

**DBCA**

# PLÁNOVÁNÍ DATABÁZE

- Základní požadavky na DB:
  - Hlavně fyzické nároky:
    - Kolik a jak velkých disků budu potřebovat
    - Jaká typ úložiště?
    - Kolik bude datových souborů?
    - Jaký způsobem (hlavně jak rychle) budou data přibývat?
    - Kolik tablespaces?
    - Jaké budou datové typy?
    - Jsou nějaké další specifické požadavky?
  - Celková struktura databáze
  - Strategie zálohování



# PŘÍKLADY DATABÁZÍ

- Transakční zpracování:
  - Online transaction processing (OLTP) systémy, (účetní systémy, IS/STAG, databáze mobilních operátorů ...)
  - ...
- „Něco mezi“:
  - Kombinace OLTP a Warehouse
- Data warehouse:
  - Výzkumné a marketingové systémy
  - Daně
  - ...

# KÓDOVÁNÍ

- Oracle podporuje celou škálu mezinárodních i národních kódování:
  - Jak 7-bit
  - Tak i 8-bit
  - I multibytová kódování (nejznámější je asi Unicode)
- Kódování (Charset) je nutno vybrat správně už při vytváření databáze. Musí umožnit ukládání všech požadovaných dat. Není nemožné jej změnit, ale je to velmi náročné
- Dnes se doporučuje Unicode, protože je univerzální

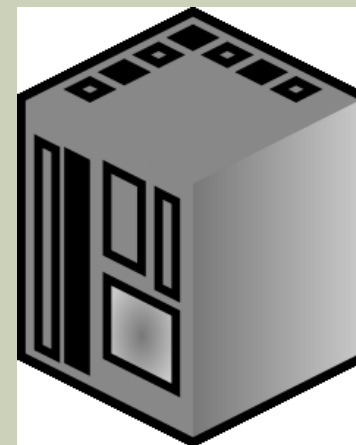
# JAK TO S KÓDOVÁNÍM FUNGUJE?

- Oracle Net porovná nastavení proměnné prostředí `NLS_LANG` na klientu a na serveru
- v případě potřeby udělá automatickou konverzi

**Oracle Net  
(automatická  
konverze)**



`NLS_LANG=CZECH_CZECH REPUBLIC.EE8MSWIN1250`



**Server**

`NLS_LANG=AMERICAN_AMERICA.AL32UTF8`

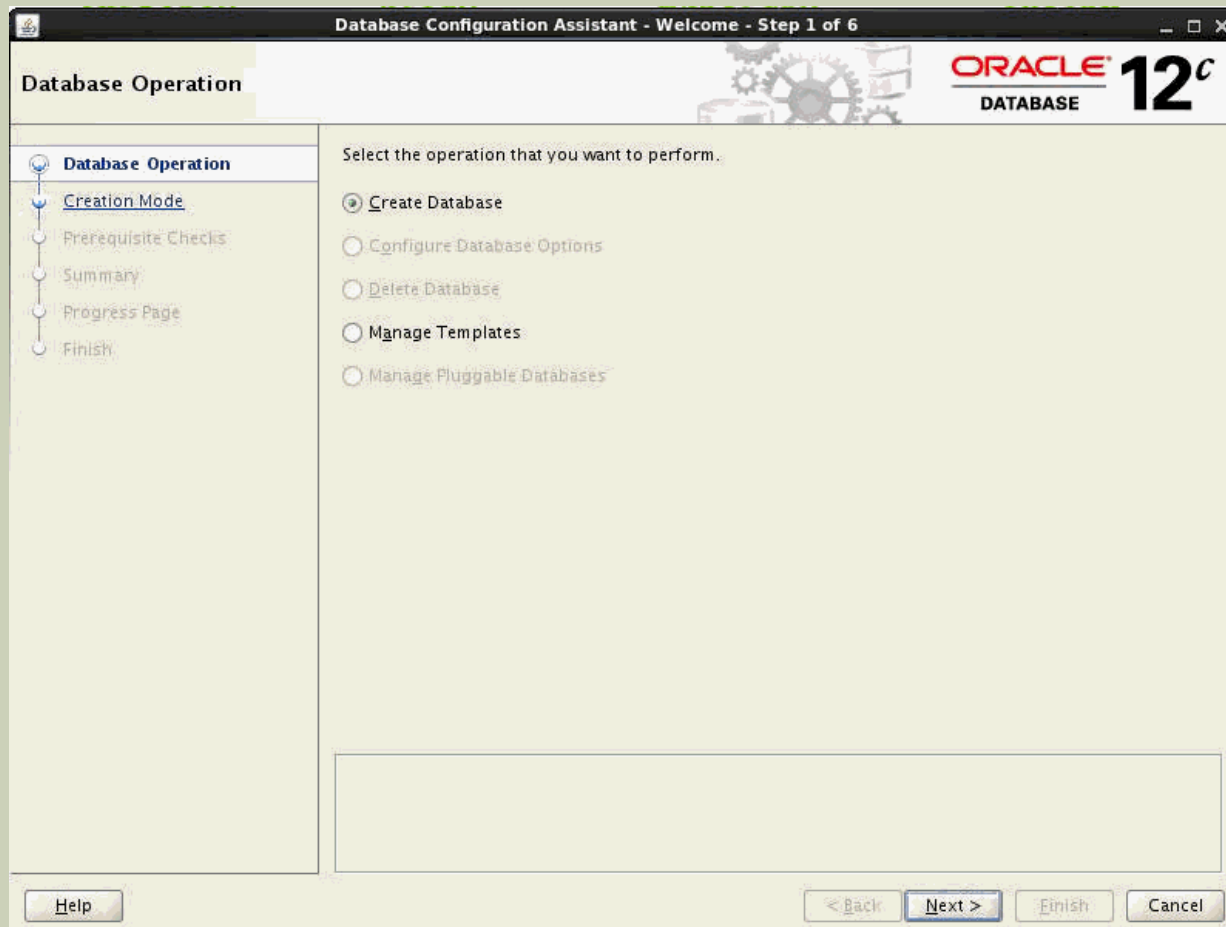
# DATABASE CONFIGURATION ASSISTANT (DBCA)

