

Módulo: Conceptos Básicos y Arquitectura de la Base de Datos

TEMARIO

- Pre-Requisitos de Instalación de Oracle Database 18c
- Pasos de Instalación
- Post Instalación
- Creación de una Base de Datos NOCDB
- Preguntas de Refuerzo

Pre-Requisitos de Instalación de Oracle Database 18c

El software de Base de Datos Oracle se puede instalar en diversos Sistemas Operativos tales como: Linux, Unix y Windows, cada uno en sus respectivas versiones y distribuciones.

La mayor cantidad de despliegues empresariales son realizados sobre ambientes Linux distribución Red Hat y Oracle Linux.

La instalación del producto tiene 3 etapas bien identificadas, las cuales son:

- Certificación del Sistema Operativo
- Instalación del Software de Base de Datos
- Post-Certificación

Pre-Requisitos de Instalación de Oracle Database 18c

Cada Sistema Operativo cuenta con un manual detallado de certificación, el cual puede ser encontrado en este documento:

<https://docs.oracle.com/en/database/oracle/oracle-database/18/install-and-upgrade.html>

Par al caso de Linux, lo encontramos directamente aquí:

<https://docs.oracle.com/en/database/oracle/oracle-database/18/ladbi/index.html>

La descarga del software Oracle Database 18c se encuentra en esta url:

<https://www.oracle.com/database/technologies/oracle18c-linux-180000-downloads.html>

Pre-Requisitos de Instalación de Oracle Database 18c

El documento de Certificación de Linux cuenta con las siguientes secciones que deben ser revisadas:

- Server Hardware Checklist for Oracle Database Installation
- Operating System Requirements for x86-64 Linux Platform
- Configuring Users, Groups and Environments for Oracle Grid Infrastructure and Oracle Database
- Checking Resource Limits for Oracle Software Installation Users
- A Completing Preinstallation Tasks Manually

Revisar la siguiente bibliografía:

- Heurtel, O. (2015). Oracle 12c: Administración. Cornellà de Llobregat (Espagne: Ediciones ENI).
Capítulos: Instalación y Creación de una nueva Base de Datos
- Biju Thomas. (2014). OCA: Oracle Database 12c Administrator Certified Associate Study Guide.
US: Sybex. Capítulo: 9

Pasos de Instalación

Descargado el instalador y copiado en el servidor, procedemos a:

- Crear una carpeta en formato ORACLE_HOME
- Descomprimir el instalador en la carpeta creada
- Inicializar un entorno gráfico (-keepalive #)
- Ejecutar el comando ./runInstaller

```
[oracle@srvbd u01]$ mkdir -p /u01/app/oracle/product/18.1.0/dbhome_1  
[oracle@srvbd u01]$ vncserver
```

```
New 'srvbd.riccio.com:1 (oracle)' desktop is srvbd.riccio.com:1
```

```
Starting applications specified in /home/oracle/.vnc/xstartup  
Log file is /home/oracle/.vnc/srvbd.riccio.com:1.log
```

```
[oracle@srvbd u01]$ cd /u01/app/oracle/product/18.1.0/dbhome_1  
[oracle@srvbd dbhome_1]$ unzip -oq /u01/install/LINUX.X64_180000_db_home.zip
```

□

Pasos de Instalación



Pasos de Instalación

Oracle Database 18c Installer - Step 2 of 8

Select Database Installation Option

18^c ORACLE[®] Database

Select the type of database installation you want to perform.

☒ Single instance database installation

☐ Oracle Real Application Clusters database installation

Configuration Option

Database Installation Option

Install Type

- Typical Installation
- Prerequisite Checks
- Summary
- Install Product
- Finish

Help

< Back Next > Install Cancel

Pasos de Instalación

Oracle Database 18c Installer - Step 3 of 10

Select Database Edition

18c ORACLE Database

Configuration Option
Database Installation Options
Database Edition
Installation Location
Create Inventory
Operating System Groups
Prerequisite Checks
Summary
Install Product
Finish

Which database edition do you want to install?

☒ Enterprise Edition
Oracle Database 18c Enterprise Edition is a self-managing database that has the scalability, performance, high availability, and security features required to run the most demanding, mission-critical applications.

☐ Standard Edition 2
Oracle Database 18c Standard Edition 2 is a full-featured data management solution ideally suited to the needs of medium-sized businesses. It includes Oracle Real Application Clusters for enterprise-class availability and comes complete with its own Oracle Clusterware and storage management capabilities.

Help < Back Next > Install Cancel

Pasos de Instalación

Oracle Database 18c Installer - Step 4 of 10

Specify Installation Location

18^c ORACLE[®] Database

Specify a path to place all Oracle software and configuration-related files installed by this installation owner. This location is the Oracle base directory for the installation owner.

Oracle base:

This software directory is the Oracle Database home directory.

Software location: /u01/app/oracle/product/18.1.0/dbhome_1

[Configuration Option](#)
[Database Installation Options](#)
[Database Edition](#)
[Installation Location](#)
[Create Inventory](#)
[Operating System Groups](#)
[Prerequisite Checks](#)
[Summary](#)
[Install Product](#)
[Finish](#)

Pasos de Instalación

Oracle Database 18c Installer - Step 5 of 10

Create Inventory

18^c ORACLE[®] Database

You are starting your first installation on this host. Specify a directory for installation metadata files (for example, install log files). This directory is called the "inventory directory". The installer automatically sets up subdirectories for each product to contain inventory data. The subdirectory for each product typically requires 150 kilobytes of disk space.

