

# Oracle 19c Server auf Oracle Linux 7

## Vorbemerkung

Oracle Linux (OL, früher bekannt als Oracle Enterprise Linux) ist eine Linux-Distribution, die von Oracle gepackt und frei vertrieben wird. Es wurde aus dem RHEL-Quellcode (Red Hat Enterprise Linux) kompiliert und ersetzt das Red Hat-Branding durch das von Oracle. Benutzer können Oracle Linux kostenlos über den E-Delivery-Service von Oracle (Oracle Software Delivery Cloud) oder von verschiedenen Mirror-Sites herunterladen und kostenlos bereitstellen und verteilen.

Oracle Database 19c ist die langfristige Support-Version der Oracle Database 12c- und 18c-Produktfamilie und bietet Kunden Premier- und Extended Support bis März 2023 bzw. März 2026. In diesem Tutorial wird die Enterprise Edition installiert, aber auch die Standard Edition funktioniert.

In diesem Tutorial werden Linux und Oracle in einer virtuellen Maschine unter Proxmox installiert. Andere Virtualisierungslösungen wie VMware oder VirtualBox gehen natürlich genauso gut.

## Installation

### Linux ISO herunterladen



Nehmen sie die neuste Version von Oracle Linux 7. Zum Zeitpunkt da diese Anleitung entstand war das 7.7, wenn eine neuere Ausgabe der 7er Version vorhanden ist können sie ruhig jene nehmen.

Oracle Linux 8 sollten sie jedoch nicht nehmen, derzeit ist die Datenbank 19c jedenfalls noch nicht dafür freigegeben und die Installation scheitert.

Holen sie Oracle Linux von <https://edelivery.oracle.com>:

- Melden sie sich mit ihrem Oracle Konto an (ggf. kostenlose Registrierung möglich)
- Suchen sie nach „Oracle Linux“
- Fügen sie „DLP: Oracle Linux 7.7.0.0.0 (Oracle Linux)“ zum Warenkorb hinzu
- Wählen sie beim Checkout „x86 64 bit“ als Plattform
- Akzeptieren sie die Lizenzvereinbarung
- Laden sie „VV983339-01.iso Oracle Linux Release 7 Update 7 for x86 (64 bit), 4.4 GB“ herunter

### Kreieren der Virtuellen Maschine

Beispielvorschlag für eine brauchbare Entwicklungsdatenbank:

- Installations-Disk Image Datei (iso): V1004253-01.iso
- Name der virtuellen Maschine: ora19

- Maximale Festplattengröße: 100 GB
- Virtuelle Festplatte als eine einzige Datei speichern
- Arbeitsspeicher: 3 GB
- Prozessoren: 2
- Netzwerk-Adapter: Bridged

Für eine Produktionsdatenbank sollten sie je nach Anzahl Benutzern natürlich mehr Arbeitsspeicher und Prozessoren vorsehen.

## Linux Installation

[Zeige alle Installationsschritte](#)





us

Help!

## WELCOME TO ORACLE LINUX 7.7.


What language would you like to use during the installation process?

English	English
Afrikaans	Afrikaans
አማርኛ	Amharic
العربية	Arabic
অসমীয়া	Assamese
Asturiano	Asturian
Беларуская	Belarusian
Български	Bulgarian
বাংলা	Bengali

English (United States)
English (United Kingdom)
English (India)
English (Australia)
English (Canada)
English (Denmark)
English (Ireland)
English (New Zealand)
English (Nigeria)
English (Hong Kong SAR China)

Quit

Continue






# INSTALLATION SUMMARY



ORACLE LINUX 7.7 INSTALLATION

us Help!



## LOCALIZATION

-  **DATE & TIME**  
*Americas/New York timezone*
-  **KEYBOARD**  
*English (US)*
-  **LANGUAGE SUPPORT**  
*English (United States)*

## SOFTWARE


-  **INSTALLATION SOURCE**  
*Local media*
-  **SOFTWARE SELECTION**  
*Minimal Install*

## SYSTEM

-  **INSTALLATION DESTINATION**
-  **KDUMP**

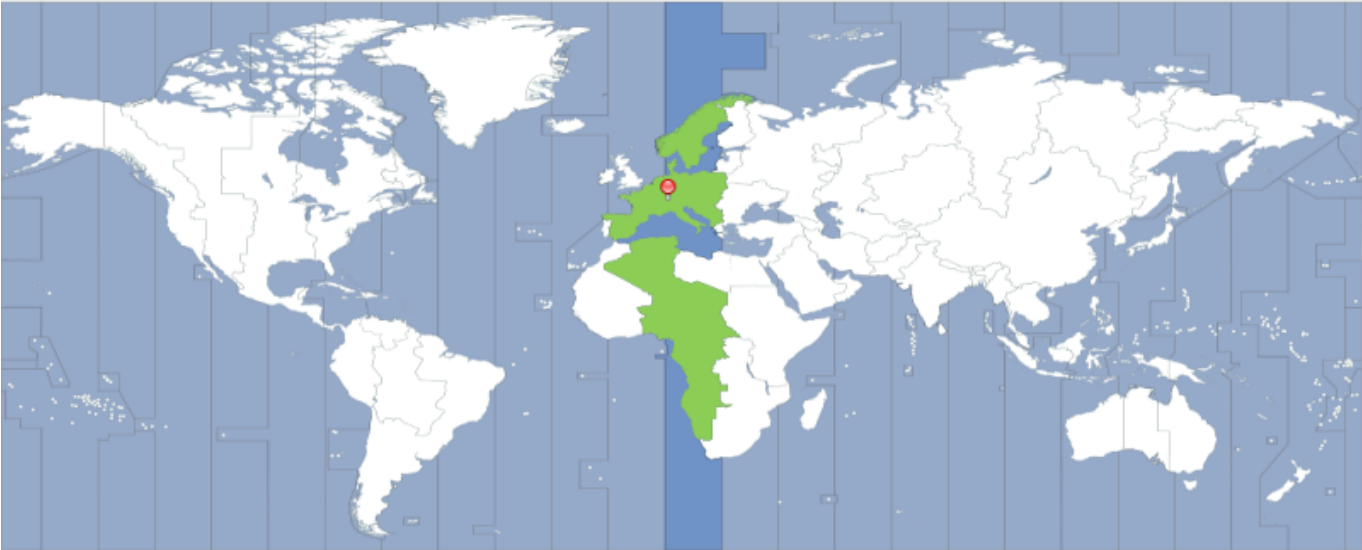
Quit Begin Installation

*We won't touch your disks until you click 'Begin Installation'.*

 Please complete items marked with this icon before continuing to the next step.

DATE & TIME ORACLE LINUX 7.7 INSTALLATION

Region:  City:  Network Time



24-hour  AM/PM  /  /

You need to set up networking first if you want to use NTP

# KEYBOARD LAYOUT

ORACLE LINUX 7.7 INSTALLATION

Done

ch

Help!

Which keyboard layouts would you like to use on this system? You may move any layout to the top of the list to select it as the default.

Swiss German; Alemannic; Alsatian (German (Switzerland))

+ - ^ v [Keyboard icon]

Test the layout configuration below:

öäü|

Layout switching not configured.

Options

**SOFTWARE SELECTION** ORACLE LINUX 7.7 INSTALLATION

---

**Base Environment**

- Minimal Install**  
Basic functionality.
- Infrastructure Server**  
Server for operating network infrastructure services.
- File and Print Server**  
File, print, and storage server for enterprises.
- Basic Web Server**  
Server for serving static and dynamic internet content.
- Virtualization Host**  
Minimal virtualization host.
- Server with GUI**  
Server for operating network infrastructure services, with a GUI.

**Add-Ons for Selected Environment**

- Backup Server**  
Software to centralize your infrastructure's backups.
- DNS Name Server**  
This package group allows you to run a DNS name server (BIND) on the system.
- E-mail Server**  
Allows the system to act as a SMTP and/or IMAP e-mail server.
- FTP Server**  
Allows the system to act as an FTP server.
- File and Storage Server**  
CIFS, SMB, NFS, iSCSI, iSER, and iSNS network storage server.
- Hardware Monitoring Utilities**  
A set of tools to monitor server hardware.
- Identity Management Server**  
Centralized management of users, servers and authentication policies.
- Infiniband Support**  
Software designed for supporting clustering and grid connectivity using RDMA-based InfiniBand and iWARP fabrics.
- Java Platform**

**NETWORK & HOST NAME** ORACLE LINUX 7.7 INSTAL

---

**Ethernet (ens33)**  
Intel Corporation 82545EM Gigabit Ethernet Controller

**Ethernet (ens33)**

Connected

Hardware Address 00:0C:29:AD:DC:CC

Speed 1000 Mb/s

IPv4 Address 10.56.2.46

IPv6 Address 2a02:120b:2c24:98d0:d1c6:7cd1:b623:8663/64  
2a02:120b:2c24:98d1:bbef:b344:592:b86f/64