- Grafický nástroj pro vytvoření databáze
- Je možné si zde vytvořit šablony
- Databáze se vytvoří přímo za běhu DBCA nebo se vytvoří pouze skripty, které se spustí následně ručně
- Nelze nakonfigurovat úplně vše, pro speciální případy si vytvoříme skripty, které pak budeme editovat

# DBCA



# DBCA





# DBCA

Database Configuration Assistant - Create Database - Step 2 of 14

**Creation Mode**

**ORACLE 12c DATABASE**

Database Operation

**Creation Mode**

Database Template

Database Identification

Management Options

Database Credentials

Storage Locations

Database Options

Initialization Parameters

Creation Options

Prerequisite Checks

Summary

Progress Page

Finish

☐ Create a database with default configuration

Global Database Name:

Storage Type:

Database Files Location:

Fast Recovery Area:

Database Character Set:

Administrative Password:

Confirm Password:

☒ Create As Container Database

Pluggable Database Name:

☒ **Advanced Mode**

# DBCA

Database Configuration Assistant - Create Database - Step 3 of 14

**Database Template**

ORACLE 12c DATABASE

Database Operation  
Creation Mode  
**Database Template**  
Database Identification  
Management Options  
Database Credentials  
Storage Locations  
Database Options  
Initialization Parameters  
Creation Options  
Prerequisite Checks  
Summary  
Progress Page  
Finish

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

Select a template for your database.

Select	Template	Includes Datafiles
<input checked="" type="radio"/>	General Purpose or Transaction Processing	Yes
<input type="radio"/>	Custom Database	No
<input type="radio"/>	Data Warehouse	Yes

Show Details...

Help < Back Next > Finish Cancel

# DBCA

Database Configuration Assistant - Create Database - Step 4 of 14

**Database Identification**

Database Operation  
Creation Mode  
Database Template  
**Database Identification**  
Management Options  
Database Credentials  
Storage Locations  
Database Options  
Initialization Parameters  
Creation Options  
Prerequisite Checks  
Summary  
Progress Page  
Finish

Provide the identifier information required to access the database uniquely. An Oracle database is uniquely identified by a Global database name, typically of the form "name.domain". Additionally, a database is referenced by at least one Oracle instance which is uniquely identified from any other instance on this system by an Oracle system identifier (SID).

Global Database Name:

SID:

☒ Create As Container Database

Creates a database container for consolidating multiple databases into a single database and enables database virtualization. A container database (CDB) can have zero or more pluggable databases (PDB).

☐ Create an Empty Container Database

☒ Create a Container Database with one or more PDBs

Number of PDBs:

PDB Name:

# DBCA

Database Configuration Assistant - Create Database - Step 5 of 14

**Management Options**

Specify the management options for the database.

☒ **Configure Enterprise Manager (EM) Database Express**

EM Database Express Port: 5500

☐ **Register with Enterprise Manager (EM) Cloud Control**

OMS Host:

OMS Port:

EM Admin Username:

EM Admin Password:

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

# DBCA

Database Configuration Assistant - Create Database - Step 6 of 15

**Database Credentials**

Database Operation  
Creation Mode  
Database Template  
Database Identification  
Management Options  
**Database Credentials**  
Network Configuration  
Storage Locations  
Database Options  
Initialization Parameters  
Creation Options  
Prerequisite Checks  
Summary  
Progress Page  
Finish

For security reasons, you must specify passwords for the following user accounts in the new database.