Inventory Directory:

Specify an operating system group whose members have write permission to the inventory directory (oralInventory).

oralInventory Group Name:

Pasos de Instalación

Oracle Database 18c Installer - Step 6 of 10

Privileged Operating System groups

18^c ORACLE[®] Database

SYS privileges are required to create a database using operating system (OS) authentication. Membership in OS Groups grants the corresponding SYS privilege, eg. membership in OSDBA grants the SYSDBA privilege.

Database Administrator (OSDBA) group: dba

Database Operator (OSOPER) group (Optional): oper

Database Backup and Recovery (OSBACKUPDBA) group: dba

Data Guard administrative (OSDGDBA) group: dba

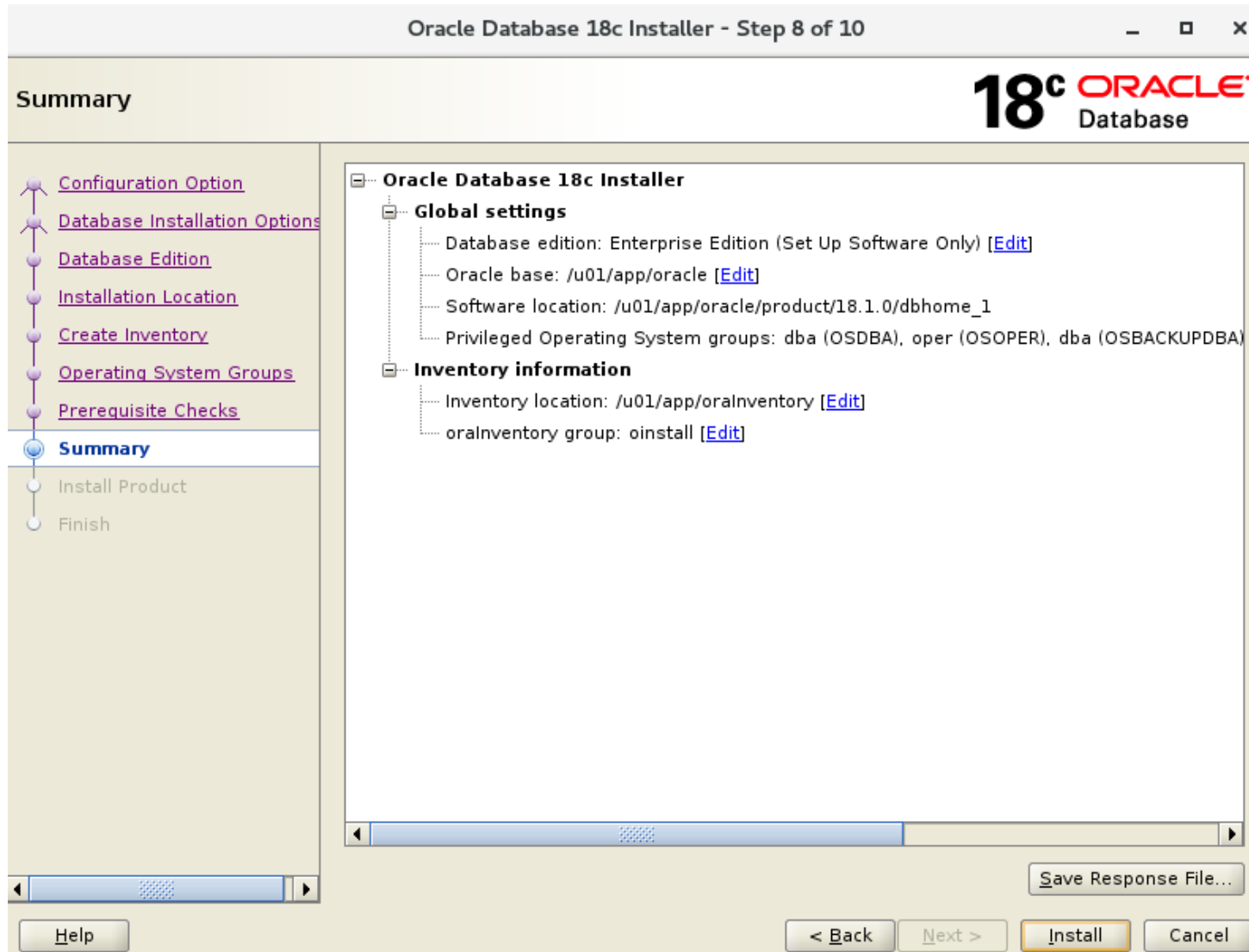
Encryption Key Management administrative (OSKMDBA) group: dba