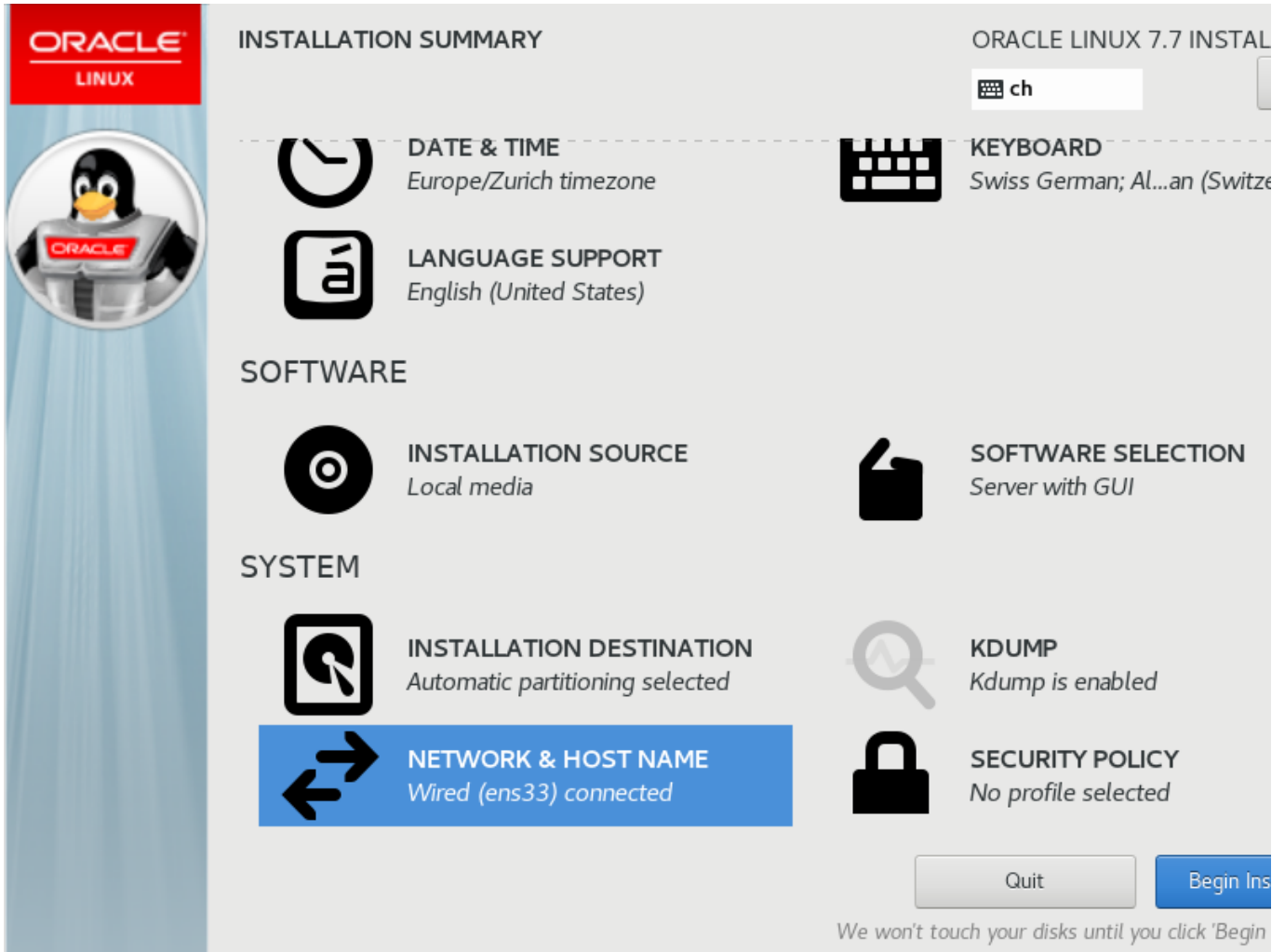
Subnet Mask 255.255.0.0

Default Route 10.56.1.1

DNS 10.56.1.1

Host name:   Current host name: l





The screenshot shows the Oracle Linux 7.7 installation summary screen. On the left is a vertical sidebar with the Oracle Linux logo and a penguin mascot. The main area is titled 'INSTALLATION SUMMARY' and is divided into sections: 'DATE & TIME' (Europe/Zurich timezone), 'LANGUAGE SUPPORT' (English (United States)), 'SOFTWARE SELECTION' (Server with GUI), 'INSTALLATION SOURCE' (Local media), 'SYSTEM' (INSTALLATION DESTINATION: Automatic partitioning selected), and 'NETWORK & HOST NAME' (Wired (ens33) connected). On the right, there are settings for 'KEYBOARD' (Swiss German; Al...an (Switze) and 'SECURITY POLICY' (No profile selected). At the bottom right, there are 'Quit' and 'Begin Ins' buttons. A footer note states: 'We won't touch your disks until you click 'Begin Ins''.

**ORACLE LINUX**

**INSTALLATION SUMMARY**

**DATE & TIME**  
Europe/Zurich timezone

**LANGUAGE SUPPORT**  
English (United States)

**SOFTWARE SELECTION**  
Server with GUI

**INSTALLATION SOURCE**  
Local media

**SYSTEM**

**INSTALLATION DESTINATION**  
Automatic partitioning selected

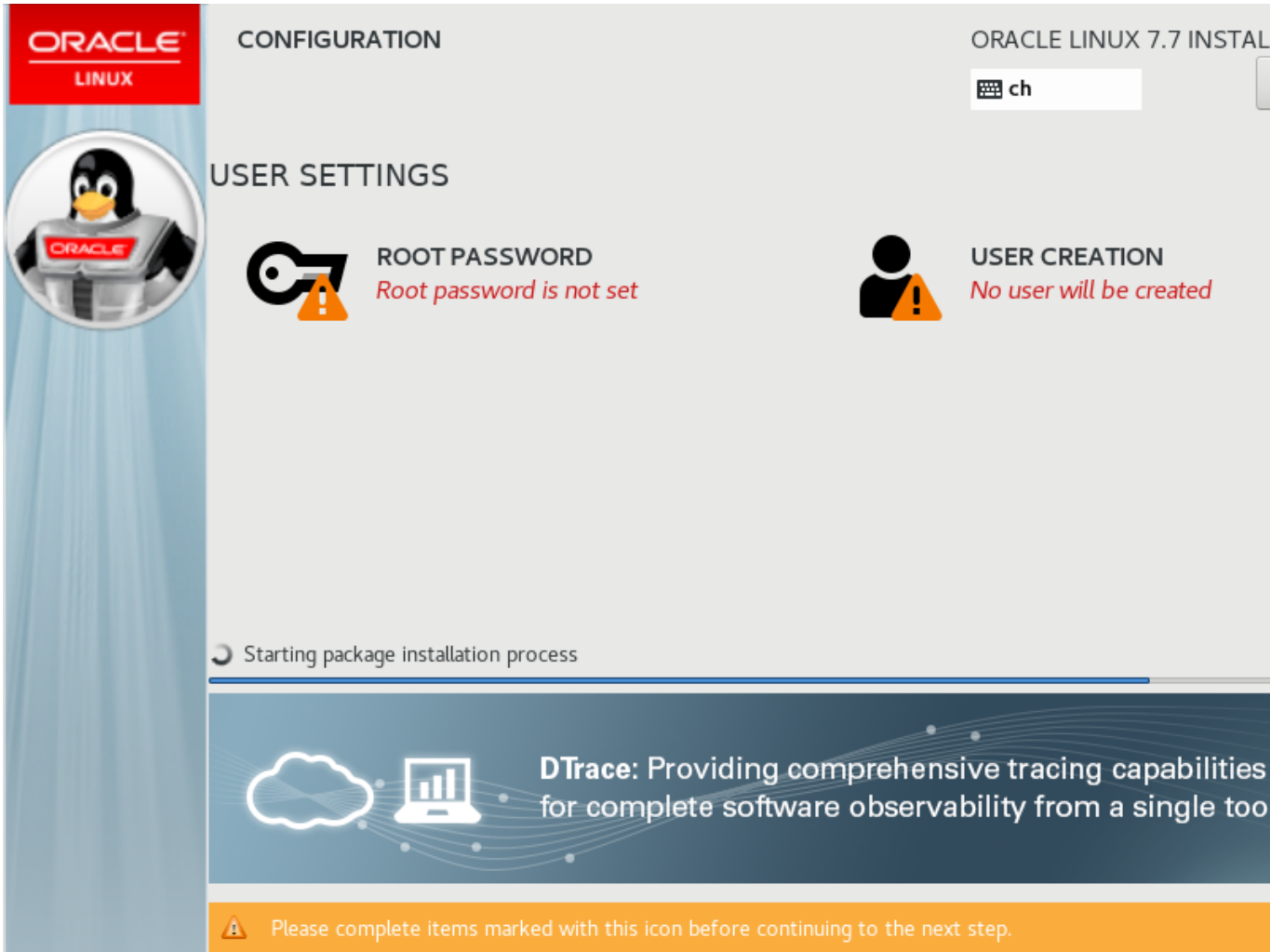
**NETWORK & HOST NAME**  
Wired (ens33) connected

**KEYBOARD**  
Swiss German; Al...an (Switze)

**SECURITY POLICY**  
No profile selected

Quit    Begin Ins

We won't touch your disks until you click 'Begin Ins'



**ORACLE LINUX**

**CONFIGURATION**

ORACLE LINUX 7.7 INSTAL

ch

**USER SETTINGS**

**ROOT PASSWORD**  
*Root password is not set*

**USER CREATION**  
*No user will be created*

Starting package installation process

**DTrace: Providing comprehensive tracing capabilities for complete software observability from a single tool**

Please complete items marked with this icon before continuing to the next step.

# ROOT PASSWORD

ORACLE LINUX 7.7 INSTA

Done

ch

The root account is used for administering the system. Enter a password for the root user.

Root Password:

Strong

Confirm:

**ORACLE LINUX**

**CONFIGURATION**

ORACLE LINUX 7.7 INSTAL

us

No user will be created

**USER SETTINGS**

**ROOT PASSWORD**  
Root password is set

**USER CREATION**  
No user will be created

Complete!

Oracle Linux is now successfully installed and ready for use. Go ahead and reboot to complete the installation.

Use of this product is subject to the license agreement found at /usr/share/oraclelinux-release/EULA

**ORACLE LINUX**

**INITIAL SETUP**

ORACLE LINUX SERVER 7.7

ch Help!

**LICENSING**

**LICENSE INFORMATION**  
License not accepted

**SYSTEM**

**NETWORK & HOST NAME**  
Wired (ens33) connected

**USER SETTING**  
No user will be created

**USER CREATION**  
No user will be created

QUIT

FINISH CONFIGURATION

Please complete items marked with this icon before continuing to the next step.

An diesem Punkt des grafischen Setups halten wir inne. Vor der Fortsetzung muss das Paket „Oracle

19c preinstall“ installiert werden welche benötigte Komponenten hinzugefügt und den Benutzer „oracle“ anlegt den wir im GUI verwenden wollen.

## Aktualisierung und Datenbank Installationsvorbereitung

Öffnen sie mit PuTTY eine SSH Terminalverbindung zu „vmora19“ und melden sie sich als root mit dem oben festgelegten Passwort an.

Software aktualisieren:

```
# yum -y update
```

„Oracle 19c preinstall“ installieren:

```
# yum install -y oracle-database-preinstall-19c
```

Definieren eines Passworts für Benutzer „oracle“ damit wir uns anmelden können:

```
# passwd oracle
```

Neustart:

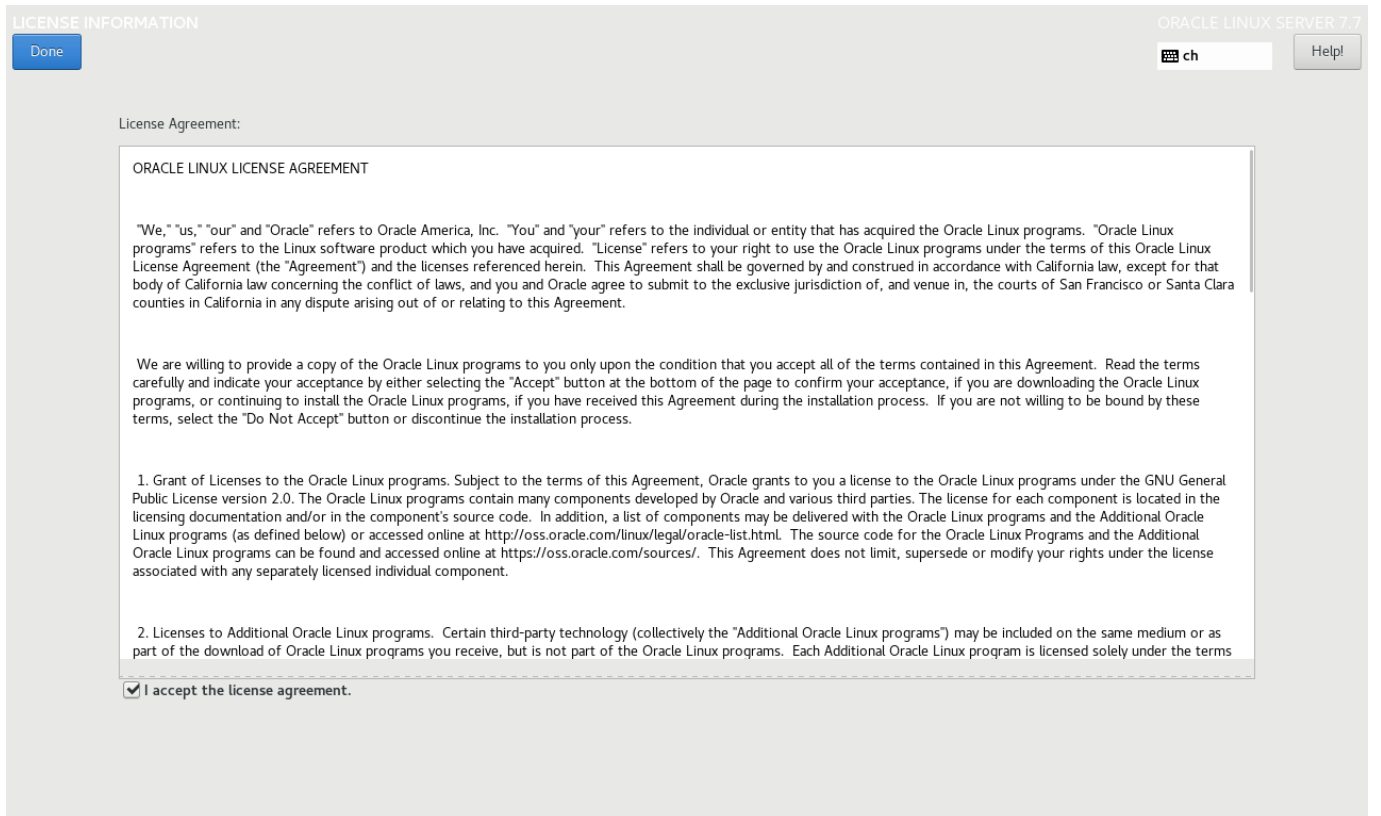
```
# reboot
```

## Grafisches Setup beenden

[Zeige abschliessende Schritte](#)