☐ Use Different Administrative Passwords

User Name	Password	Confirm Password
SYS		
SYSTEM		
PDBADMIN		

☒ Use the Same Administrative Password for All Accounts

Password:

Confirm Password:

# DBCA

Database Configuration Assistant - Create Database - Step 7 of 15

ORACLE 12c DATABASE

## Network Configuration

- Database Operation
- Creation Mode
- Database Template
- Database Identification
- Management Options
- Database Credentials
- Network Configuration**
- Storage Locations
- Database Options
- Initialization Parameters
- Creation Options
- Prerequisite Checks
- Summary
- Progress Page
- Finish

### Listener Selection

Listeners from current Oracle home are listed below. To create a new listener in current Oracle home, specify the listener name and port.

Select Listeners.

Select	Name	Port	Oracle Home	Status
<input checked="" type="checkbox"/>	LISTENER	1521	/u01/app/oracle/product/12.1.0/dbhome_1	Up

☐ Create a New Listener

Listener Name:

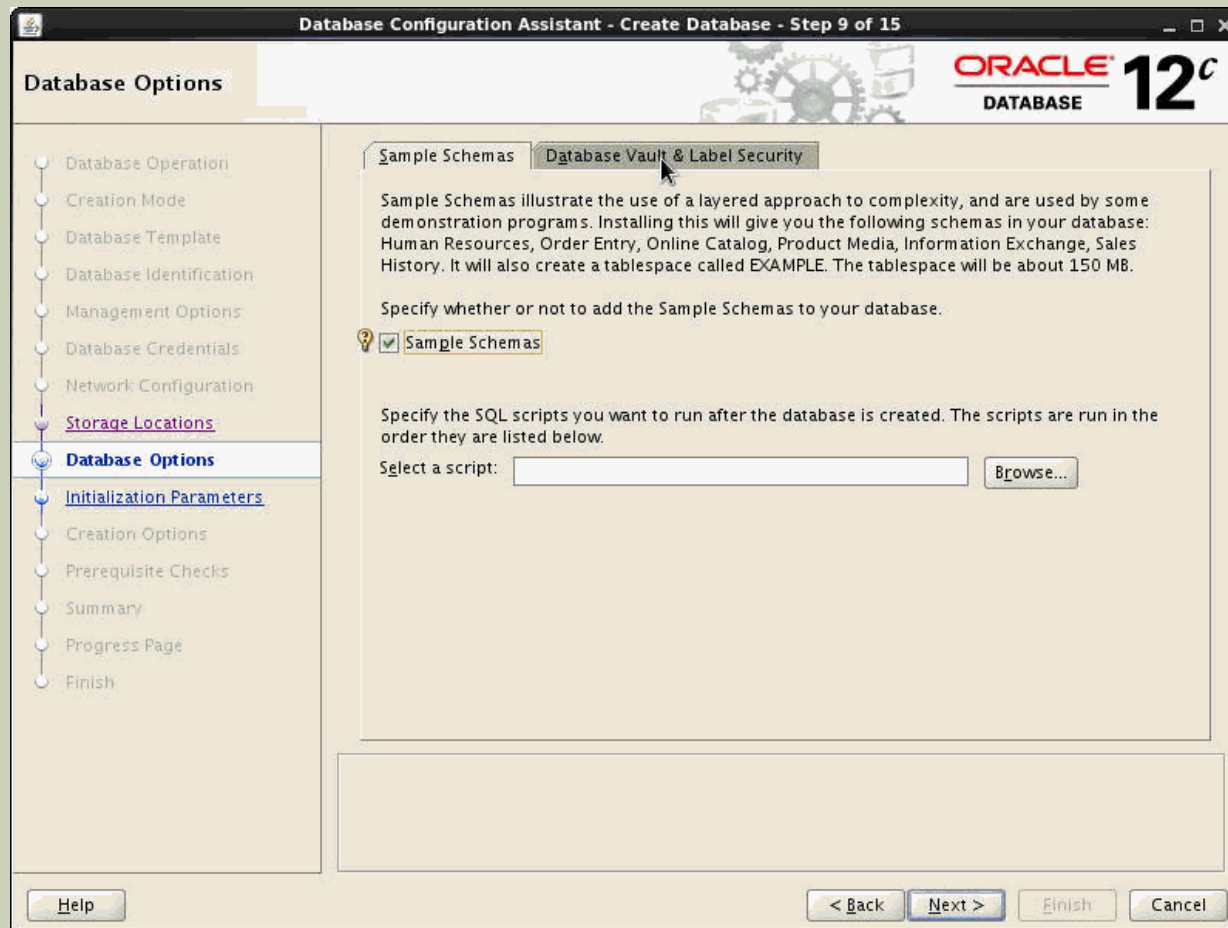
Listener Port:

Target Oracle Home: /u01/app/oracle/product/12.1.0/dbhome\_1

Help

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# DBCA



# DBCA

Database Configuration Assistant - Create Database - Step 8 of 15

ORACLE 12c DATABASE

## Storage Locations

- Database Operation
- Creation Mode
- Database Template
- Database Identification
- Management Options
- Database Credentials
- Network Configuration
- Storage Locations**
- Database Options
- Initialization Parameters
- Creation Options
- Prerequisite Checks
- Summary
- Progress Page
- Finish

Database files Storage Type: File System

☒ Use Database File Locations from Template

☐ Use Common Location for All Database Files

File Location:  Browse...

☐ Use Oracle-Managed Files: Multiplex Redo Logs and Control Files...

Choose the recovery options for the database.

Recovery files Storage Type: File System

☒ Specify Fast Recovery Area

Fast Recovery Area: {ORACLE\_BASE}/fast\_recovery\_area Browse...

Fast Recovery Area Size: 4560 MB

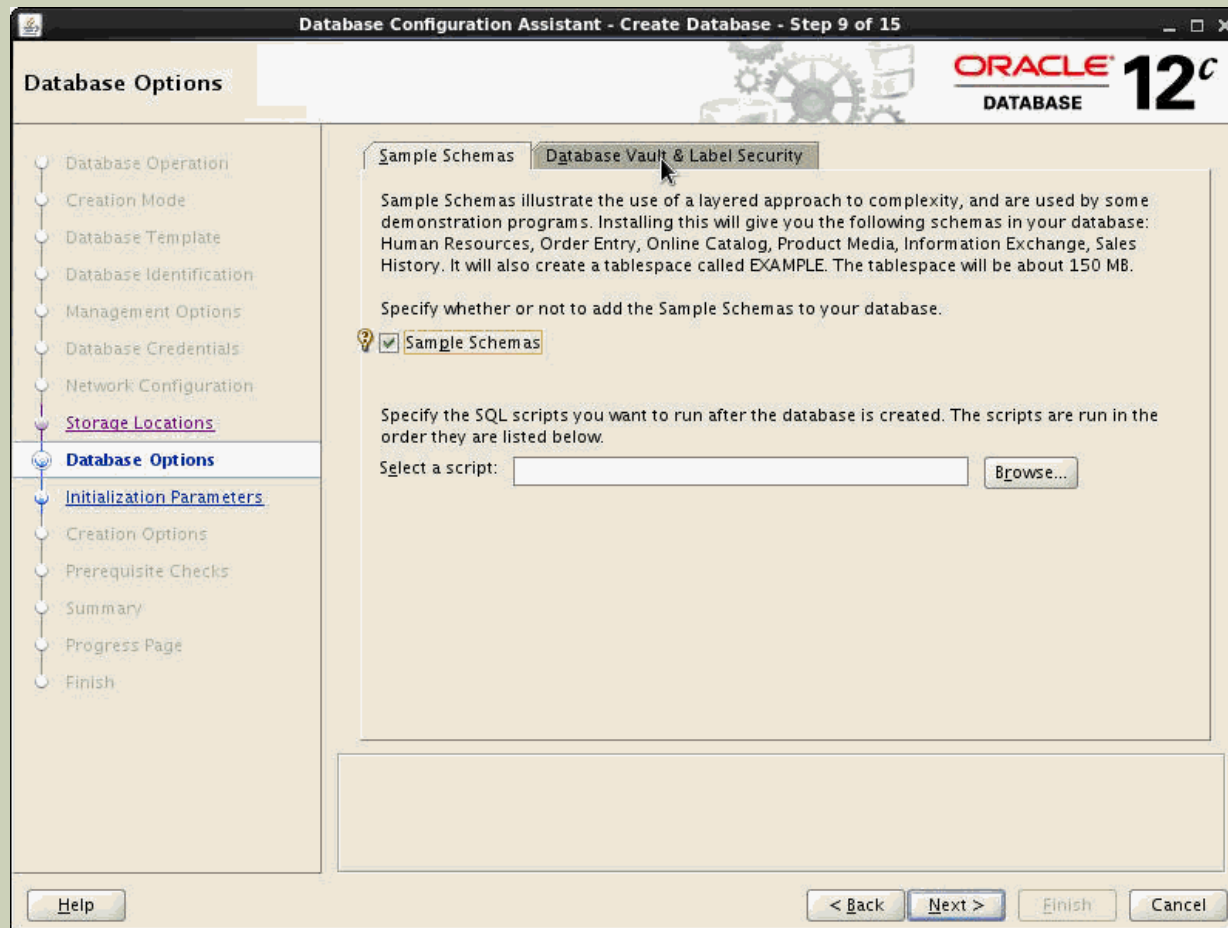
☐ Enable Archiving Edit Archive Mode Parameters

File Location Variables...