Real Application Cluster administrative (OSRACDBA) group: dba

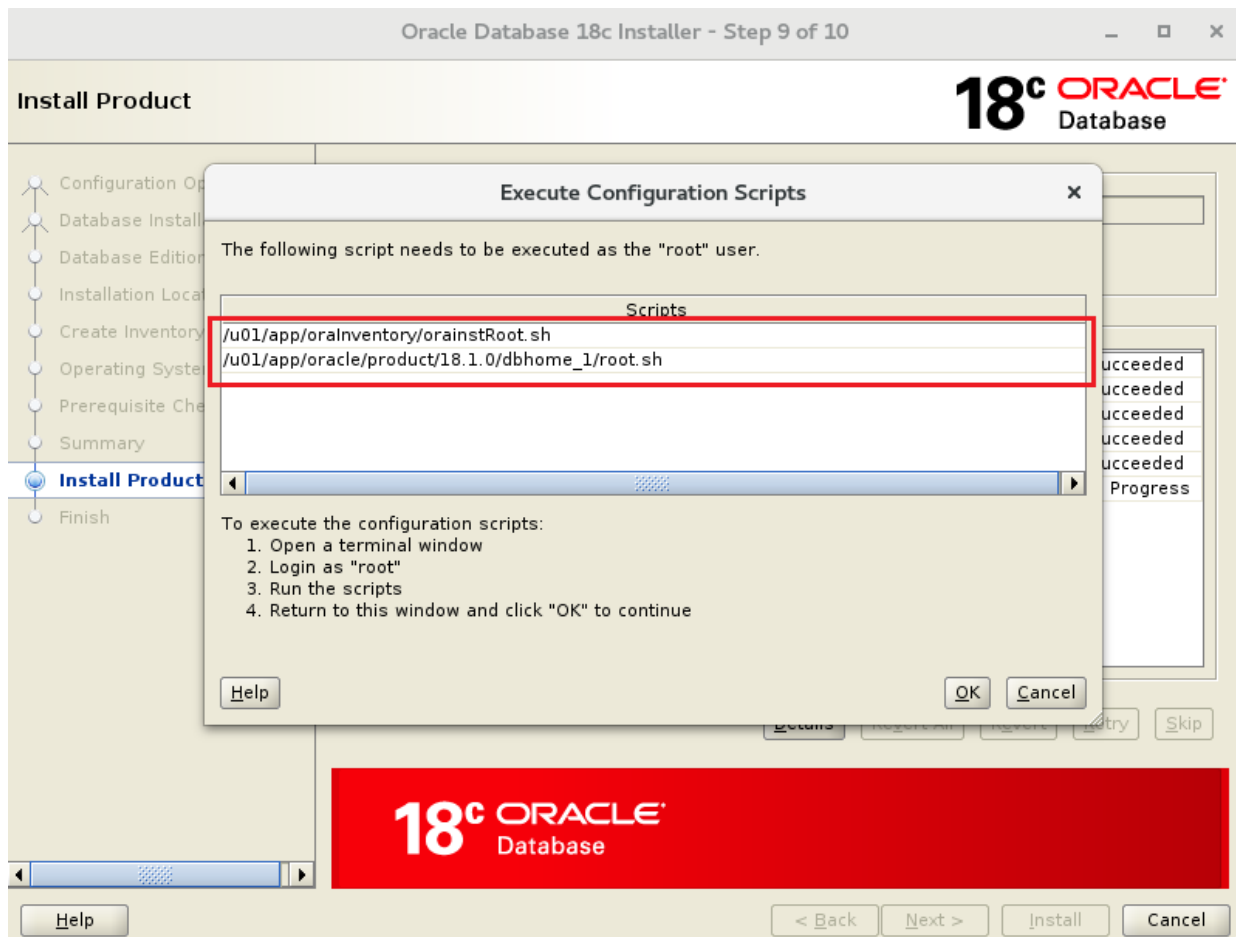
Help < Back Next > Install Cancel

Nota: Esta configuración se almacena en el siguiente archivo:
\$ORACLE_HOME/rdbms/lib/config.c

Pasos de Instalación



Pasos de Instalación



```
[oracle@srvbd dbhome_1]$ su -
```

Password:

Last login: Mon Apr 1 00:41:54 -05 2019 from 132.68.1.1 on pts/0

```
[root@srvbd ~]# sh /u01/app/oraInventory/orainstRoot.sh
```

Changing permissions of /u01/app/oraInventory.

Adding read,write permissions for group.

Removing read,write,execute permissions for world.

Changing groupname of /u01/app/oraInventory to oinstall.

The execution of the script is complete.

```
[root@srvbd ~]# sh /u01/app/oracle/product/18.1.0/dbhome_1/root.sh
```

Performing root user operation.

The following environment variables are set as:

ORACLE_OWNER= oracle

ORACLE_HOME= /u01/app/oracle/product/18.1.0/dbhome_1

Enter the full pathname of the local bin directory: [/usr/local/bin]:

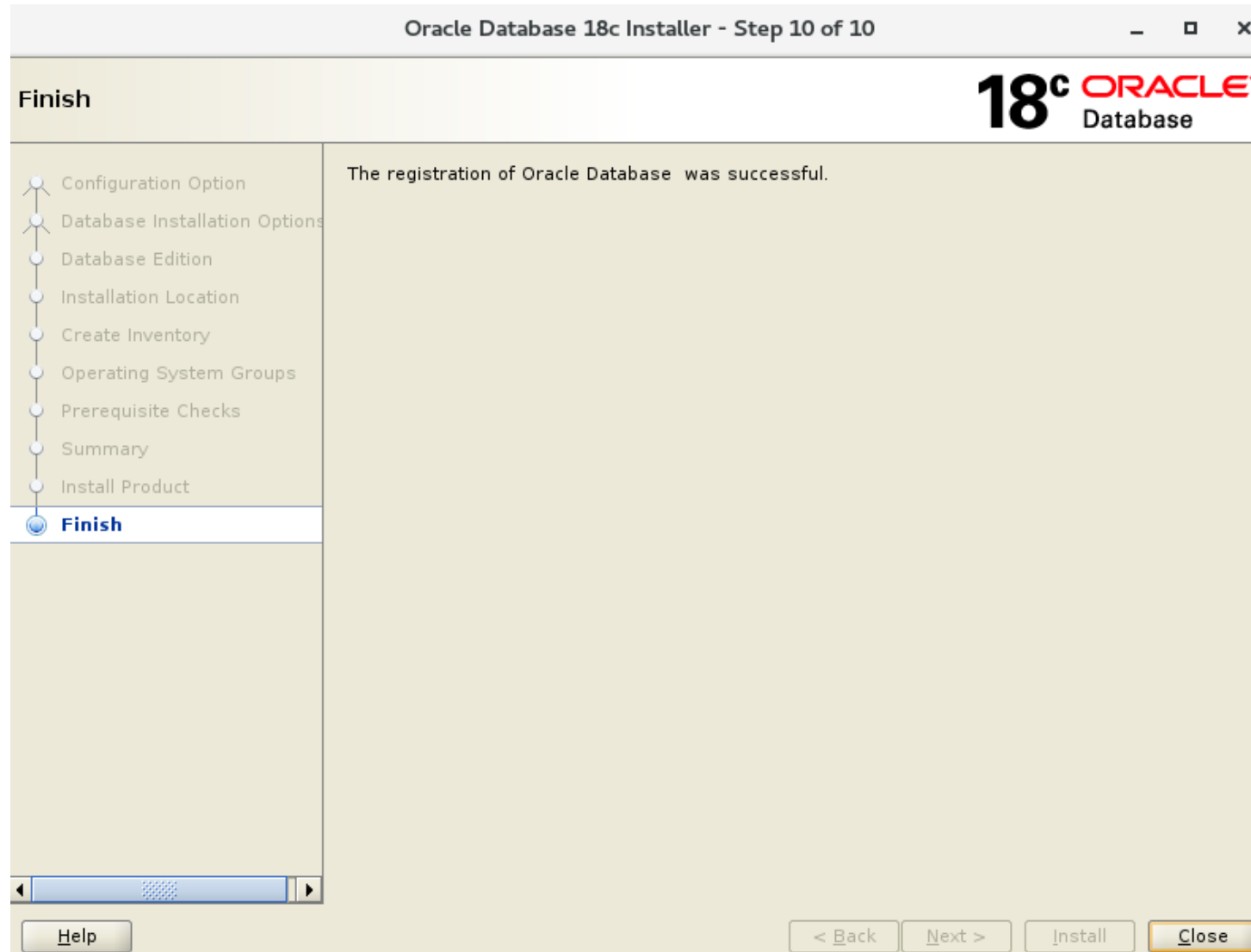
Copying dbhome to /usr/local/bin ...

Copying oraenv to /usr/local/bin ...

Copying coraenv to /usr/local/bin ...

Creating /etc/oratab file...