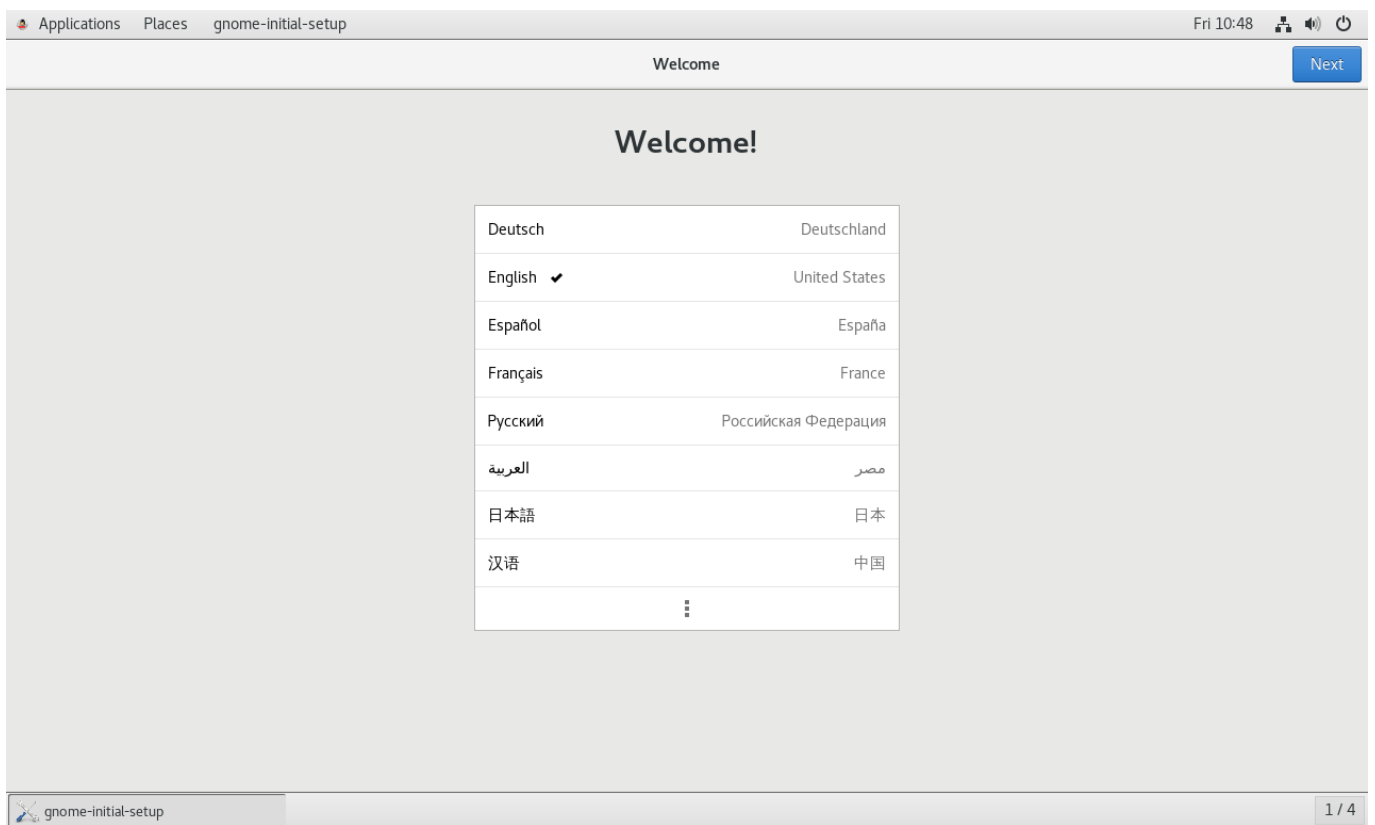
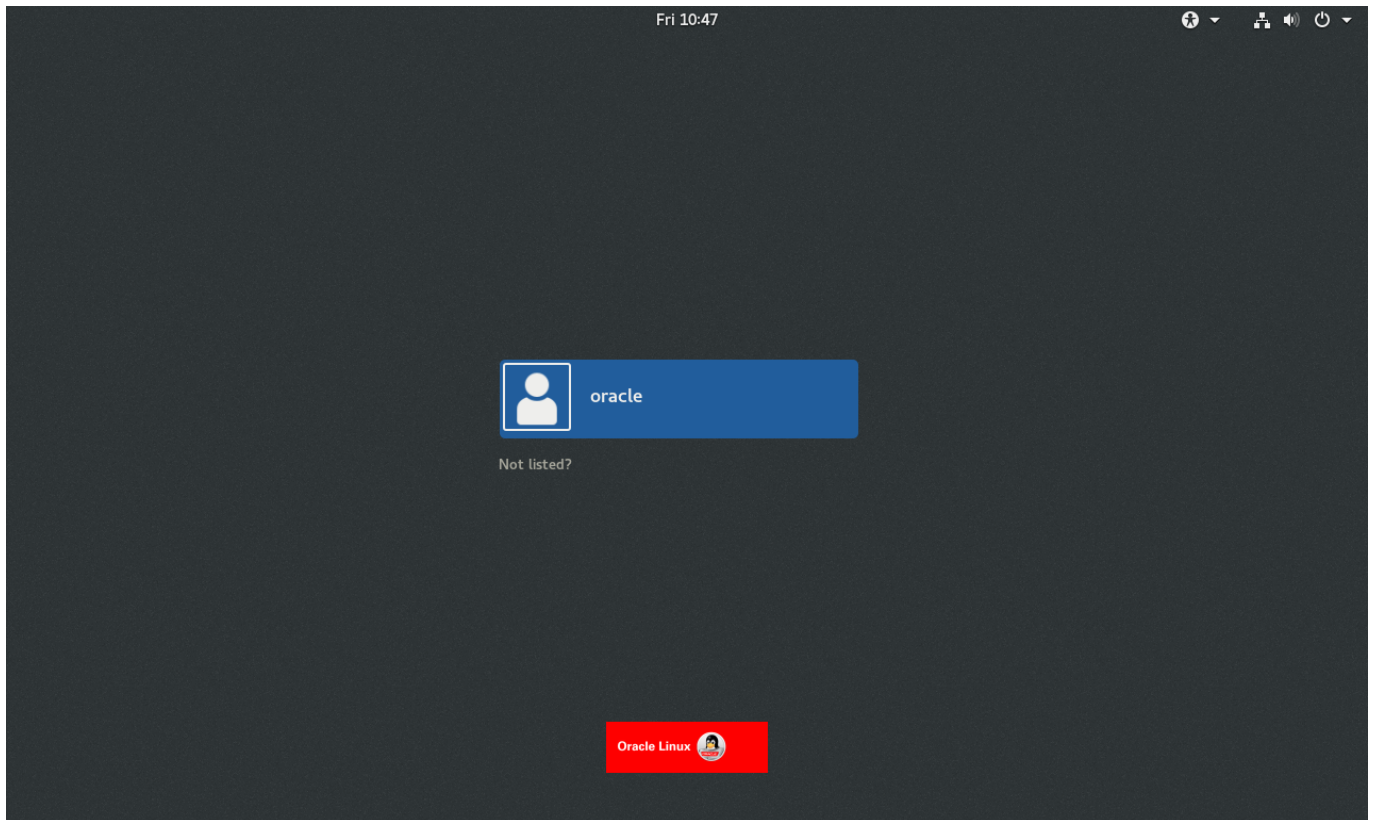


The image shows the Oracle Linux Initial Setup window. On the left is a vertical sidebar with the Oracle Linux logo and a penguin mascot. The main area is titled "INITIAL SETUP" and contains three sections: "LICENSING" with a warning icon and "License not accepted" text; "SYSTEM" with a network icon and "Wired (ens33) connected" text; and "USER SETTING" with a black box containing "No user will be created" and "USER CREATION" with "No user will be created" text. At the bottom, there are "QUIT" and "FINISH CONFIGURATION" buttons, and a yellow warning bar with the text "Please complete items marked with this icon before continuing to the next step."



The image shows the "LICENSE INFORMATION" screen. It features a "Done" button in the top left and a "Help!" button in the top right. The main content is the "License Agreement" text, which includes the "ORACLE LINUX LICENSE AGREEMENT" title and several paragraphs of legal text. At the bottom, there is a checkbox labeled "I accept the license agreement." which is checked.

Anmelden als "oracle" und gnome Benutzerkonfiguration durchführen



Applications Places gnome-initial-setup Fri 10:49

Previous Typing Next

## Typing

Select your keyboard layout or an input method.


Cameroon Multilingual (Dvorak)	<a href="#">Preview</a>
Cameroon Multilingual (QWERTY)	<a href="#">Preview</a>
English (Australian)	<a href="#">Preview</a>
English (Cameroon)	<a href="#">Preview</a>
English (Canada)	<a href="#">Preview</a>
English (US)	<a href="#">Preview</a>
German (Switzerland)	<input checked="" type="checkbox"/> <a href="#">Preview</a>
⋮	

gnome-initial-setup 1 / 4

Applications Places gnome-initial-setup Fri 10:50

Previous Privacy Next

## Privacy



### Location Services

Allows applications to determine your geographical location. An indication is shown when location services are in use.  
Uses Mozilla Location Service: [Privacy Policy](#)

Privacy controls can be changed at any time from the Settings application.

gnome-initial-setup 1 / 4



Applications Places gnome-initial-setup Fri 10:50

Previous Online Accounts Skip

### Connect Your Online Accounts

Connect your accounts to easily access your email, online calendar, contacts, documents and photos.


- Google
- Nextcloud
- Microsoft

Accounts can be added and removed at any time from the Settings application.

