# Practices for Lesson 11: Configuring Oracle Connection Manager for Multiplexing and Access Control

Practices for Lesson 11: Overview

Overview

In these practices, you will configure Oracle Connection Manager, configure a client to use Oracle Connection Manager, and enable session multiplexing.

Practice 11-1: Installing Oracle Instant Client

Overview

In this practice, you will perform a custom installation of the Oracle Instant Client software in order to install the Connection Manager software.

Assumptions

The zip file containing the Instant Client Software is located in the /stage directory.

Tasks

Open a terminal, and change the current working directory to the stage directory

/stage/ . In that directory is the Instant client software in a zip file named: V9832064-01.zip . As the oracle OS user, unzip this file in place to create /stage/client directory.

Change the working directory to /stage/client and run the Oracle Installer to install Connection Manager and Oracle Net listener.

Complete the installation using the Oracle Database Client 19c Installer.

Select the Installation Type by clicking **Custom** and then clicking **Next**.

Override the default and specify a new software location,

/u01/app/oracle/product/client\_1; click Next.

On the Available Product Components page, select **Connection Manager** and **Oracle Net Listener** and then click **Next**.

On the Summary Product page, click **Install**.

The install Product page shows progress of the installation. When the Execute Configuration Scripts window appears, run the script by:

Open a new terminal window

Become the root user with the su command

Run the script /u01/app/oracle/product/client\_1/root.sh Press **ENTER** at the prompt:

Close the root user terminal window

Press OK to confirm script has been run.

On the Finish page, click **Close**.

To ease setting the client environment, create an /etc/oratab entry; add the fo line

"client:/u01/app/oracle/product/client\_1:N” using the echo command as follows:

Run the command cat /etc/oratab to confirm the entry was added.

Close the open terminal windows.

Practice 11-2 Configuring Connection Manager

Overview

In this practice, you configure the cman.ora file on the Oracle Connection Manager host. The cman.ora file specifies the listening endpoint for the server, access control rules, and Oracle Connection Manager performance parameters.

**Important:** In this practice, the **$ORACLE\_HOME** variable points to the client software home and NOT the database software home.

Tasks

Perform the tasks that follow on the server that will host Oracle Connection Manager.

Open a terminal window and use oraenv to set the environment variables for the client

software home.

Copy the $ORACLE\_HOME/network/admin/samples/cman.ora file to

$ORACLE\_HOME/network/admin/cman.ora.

Create directories for Connection Manager logging and tracing.

In other environments, you will discover the name of your host with hostname -f and then use the value returned as the *hostname* in later commands.

**Note:** In this practice environment, use localhost for the *hostname.*

Edit the file $ORACLE\_HOME/network/admin/cman.ora file with a text editor of your choice, such as vi or gedit . You will be configure the listening endpoint, access control rule list, and the parameter list. Be careful and do not change anything that is not specified in these instructions.

Typos and changes to the formatting of spaces and tabs will prevent CMAN from starting. Replace the following items in the file:

**Note: vi** is used in this example, and the directories must exist and the host name must be resolvable or CMAN will not start.

######

# CMAN Alias cman\_***<fqhost>*** = (configuration=

# Listening address of the cman (address=(protocol=tcp)(host=***<fqhost>*)(**port=***<lsnport>****)* )

# Configuration parameters of this CMAN (parameter\_list =

# Need authentication for connection?

# Valid values: boolean values for on/off (aso\_authentication\_filter=off)

# Connection statistics need to be collected? # Valid values: boolean values for on/off (connection\_statistics=yes)

# Log files would be created in the directory specified here (log\_directory=<logdir>)

# Logging would be in done at this level

# Valid values: OFF | USER | ADMIN | SUPPORT (log\_level=off)

# Maximum number of connections per gateway

# Valid values: Any positive number (Practically limited by few 1000s)

(max\_connections=256)

# Idle timeout value in seconds

# Valid values: Any positive number (idle\_timeout=0)

# Inbound connect timeout in seconds # Valid values: Any positive number (inbound\_connect\_timeout=0)

# Session timout in seconds

# Valid values: Any positive number

(session\_timeout=0)

# Outbound connect timeout in seconds # Valid values: Any positive number (outbound\_connect\_timeout=0)

# Maximum number of gateways that can be started

# Valid values: Any positive number (Practically limited by # system resources)

(max\_gateway\_processes=***8***)

# Minimum number of gateways that must be present at any time

# Valid values: Any positive number (Practically limited by # system resources)

# max\_gateway\_processes > min\_gateway\_processes (min\_gateway\_processes=***3***)

# Remote administration allowed?

# Valid Values: Boolean values for on/off (remote\_admin=on)

# Trace files would be created in the directory specified here

(trace\_directory=<trcdir>)

# Trace done at this level

# Valid values: OFF | USER | ADMIN | SUPPORT (trace\_level=off)

# Is timestamp needed with tracing?

# Valid values: Boolean values for on/off (trace\_timestamp=off)

# Length of the trace file in kB

# Valid values: Any positive number (Limited practically) (trace\_filelen=1000)

# No. of trace files to be created when using cyclic tracing # Valid values: Any positive number

(trace\_fileno=1)

# Maximum number of CMCTL sessions that can exist

Save the cman.ora file.