Pasos de Instalación



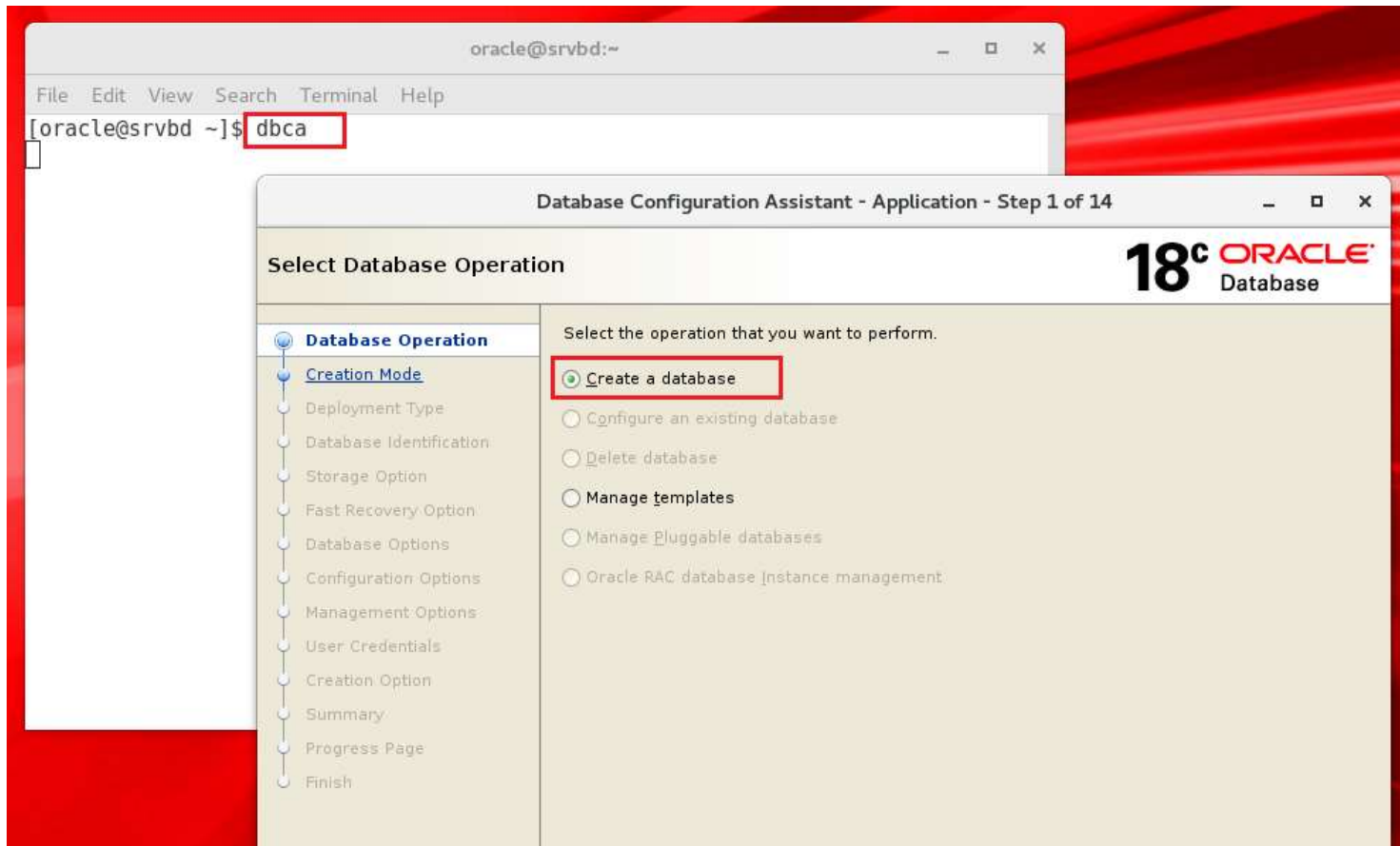
Post Instalación

La etapa de Post Instalación involucra definir las variables de ambiente las cuales son: ORACLE_BASE, ORACLE_HOME, LD_LIBRARY_PATH y PATH, ejemplo:

```
[oracle@srvbd ~]$ cat bd.env
export ORACLE_BASE=/u01/app/oracle
export ORACLE_HOME=$ORACLE_BASE/product/18.1.0/dbhome_1
export LD_LIBRARY_PATH=$ORACLE_HOME/lib
export PATH=$ORACLE_HOME/bin:$PATH
```


Creación de una Base de Datos NOCDB

Para crear una base de datos, lo realizamos a través del utilitario DBCA.



Pasos de Instalación

Database Configuration Assistant - Create a database - Step 2 of 14

Select Database Creation Mode

18^c ORACLE[®]
Database

Database Operation

Creation Mode

Deployment Type

Database Identification

Storage Option

Fast Recovery Option

Database Options

Configuration Options

Management Options

User Credentials

Creation Option

Summary

Progress Page

Finish

☐ Typical configuration

Global database name: PRD

Storage type: File System

Database files location: /u02/oradata Browse...

Fast Recovery Area (FRA): /u03/fra Browse...

Database character set: AL32UTF8 - Unicode UTF-8 Universal character set

Administrative password:

Confirm password:

☒ Create as Container database

Pluggable database name:

☒ Advanced configuration

Help < Back Next > Finish Cancel

Pasos de Instalación

Database Configuration Assistant - Create a database - Step 3 of 14

Select Database Deployment Type

18c ORACLE Database

Select the type of database you want to create.

Database type: Oracle Single Instance database

Configuration type: Admin Managed

Select a template for your database.

Templates that include datafiles contain pre-created databases. They allow you to create a new database quickly. Use templates without datafiles only when necessary, such as when you need to change attributes like block size that cannot be altered after database creation.

	Template name	Include datafiles	Details
<input type="radio"/>	Data Warehouse	Yes	View details
<input checked="" type="radio"/>	Custom Database	No	View details
<input type="radio"/>	General Purpose or Transaction Processing	Yes	View details

Template location: /u01/app/oracle/product/18.1.0/dbhome_1/assistants/dbca/templates [Change...](#)

Help < Back Next > Finish Cancel

Pasos de Instalación

Database Configuration Assistant - Create a database - Step 4 of 14

Specify Database Identification Details

18^c ORACLE[®] Database

Database Operation

Creation Mode

Deployment Type

Database Identification

Storage Option

Fast Recovery Option

Database Options

Configuration Options

Management Options

User Credentials

Creation Option

Summary

Progress Page

Finish

Provide a unique database identifier information. An Oracle database is uniquely identified by a Global database name, typically of the form "name.domain".

Global database name: PRD

SID: PRDSID

Service name:

☐ Create as Container database

A Container database can be used for consolidating multiple databases into a single database, and it enables database virtualization. A Container database (CDB) can have zero or more pluggable databases (PDB).

