12. Use Enterprise Manager Database Control and SQL * plus

1.1. Enterprise Manager Database Control. Database administration using Enterprise Manager.

Oracle Universal Installer (OUI) installs Oracle Enterprise Manager Database Control when Oracle software is installed. Oracle Enterprise Manager Database Control provides a WEB-based interface that can be used to manage Oracle instance and database.

Oracle Enterprise Manager Database Control is used for:

- View information about the performance and status of the database user model;
 - Creating database storage structures (such as table spaces);
 - Creating schema objects (such as tables and indexes);
 - Consumer protection management;
 - Database archiving;
 - Database recovery;
 - Import and export data;

Management Framework



Fig. 12.1. Oracle Enterprise Manager - Management Framework.

Oracle Enterprise Manager architecture provides a high degree of flexibility and functionality. Oracle Enterprise Manager can be easily customized to meet the needs of monitoring and administration of a specific environment.

A typical Oracle Enterprise Manager framework configuration consists of the following functional areas (figure 12.1):

- Managed goals
- Management services
- Network control
- Database management
- Application server control

In this course, Oracle Enterprise Manager Database Control is used to manage the user database.

Start the Enterprise Manager console process.

To access Oracle Enterprise Manager, you must start the dbconsole Database Control process from the client browser. The dbconsole process starts automatically after installation.

If the process is not started, it can be started manually at the command line as follows:

1. The \$ ORACLE_HOME / bin directory opens.

2. The command emctl start dbconsole is executed (Fig. 12.2.).

| Places | Terminal Mon (|)1:17 • | \mathbf{A} | n()) | Ċ |
|--------|--|---------|--------------|------------------|-----|
| | | | | | |
| | oracle@localhost:~ | | - | | × |
| | File Edit View Search Terminal Help | | | | |
| ŝ | <pre>[oracle@localhost ~]\$ /u01/app/oracle/product/11.2.0/db 1/bin/./emctl start Oracle Enterprise Manager 11g Database Control Release 11.2.0.4.0</pre> | dbconso | ole | - | |
| Home | Copyright (c) 1996, 2013 Oracle Corporation. All rights reserved. https://localhost.localdomain:1158/em/console/aboutApplication Starting Oracle Enterprise Manager 11g Database Control | ۱. | | | |
| | Logs are generated in directory /u01/app/oracle/product/11.2.0/db_1/localhos cl/sysman/log [oracle@localhost ~]\$ | t.local | ldom | ain _. | _or |
| Trash | | | | | |
| | i oracle@localhost:~ | | | | |

Fig. 12.2. Start the dbconsole process.

Overview of the status of the dbconsole process - as follows: [oracle @ hostname ~] \$ emctl status dbconsole

Access to Enterprise Manager for database management.

https://host name:1158/em In this case it is localhost.localdomain.

Access to Oracle Enterprise Manager database management can be obtained by opening a web browser and entering the following URL: http: // port number of hostname / em https: // host name: 1158 / em in this case it is localhost.localdomain: 1158 / em

The host name is the name or address of the computer. The port number is the HTTPS port number for Oracle Enterprise Manager database management. The default is 1158. The value for the specific system can be found in the file \$ ORACLE_HOME / install / portlist.ini. When executing the emctl status dbconsole command, the port number can also be seen.

If the instance is started and the database is open, Oracle Enterprise Manager displays the login page for the management database.

If the instance is "shut down" and needs to be started, or the database is installed, Oracle Enterprise Manager displays the "Start / Shutdown and Recovery" page. Oracle instance. "

Note: The database management page cannot be opened if the listener is off. Startup:

[oracle@localhost ~]\$ lsnrctl

LSNRCTL for Linux: Version 11.2.0.4.0 - Production on 20-MAY-2019 01:22:32 Copyright (c) 1991, 2013, Oracle. All rights reserved. Welcome to LSNRCTL, type "help" for information. LSNRCTL> start Starting /u01/app/oracle/product/11.2.0/db_1/bin/tnslsnr: please wait...