gnome-initial-setup 1 / 4

Applications Places gnome-initial-setup Fri 10:51

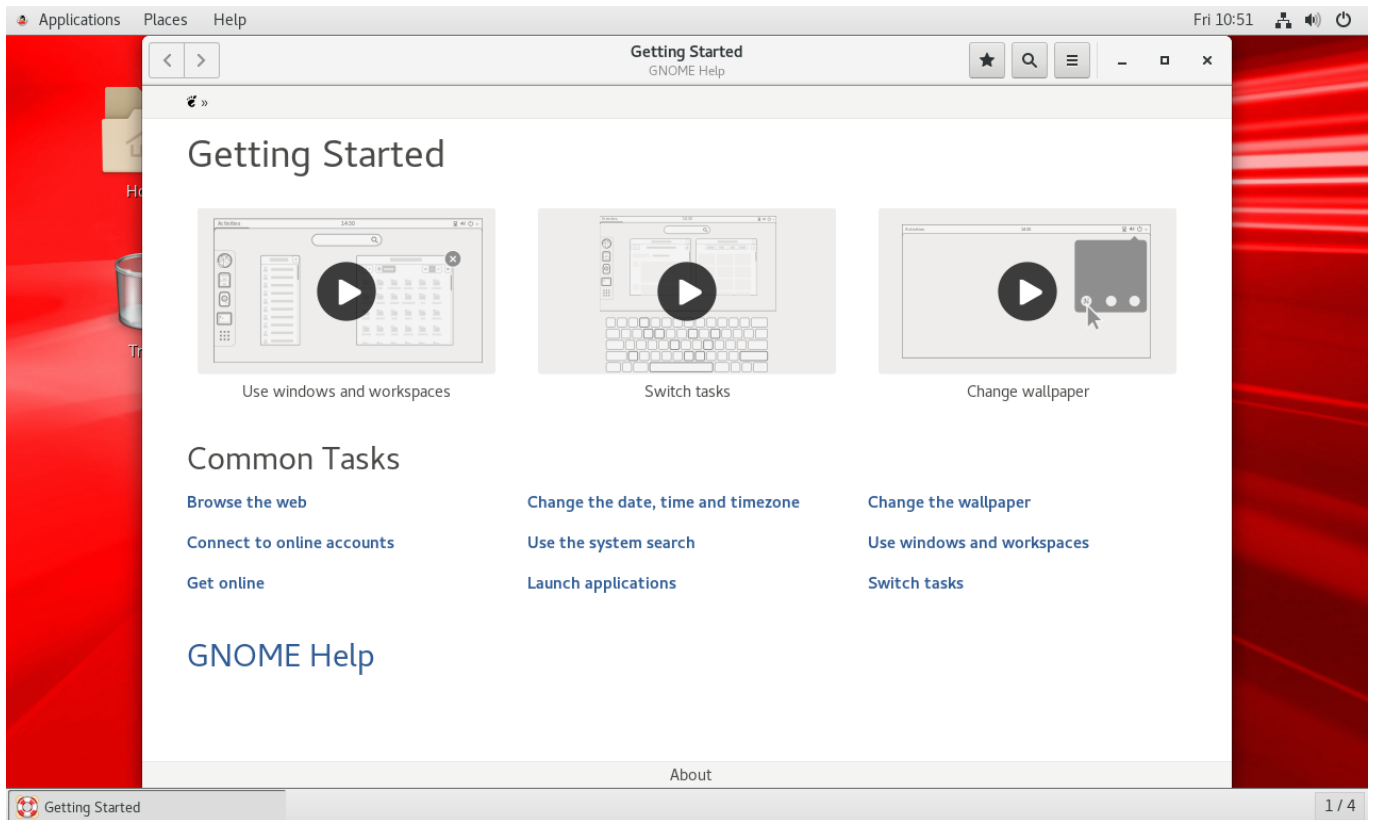
Ready to Go



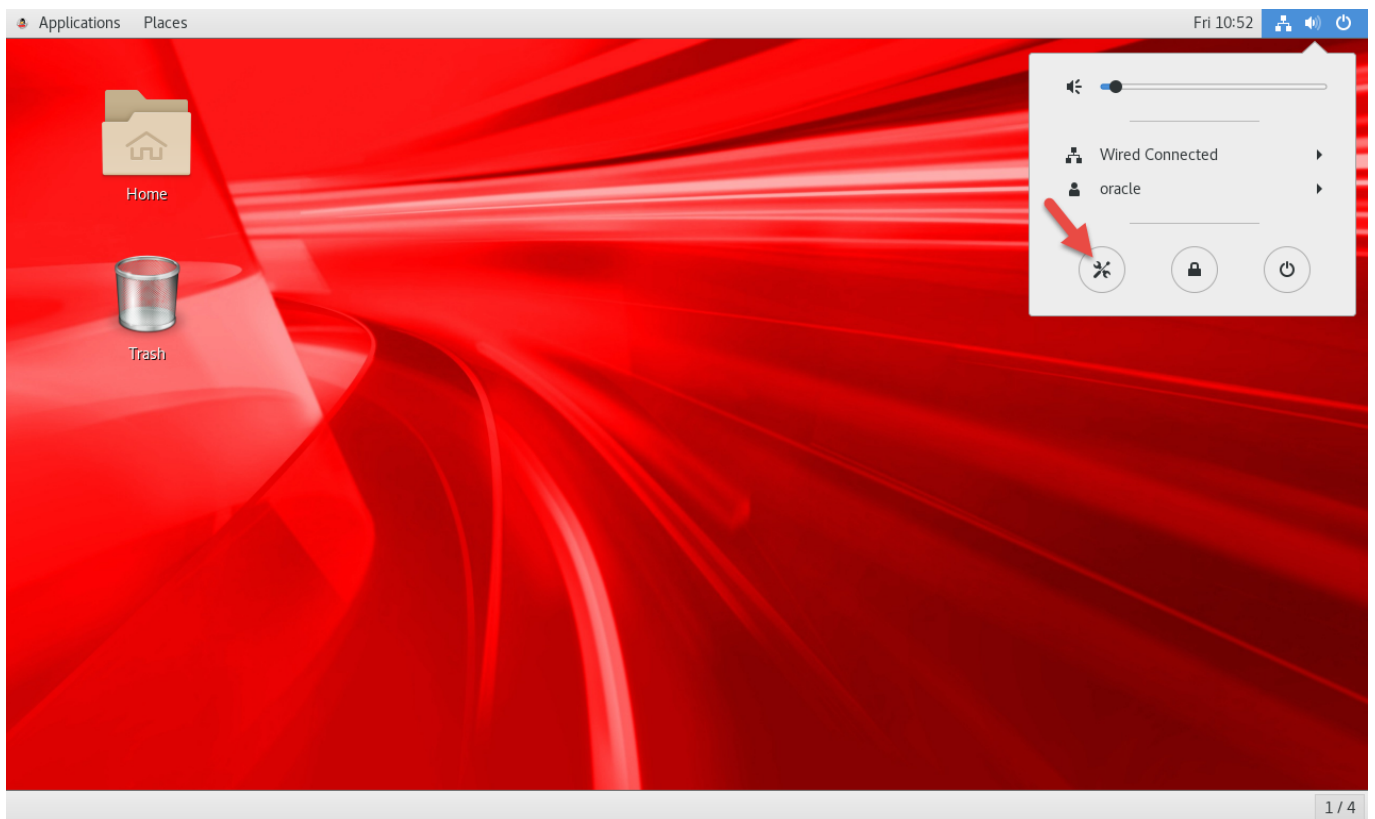
### You're ready to go!

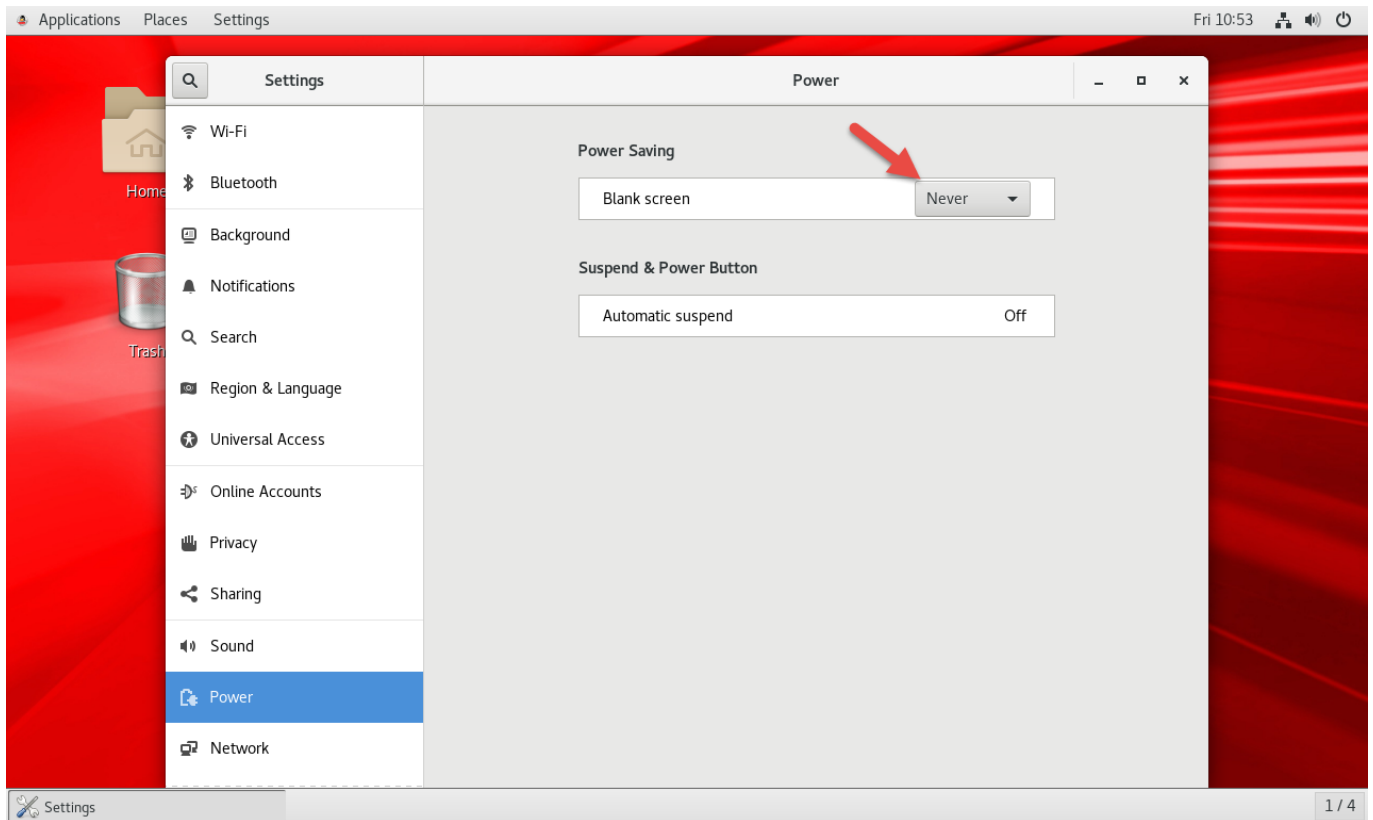
Start Using Oracle Linux Server

gnome-initial-setup 1 / 4



### Bildschirm Timeout abschalten



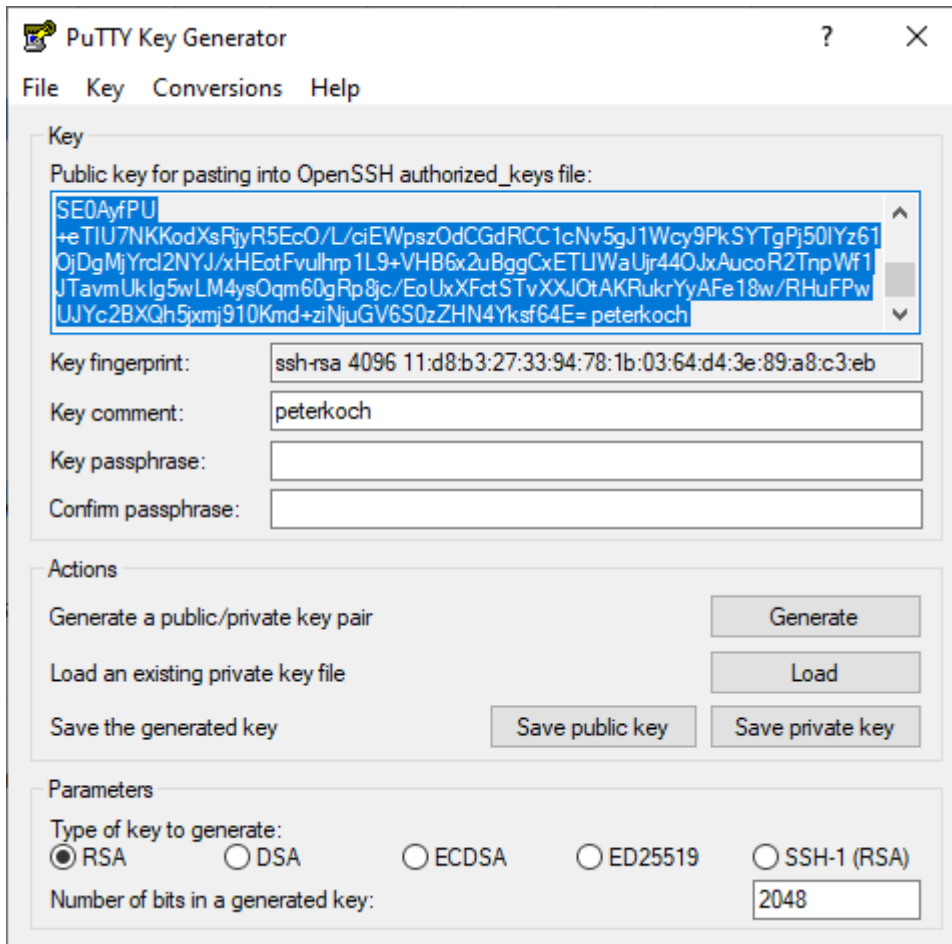


## SSH Schlüsselaufisierung für root

Verzeichnis ~/.ssh und Schlüssel generieren:

```
# ssh-keygen -t rsa -b 4096  
<enter>  
<enter>  
<enter>
```