Help < Back Next > Finish Cancel



# DBCA



# DBCA

Database Configuration Assistant - Create Database - Step 9 of 15

Database Options

Database Operation  
Creation Mode  
Database Template  
Database Identification  
Management Options  
Database Credentials  
Network Configuration  
Storage Locations  
**Database Options**  
Initialization Parameters  
Creation Options  
Prerequisite Checks  
Summary  
Progress Page  
Finish

Sample Schemas Database Vault & Label Security

Specify the Database Vault Owner and Password.

☐ **Configure Database Vault**

Database Vault Owner:

Password:  Confirm Password:

☐ Create a Separate Account Manager

Account Manager:

Password:  Confirm Password:

Select Label Security configuration options.

☐ **Configure Label Security**

☐ Configure with OID

Help < Back Next > Finish Cancel

# DBCA

Database Configuration Assistant - Create Database - Step 10 of 15

ORACLE 12c DATABASE

## Initialization Parameters

- Database Operation
- Creation Mode
- Database Template
- Database Identification
- Management Options
- Database Credentials
- Network Configuration
- Storage Locations
- Database Options
- Initialization Parameters**
- Creation Options
- Prerequisite Checks
- Summary
- Progress Page
- Finish

Memory Sizing Character Sets Connection Mode

☒ Typical Settings

Memory Size (SGA and PGA): 3080 MB

Percentage: 40 %

☒ Use Automatic Memory Management

Show Memory Distribution...

☐ Custom Settings

Memory Management: Automatic Shared Memory Management

SGA Size: 2,310 M Bytes

PGA Size: 770 M Bytes

Total Memory for Oracle: 3080 MB

All Initialization Parameters...

Help

< Back Next > Finish Cancel

# DBCA

Database Configuration Assistant - Create Database - Step 10 of 15

ORACLE 12c DATABASE

## Initialization Parameters

- Database Operation
- Creation Mode
- Database Template
- Database Identification
- Management Options
- Database Credentials
- Network Configuration
- Storage Locations
- Database Options
- Initialization Parameters**
- Creation Options
- Prerequisite Checks
- Summary
- Progress Page
- Finish

Memory Sizing **Character Sets** Connection Mode

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

All Initialization Parameters...

Help < Back Next > Finish Cancel

# DBCA

Database Configuration Assistant - Create Database - Step 10 of 15

ORACLE 12c DATABASE

## Initialization Parameters

- Database Operation
- Creation Mode
- Database Template
- Database Identification
- Management Options
- Database Credentials
- Network Configuration
- Storage Locations
- Database Options
- Initialization Parameters**
- Creation Options
- Prerequisite Checks
- Summary
- Progress Page
- Finish

Memory Sizing Character Sets **Connection Mode**

☐ Use the default.  
The default character set for this database is based on the language setting of this operating system: WE8MSWIN1252.

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

☐ Choose from the list of character sets

Database Character Set:

☒ Show recommended character sets only.

National Character Set:

Default Language:

Default Territory:

[All Initialization Parameters...](#)

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

# DBCA

Database Configuration Assistant - Create Database - Step 10 of 15

ORACLE 12c DATABASE

## Initialization Parameters

- Database Operation
- Creation Mode
- Database Template
- Database Identification
- Management Options
- Database Credentials
- Network Configuration
- Storage Locations
- Database Options
- Initialization Parameters**
- Creation Options
- Prerequisite Checks
- Summary
- Progress Page
- Finish

Memory Sizing Character Sets Connection Mode

Select the mode in which you want your database to operate by default:

☒ **Dedicated Server Mode**

For each client connection the database will allocate a resource dedicated to serving only that client. 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**

Several client connections share a database-allocated pool of resources. Use this mode when a large number of users need to connect to the database simultaneously while efficiently utilizing system resources. The Oracle shared server feature will be enabled.

Shared Servers specifies the number of server processes that you want to create when an instance is started up.

Shared Server:

All Initialization Parameters...