•••

The listener supports no services The command completed successfully LSNRCTL> exit [oracle@localhost ~]\$

Starting the Oracle instance can be done from SQL * plus:

[oracle@localhost ~]\$ sqlplus

SQL*Plus: Release 11.2.0.4.0 Production on Mon May 20 01:26:08 2019

Copyright (c) 1982, 2013, Oracle. All rights reserved.

Enter user-name: sys as sysdba

Enter password:_

Connected to an idle instance.

<mark>SQL> startup</mark>

ORACLE instance started.

Total System Global Area 1119043584 bytes Fixed Size 2252504 bytes Variable Size 704643368 bytes Database Buffers 402653184 bytes Redo Buffers 9494528 bytes Database mounted. Database opened. SQL> exit Disconnected from Oracle Database 11g Enterprise Edition Release 11.2.0.4.0 - 64bit Production With the Partitioning, OLAP, Data Mining and Real Application Testing options

[oracle@localhost ~]\$

Enterprise Manager: Database management login.

To access the database, you must use a username that is authorized to access database control. Initially, SYS, SYSTEM and SYSMAN users are allowed.

You can access Enterprise Manager's Database Management as follows: 1. Open the web browser and enter the following URL:

HTTPS: // hostname: port / em

Enter SYS in the User Name field. Enter the password that was set for the SYS user during the creation of the database in the Password field (Fig. 12.3.). Select SYSDBA from the Connect As list.

SYSDBA is an administrator privilege that allows certain types of database operations to be performed.

1. Select Login. The database home page is displayed.

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| | ORACLE Enterprise Manager 11g | He | эlb |
| | Login | | |
| | | | |
| | * User Name sys | | |
| | * Password | | |
| | Connect As SYSDBA~ | | |
| | Login | | |
| | Copyright © 1996, 2013, Oracle. All rights reserved. Oracle, JD Edwards, PeopleSoft, and Retek are registered trademarks of Oracle Corporate Login saffiliates. Other names may be trademarks of their respective owners. Unauthorized access is strictly prohibited. https://localhost.localdomain:1158/em/console/logon/logon# | | |

Fig. 12.3. Login.

Enterprise Manager: Database home page.

The database home page shows the current state of the database, showing a series of indicators that depict the overall "health" of the database (fig. 12.4.). Additional pages can be accessed from the properties pages to manage specific aspects of the user database.

The following information about the performance and status of the database instance can be found on the database management home page:

• name of the instance, version of the database, location of Oracle home, media recovery options and other relevant instance data;

- availability of the current instance;
- emergency warnings;
- session and SQL related information;
- key indicators for space use.

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| | | | L | .ogged in As | s SYS |
| Database Instance: orcl | | | | | — I |
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| General Host CP | J | Active Sessions | SQL Response Time | | _ |
| Shutdown Black Out 100% | | 4.0 | 1.0 | | _ |
| Status Up 75 | | 3.0 | | | |
| Up Since May 13, 2019 2:08:48 AM EEST 50 | Other | 2.0 Walt User I/O | 0.5 | | |
| Version 11.2.0.4.0 25 | orc | 1.0 CPU | | | |
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| Diagnostic Summary | Space Summary | | High Availability | | - 1 |
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| Active Incidents 🖉 0 | Segment Advisor Recommendat | ons Q | Instance Recovery Time (sec) 13 | | - 1 |
| Key SQL Profiles Unavailable | Policy Violati Dump Area Used | ons 🗸 0 (%) 78 | Last Backup n/a Usable Fast Recovery Area (%) 100 | | |
| Database Instance Health | Dany room of the | | Flashback Database Logging Disable | 1 | - 1 |
| ▼ Alerts | | | | | _ |
| Category All V G0 Critical 0 Warning 0 | | | | | |
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| (No alerts) | | | | | |
| (2) Firefox automatically sends some data to Mozilla so that we | can improve your experience. | | <u>C</u> hoose W | hat I Share | × |
| 🔚 oracle@localhost:~ 🥌 Oracle Enterprise M | nager (SYS) - D | | | | 1/4 |

Fig. 12.4. Home page for database management.