Persönlichen Schlüssel in PuTTYgen laden, und den Public Key ins die Zwischenablage kopieren:



Public Key des persönlichen Schlüssels zu authorized\_keys hinzufügen:

```
# nano ~/.ssh/authorized_keys
<paste>
```

Passwortanmeldung für SSH Verbindungen ausschalten:

```
# nano /etc/ssh/sshd_config
...
PasswordAuthentication no
...
```

SSH neu starten:

```
# service sshd restart
```

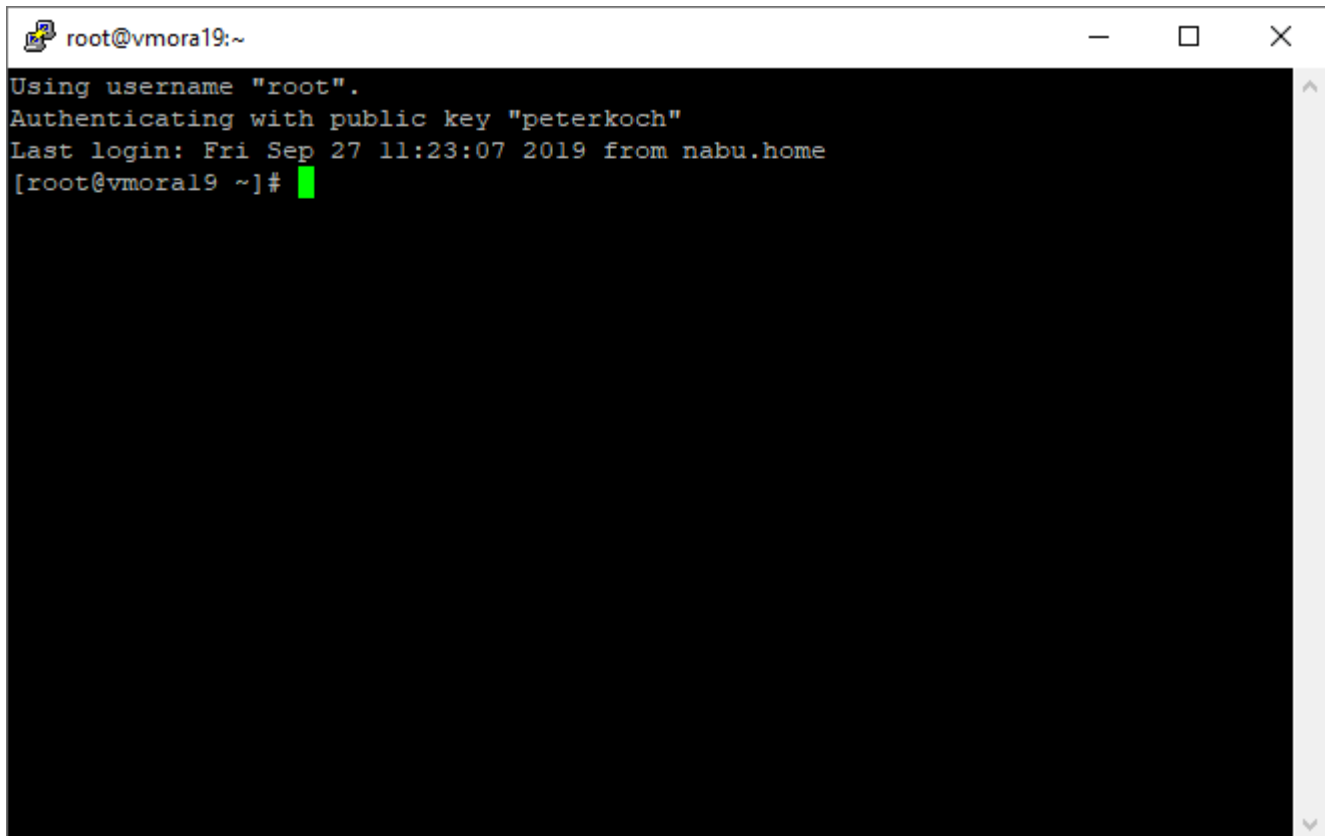
Aktuelles PuTTY Terminal zur Sicherheit noch offen lassen.

In PuTTY eine Session für root erzeugen und testen:

- Session
  - Host Name: ora19
  - Port: 22 / SSH
- Connection
  - Data
    - Auto-login username: root

- SSH
  - Auth
    - Private key file: (Speicherort meiner ppk Datei)
- Session
  - Saved sessions: ora19 - root
  - Save

Testen ob das Autologin funktioniert:



```
root@vmora19:~  
Using username "root".  
Authenticating with public key "peterkoch"  
Last login: Fri Sep 27 11:23:07 2019 from nabu.home  
[root@vmora19 ~]#
```

## Motd Logo

Logo erzeugen bei <http://www.network-science.de/ascii/>

- Text: vmora19
- Font: slant
- Reflection: no
- Adjustment: center
- Stretch: no
- Width: 80
- do it!

Logo in Zwischenablage kopieren und in motd einfügen

```
# nano /etc/motd  
<paste>
```

## rlwrap für Cursortasten in SqlPlus installieren

```
# wget
https://dl.fedoraproject.org/pub/epel/epel-release-latest-7.noarch.rpm
# rpm -ivh epel-release-latest-7.noarch.rpm
# yum -y install rlwrap
```

## SELinux auf Permissive ändern

```
# nano /etc/selinux/config
SELINUX=permissive
```

```
# setenforce permissive
```

## Firewall ausschalten

```
# systemctl stop firewalld
# systemctl disable firewalld
```

## Oracle Verzeichnisse anlegen

```
# mkdir -p /u01/app/oracle/product/19.3.0/dbhome_1
# mkdir -p /u02/oradata
# mkdir -p /u02/orafra
# chown -R oracle:oinstall /u01 /u02
# chmod -R 775 /u01 /u02
```

## SSH Login für Benutzer oracle

Analog wie bei root:

```
# su oracle
```

```
$ ssh-keygen -t rsa -b 4096
<enter>
<enter>
<enter>
```

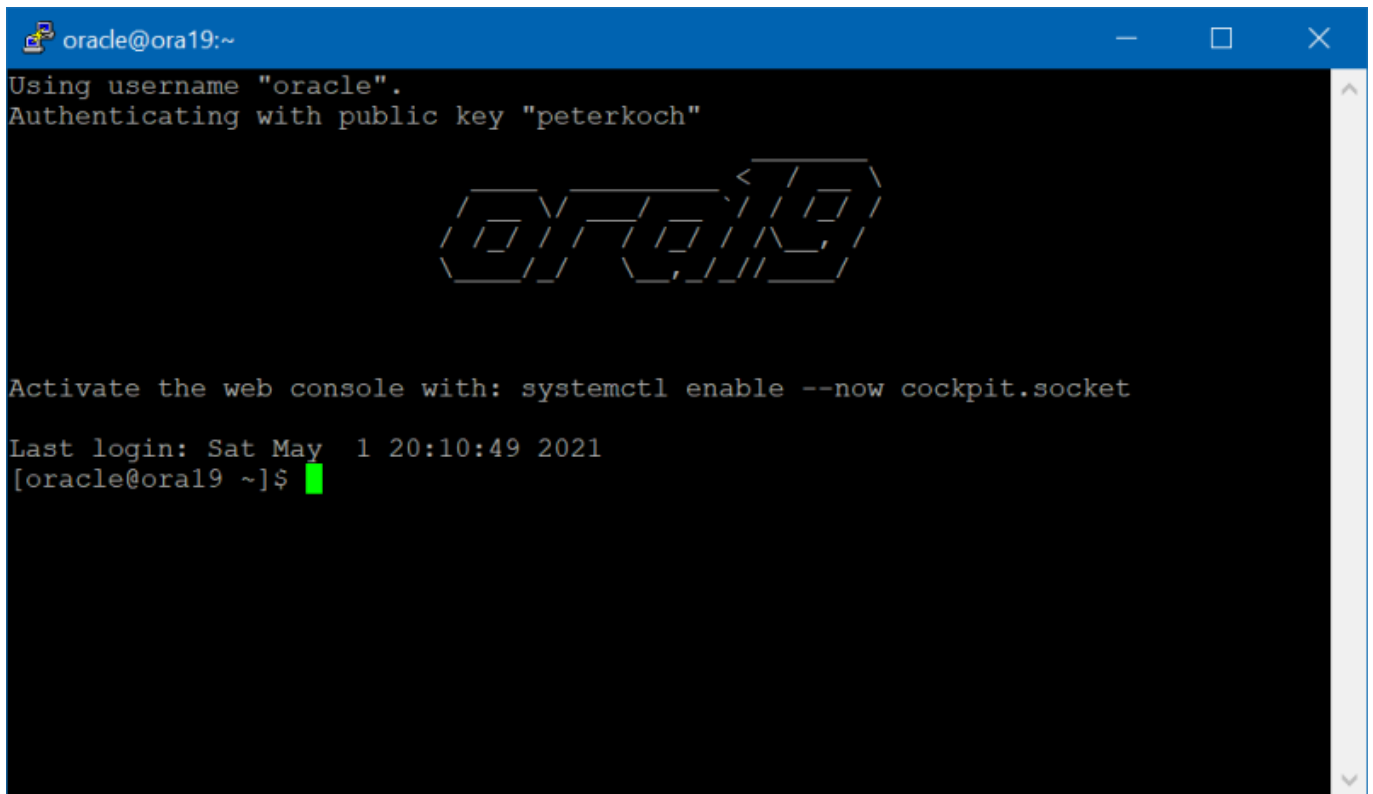
```
$ nano ~/.ssh/authorized_keys
<paste des eigenen Public Key>
```

PuTTY Session anlegen

- Session „vmora19 - root“ laden
- Auto-login username ändern auf: oracle

- Session speichern als „vmora19 - oracle“

Testen ob es funktioniert:



```
oracle@ora19:~
Using username "oracle".
Authenticating with public key "peterkoch"

          ORACLE

Activate the web console with: systemctl enable --now cockpit.socket

Last login: Sat May  1 20:10:49 2021
[oracle@ora19 ~]$
```

```
$ exit
# reboot
```

## Oracle Database 19c Software beschaffen

Download von <https://www.oracle.com/database/technologies/oracle19c-linux-downloads.html>

- Auswählen: LINUX.X64\_193000\_db\_home.zip
- Lizenzvereinbarung akzeptieren
- Auf „Download“ klicken
- Mit eigenem Oracle Konto anmelden (ggf. kostenlose Registrierung möglich)
- Datei auf eigenem Arbeitsplatz-PC abspeichern

Filezilla verwenden um sich als oracle per SFTP/SSH zu verbinden, dann LINUX.X64\_193000\_db\_home.zip hochladen nach /home/oracle

## Vorbereitungen als Benutzer oracle

Skripte erzeugen

```
$ mkdir ~/scripts
$ nano ~/scripts/setEnv.sh
```

[~/scripts/setEnv.sh](#)

```
# Oracle Settings
export TMP=/tmp
export TMPDIR=$TMP

export ORACLE_HOSTNAME=ora19
export ORACLE_UNQNAME=cdb1
export ORACLE_BASE=/u01/app/oracle
export ORACLE_HOME=$ORACLE_BASE/product/19.3.0/dbhome_1
export ORA_INVENTORY=/u01/app/oraInventory
export ORACLE_SID=cdb1
export PDB_NAME=pdb1
export DATA_DIR=/u02/oradata

export PATH=/usr/sbin:/usr/local/bin:$PATH
export PATH=$ORACLE_HOME/bin:$PATH

export LD_LIBRARY_PATH=$ORACLE_HOME/lib:/lib:/usr/lib
export CLASSPATH=$ORACLE_HOME/jlib:$ORACLE_HOME/rdbms/jlib
```

```
$ nano ~/scripts/start_all.sh
```

[~/scripts/start\\_all.sh](#)

```
#!/bin/bash
. /home/oracle/scripts/setEnv.sh

export ORAENV_ASK=NO
. oraenv
export ORAENV_ASK=YES

dbstart $ORACLE_HOME
```

```
$ nano ~/scripts/stop_all.sh
```

[~/scripts/stop\\_all.sh](#)

```
#!/bin/bash
. /home/oracle/scripts/setEnv.sh

export ORAENV_ASK=NO
. oraenv
export ORAENV_ASK=YES

dbshut $ORACLE_HOME
```



Skripte ausführbar machen:

```
$ chmod u+x ~/scripts/*.sh
```

An Datei .bash\_profile anhängen:

```
$ nano ~/.bash_profile
```

~/.bash\_profile

```
. /home/oracle/scripts/setEnv.sh  
alias sqlplus="rlwrap sqlplus"
```

Abmelden, und erneut als oracle anmelden, dann:

```
$ cd $ORACLE_HOME  
$ unzip -oq ~/LINUX.X64_193000_db_home.zip
```

## DB Software Installation starten

Im GUI als oracle anmelden und ein Terminal-Fenster öffnen.

