Practice 23

Using Oracle Database Backup Cloud Service

Practice Target

In this practice, you will backup a tablespace into a storage container hosted into an Oracle Database Backup Cloud Service.

Practice Overview

In this practice, you will perform the following tasks:

- Subscribe to Oracle Cloud Services using a trial account
- Create a storage container in the "Storage Classic" service
- Create a user and grant Storage_ReadWriteGroup to it
- Download and install the Oracle Database Cloud Backup Module
- Configure RMAN with the created storage container
- Enable Password-based encryption
- Take backup of `users` tablespace to the cloud

Assumptions

This practice assumes that the `srv1` appliance is up and running and its database `ORADB` is running in `OPEN` state.

Note

I advise you to watch the video of implementing this practice before you try implementing it yourself.

Note

The video of implementing this practice is demonstrating the windows in the Oracle Cloud Services site as they appear at the time of recording the video. They could be changed later by Oracle.

Reference

Oracle® Cloud Using Oracle Database Backup Cloud Service Release 16.4

A. Creating a Storage Container in the Cloud

Perform the following steps, you will perform all the steps to create a storage container in the Oracle Cloud Services.

Create a Trial Cloud Account and Activate It

1. Start an Internet browser and open the Oracle Cloud Services site:

   https://cloud.oracle.com/home

2. Click on "**Try for Free**" button.
3. Click on "**Create a Free Account**" button.
4. Fill-in the form, select the "Oracle Cloud Services Agreement" checkbox, then submit the form.

   You need a mobile number to receive SMS verification code and a credit card.

5. Wait till you receive an email from Oracle informing you that they are provisioning the services.

   In the email that you will receive, your **Identity Domain** value will be provided. Always remember your account identity. You will need it in many configuration occasions.

6. Click on "**Get Started with Oracle Cloud**" button that appears in the email. You will reset your password.
7. Wait till you receive a second email from Oracle informing you that your services are ready.

Create a storage container

8. Make sure you are logged on to the Oracle Cloud Services then open the **Dashboard**.
9. Click on "**Customize Dashboard**" button.
10. Scroll down till you see the "**Storage Classic**" service. Click on "Show" button for that service. You should see the "Storage Classic" icon appearing in the dashboard.
11. Click on the "**Storage Classic**" link. The link is the title of the icon. A page that reads "Service: Oracle Cloud Infrastructure Object Storage Classic" should appear.
12. Click on "**Open Service Console**" button. A page that reads "Storage Classic" should appear.
13. Click on "**Create Container**" button, then perform the following:
    a. Enter a name for the container. Name it as "ORADB_CLOUD"
    b. Keep the storage class as Standard.
    c. Click on "**Advanced**" link beside the arrow
    d. Mark the checkbox "**Replicate to Data Center(s)**". This is important to select.
    e. Click on **Create** button.

Create a user and grant the required privilege to it

14. Click on the **three small lines** icon on the upper left corner of the page ( ). A menu should pop up to you. Scroll all the way down till you see "**Users**" link. Click on it. It should open "User Management" page.

15. Click on the "**Add**" button on the right hand side of the page.

16. Fill in the form as follows (you can keep the other fields blank):

First Name: **User1**

Last Name: **LName1**

Email: (**an email** that you have access to from your choice)

Unmark User Email as User Name

User Name: **user1**

17. Click on **Next** button. "Service Access" page should appear to you.

18. Scroll all the way down till you see the icon that reads "**Storage Classic**".

19. Click on the field that reads "**Service Entitlement**". A list of privileges should appear to you.

20. Select the privilege "**Storage_ReadWriteGroup**".

21. Scroll up to the top of the page then click on "**Finish**" button.

22. There is another way of granting the privilege to the user. It is through a group. To do so, perform the following:

a. Open the "**User Management**" page (Click on the three small lines on the upper left corner of the page, scroll all the way down till you see "Users" link, click on it)

b. Click on **Groups** tab

c. Click on **Add** button

d. Enter the new **group name** then click on **Add** button. The new group should appear in the page.

e. Click on the **new group name link**. Click on **Roles** tab, scroll all the way down till you see the icon that reads "**Storage Classic**".

f. Click on the field that reads "**Service Entitlement**". A list of privileges should appear to you. Select the privilege "**Storage_ReadWriteGroup**".

g. Add the user to the group. There is more than one procedure to do that. One of them is the following:

i. In "User Management" page, click on **users**

ii. Click on the small checkbox that appears in the left corner of user1 icon.

iii. Click on the button that appears on the right hand side of the page.

iv. Select Add to group menu item

v. Select the new group name then click on **Add** button

23. Wait till you receive an email that confirms the user creation. In my testing case, it took nearly half an hour till I received that email. Do not proceed until you receive the email. The user will not be considered as active till you sign in with it.