Work and configuration tools pages (fig. 12.5.):

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|----------------------------|---------------------------|---------------|-------------------|--------------------------------|---------------|---------|-----------|-----------------|-----------|-----|
| Database Instance: orcl | | | | | | | | Logge | d in As S | SYS |
| Home <u>Performance Av</u> | vailability <u>Server</u> | <u>Schema</u> | Data Movement | Software and Support | | | | | | |
| | | | P | age Refreshed May 20, 2019 1:4 | 17:50 AM EEST | Refresh | View Data | Automatically (| 60 sec) | ~ |

Fig. 12.5. Work and configuration tools.

Support links providing more details (fig. 12.6.):

| | Pagi |
|---|-------------------------------------|
| General | Host CPU |
| Shutdown Black Out | 100% |
| Status Up | 75 |
| Up Since May 20, 2019 1:27:42 AM EEST | 50 Other |
| Instance Name orcl | orcl |
| Version 11.2.0.4.0 | 25 |
| Host <u>localhost.localdomain</u> Listener <u>LISTENER_localhost.localdomain</u> | o 🛄 |
| View All Properties | Load <u>2.38</u> Paging <u>0.02</u> |

Fig. 12.6. Enterprise Manager - Support links.

Suggested quick links to more important tools at the bottom of the window (fig. 12.7.):

| Home | Performance | <u>Availability</u> | <u>Server</u> | <u>Schema</u> | Data Movement | Software and Support | |
|--|--|---------------------|---------------|------------------------------------|--|----------------------------------|--|
| Related L Access Alert Histor Baseline Me Jobs Monitoring C Scheduler C User-Define | nks / tric Thresholds Configuration :entral d Metrics | | | Add Aler Blac Metr SQL | Exadata Cell Target t Log Contents kouts ric and Policy Settinu itor in Memory Acce . Worksheet | <u>s</u> <u>Is</u> ss Mode | Advisor Central All Metrics EM SQL History Metric Collection Errors Policy Groups Target Properties |
| Copyright © 1996. | 2013. Oracle. All righ | ts reserved. | | Ī | Database <u>Setup</u> | Preferences Help Logout | |
| - [oracle@lo | calhost:~] | | Oracle Ei | nterprise Ma | nager (SYS) - D | 🔏 [Settings] | |

Fig. 12.6. Enterprise Manager - Quick Links.

Grant administrative privileges to the Enterprise Manager.

Administrators are database users defined in the management repository who can log in to Enterprise Manager to perform management tasks. The amount of management tasks available in Enterprise Manager depends on the privileges and roles assigned to administrators.

Granting privileges to manage other database users is done as follows:

- 1. Log in to Database Control as a SYS user.
- 2. Click on Setup at the top of the home page of the database (fig. 12.7.).



Fig. 12.7. Enterprise Manager - Setup.

3. Click on Administrators in the left navigation bar (fig. 12.8.).



Fig. 12.8. Enterprise Manager - Administrators.

Users of databases with management privileges are listed.

4. Select Create to create a new Enterprise Manager user by assigning management rights to an existing database user (fig. 12.9.).

| Applications Place | es Firefo | XC | | | | | |
|-------------------------|--------------|--|----------------------------|--|--|--|--|
| | | Oracle Enterprise Manager (S | YS) - Administrators - Moz | | | | |
| Oracle Enterprise Mana | ager (S 🗙 | + | | | | | |
| ← → ♂ ✿ | | 🛈 🔒 https://localhost.localdomain:1158/em/coi | nsole/admin/rep/userAdmin | | | | |
| ORACLE Enterprise | e Manager 1 | 1 <i>g</i> | | | | | |
| Enterprise Manager C | configuratio | n Management Services and Repository Agents | | | | | |
| Overview of Setup | Adminis | trators | | | | | |
| Administrators | Administrat | ors are database users who can login to Enterprise Man | ager to perform management | | | | |
| Notification Methods | Search | Go | | | | | |
| Patching Setup | (View) E | dit) Subscribe to Rules) Delete) Create) | | | | | |
| Blackouts | Select Nan | le | Access | | | | |
| Management Pack | SYS | | Super Administrator | | | | |
| Access | SYS | MAN | Repository Owner | | | | |
| Monitoring Templates | 0 <u>sys</u> | TEM | Super Administrator | | | | |
| Corrective Action | | | | | | | |

Fig. 12.9. Enterprise Manager - creating a new user.