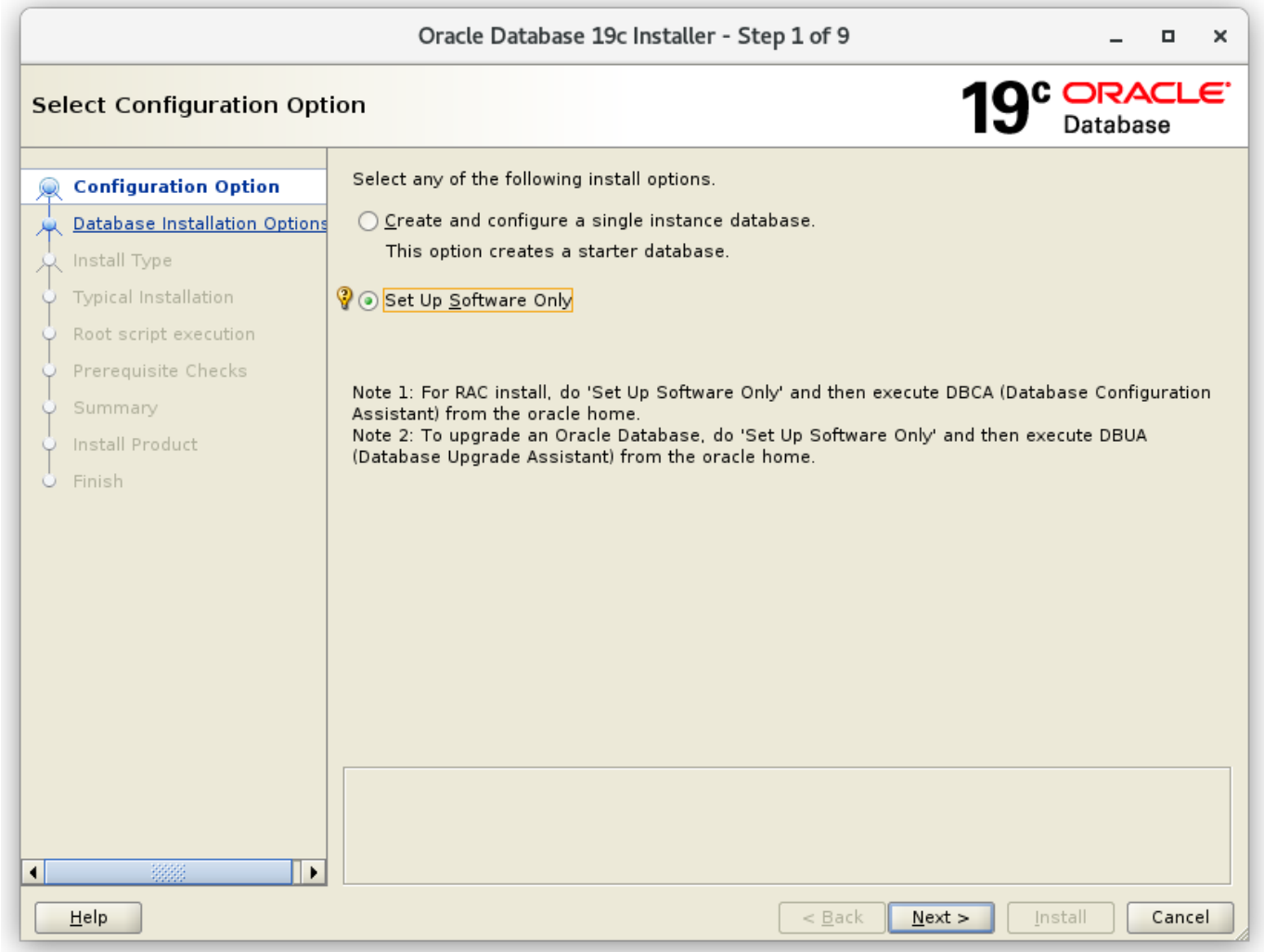
Ins ORACLE\_HOME Verzeichnis wechseln und das Installationsprogramm starten:

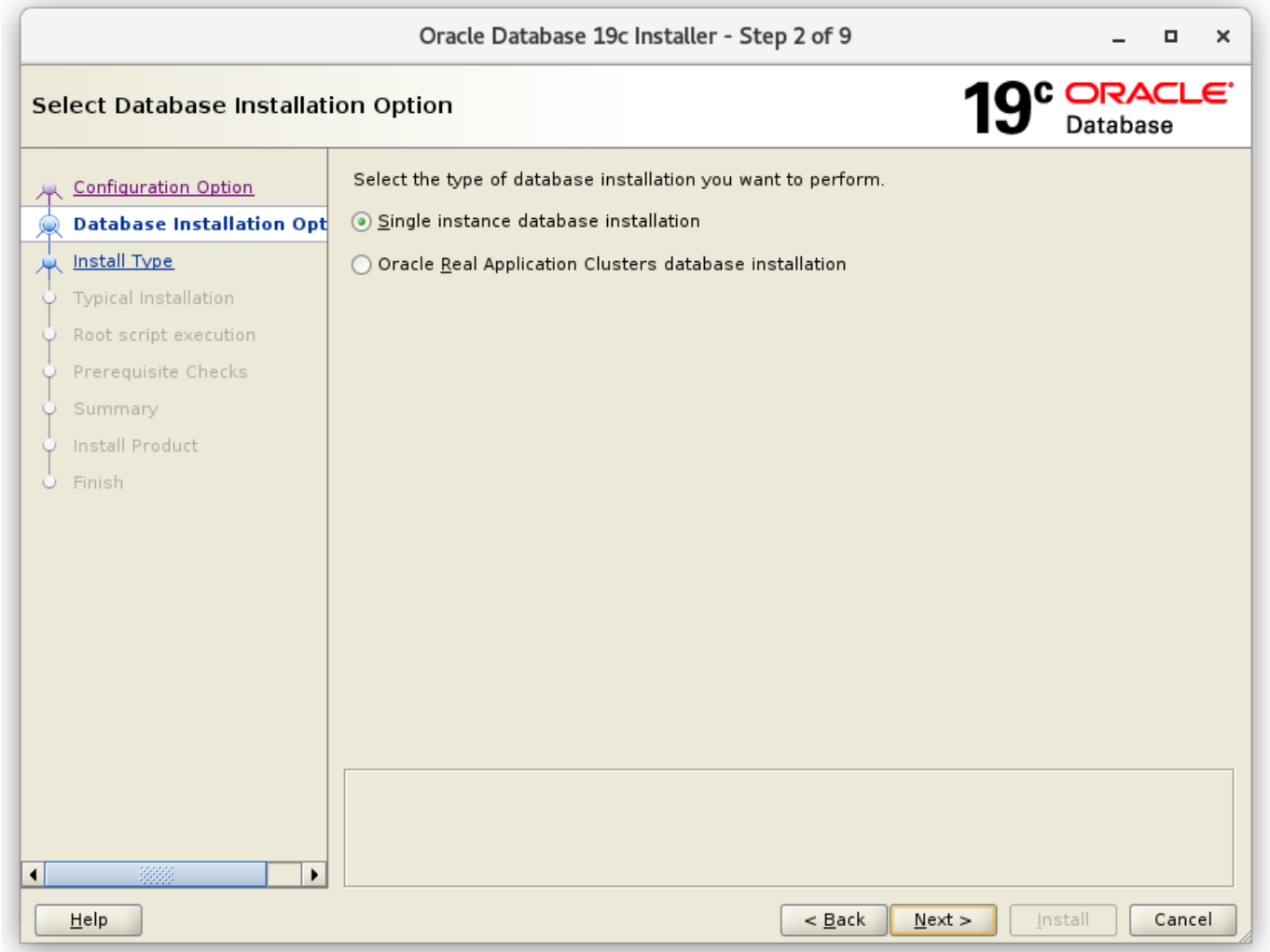
```
$ cd $ORACLE_HOME  
$ ./runInstaller
```

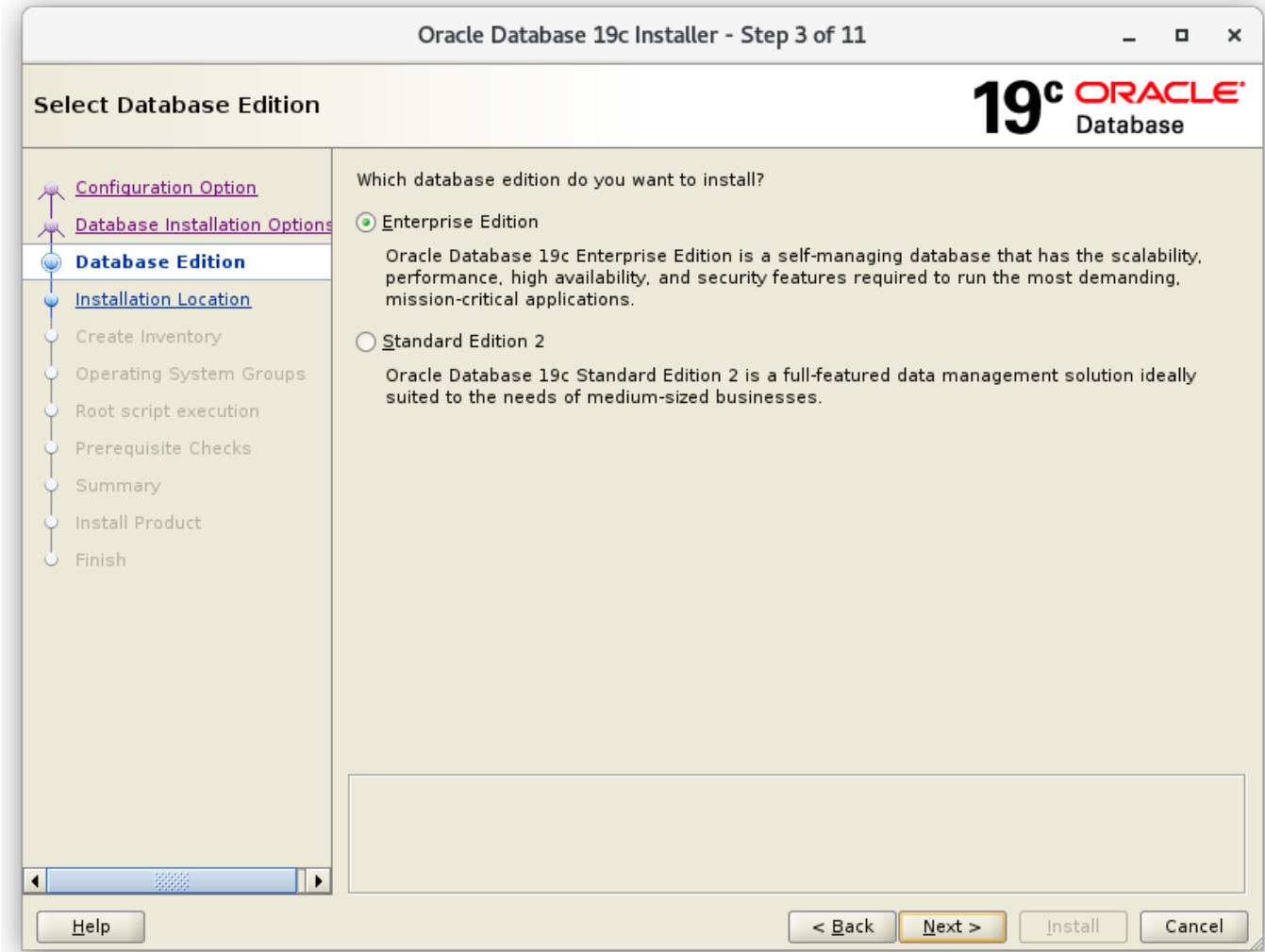
## Setup mit dem Oracle Database 19c Installer

