Practice 16

Using Server Categorization and Cluster Configuration Policies

Practice Overview

In this practice, you will perform the following:

- Create and test server categories
- Create and test cluster configuration policies

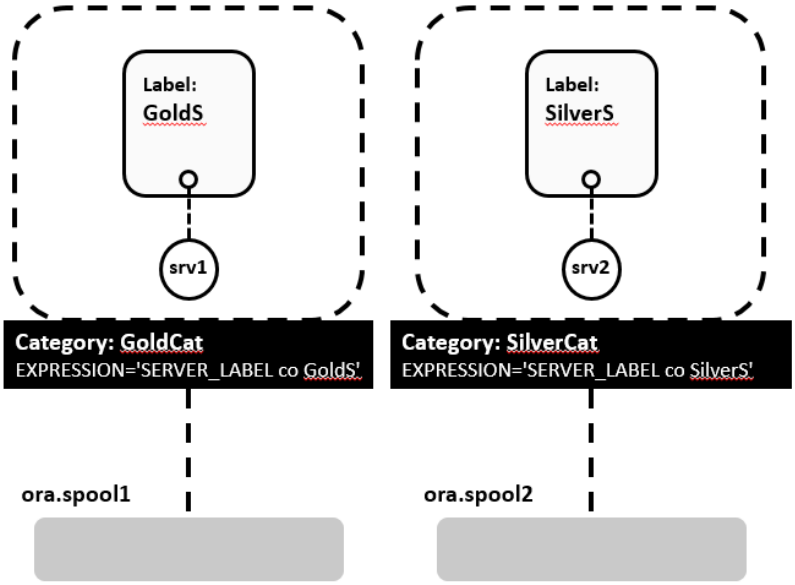
Practice Assumptions

- The practice assumes that you have the virtual machines `srv1` and `srv2` up and running.

Managing Server Categories

Overview

In this section of the practice, you will learn on how to create and use server categories. You will build up the following simple configuration:



This configuration assumes the scenario where you have two groups of servers. One group is of high-specs servers and the other group is of medium-specs servers. The first group will be put under a category named “GoldCat” and the other group will be put under a category named “SilverCat”.

In summary, you will perform the following:

- Set a label to each server to distinguish between the high-specs servers and the medium-specs servers. We assume `srv1` is of a high-specs server and therefore its label will be set to “`GoldS`”. `Srv2` is assumed to be of medium-specs server and its label will be set to “`SilverS`”.
- Create two categories named “`GoldCat`” and “`SilverCat`”. The `EXPRESSION` of `GoldCat` is set so that it accepts only `GoldS` servers. The `EXPRESSION` of `SilverCat` is set so that it accepts only `SilverS` servers.
- `GoldCat` is assigned to `spool1` and `SilverCat` is assigned to `spool2`.
- Test the configuration.

Managing Server Categories Implementation

1. Open a Putty session to srv1, and login as root.

2. Set the configuration value of the SERVER_LABEL server configuration attribute for srv1 to GoldS

   Observe that setting the label must be performed by root, not grid.

```
/u01/app/12.2.0/grid/bin/crsctl set server label GoldS
```

3. Restart the Oracle Clusterware technology stack on srv1.

   Setting a label to a server requires restarting the clusterware on the server.

```
/u01/app/12.2.0/grid/bin/crsctl stop crs
/u01/app/12.2.0/grid/bin/crsctl start crs
/u01/app/12.2.0/grid/bin/crsctl get server label
```

4. Open a new Putty session to srv2, and login as root.

5. Perform the same steps on srv2 to set its label to SilverS.

```
/u01/app/12.2.0/grid/bin/crsctl set server label SilverS
/u01/app/12.2.0/grid/bin/crsctl stop crs
/u01/app/12.2.0/grid/bin/crsctl start crs
/u01/app/12.2.0/grid/bin/crsctl get server label
```