5. Select the flashlight icon next to the Name field, then select an existing database user from the pop-up window.

6. Enter the password for the selected user and select Finish (Fig. 12.10.).

| Oracle Enterprise Manager | (5 × | + | | | | | Moz | illa Firefox | | | | - | ۰ | × |
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| Enterprise Manager Config | juratio | n Management Servic | es and Repository Agents | | 0 | ORACLE OC | M | | | | | | | |
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| ropentes | | | | | | | | | | | | | | |
| Name SCOT | т | | | | | | | | | | | | | |
| E-mail Addres | s No | Email address is defined | for this administrator. | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| Roles | | | | | | | | | | | | | | |
| Name | | | Description | | | | | | | | | | | |
| PUBLIC | | | | | | | | | | | | | | |
| System Priv | vilege | es | | | | | | | | | | | | |
| Name | | | Description | | | | | | | | | | | |
| VIEW ANY T | ARGE | ET S | /iew all discovered targets Service and Repository ta MONITOR ENTERPRISE | s in the rgets). MAN | e en This IAGE | vironment (i s system pr ER system | ncluding A ivilege auto privilege. | gents, and omatically | l Mana includ | agei les | ment the | | | |

 Name
 Type
 Privilege

 No target privileges are granted

Fig. 12.10. Enterprise Manager - configure a new user..

Configure Enterprise Manager settings and preferences.

Enterprise Manager allows you to configure database management settings and preferences.

These include the following:

Target Privileges

• Notifications: Notification methods, rules and schedules can be configured. Notifications can be configured to receive email notifications. By default, the Enterprise Manager database home page lists all alerts.

• Blackouts: Blackout periods can be configured to stop monitoring. Periods of "Blackout" are defined so that false alarms are not sent.

• Preferred credentials: Enterprise Manager automatically performs many routine administrative tasks (such as archiving) for the user. This is done with the help of a complex built-in work planning system. To keep the user environment secure, setting automatic execution tasks in Enterprise Manager requires providing login information and a database. To avoid entering this information each time a task is created, Enterprise Manager allows you to save this information as your favorite credentials. Preferred identification data is stored in the database in encrypted form to protect against unauthorized use.

Defining Blackout Periods.

Blackouts allow you to stop monitoring one or more targets for maintenance operations. Interruption periods are defined to prevent alert notifications when the maintenance database is shut down.

When planning to display the maintenance database, it can be stated that alert notifications should not be sent to the user, defining an Blackout period. Blackouts also allow you to stop monitoring other maintenance operations.

A Blackout period can be defined in Enterprise Manager Database Management by following these steps:

1. Click Setup at the top of the database home page. The installation page appears.

2. Blackouts in the left frame are selected. The Blackouts page appears (fig. 12.11.).

3. Select Create to start the Blackout Wizard.

| ORACLE Enterpris | e Manager 11 <i>g</i> Setup Preferences Help Logout Database |
|----------------------|--|
| Enterprise Manager (| Configuration Management Services and Repository Agents |
| Overview of Setup | Blackouts |
| Administrators | Blackouts allow you to suspend monitoring on one or more targets in order to perform maintenance operations. To black out a |
| Notification | target, you need to have at least Operator privileges on the target. |
| Methods | View By Targets in Blackout V |
| Patching Setup | |
| Blackouts | Search All target types V |
| Management Pack | Parent None V |
| Access | Show Active M Show all included targets |
| Monitoring | |
| <u>Templates</u> | (Create) |
| Corrective Action | Full Start Created Last Updated Select Target Type Status Blackout Date Duration Repeat Reason By By |
| | No Blackouts found. |

Fig. 12.11. Create a Blackout.