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# DBCA

Database Configuration Assistant - Create Database - Step 11 of 15

ORACLE 12c DATABASE

## Creation Options

- Database Operation
- Creation Mode
- Database Template
- Database Identification
- Management Options
- Database Credentials
- Network Configuration
- Storage Locations
- Database Options
- Initialization Parameters
- Creation Options**
- Prerequisite Checks
- Summary
- Progress Page
- Finish

Select the database creation options.

☒ Create Database

☐ Save as a Database Template

Name:

Description:

☐ Generate Database Creation Scripts

Destination Directory:

# DBCA

Database Configuration Assistant - Create Database - Step 13 of 15

Summary

Database Configuration Assistant: Summary

## Create Database – Summary

**Database Configuration Summary**

**Global Database Name:** orcl.example.com  
**Database Configuration Type:** Single Instance  
**SID:** orcl  
**Create As Container Database:** Yes  
**Number of Pluggable Databases:** 1  
**Sample Schema PDB:** pdborcl  
**Storage Type:** File System  
**Memory Configuration Type:** Automatic Memory Management  
**Template Name:** General Purpose or Transaction Processing

**Database Configuration Details**

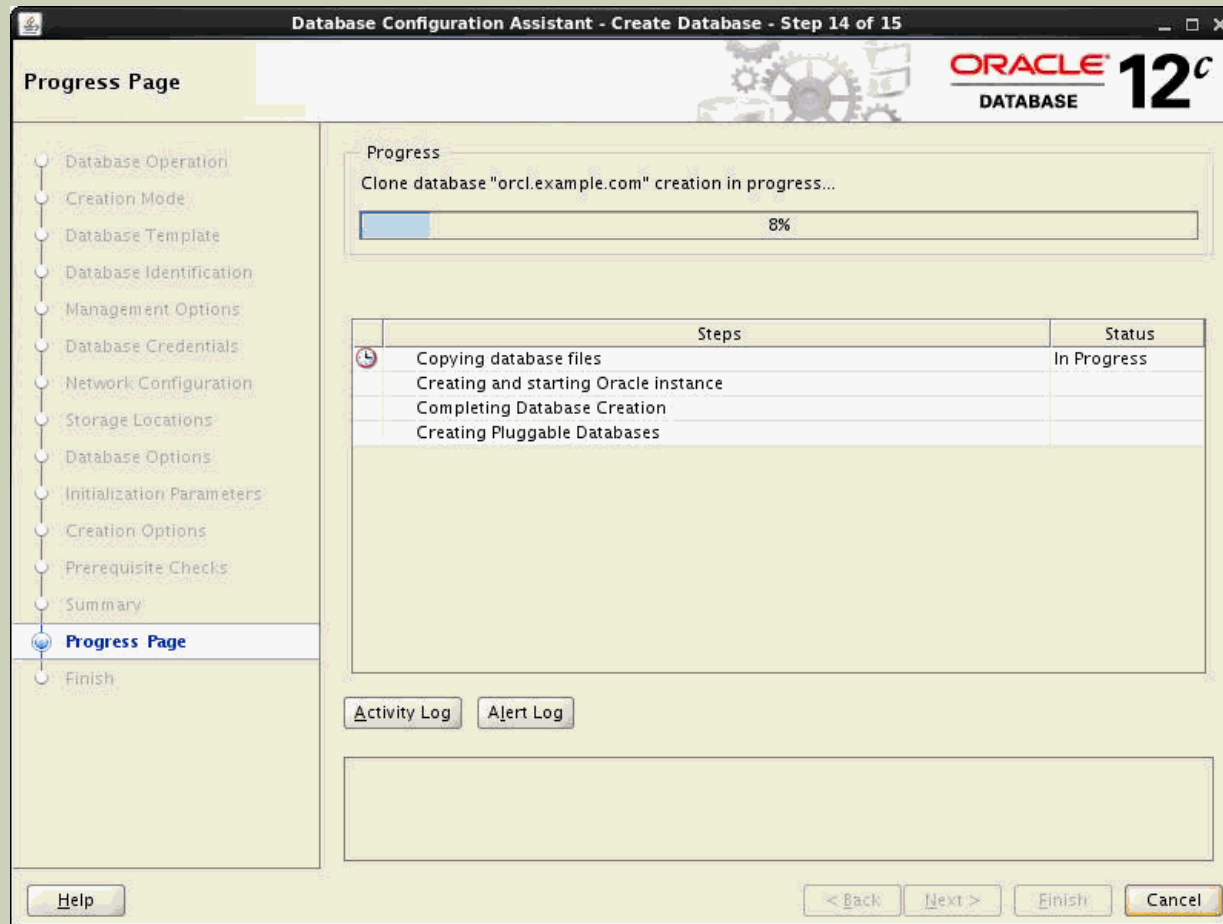
**Database Components**

Component	Selected
Oracle JVM	true
Oracle Text	true
Oracle Multimedia	true
Oracle OLAP	true