6. Switch to grid user and execute the following commands to create two categories:

```
su - grid
crsctl add category GoldCat -attr "EXPRESSION='SERVER_LABEL co GoldS'"
crsctl add category SilverCat -attr "EXPRESSION='SERVER_LABEL co SilverS'"
```

7. Execute the following commands to verify the settings that have been configured so far.

```
# display all the categories registered in the system and their attributes:
crsctl status category

# display the servers that come under each category
crsctl status server -category GoldCat
crsctl status server -category SilverCat
```

8. Assign the categories to their server pools. This is the last step of implementing the configuration.

   The force option is needed because there already running services on the server pools.

```
srvctl modify srvpool -serverpool spool1 -category "GoldCat" -force
srvctl modify srvpool -serverpool spool2  -category "SilverCat" -force
```

9. Display how the servers are distributed among the server pools.

   This step is to verify that the configuration is correct. You should see srv1 in spool1 and srv2 in spool2.

```
crsctl stat serverpool
```

10. Display the configuration of the server pools.

```
srvctl config srvpool -serverpool spool1
srvctl config srvpool -serverpool spool2
```

Clean up

The following steps demonstrate how you can remove the server categories that you have just implemented.

11. Remove the category settings from each server pool and delete the created categories.

```
srvctl modify srvpool -serverpool spool1 -category "" -force
srvctl modify srvpool -serverpool spool2 -category "" -force

crsctl delete category GoldCat
crsctl delete category SilverCat
```

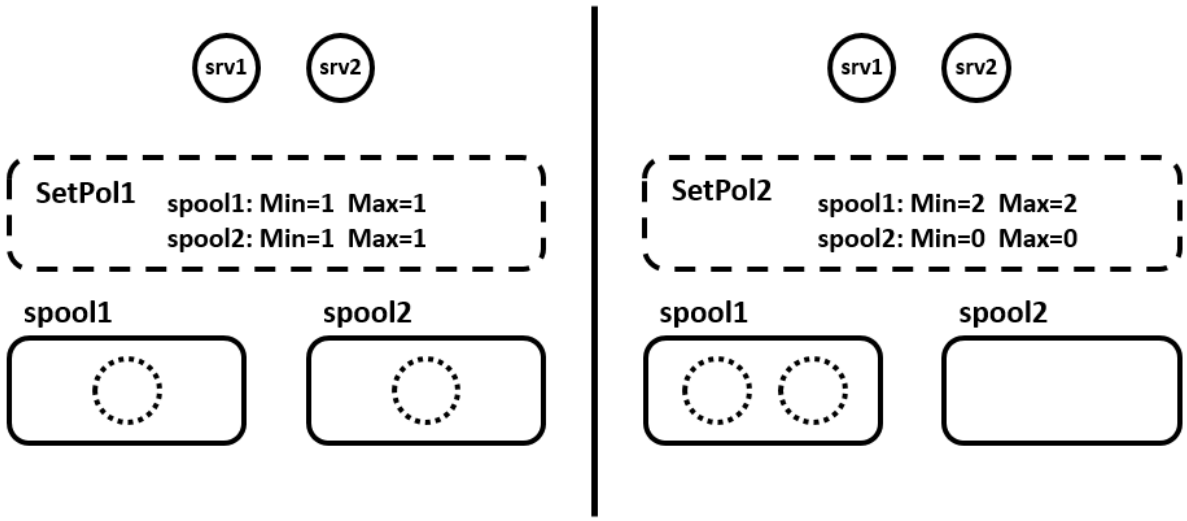
12. Remove the labels from the servers. The commands must be run as root.

```
# in srv1
su -
/u01/app/12.2.0/grid/bin/crsctl set server label ""
/u01/app/12.2.0/grid/bin/crsctl stop crs
/u01/app/12.2.0/grid/bin/crsctl start crs

# in srv2:
su -
/u01/app/12.2.0/grid/bin/crsctl set server label ""
/u01/app/12.2.0/grid/bin/crsctl stop crs
/u01/app/12.2.0/grid/bin/crsctl start crs

# verify: if you find a server is still in the Free server pool, wait for a few
#  seconds then try the same command again.
/u01/app/12.2.0/grid/bin/crsctl stat serverpool
```

Managing Cluster Configuration Policies

Overview

In this section of the practice, you will create and use cluster configuration policies. You will build up two policies as shown in the following diagram:



This configuration assumes the scenario where you have two server pools. Each is serving specific database service. The server pools will receive the same number of servers during normal operations. In some specific cases, it is required to give the first server pool more power by assigning more servers to it.