4. Enter a name for the Blackout in the Name field (fig. 12.12.). The cause of the Blackout is chosen. Select Database in the drop-down menu, Type in the Available targets area. Select the user database and click Move. Next, select Next. The Create Blackout: Schedule page appears.

| Create BI | ackout: Properties | | | |
|---|---|---|--|---|
| | | | | Cancel Step 1 of 5 Ne <u>x</u> t |
| * Name | Blackout-May 20 2019 3:06:08 AM | _ | | |
| Comments | Service check. | | | |
| | | | 1 | |
| Reason | AS: Application Server Emergency | ~ | | |
| | Run jobs during the blackout | | | |
| Targets | | | | |
| | | Select the targets to be privileges. Agents are r blackout. | blacked out. You only see the targets for ot shown because they can only be black | or which you have Operator cked out as part of a full host |
| Availa | ble Targets | | Selected Targets | |
| Type Manage LISTEN localhos orcl(Dat | All target types ement Services and Repository(OMS a IER_localhost.localdomain(Listener) st.localdomain(Host) rabase Instance) | and Repository) | Move Move All Remove | |

Fig. 12.12. Blackout configuration.

5. Enter the start time of the planned Blackout or select Immediate if the database will now be switched off (fig. 12.13.). The duration of the Blackout is chosen: "indefinite", "time", or "until the future". Accepted by default "Do not repeat" or select a repeat frequency in the drop-down menu. Choose Next.

| Create Black | kout: Schedule | |
|--|---|---|
| Set up a schedule you can select the targets. * Time Zone | e for the blackout using the targets timezone. If targets e timezone for the schedule, but the blackout will occu (UTC+02:00) Sofia (EET) | Cancel Back Step 4 of 5 Next s span multiple timezones, ur simultaneously across all |
| Start Immediate Later Da Tin | ely te May 20, 2019 (example: May 20, 2019) ne 3 · 30 · • AM O PM | Duration Indefinite Length o Hours 2 Minutes Until Date May 20, 2019 (example: May 20, 2019) Time 4 : 30 · O AM PM TIP Duration should be in Hours and Minutes for repeating blackouts. |
| Repeating Repeat D | o Not Repeat ✓ | ged from repeating to non-repeating and vice versa. |

Fig. 12.13. Blackout Planning.

6. The Create Blackout: Overview page appears (fig. 12.14). The input is reviewed and Done is selected. It can be selected on Back if a setting needs to be changed. A confirmation message will be received

| | | | Cancel Back Step 5 of 5 Finish |
|---------------------|------------|----------------------------------|--------------------------------|
| Properties | | | |
| | Name | Blackout-May 20 2019 3:06:08 AM | |
| | Reason | AS: Application Server Emergency | |
| | | Service check. | |
| Co | omments | | |
| Run jobs during the | blackout | Yes | |
| Schedule | | | |
| | Time Zone | (UTC+02:00) Sofia | |
| | Start Date | May 20, 2019 3:30:00 AM | |
| | Duration | 2 Minutes | |
| Repeating | | | |
| | Repeat | Do Not Repeat | |
| Coloria d Torrado | | | |
| Selected largets | | | |
| Mamo | | | |

Fig. 12.14. Blackout Planning - Overview.

Set favorite credentials

Preferred credentials can be set so that Enterprise Manager automatically provides host and database credentials when scheduling tasks and tasks to perform administrative operations such as backup and recovery. For security, credentials are stored in encrypted mode.

