

## Practice 18

### Adding an Oracle RAC Node to a Cluster

#### Practice Overview

In this practice you will perform the procedure to add the Oracle RAC node `srv2` to the Oracle RAC database cluster `rac`

In high level, you will perform the following:

- Installing the `cvuqdisk` in `srv2`
- Extend Oracle Clusterware software home from `srv1` to `srv2`
- Extend Oracle Database software home from `srv1` to `srv2`
- Add an Oracle database instance in `srv2`

#### Practice Assumptions

The practice assumes that you have `srv1` and `srv2` up and running in their virtual machines.

#### Note:

In real life scenario, to add a node to the cluster, we have to perform all the pre-requisite actions that we performed to prepare `srv2`, like network configuration, preparing the storage, creating the OS user and groups, and so on. After that, we follow the steps as described in this practice.

## Practice Procedures

### A. Installing the cvuqdisk in srv2

The package `cvuqdisk` of specific release must be installed before extending the Clusterware software into the node that we want to add. In the following steps you will install the named package into `srv2`.

1. In a Putty session, login to `srv1` as `root`
2. Copy the required rpm package from `srv1` to the staging folder.

```
cp /u01/app/12.2.0/grid/cv/rpm/cvuqdisk-1.0.10-1.rpm /media/sf_staging
```

3. Open another Putty session and login to `srv2` as `root`
4. In the `srv2` session, install the rpm package.

```
cd /media/sf_staging
CVUQDISK_GRP=oinstall; export CVUQDISK_GRP
rpm -iv cvuqdisk-1.0.10-1.rpm
rm /media/sf_staging/cvuqdisk-1.0.10-1.rpm
```

### B. Extend Oracle Clusterware software home from srv1 to srv2

In the following steps, you will extend Oracle Clusterware software home from `srv1` to `srv2`

5. In the VirtualBox window of `srv1`, login as `grid`
6. Verify the integrity of the cluster and `srv2`

In real life scenario, the checking points performed by the utility should all pass. In our environment, we will see the following failing points. In our case, they can be safely ignored:

- o Access Control List check
- o Group of device \*\*\* did not match
- o Verifying Physical Memory
- o The DNS response time for an unreachable node exceeded

```
cluvfy stage -pre nodeadd -n srv2
```

7. Extend Oracle Clusterware home to `srv2`

```
cd $ORACLE_HOME/addnode
addnode.sh
```

## 8. Respond to the displayed Installer instructions as follows:

Window	Action
<b>Cluster Add Node Information</b>	<ol style="list-style-type: none"> <li>Click on <b>Add</b> button</li> <li>Fill in the Add Cluster Node Information window fields as follows: Public Host Name: <b>srv2.localdomain</b> Node Role: HUB Virtual Hostname: <b>srv2-vip.localdomain</b></li> <li>Click on <b>OK</b> button</li> <li>Click on <b>Next</b> button</li> <li>Click on <b>SSH Connectivity</b> button</li> <li>Enter the OS password for <code>grid</code> user</li> <li>Click on <b>Test</b> button</li> <li>You should see a message confirming that the connectivity was successful</li> <li>Click on <b>Next</b> button  You will see a message informing that the Oracle Base location is not empty.</li> <li>Click on <b>Yes</b> button</li> </ol>
<b>Prerequisite Checks</b>	<p>The same checks that was performed by <code>cluvfy</code> utility is performed over here.</p> <ol style="list-style-type: none"> <li>Click on <b>Ignore All</b> checkbox A confirmation message will pop up.</li> <li>Click on <b>Yes</b> button</li> </ol>
<b>Summary</b>	Click on <b>Install</b> button
<b>Execute Configuration Scripts</b>	<p>When prompted, execute the <code>root.sh</code> script in <code>srv2</code> as <code>root</code></p> <p>After running the script, click on <b>OK</b> button</p>
<b>Finish</b>	Click on <b>Close</b> button

### C. Extending Oracle Database software home from srv1 to srv2

In the following steps, you will extend Oracle database software home from `srv1` to `srv2`

9. In the VirtualBox window of `srv1`, logout and login to it as `oracle`

10. Open a terminal window and run the following code to extend Oracle database home to `srv2`

```
cd $ORACLE_HOME/addnode
./addnode.sh
```

11. Respond to the displayed Installer instructions as follows:

Window	Action
<b>Node Selection</b>	Make sure <code>srv2</code> is selected.
<b>Prerequisite Checks</b>	<p>The following warnings can be ignored:</p> <ul style="list-style-type: none"> <li>o <code>resolv.conf</code> Integrity</li> <li>o (Linux) <code>resolv.conf</code> Integrity</li> </ul> <p>Click on <b>Ignore All</b> checkbox</p> <p>Click on <b>Next</b> button</p> <p>A confirmation dialog message appears.</p> <p>Click on <b>Yes</b> button</p>
<b>Summary</b>	Click on <b>Install</b> button
<b>Install Product</b>	When prompted to do so, run the script <code>root.sh</code> in <code>srv2</code> then click on <b>OK</b> button
<b>Finish</b>	<p>Observe the installer window informs to run <code>dbca</code> to add the instance.</p> <p>Click on <b>OK</b> button</p>

12. In Putty session connected to `srv2`, change the current user to `grid` and run the following CVU command to check the cluster integrity.

This command verifies that the provided node has been successfully added to the cluster at the network, shared storage, and clusterware levels.

In our environment, the failure reported on the SCAN name verification can be ignored.

```
su - grid
cluvfy stage -post nodeadd -n srv2
```

## D. Add an Oracle database instance in srv2

In the following steps, you will add an Oracle database instance of the database `rac` to `srv2`

**13.** In the VirtualBox window of `srv1`, make sure you are logged on as `oracle`

**14.** Open a terminal window and run the `dbca` utility

```
dbca
```

**15.** Respond to the displayed `dbca` windows as follows:

Window	Action
<b>Database Operation</b>	Select the following option: <b>- Oracle RAC database instance management</b>
<b>Instance Operation</b>	Select the following option: <b>Add an Instance</b>
<b>Select Database</b>	Enter the following fields: User name: <code>sys</code> Password: its password
<b>Instance Details</b>	Make sure the given data is correct
<b>Summary</b>	Click on <b>Finish</b> button
<b>Finish</b>	Click on <b>Close</b> button

**16.** In Putty session connected to `srv2`, make sure you are connected as `grid` then verify the administrative privileges on the target node

```
cluvfy comp admprv -o db_config -d $ORACLE_HOME -n srv2
```

**17.** Verify that the new Oracle database instance has been added to the database.

```
srvctl status database -d rac
```

## Summary

We can add a node to a RAC online, without shutting down the Clusterware or the database. The procedure to add a node to the RAC is performed by simply running specific steps after preparing the node.