As we have only two servers in our environment, when the second policy is active, we have to leave the second server pool with no servers. Of course, you should not do that in real life scenario. You are doing it in this practice for educational purposes only.

You will achieve the required target by building up two policies. The first policy sets the `MIN_SIZE` and the `MAX_SIZE` to one to every server pool. The second policy sets the `MIN_SIZE` and the `MAX_SIZE` to two for the first server pool and to zero for the second server pool.

Managing Cluster Configuration Policies Implementation

13. In the Putty session that is connected to srv1, switch the current user to grid.

14. Create a file under the grid home directory and add the policies configuration in it as shown in the following code.

Observe the following in the policies configuration file:

- You have to use the ora.<spoolname> format in the configuration file to refer to the server pool names. You have to do that every time you refer to a database server pool in the crsctl commands. Whereas in srvctl commands, you do not include the "ora." part.

```
su - grid
mkdir scripts
vi ~/scripts/policy.txt
```

```
SERVER_POOL_NAMES=Free ora.spool1 ora.spool2
POLICY
 NAME=SetPol1
 SERVERPOOL
  NAME=ora.spool1
  IMPORTANCE=0
  MAX_SIZE=1
  MIN_SIZE=1
  SERVER_CATEGORY=
 SERVERPOOL
  NAME=ora.spool2
  IMPORTANCE=0
  MAX_SIZE=1
  MIN_SIZE=1
  SERVER_CATEGORY=
POLICY
 NAME=SetPol2
 SERVERPOOL
  NAME=ora.spool1
  IMPORTANCE=0
  MAX_SIZE=2
  MIN_SIZE=2
  SERVER_CATEGORY=
 SERVERPOOL
  NAME=ora.spool2
  IMPORTANCE=0
  MAX_SIZE=0
  MIN_SIZE=0
  SERVER_CATEGORY=
```

15. Submit the policy set file using the following command:

    Note: if, for any reason, you wanted to resubmit the same file again, use the option `-ksp` with the command. Otherwise, you will receive the following error:

    ```
    CRS-2826: Server pools cannot be removed from the configuration policy set without activating a new policy at the same time.
    ```

    ```
    crsctl modify policyset -file ~/scripts/policy.txt

    # verify
    crsctl status policy
    ```

Testing the Policy Set

In the following steps you will enable the two policies and examine the effect of each policy.

16. Activate the policy `SetPol1`.

    `-f` option stands for force. This is required in our case because there is a service running in the server pool. Without the force option, the command fails.

    ```
    crsctl modify policyset -attr "LAST_ACTIVATED_POLICY=SetPol1" -f
    ```

17. Wait for a few seconds then check the status of the server pools. You should see a server in every server pool.

    ```
    crsctl stat serverpool
    ```

18. Activate the policy `SetPol2`.

    ```
    crsctl modify policyset -attr "LAST_ACTIVATED_POLICY=SetPol2" -f
    ```

19. Wait for a few seconds then check the status of the server pools. You should two servers in server pool `spool1` and no server in server pool `spool2`.

    ```
    crsctl stat serverpool
    ```

Cleanup

20. Execute the following commands to clean up the configuration that you have made.

    ```
    crsctl delete policy SetPol1
    crsctl delete policy SetPol2

    # verify
    crsctl status policy
    ```

Summary

- Server Categories are used to control which servers should be assigned to which server pool.
- Cluster configuration policies are used to dynamically change the attributes of the server pools. The changes are implemented according to the business needs.