☒ Use local Undo tablespace for PDBs

☐ Create an empty Container database

☒ Create a Container database with one or more PDBs

Number of PDBs: 1

PDB name: pdb

Help

< Back

Next >

Finish

Cancel

Pasos de Instalación

Database Configuration Assistant - Create 'PRDSID' database - Step 5 of 14

Select Database Storage Option

18c ORACLE Database

- Database Operation
- Creation Mode
- Deployment Type
- Database Identification
- Storage Option**
- Fast Recovery Option
- Database Options
- Configuration Options
- Management Options
- User Credentials
- Creation Option
- Summary
- Progress Page
- Finish

☐ Use template file for database storage attributes
Storage type and location for database files will be picked up from the specified template (Custom Database).

☒ Use following for the database storage attributes
All the database files will be put at the specified location below. You can customize the name and location of each datafile in the subsequent screen.

Database files storage type: File System

Database files location: /u02/oradata

☐ Use Oracle-Managed Files (OMF)

Pasos de Instalación

Database Configuration Assistant - Create 'PRDSID' database - Step 6 of 14

Select Fast Recovery Option

18^c ORACLE Database

Choose the recovery options for the database.

☒ Specify Fast Recovery Area

Recovery files storage type: File System

Fast Recovery Area: /u03/fra [Browse...](#)

Fast Recovery Area size: 3000 MB

☐ Enable archiving [Edit archive mode parameters...](#)

[Help](#) [< Back](#) [Next >](#) [Finish](#) [Cancel](#)

Pasos de Instalación

Database Configuration Assistant - Create 'PRDSID' database - Step 7 of 14

Specify Network Configuration Details

18^c ORACLE Database

Database Operation
Creation Mode
Deployment Type
Database Identification
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User Credentials
Creation Option
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Finish

Listener selection

Listeners from current Oracle home are listed below. Specify the listener name and port to create a new listener in current Oracle home.

Name	Port	Oracle home	Status
------	------	-------------	--------

☒ Create a new listener

Listener name: LISTENER

Listener port: 1521

Oracle home: /u01/app/oracle/product/18.1.0/dbhome_1

Help < Back Next > Finish Cancel

Pasos de Instalación

Database Configuration Assistant - Create 'PRDSID' database - Step 8 of 15

18c ORACLE Database

Select Database Options

Database components

Select the standard database components you want to configure for use in your database. Oracle recommends that you always install these components in your database. Deselecting these components may cause you to no longer be able to choose some components on the subsequent page.

Select Component	Tablespace
<input checked="" type="checkbox"/> Oracle JVM	SYSTEM
<input checked="" type="checkbox"/> Oracle Text	SYS_AUX
<input checked="" type="checkbox"/> Oracle Multimedia	SYS_AUX
<input checked="" type="checkbox"/> Oracle OLAP	SYS_AUX
<input checked="" type="checkbox"/> Oracle Spatial	SYS_AUX
<input type="checkbox"/> Oracle Label Security	SYSTEM
<input type="checkbox"/> Oracle Application Express	SYS_AUX
<input type="checkbox"/> Oracle Database Vault	SYS_AUX

[Help](#) [< Back](#) [Next >](#) [Finish](#) [Cancel](#)

Pasos de Instalación

Database Configuration Assistant - Create 'PRDSID' database - Step 9 of 15

Specify Configuration Options

18c ORACLE Database

Database Operation
Creation Mode
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Database Options
Configuration Options
Management Options
User Credentials
Creation Option
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Progress Page
Finish

Memory Sizing Character sets Connection mode Sample schemas

☐ Use Automatic Shared Memory Management

SGA size: 950 MB 390 1267 3168

PGA Size: 317 MB

☐ Use Manual Shared Memory Management

Shared pool size: 0 MB

Buffer cache size: 0 MB

Java pool size: 0 MB

Large pool size: 0 MB

PGA size: 0 MB

Total memory for database 0 MB

☒ Use Automatic Memory Management

Memory target: 1267 MB 390 1267 3168 39%

Help < Back Next > Finish Cancel

Pasos de Instalación

Database Configuration Assistant - Create 'PRDSID' database - Step 9 of 15

Specify Configuration Options

18^c ORACLE Database

Database Operation
Creation Mode
Deployment Type
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Management Options
User Credentials
Creation Option
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Finish

Memory Sizing **Character sets** Connection mode Sample schemas

A block is the smallest unit of storage for allocation and for I/O. It cannot be changed once the database is created.

Block size: 8192 BYTES

Specify the maximum number of operating system user processes that can be simultaneously connected to this database. The value of this parameter includes the user processes and the Oracle background processes.

Processes: 300

Help < Back Next > Finish Cancel

Pasos de Instalación

Recomendación sobre el Tamaño de Bloque:

2 KB – 4KB: Base de datos altamente transaccionales.

16 KB – 32 KB: Base de datos OLAP (DW).

8 KB: Base de datos de comportamiento Mixto.

Debemos seleccionar el correcto tamaño del bloque al momento de crear la base de datos, luego este valor no podrá ser modificado e influye directamente en el desempeño de la base de datos.

Un bloque es la unidad más pequeña de almacenamiento para asignación y E/S. Una vez creada la base de datos, no se podrá cambiar.