You can set preferred credentials in Enterprise Manager Database Management by following these steps:

1. Select "Preferences" at the top of the database home page. The Preferences page appears.

2. Select "Preferred access data" in the left frame (fig. 12.15.). The preferred access data page is displayed.

| ORACLE Enterprise Database Control | e Manager 11 <i>g</i> | Setup Preferences Help Logout Database |
|---|---|---|
| Preferences | | |
| General Preferred Credentials Notification | General Password | (Revert) (Apply) |
| Rules Schedule | To change your password, specify and confirm a new password. Administrator SYS Current Password | |
| | Fig. 12.15. Preferences. | |

3. Select the icon under "Set Credentials" for a specific database item. Then the page for entering user access data is displayed (fig. 12.16.).

| ORACI Database | L ∈ Enterprise e Control | Manager 11 <i>g</i> | | | | | | <u>s</u> | etup Preferenc | es <u>Help Logout</u> Database |
|---|--------------------------------------|---|---------------|--------------------|------------------------------|--------------------|--|------------------|------------------|-----------------------------------|
| Prefe | rences | | | | | | | | | |
| General Preferre Creden | ed htials | Preferred Credentials You can use preferred credentials to simplify access to targets that you manage. If a target has preferred credentials set, applications that log in to that target will automatically use the preferred credentials. | | | | | | | | |
| Rules Schedule | <u>s</u> | Target Type | Total Ta | rgets T | Targets with Credentials Set | | | Set Credentials | | |
| | edule I | Listener | 1 | 1 | | | | | <u>.</u> | |
| | | Host | 1 | 1 | 1 | | | | | |
| | | Database Instance | 1 | 1 | | | | | | |
| | | Agent | 1 | 1 | | | | | | |
| Preferred Credentials > Database Preferred Credentials Revert Apply To set preferred credentials for Database targets, update the appropriate fields in one of the tables below. To delete credentials, clear the appropriate fields. The privilege settings must be already set on the host targets to set Run privileges. Press Apply after making any changes. of TIP Normal database conductions are used by Externation Manager functions: that do not require database administrator privileges. SYSDRA database | | | | | | | | | | |
| credentials are used by privileged functions that access non-open databases or perform database startup/shutdown operations. Host credentials are used by remote operations and jobs to run applications that access a database (e.g., SQLPLUS). | | | | | | | | | | |
| Target | Credentials | S | | | | | | | | |
| Target cre | edentials can be | specified for each Dat | abase target. | | | | | | | |
| Name \triangle | Host | UserName | Password | SYSDBA UserName | | SYSDBA Password | | Host Username | Host Password | d Test |
| orcl | localhost.localdo | omain | | sys | | ••••• | | oracle | ••••• | Test |
| | | | | | | | | | Re | vert Apply |

Fig. 12.16. Set user access data.

4. Enter the identification data in the form of a username and password for the specified users. "Test" is selected.

5. A confirmation message is received that the credentials have been confirmed. Apply is selected to save the preferred access credentials.

1.2. Use SQL * Plus to access a user database.

SQL * Plus provides a command line interface to a database that allows actions:

- Performing database management operations;

- Execute SQL commands for querying, inserting, updating and deleting data in the database.

• SQL * Plus can be used interactively or in group mode.

In addition to Enterprise Manager, SQL * Plus can be used to execute SQL statements. This tool allows you to perform many of the known database management operations, as well as set, enter, update and delete data in the database.

SQL * Plus can be used to enter SQL commands for:

- tables for queries in the database;
- inserting, updating and deleting rows in the database;
- performing database administration operations.

In addition, PL / SQL commands can be entered and SQL * Plus commands can be used for formatting and reporting.

SQL * Plus can be called by performing the following steps (fig.2.17.):

1. A terminal window opens.

2. Enter the following in the command prompt:

\$ sqlplus / nolog

3. Enter connect and the username / password as shown in the following example:

SQL> connect hr / hr (or connect scheme / pass)

| oracle@localhost:~ | - | × |
|---|---|---|
| <u>F</u> ile <u>E</u> dit <u>V</u> iew <u>S</u> earch <u>T</u> erminal <u>H</u> elp | | |
| [oracle@localhost ~]\$ sqlplus /nolog | | |
| SQL*Plus: Release 11.2.0.4.0 Production on Mon May 20 03:42:05 2019 | | |
| Copyright (c) 1982, 2013, Oracle. All rights reserved. | | |
| SQL> conn hr/oracle Connected. SQL> | | |

