Practice

Using RMAN Recovery Catalog

Practice Target

In this practice you will perform the general tasks involved in using RMAN recovery catalog.

Practice Overview

In this practice, you will perform the following tasks:

- Create recovery catalog in `orawindb` database and register the database `oradb` in it
- Catalog recovery files in the recovery catalog
- Create and manage RMAN stored scripts

Assumptions

This practice assumes the following:

- This practice assumes that the vm `srv1` is up and running from the **CDB** snapshot.
- This practice assumes that the vm `winsrv` is up and running.

A. Creating Recovery Catalog

In the following steps, you will create RMAN recovery catalog in `orawindb` database.

1. Open Putty and login to `srv1` as `oracle`.

2. Make sure `ORAWINDB` is configured in `tnsnames`.ora file as follows

```
cat $TNS_ADMIN/tnsnames.ora
```

```
ORAWINDB =
  (DESCRIPTION =
    (ADDRESS = (PROTOCOL = TCP)(HOST = winsrv)(PORT = 1521))
    (CONNECT_DATA =
      (SERVER = DEDICATED)
      (SERVICE_NAME = orawindb)
    )
  )
```

3. Invoke SQL*Plus and connect to `orawindb` as `SYSTEM` user.

```
sqlplus system/ABcd##1234@ORAWINDB
```

4. Execute the following statements to create the Recovery Catalog owner.

```
CREATE TABLESPACE rc_tbs;
CREATE USER rc_owner IDENTIFIED BY ABcd##1234
 TEMPORARY TABLESPACE temp
 DEFAULT TABLESPACE rc_tbs
 QUOTA UNLIMITED ON rc_tbs;
GRANT RECOVERY_CATALOG_OWNER TO rc_owner ;
```

5. Exit from SQL*Plus

```
exit
```

6. Invoke RMAN, connect to the local database as target and connect to the recovery catalog database (`orawindb`)

   RMAN will prompt you for the recovery catalog owner password. You can include it in the command that invokes RMAN, if you want to.

```
rman target "'/ as SYSBACKUP'" catalog rc_owner@orawindb
```

7. Create the recovery catalog.

```
CREATE CATALOG;
```

8. Register `the target database.`

```
REGISTER DATABASE;
```

B. Cataloging Backup Files

In this section of the practice, you will learn how to catalog recovery files in an RMAN repository.

9. Perform the following backups in RMAN.

If the statement "`BACKUPSET ARCHIVELOG`" fails with the error "`ORA-19809: limit exceeded for recovery files`", this means there is no enough free space in the FRA to save the backup of the archivelogs in it. One idea to resolve this issue is to delete most of the archivelog files.

To delete some of the archivelog files, look at the sequences of the archivlog files and use the statement "`delete archivelog until sequence n`" to delete all the archivelog file up to the sequence number of your choice.

```
CONFIGURE CONTROLFILE AUTOBACKUP OFF;
BACKUP AS BACKUPSET TABLESPACE users TAG 'USERS_BS';
BACKUP AS COPY TABLESPACE users TAG 'USERS_DF';
BACKUP AS BACKUPSET ARCHIVELOG ALL TAG 'ARC_BS';
CONFIGURE CONTROLFILE AUTOBACKUP ON;
```

10. Make a directory under the shared folder.

```
HOST 'mkdir /media/sf_staging/backup';
```

11. Retrieve list of the backup pieces produced above and copy them to the shared folder `/media/sf_staging/backup`.

```
LIST BACKUPSET TAG 'USERS_BS';
HOST 'cp /u01/app/oracle/fast_recovery_area/ORADB/backupset/***/o1_**_USERS_BS_*_.bkp
/media/sf_staging/backup/';

LIST BACKUPSET TAG 'ARC_BS';
HOST 'cp /u01/app/oracle/fast_recovery_area/ORADB/**_ARC_BS_**_.bkp
/media/sf_staging/backup/';
```

12. Retrieve list of the image copies produced above and copy them to the shared folder.

```
LIST COPY TAG 'USERS_DF';

HOST 'cp /u01/app/oracle/fast_recovery_area/ORADB/datafile/**_users_**_.dbf
/media/sf_staging/backup/';
```

13. Verify that you have three files in the shared folder directory.

```
HOST 'ls -alh /media/sf_staging/backup/';
```

Cataloging specific backup piece

Note: cataloging recovery files does not require Recovery Catalog database. It can be done even if the RMAN repository is the control file.