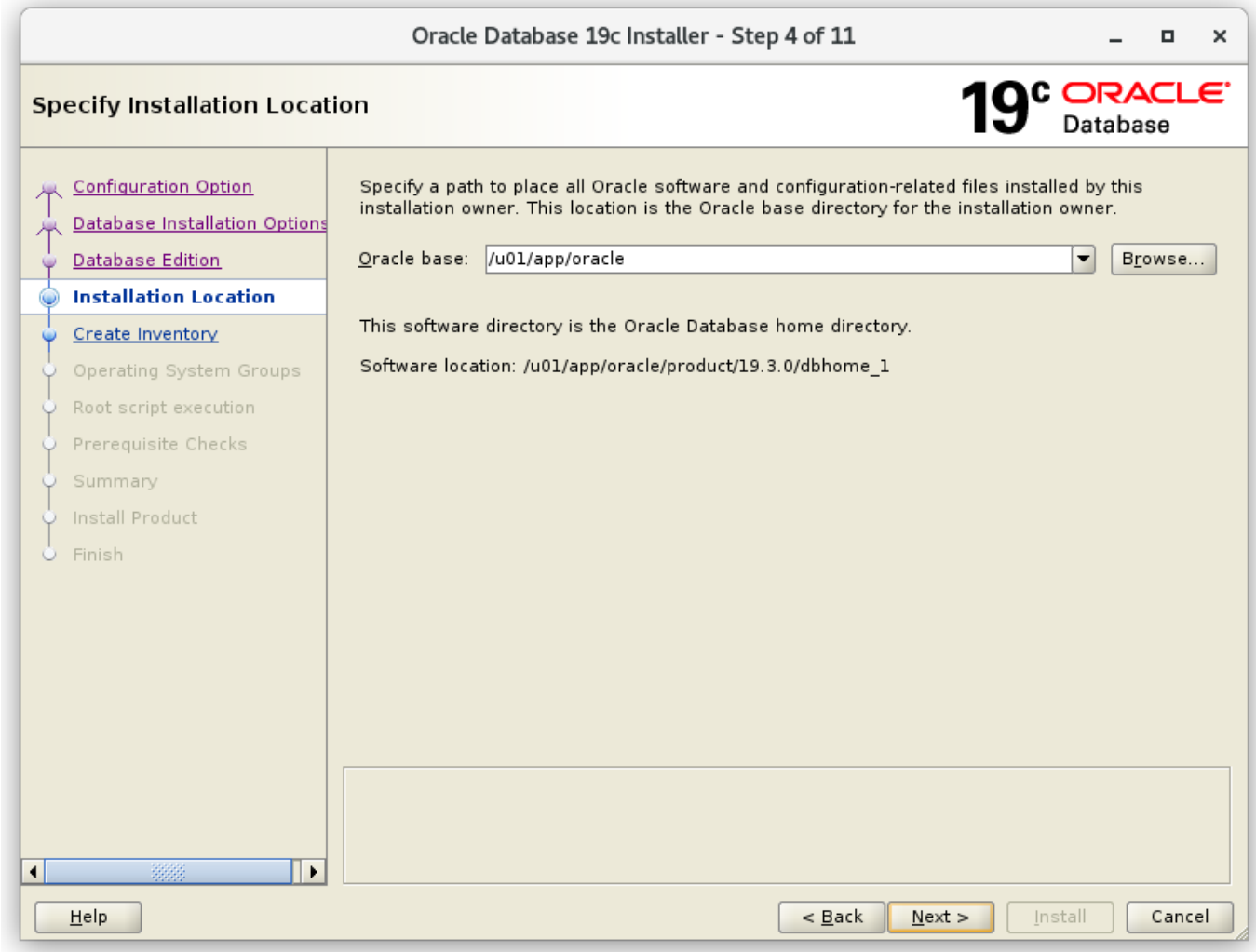
Setzen sie zunächst nur die Software auf, die Datenbank wird später mit dem [DBCA](#) Database Configuration Assistant erstellt.

[Zeige alle Schritte](#)










Oracle Database 19c Installer - Step 5 of 11 \_ □ ×

## Create Inventory



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

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:

Oracle Database 19c Installer - Step 6 of 11

### Privileged Operating System groups

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:	<input type="text" value="dba"/>
Database Operator (OSOPER) group (Optional):	<input type="text" value="oper"/>
Database Backup and Recovery (OSBACKUPDBA) group:	<input type="text" value="backupdba"/>
Data Guard administrative (OSDGDBA) group:	<input type="text" value="dgdba"/>
Encryption Key Management administrative (OSKMDBA) group:	<input type="text" value="kmdba"/>
Real Application Cluster administrative (OSRACDBA) group:	<input type="text" value="racdba"/>

### Oracle Database 19c Installer - Step 7 of 11

**19<sup>c</sup> ORACLE<sup>®</sup>**  
Database

#### Root script execution configuration

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

During the software configuration, certain operations have to be performed as "root" user. You can choose to have the installer perform these operations automatically by specifying inputs for one of the options below. The input specified will also be used by the installer to perform additional prerequisite checks.

Automatically run configuration scripts

Use "root" user credential

Password :

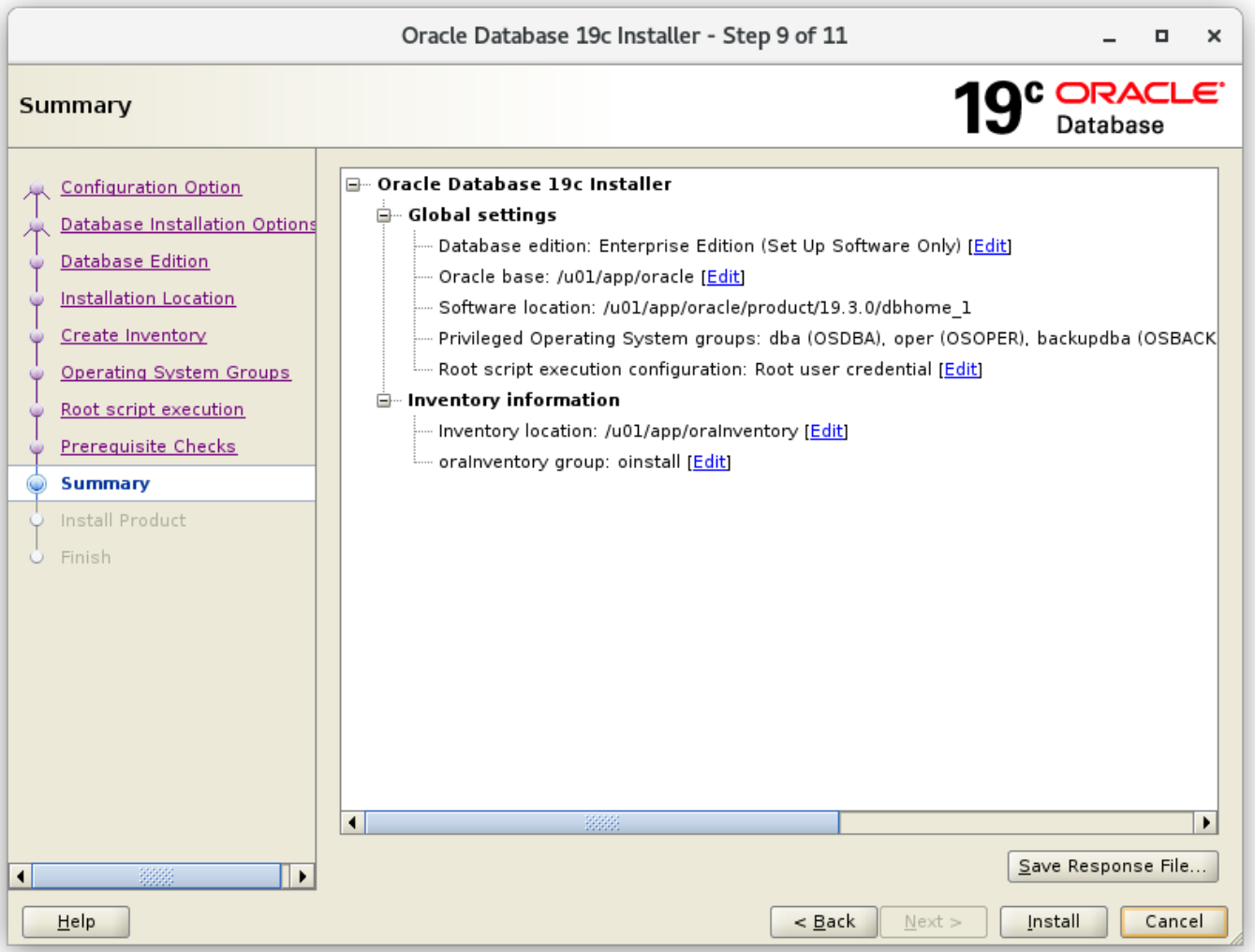
Use sudo

Program path :

User name :

Password :





### Oracle Database 19c Installer - Step 10 of 11

**Install Product****19<sup>c</sup> ORACLE<sup>®</sup> Database**

- Configuration Option
- Database Installation Options
- Database Edition
- Installation Location
- Create Inventory
- Operating System Groups
- Root script execution
- Prerequisite Checks
- Summary
- Install Product**
- Finish