Tamaño del Bloque: Bytes

Pasos de Instalación

Database Configuration Assistant - Create 'PRDSID' database - Step 9 of 15

Specify Configuration Options

18^c ORACLE Database

Database Operation
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Finish

Memory Sizing **Character sets** Connection mode Sample schemas

The database character set determines how character data is stored in the database.

☒ Use Unicode (AL32UTF8)
Setting character set to Unicode (AL32UTF8) enables you to store multiple language groups.

☐ Use OS character set (WE8MSWIN1252)
Character set is based on the language setting of this operating system.

☐ Choose from the list of character sets

Database character set: AL32UTF8 - Unicode UTF-8 Universal character set

☒ Show recommended character sets only

National character set: AL16UTF16 - Unicode UTF-16 Universal character set

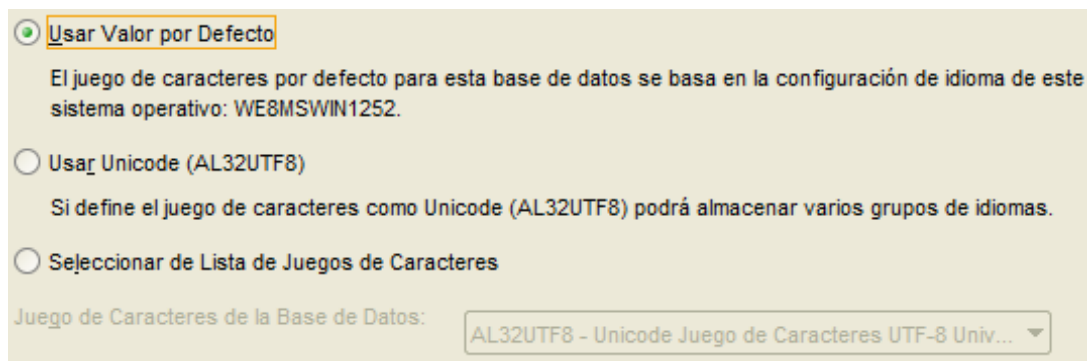
Default language: American

Default territory: United States

Help < Back Next > Finish Cancel

Pasos de Instalación

Es importante que seleccione el correcto juego de caracteres que tendrá nuestra base de datos ya que ellos definirán los caracteres que podrán ser almacenados en los tipos de datos: **CHAR/VARCHAR/CLOB**.



A screenshot of a database installation window. It features three radio button options for character set selection. The first option, 'Usar Valor por Defecto', is selected and highlighted with a yellow box. Below it, a text box explains that the default character set is based on the system's language configuration (WE8MSWIN1252). The second option is 'Usar Unicode (AL32UTF8)', with a note that it allows storing multiple languages. The third option is 'Seleccionar de Lista de Juegos de Caracteres'. At the bottom, a label 'Juego de Caracteres de la Base de Datos:' is followed by a dropdown menu currently showing 'AL32UTF8 - Unicode Juego de Caracteres UTF-8 Univ...'.

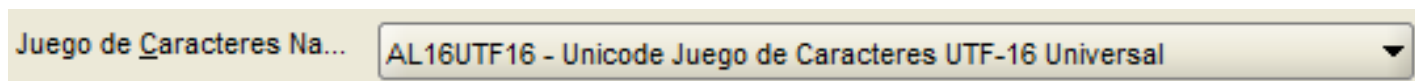
☒ Usar Valor por Defecto
El juego de caracteres por defecto para esta base de datos se basa en la configuración de idioma de este sistema operativo: WE8MSWIN1252.

☐ Usar Unicode (AL32UTF8)
Si define el juego de caracteres como Unicode (AL32UTF8) podrá almacenar varios grupos de idiomas.

☐ Seleccionar de Lista de Juegos de Caracteres

Juego de Caracteres de la Base de Datos: AL32UTF8 - Unicode Juego de Caracteres UTF-8 Univ...

Debe seleccionar el correcto juego de caracteres Nacionales que tendrá nuestra base de datos ya que ellos definirán los caracteres que podrán ser almacenados en los tipos de datos: **NCHAR/NVARCHAR/NCLOB**.



A screenshot of a database installation window showing the 'Juego de Caracteres Na...' (National Character Set) dropdown menu. The selected option is 'AL16UTF16 - Unicode Juego de Caracteres UTF-16 Universal'.

Juego de Caracteres Na... AL16UTF16 - Unicode Juego de Caracteres UTF-16 Universal

Pasos de Instalación

Database Configuration Assistant - Create 'PRDSID' database - Step 9 of 15

Specify Configuration Options

18^c ORACLE[®] Database

Memory Sizing Character sets **Connection mode** Sample schemas

☒ **Dedicated server mode**

The database will allocate a dedicated resource for each client connection in this mode. Use this mode when the number of total client connections is expected to be small or when clients will be making persistent, long-running requests to the database.

☐ Shared server mode

The database will use a shared pool of allocated resources for all client connections in this mode. Use this mode when a large number of users need to connect to the database simultaneously while efficiently utilizing system resources.

Specify the number of Shared Servers, which will be the number of processes that will be created when the instance is started.