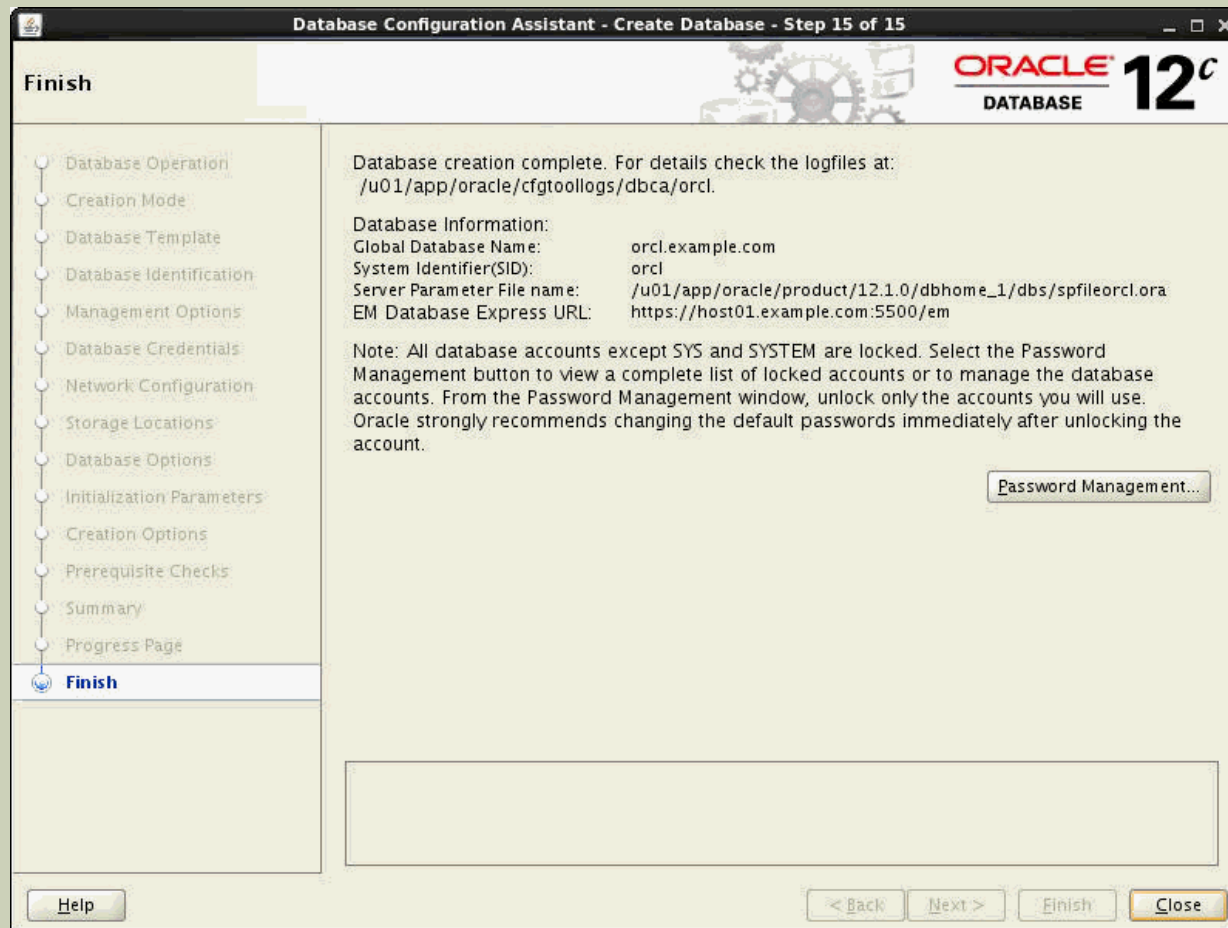
Help < Back Next > Finish Cancel



# DBCA



# DBCA



# VYTVÁŘENÍ DB

- Minimální inicializační soubor:

- `control_files='/path_to_controlfile/control01.ctl'`
- `db_name= 'mydb'`

```
SQL>startup nomount
```