24. Click on the "**Access your Cloud Services**" button that appears in the email.

25. You will be asked to reset the password. Reset the password and login with the new user.

Note

If you are already logged on with the administrator account to the Oracle Services site (and most likely you are), clicking on the button will not direct you to the login page. It will open the services page to you.

If this case, copy the link of the button into the clipboard and open it in a different browser. Alternatively, sign out from Oracle Cloud services before you click on the button.

B. Installing Oracle Database Cloud Backup Module and Configuring RMAN

Perform the following steps, you will download and install the Oracle Database Cloud Backup Module in `srv1`. You will then configure RMAN with the cloud storage. After that, you will backup `users` tablespace to the cloud.

Download and install the Oracle Database Cloud Backup Module

26. Download Oracle Database Cloud Backup Module. At the time of this writing, you can download it from the following link. You should have the file **opc_installer.zip** downloaded.

27. Copy the downloaded file to the shared folder that is accessible by the VirtualBox appliance.

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

29. Change the current directory to the directory of the shared storage directory. Extract the installation file.

```
cd /media/sf_extdisk
unzip opc_installer.zip
```

30. Create a directory to save the wallet file in it.

```
mkdir /app/oracle/product/12.2.0/db_1/dbs/wallet
```

31. Install the backup module.

a. Obtain the data center name of the storage container:

i. In the Cloud Services page, click on the **Dashboard**

ii. Click on the **Storage Classic** link. A page that reads "Service: Oracle Cloud Infrastructure Object Storage Classic" should appear.

iii. Click on "**Open Service Console**" button. A page that reads "Storage Classic" should appear.

iv. Click on the **Storage Container name** (ORADB_CLOUD) that you created earlier.

v. Click on **Container Information** link to expand its contents

vi. Under the Replication policy line, you should see a field that contains the current data center. Take a note of it.

b. Copy the following code into a text file and substitute the variables with their values in your case. The variables are formatted as bold in the code.

```
java
-jar opc_install.jar
-host https://<data center name>.storage.oraclecloud.com/v1/Storage-<identityDomain>
-opcId 'user1'
-opcPass '<user1 password>'
-walletDir /app/oracle/product/12.2.0/db_1/dbs/wallet
-libDir /app/oracle/product/12.2.0/db_1/lib
-no-check-certificate
-container ORADB_CLOUD
```

Note: the format of the value that should be passed to the `host` parameter is different in the code above from what is stated in the documentation. The documentation (see the reference in the first page of this document) instructs to use the following format:

```
https://<identityDomain>.storage.oraclecloud.com/v1/Storage-<identityDomain>
```

In my testing cases, this format does not work and only the one that is mentioned in the code example worked with me.

c. After substituting variables with their values, make all the arguments in one line.

d. Make sure the current directory is the directory that contains the installation file.

e. Execute the code.

f. Check out the configuration files

```
ls -al /app/oracle/product/12.2.0/db_1/lib/libopc.so
cat /app/oracle/product/12.2.0/db_1/dbs/opcORADB.ora
```

Configure RMAN with the created storage container and backup `users` tablespace to the cloud storage

32. Invoke rman with connecting to the local database as target.

33. Execute the following code to configure the SBT channel in RMAN with the cloud storage container.

```
CONFIGURE CHANNEL DEVICE TYPE sbt
PARMS='SBT_LIBRARY=/app/oracle/product/12.2.0/db_1/lib/libopc.so,
SBT_PARMS=(OPC_PFILE=/app/oracle/product/12.2.0/db_1/dbs/opcORADB.ora)';
```

34. Set the encryption password for the RMAN session. You are free to use TDE, if you want to. When backing up to a cloud storage, encryption is a must.

```
SET ENCRYPTION ON IDENTIFIED BY MyPassword ONLY;
```

35. Backup users tablespace to the cloud storage.

```
BACKUP DEVICE TYPE sbt TABLESPACE users;
```

36. Go to the Cloud Services page and check out the contents of the storage container.

Summary

Obtaining a cloud storage from Oracle Cloud Services is quite easy. In this practice, you created a cloud storage container in Oracle Services, configured RMAN to connect to it, and created a backup set file in it.