14. Catalog **one** file in the shared folder backup directory.

```
CATALOG BACKUPPIECE '/media/sf_staging/backup/**_ARC_BS_**_.bkp'
```

15. Catalog the datafile copy that was copied to the shared folder backup directory (its extension is `dbf`).

```
CATALOG DATAFILECOPY '/media/sf_staging/backup/**_mf_users_**_.dbf';
```

Cataloging backup pieces in a directory

If you have a lot of backup files in a directory, you can catalog them all in one command.

16. Issue the following command to catalog the recovery files in the shared folder directory.

The command will scan the directory and prompt you to confirm cataloging any found file. You will not receive prompt on the files that are already cataloged.

```
CATALOG START WITH '/media/sf_staging/backup/';
```

Clean up

17. Delete the produced backupset and datafile copies.

```
DELETE NOPROMPT BACKUPSET TAG 'USERS_BS';
DELETE NOPROMPT BACKUPSET TAG 'ARC_BS';
DELETE NOPROMPT COPY TAG 'USERS_DF';
```

C. Using RMAN Stored Scripts

In this section of the practice, you will create RMAN stored scripts and execute them.

18. Create a stored script to back up the `users` tablespace.

```
CREATE SCRIPT FULL_USERS_SCRIPT
{ BACKUP TABLESPACE USERS TAG 'USERS_TBS'; }
```

19. Print the stored script.

```
PRINT SCRIPT FULL_USERS_SCRIPT;
```

20. Execute the stored script

```
run { execute script FULL_USERS_SCRIPT;}
```

21. Verify the backupset produced by the script execution.

```
LIST BACKUPSET TAG 'USERS_TBS';
```

22. Delete the backupset.

```
DELETE NOPROMPT BACKUPSET TAG 'USERS_TBS';
```

23. Create the following script.

When running the code, it asks you to enter values to the substitute variables. Enter any values and the script will be created. Do not worry, the code will not get executed.

```
CREATE SCRIPT TBS_FULL_SCRIPT
{ BACKUP TABLESPACE &1 TAG '&2' ;}
```

Following is the output of executing the code in my environment:

```
RMAN> CREATE SCRIPT TBS_FULL_SCRIPT
{ BACKUP TABLESPACE &1 TAG '&2' ;}
Enter value for 1: users
Enter value for 2: test
created script TBS_FULL_SCRIPT
```

24. Execute the stored script in a run block.

Observe that values passed to the variables are separated by spaces.

```
RUN { EXECUTE SCRIPT TBS_FULL_SCRIPT USING USERS 'USERS122022';}
```

25. Verify the backupset produced by the script execution.

```
LIST BACKUPSET TAG 'USERS122022';
```

26. Exit from RMAN and run the same script in the RMAN command line.

```
rman target "'/ as SYSBACKUP'" catalog rc_owner@orawindb script=TBS_FULL_SCRIPT USING
USERS  'USERS112022'
```

Clean up

27. Shutdown `srv1` and restore it from its **non-CDB** snapshot.

28. Shutdown `winsrv` and restore it from its snapshot.

Summary

- RMAN repository can be saved in an Oracle database, it is called Recovery Catalog database.
- If we have RMAN backup files of any type in a file system, we can catalog them into a Recovery Catalog so that RMAN can then use them for recovery.
- With Recovery Catalog database, we can create RMAN scripts and save them in the Recovery Catalog database to run the scripts later whenever we want.