Start CMAN with cmctl utility. Then use the admin command to connect to the

cman\_localhost instance and start it. Exit when the command completes successfully.

CMCTL> **admin cman\_localhost**

Current instance cman\_localhost is not yet started Connections refer to

(DESCRIPTION=(address=(protocol=tcp)(host=localhost)(port=1522))). The command completed successfully**.**

CMCTL :cman\_localhost> **startup**

Starting Oracle Connection Manager instance cman\_localhost. Please wait...

CMAN for Linux: Version 19.0.0.0.0 - Production Status of the Instance

Instance name cman\_localhost

Version CMAN for Linux: Version 19.0.0.0.0 -Production

Start date 18-SEP-2019 18:39:36

Uptime 0 days 0 hr. 0 min. 9 sec Num of gateways started 2

Average Load level 0

Log Level OFF

Trace Level OFF

Instance Config file

/u01/app/oracle/product/client\_1/network/admin/cman.ora

Instance Log directory

/u01/app/oracle/diag/netcman/edvmr1p0/cman\_localhost/alert

Instance Trace directory

/u01/app/oracle/diag/netcman/edvmr1p0/cman\_localhost/trace The command completed successfully.

CMCTL:cman\_localhost> **exit**

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Exit the terminal.

Practice 11-2: Configuring the Database for Oracle Connection Manager

Overview

In this practice, you configure the database to register with Connection Manager.

Tasks

Open a terminal window and use oraenv to set the environment variables for the orclcdb

database.

Change directory to $ORACLE\_HOME/network/admin.

Use a text editor of your choice to add a service name entry to the tnsnames.ora file to enable the database server to communicate with Oracle Connection Manager. Use localhost for *hostname*, example:

Log in to SQL\*Plus as a user with SYSDBA privileges.

Add a descriptor that specifies the listening address of Oracle Connection Manager to the initialization parameter file.

Force the database to register with CMAN.

**Note:** CMAN is acting as a LISTENER.

Exit SQL\*Plus.

Close all terminals.

Practice 11-3: Configuring Clients for Oracle Connection Manager

Overview

In this practice, you will configure a protocol address for Oracle Connection Manager.

Tasks

Open a terminal window on the client host and use oraenv to set the environment variables for the client software home.

Use Oracle Net Manager to configure the tnsnames.ora file with a connect descriptor that specifies the protocol address of Oracle Connection Manager.

Invoke Oracle Net Manager.

In the navigator pane, select **Service Naming** from Local menu.

Click the plus sign (+) on the toolbar or select **Create** from the Edit menu.

Enter **C\_ORCLCDB** in the Net Service Name field and then click **Next**.

Select the **TCP/IP** protocol for Oracle Connection Manager and then click **Next**.

For Host Name, specify **localhost**

Specify **1522** as the Oracle Connection Manager port and **localhost** and then click

Next.

**Note:** The default port number for Oracle Connection Manager is 1521, and the protocol is TCP/IP.

Enter ORCLCDB in the Service Name field and then let the connection type default to

**Database Default**. Click **Next**.

Click **Finish** and save your configuration; then close the Net Service Name Wizard.

Test the connection through CMAN using SQL\*Plus with the @C\_ORCLCDB network service name. See *Appendix - Product-Specific Credentials* for the password.

Exit sqlplus.

Close the terminal.

Practice 11-4: Configuring the Oracle Database Server for Session Multiplexing

Overview

In this practice, you configure the database server for multiplexing.

Tasks

Enable session multiplexing for Oracle Connection Manager.

On the orclcdb database, log in to SQL\*Plus as a user with SYSDBA privileges

Set the DISPATCHERS parameter in the initialization parameter file with the PROTOCOL

and MULTIPLEX attributes.

Test that session multiplexing is working.

In the existing terminal with the oraenv set to orclcdb and connected to the database as a user with SYSDBA privileges.

In this terminal session, examine V$SESSION to determine the connection type. Refer to this session as *Terminal 1*.

In another terminal with the oraenv set to client, start a SQL\*Plus session using the connection string that uses CMAN. Refer to this session as *Terminal Two*

In the database session, run the V$SESSION query again. What is different?

Open a third client terminal with the environment set to client, start another SQL\*Plus session using the connection string that uses CMAN. Refer to this as Terminal 3.

In the Terminal 1 session, run the V$SESSION query again. What is different?

In Terminal 1, Get more information about the session connections from V$CIRCUIT view. Notice that only the two sessions being multiplexed through CMAN are shown. Both sessions are being routed through the same dispatcher.

Exit all SQL\*Plus sessions

Shut down Connection Manager. In a terminal 1 with oraenv set to client, use the

cmctl shutdown command.

Exit all remaining terminals.