# SKRIPTY PRO VYTVOŘENÍ DB

```
CREATE DATABASE mydb
  USER SYS IDENTIFIED BY sys_password
  USER SYSTEM IDENTIFIED BY system_password
  LOGFILE
    GROUP 1 ('/u01/app/oracle/oradata/mydb/redo01.log') SIZE 100M,
    GROUP 2 ('/u01/app/oracle/oradata/mydb/redo02.log') SIZE 100M,
    GROUP 3 ('/u01/app/oracle/oradata/mydb/redo03.log') SIZE 100M
  CHARACTER SET EE8ISO8859P2
  NATIONAL CHARACTER SET AL16UTF16
  DATAFILE '/u01/app/oracle/oradata/mydb/system01.dbf' SIZE 325M
    AUTOEXTEND ON MAXSIZE UNLIMITED
  SYSAUX DATAFILE '/u01/app/oracle/oradata/mydb/sysaux01.dbf'
    SIZE 300M AUTOEXTEND ON MAXSIZE UNLIMITED
  DEFAULT TABLESPACE users
    DATAFILE '/u01/app/oracle/oradata/mydb/users01.dbf'
      SIZE 100M AUTOEXTEND ON MAXSIZE UNLIMITED
  DEFAULT TEMPORARY TABLESPACE tempts1
    TEMPFILE '/u01/app/oracle/oradata/mydb/temp01.dbf'
      SIZE 20M
  UNDO TABLESPACE undotbs
    DATAFILE '/u01/app/oracle/oradata/mydb/undotbs01.dbf'
      SIZE 100M AUTOEXTEND ON MAXSIZE UNLIMITED;
```

# SKRIPTY PRO VYTVOŘENÍ DB

- Minimalistické skripty:

- Vyžadují nastavené inicializační parametry:

- db\_create\_file\_dest
- db\_create\_online\_log\_dest\_1

```
SQL>create database mydb  
character set EE8ISO8859P2  
undo tablespace undotbs1  
default temporary tablespace temp;
```

```
SQL>create database mydb;
```

# SKRIPTY PRO VYTVOŘENÍ DB

- Příkaz `create database` vytvoří pouze fyzické soubory, vlastní „logiku“ je potřeba do nich nahrát následujícími skripty:

```
SQL>@$ORACLE_HOME/rdbms/admin/catalog.sql
```

```
SQL>@$ORACLE_HOME/rdbms/admin/catproc.sql
```

# INICIALIZAČNÍ SOUBOR

- Jmenuje se vždy `init<jméno databáze>.ora` (např. tedy `initadm.ora`) nebo `spfile<jméno databáze>.ora`
- `Init.ora` je textový editovatelný soubor, databáze jej neumí modifikovat za běhu
- `Spfile.ora` je „čitelný“ soubor, který umí databáze modifikovat za běhu
- Konverze se provádí SQL příkazem

```
create spfile [spfileadm.ora] from pfile  
[initadm.ora]
```

**resp.**

```
create pfile [spfileadm.ora] from spfile  
[initadm.ora]
```

# INICIALIZAČNÍ SOUBOR

- Je VŽDY! umístěn v <ORACLE\_HOME>/dbs
- Zde též vždy najdeme ukázkový init.ora soubor
- Všechny inicializační parametry k dané verzi vždy najdeme v *Oracle Database Reference*
- Některé nelze modifikovat za běhu databáze vůbec, některé lze modifikovat na úrovni celé db

```
alter system set parname=value
```

**některé lze modifikovat až na úrovni sezení**

```
alter session set parname=value
```

- Dnes je možné si parametry vyladit přímo v paměti a pak použít příkaz:
- `create (s)pfile [jmeno_souboru] from memory`



# ZÁKLADNÍ INICIALIZAČNÍ PARAMETRY

- COMPATIBLE – *jaké fce a vlastnosti jsou dostupné*
- CONTROL\_FILES – *kde jsou řídicí soubory*
- DB\_BLOCK\_SIZE – *velikost datového bloku*
- DB\_CREATE\_FILE\_DEST – *umístění datových souborů*
- DB\_CREATE\_ONLINE\_LOG\_DEST\_n – *umístění online redologů*
- DB\_NAME – *jméno databáze*
- DB\_RECOVERY\_FILE\_DEST – *adresář pro zálohování*
- DB\_RECOVERY\_FILE\_DEST\_SIZE – *limit pro velikost záloh*
- DIAGNOSTIC\_DEST – *umístění alert logu a trace files*
- LOG\_ARCHIVE\_DEST\_n – *umístění archivních redologů*
- NLS\_LANGUAGE – *jazyk (CZECH)*
- NLS\_TERRITORY – *země (CZECH REPUBLIC)*
- NLS\_SORT – *řazení záznamů (XCZECH)*
- PGA\_AGGREGATE\_TARGET a SGA\_TARGET nebo MEMORY\_TARGET – *nastavení limitu paměti*
- UNDO\_TABLESPACE – *tablespace pro rollback*

# KVÍZ

- A je tu první plusový bod pro jednoho z vás ...

**DOTAZY?**