Oracle RAC One Node

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Objectives

In this lecture, you should learn how to perform the following:

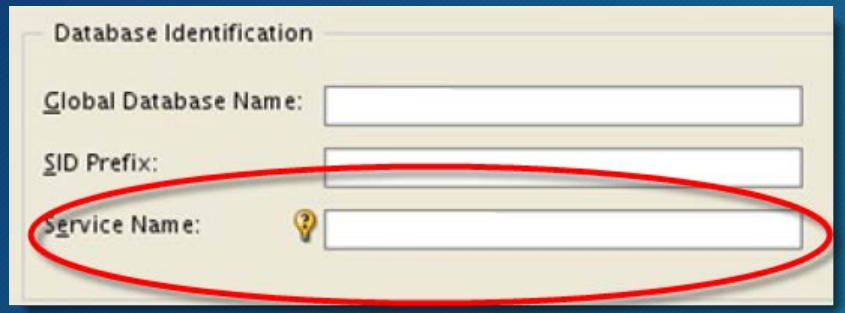
- Describe the architecture of Oracle RAC One Node
- Create an Oracle RAC One Node database
- Relocate an Oracle RAC One Node instance
- Convert an Oracle RAC One Node to Oracle RAC
- Convert a Single Instance Database to RAC One Node
- Convert a RAC Database to RAC One Node

About Oracle RAC One Node

- Is a single instance of a RAC-enabled database running on one node in the cluster only.
- Features:
  - Active-passive configuration: cold-failover
  - Easy relocation to different active node
  - Upgradable to Oracle RAC
- Requirements:
  - Same hardware setup as in RAC database and same software requirements
  - Separate license from Database Enterprise Edition but cheaper than RAC

Creating an Oracle RAC One Node Database

- Can be created using DBCA
- Can be a convert from single-instance or RAC database
- At least one dynamic database service must be configured



- If not registered in the clusterware, add its dynamic service:

```
srvctl add database -dbtype RACONENODE [-server server_list
] [-instance instance_name ] [-timeout timeout]
```

Verifying RAC One Node

```
srvctl config database -db rac1n
 Database unique name: rac1n
 Database name: rac1n
 Oracle home: /u01/app/oracle/product/12.2.0/dbhome_1
 Oracle user: oracle
 ...
 Type: RACOneNode
 Online relocation timeout: 30
 ...
 Candidate servers: srv1,srv2
 ...
```

Oracle RAC One Node Online Relocation

- The active instance can online relocate from one node to another
- Relocation period can be customized up to 12 hours
- Relocation can be performed on different batch level homes
- To initiate relocation:

```
srvctl relocate database -db db_unique_name
 [-node target_node] [-timeout timeout] [-stopoption NORMAL]
 [-verbose]

srvctl relocate database -db db_unique_name -abort [-revert]
[-verbose]
```

Online Relocation (Migration) and TAF Configuration

- Use either Application Continuity and FAN or TAF to minimize the impact of a relocation on the client
  - If FAN or TAF is not used, transactions will be allowed to complete within the timeout value constraint.
    - If the timeout is exceeded, clients will receive an ORA-3113 "end-of-file on communication channel"
      - If the shutdown of the original instance takes longer than the timeout value, the instance is aborted.

Online Relocation: Example

- To relocate the database rac1n to srv2:

```
srvctl relocate database -db rac1n -node srv2 -timeout 15
-verbose
```

```
Configuration updated to two instances
Instance rac_2 started
Services relocated
Waiting for 15 minutes for instance rac_1 to stop.....
Instance rac_1 stopped
Configuration updated to one instance
```

Online Relocation: Example (cont)

- In the Alert log file you will notice:

```
ALTER SYSTEM SET shutdown_completion_timeout_mins=30
SCOPE=MEMORY;
```

- While the relocation is going on:

```
#srvctl status database -d rac

Instance rac_1 is running on node rac1
Online relocation: ACTIVE
Source instance: rac_1 on rac1
Destination instance: rac_2 on rac2
```

Converting Oracle RAC One Node to Oracle RAC

1. Shutdown the Oracle RAC One Node database
2. Execute the srvctl convert database command:

```
srvctl convert database -db <db_unq_name> -dbtype RAC
```

3. Startup the database
4. Add the more nodes to the RAC database:

```
srvctl add instance -db <db_unq_name>
 -instance <instance_name> –node <node_2>
```

5. Startup the added instance

Converting a Single Instance Database to RAC One Node

- Use DBCA to convert from single-instance Oracle databases to Oracle RAC One Node
  - Automates the conversion tasks
- Requirements:
  - Verify the hardware and operating system RAC requirements
  - Shared storage: either ASM or OCFS

Converting a RAC Database to RAC One Node

- Requirements:
  - For admin-managed RAC, set the preferred instance in the services to a single node
  - Convert a `PRECONNECT TAF` policy in any service (if it exists) to `BASIC` or `NONE` before conversion
  - For policy-managed RAC, make all the service use the same server pool
  - Only one instance should be running in the RAC
- The command to change RAC to RAC One Node:

```
srvctl convert database -db <db_unique_name> -dbtype
RACONENODE [-instance <instance_name> -timeout <timeout> ]
```

Summary

In this lecture, you should have learnt how to perform the following:

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- Convert a Single Instance Database to RAC One Node
- Convert a RAC Database to RAC One Node