Shared servers:

Help < Back Next > Finish Cancel

Database Operation
Creation Mode
Deployment Type
Database Identification
Storage Option
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Pasos de Instalación

Database Configuration Assistant - Create 'PRDSID' database - Step 9 of 15

Specify Configuration Options

18^c ORACLE[®] Database

Database Operation
Creation Mode
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User Credentials
Creation Option
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Progress Page
Finish

Memory Sizing Character sets Connection mode **Sample schemas**

Installing sample schema configures the Human Resources schema. The contents are stored under the SYSAUX tablespace.

☒ Add sample schemas to the database

Help < Back Next > Finish Cancel

Pasos de Instalación

Database Configuration Assistant - Create 'PRDSID' database - Step 10 of 15

Specify Management Options **18c ORACLE Database**

Specify the management options for the database.

☒ **Configure Enterprise Manager (EM) database express**

EM database express port:

☐ **Register with Enterprise Manager (EM) cloud control**

QMS host:

QMS port:

EM admin username:

EM admin password:

[Help](#) [< Back](#) [Next >](#) [Finish](#) [Cancel](#)

Pasos de Instalación

Database Configuration Assistant - Create 'PRDSID' database - Step 11 of 15

Specify Database User Credentials

18^c ORACLE[®] Database

You must specify passwords for the following user accounts in the new database for security reasons.

☐ Use different administrative passwords

	Password	Confirm password
<u>S</u> YS	<input type="password"/>	<input type="password"/>
<u>S</u> YSTEM	<input type="password"/>	<input type="password"/>

☒ Use the same administrative password for all accounts

Password: Confirm password:

Management Options

User Credentials

[Creation Option](#)

Summary


Progress Page

Finish

Help

< Back Next > Finish Cancel

Messages:

 Password: [DBT-06208] The 'ADMIN' password entered does not conform to the Oracle recommended standards.

Pasos de Instalación

Database Configuration Assistant - Create 'PRDSID' database - Step 12 of 15

Select Database Creation Option

18c ORACLE Database

Select the database creation options.

☒ Create database

Specify the SQL scripts you want to run after the database is created. The scripts are run in the order listed below.

Post DB creation scripts:

☐ Save as a database template

Template name:

Template location:

Description:

☐ Generate database creation scripts

Destination directory:

Following advanced configuration options can be used to configure initialization parameters and customize database storage locations.

Database Operation

Creation Mode

Deployment Type

Database Identification

Storage Option

Fast Recovery Option

Network Configuration

Database Options

Configuration Options

Management Options

User Credentials

Creation Option

Summary

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Finish

Pasos de Instalación

Database Configuration Assistant - Create 'PRDSID' database - Step 13 of 15

Summary

18c ORACLE Database

[Database Operation](#)
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[Database Options](#)
[Configuration Options](#)
[Management Options](#)
[User Credentials](#)
[Creation Option](#)
Summary
Progress Page
Finish

Database Configuration Assistant

- Global Settings**
 - Global database name: PRD
 - Configuration type: Oracle Single Instance database
 - SID: PRDSID
 - Create as Container database: No
 - Database Files Storage Type: File System
 - Memory Configuration Type: Automatic Memory Management
 - Template name: New Database
- Database components**
 - Oracle JVM: Yes
 - Oracle Text: Yes
 - Oracle Multimedia: Yes
 - Oracle OLAP: Yes
 - Oracle Spatial: Yes
 - Sample Schemas: Yes
- Initialization Parameters**
 - audit_file_dest: {ORACLE_BASE}/admin/{DB_UNIQUE_NAME}/adump
 - audit_trail: db
 - compatible: 18.0.0
 - control files: ("/u02/oradata/{DB_UNIQUE_NAME}/control01.ctl", "/u03/fra/{DB_UNIQUE_NAME}/control02.ctl")

Save Response File...

Help < Back Next > Finish Cancel

Pasos de Instalación

Database Configuration Assistant - Create 'PRDSID' database - Step 14 of 15

Progress Page **18^c ORACLE[®] Database**

Progress

6%

Creating and starting Oracle instance : In Progress

Status

➔ DB Creation	In Progress
✓ • Prepare for db operation	Succeeded
➔ • Creating and starting Oracle instance	In Progress
• Creating database files	Pending
• Creating data dictionary views	Pending
• Oracle JVM	Pending
• Oracle Text	Pending
• Oracle Multimedia	Pending

[Details](#) [Revert All](#) [Revert](#) [Retry](#) [Skip](#)

DBCA Log Location:
/u01/app/oracle/cfgtoollogs/dbca/PRD/trace.log_2020-04-08_05-50-32PM

[Help](#) [< Back](#) [Next >](#) [Finish](#) [Cancel](#)

Preguntas de Refuerzo

1. ¿Qué distribuciones de Linux son certificadas para instalar Oracle Database 18c?
2. ¿Cuáles son los requerimientos mínimo de hardware para realizar una instalación?
3. ¿Cuál es la razón de ser del grupo de sistema operativo oinstall y dba?
4. ¿Cuál es la diferencia entre ORACLE_BASE y ORACLE_HOME?
5. ¿Qué es una configuración Single Instance?
6. ¿Cuál es la diferencia entre CHARACTER SET y NATIONAL CHARACTER SET?
7. Si necesitamos crear una base de datos para propósito de construir un Data Warehouse, ¿Qué tamaño de Data Block usted escogería?
8. ¿Podría existir configuraciones de múltiples instancias asociadas a una capa física?