parameter file name on the BR*Tools command

You can optionally specify the backup utility parameter (.utl parameter) file on the BR*Tools commands using the `-r` option. The value on the command line overrides the value specified in the SAP initialization file.

BR*Tools searches for the parameter file in the `$ORACLE_HOME\database\` directory. If you store the file in another location, you need to supply the full path with the `-r` option. For example:

brbackup -r
C:\Oracle\NetApp_fcp_price_10g_enterprise_inst_vol1\database\initCER.utl ...

Database backups created using BRBACKUP and BRARCHIVE

The `BRBACKUP` command creates a backup of the SAP database using Snapshot copy on the storage system. You can run the `BRBACKUP` command from the SAP host's command-line interface (CLI), or BR*Tools CLI or graphical user interface (GUI). To back up the offline redo log files, you can use the `BRARCHIVE` command.

`BRBACKUP` backs up the data files, control files, and online redo log files of the SAP database. You should back up the other SAP configuration files, for example, SAP log files, kernel files, and transports requests using `BRBACKUP` with the `SAP_DIR` option, and restore using `BRRESTORE`.

If the value of the *SQLNET.AUTHENTICATION_SERVICES* parameter in the `sqlnet.ora` is set to **NONE**, ensure that the Oracle database user (system) has sysoper privileges. The system is the default user created during the creation of the Oracle database. To enable SYSOPER privileges, run the following command:
`grant sysoper to system;`

You should use either the BR*Tools commands or the SnapManager commands to manage the archive log files.

You should not use the combination of SnapManager profiles and the BR*Tools commands for managing the archive log backups with respect to the following operations:

* Creating separate backups of data files and archive log files using the `BRBACKUP` and `BRARCHIVE` commands with the SnapManager profile (created using the option to separate archive log backups)
* Pruning archive log files while creating the backup using the SnapManager profile

> ⓘ SnapManager does not display any warning or error message when you use a combination of SnapManager for SAP profiles and the BR*Tools commands for managing the archive log files.

You should create a profile without using the option to separate archive log backups and use this profile for regular BR*Tools operations.

You can restore the backup by using `BRRESTORE`. For database backups (backups include data files, control files, or online redo log files) created by using BRBACKUP with the `-m all` or `-m full` option, you can also restore the backup by using the SnapManager CLI or GUI.

For more information about how SnapManager handles backing up, see *Backing up databases*.

See the SAP documentation for the specific instructions and syntax for the `BRBACKUP` and `BRARCHIVE`

commands. Before using the BRBACKUP and BRARCHIVE command with a storage system, ensure that the following conditions are met:

- If the SnapManager profile name is different from the SAP database system identifier, specify the name of the parameter file that contains the SnapManager profile name.

  You can do so in one of the following ways:

  - Specify the backup utility parameter file (`initSID.utl`) using the `-r` option with the `BRBACKUP` command.

  - Specify the parameter file in the initialization file (`initSID.sap`). For more information, see *Specifying the profile for BR*Tools backups.*

- If it is appropriate for your environment, create additional backups of your SAP data using a different medium, such as tape. Snapshot copies are intended for rapid backup and restoration. They are stored on the same physical media as the data being backed up and are not intended for disaster recovery unless copied to other storage devices.

Schedule backups with SAP transaction DB13

There are several steps required to enable backups by SnapManager for SAP to work from the DBA Planning Calendar transaction DB13.

Steps

1. Change the permissions of the `/oracle/SID/sapbackup` directory to allow write access by the sidadm user identifier.

   Use the following command as `orasid`:

   chmod 775 /oracle/SID/sapbackup

   This will allow members of the dbagroup to write to that directory. The user identifier sidadm is a member of the dba group.

2. Change the permissions of the SnapManager for SAP credentials file for `orasid` to allow `sidadm` access. Use the following command executed by `orasid`:

   Use the following command executed by `orasid`:

   chmod 660 /oracle/SID/.netapp/smsap/credentials

   Follow the directions in section 3.3, "Registering Systems in the Repository" of TR-3582 "SnapManager for SAP Best Practices" to register the sidadm user identifier in the SnapManager for SAP repository.

Database restore by using BRRESTORE and BRRECOVER

The `BRRESTORE` and `BRRECOVER` commands work only with backups created using `BRBACKUP`.

See the SAP documentation for specific instructions and syntax for the `BRRESTORE` and `BRRECOVER` commands.

If the SnapManager profile name is different from the SAP database system identifier, you must specify the name of the parameter file that contains the SnapManager profile name. You can do this in one of the following ways:

- Specify the backup utility parameter file (`initSID.utl`) using the `-r` option in the `BRBACKUP` command.
- Specify the parameter file in the BR*Tools initialization file (`initSID.sap`).

> ⓘ Backups (data files, control files, or online redo log files) that are created by using `BRBACKUP` can be restored from secondary or tertiary storage systems by using the `smsap restore` command. However, it is recommended to back up the other SAP configuration files, for example, SAP log files, kernel files, and transports requests by using `BRBACKUP` with `SAP_DIR`, and restore by using `BRRESTORE`.

Backing up and restoring files using BR*Tools

In addition to backing up database files, you can use BR*Tools to back up and restore any files, such as the SAP system files stored on the storage system.

Follow the SAP BR*Tools documentation for the BRBACKUP and BRRESTORE commands. The following additional information applies when you are using SnapManager for SAP:

- The files must be stored on the storage system.
- Be sure you have permissions for the files you are backing up. For example, backing up SAP system files (`BRBACKUP backup_mode=sap_dir`) or Oracle system files (`BRBACKUP backup_mode=ora_dir`) requires root permission on the host. Use the `su root` command before running BRBACKUP.

Restoring a backup to a different host

You can use the BRRESTORE or `smsap restore` command to restore a backup that you made with BRBACKUP on a different host. The new host must also be running SnapManager for SAP.

Make SnapManager profile available

Before you can run BRRESTORE, you must make the SnapManager profile of the original host available to the new host. Complete the following steps:

- Set credential for repository: Use the `smsap credential set` command to enable the new host to access the SnapManager repository used for the original backup.
- Set credential for profile: Use the `smsap credential set` command to enable the new host to access the SnapManager profile used for the original backup.
- Load the profile on the new host: Use the `smsap profile sync` command to load the SnapManager profile information onto the new host.

Run BRRESTORE

Configure new storage on the new host with the same paths as the original storage on the original host.

Use the `BRRESTORE` command to restore the backup to the new host. By default, the files are restored to the original path locations. You can specify an alternate path for the restored files using the `-m` option of the `BRRESTORE` command. See the SAP documentation for more information on `BRRESTORE`.