**Progress**

11%

Linking Utilities Executables

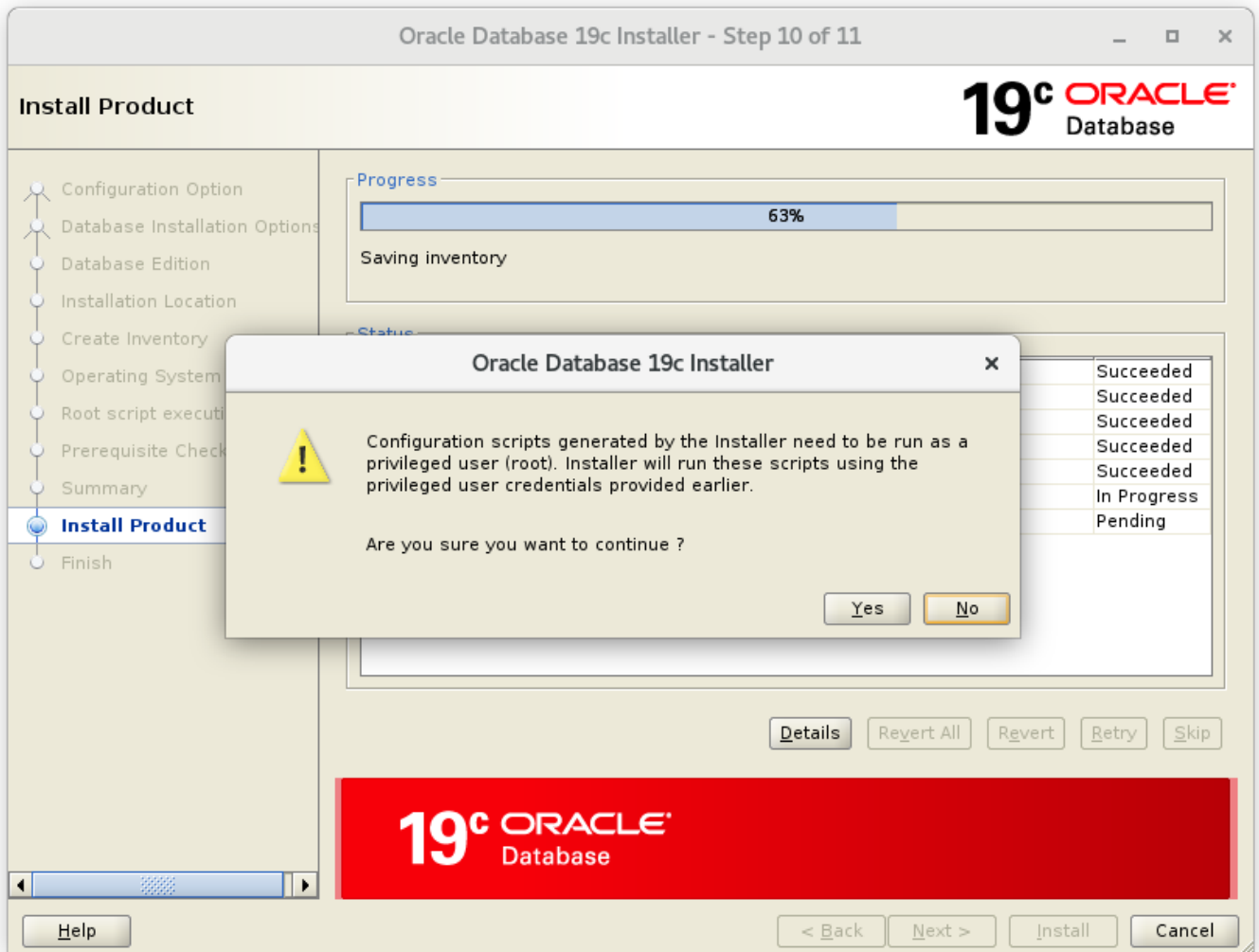
**Status**

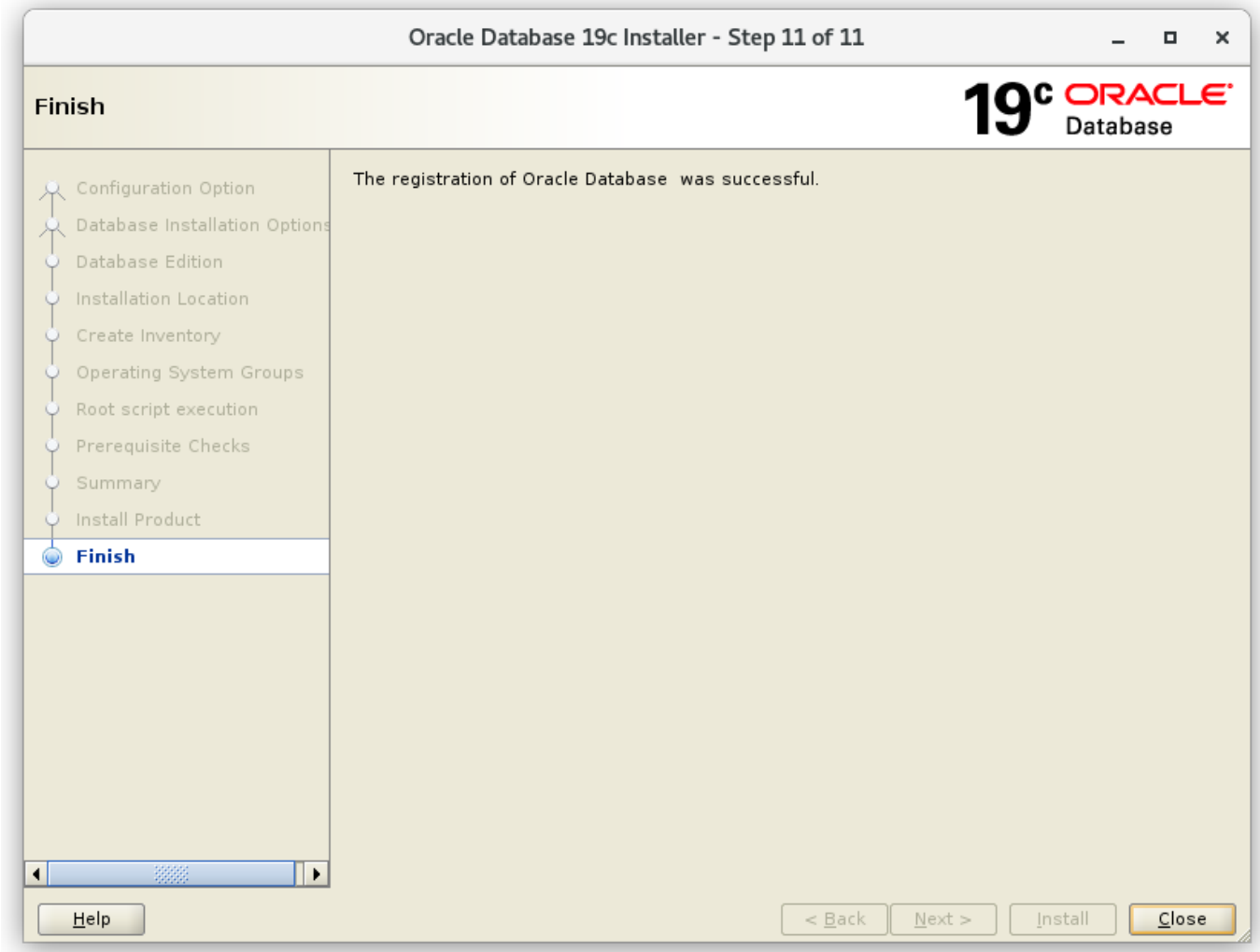
➔ Configure Local Node	In Progress
• Prepare	Succeeded
➔   • Link binaries	In Progress
• Setup	Pending
Setup Oracle Base	Pending
Execute Root Scripts	Pending

Details Revert All Revert Retry Skip

**19<sup>c</sup> ORACLE<sup>®</sup> Database**

Help< BackNext >InstallCancel





```
[oracle@vmora19 dbhome_1]$ ./runInstaller  
Launching Oracle Database Setup Wizard...
```

The response file for this session can be found at:  
/u01/app/oracle/product/19.3.0/dbhome\_1/install/response/db\_2019-09-28\_07-17-03AM.rsp

You can find the log of this install session at:  
/tmp/InstallActions2019-09-28\_07-17-03AM/installActions2019-09-28\_07-17-03AM.log

Moved the install session logs to:  
/u01/app/oraInventory/logs/InstallActions2019-09-28\_07-17-03AM

```
[oracle@vmora19 dbhome_1]$ █
```

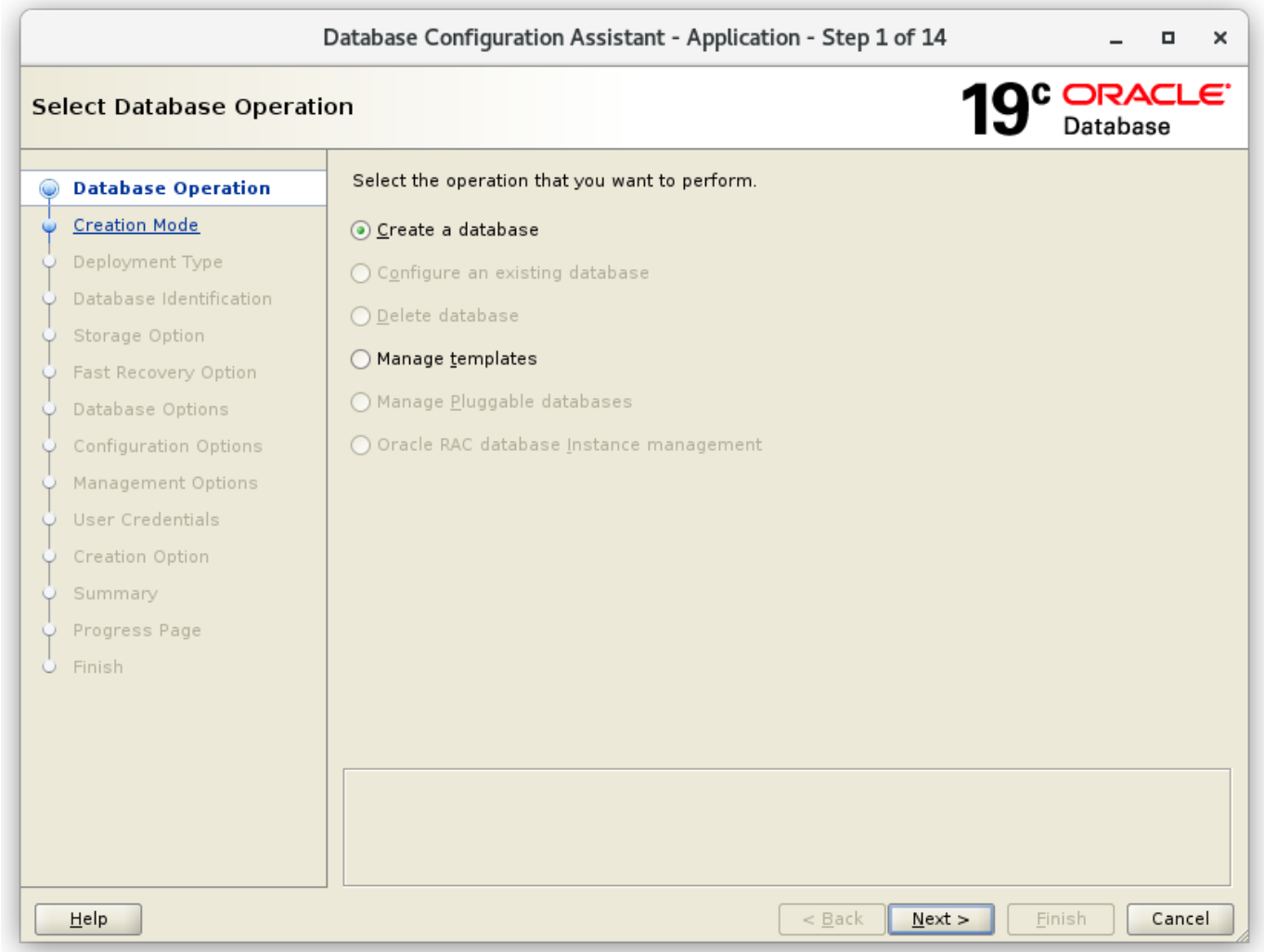
## Datenbank mit dem DBCA erstellen

Im GUI als oracle anmelden und ein Terminalfenster öffnen.

Den Listener aufstarten und DCBA ausführen:

```
$ lsnrctl start  
$ dbca
```

[Zeige alle Schritte](#)



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

**19<sup>c</sup> ORACLE<sup>®</sup>**  
Database

#### Select Database Creation Mode

- 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:

Storage type:

Database files location:

Fast Recovery Area (FRA):

Database character set:

Administrative password:

Confirm password:

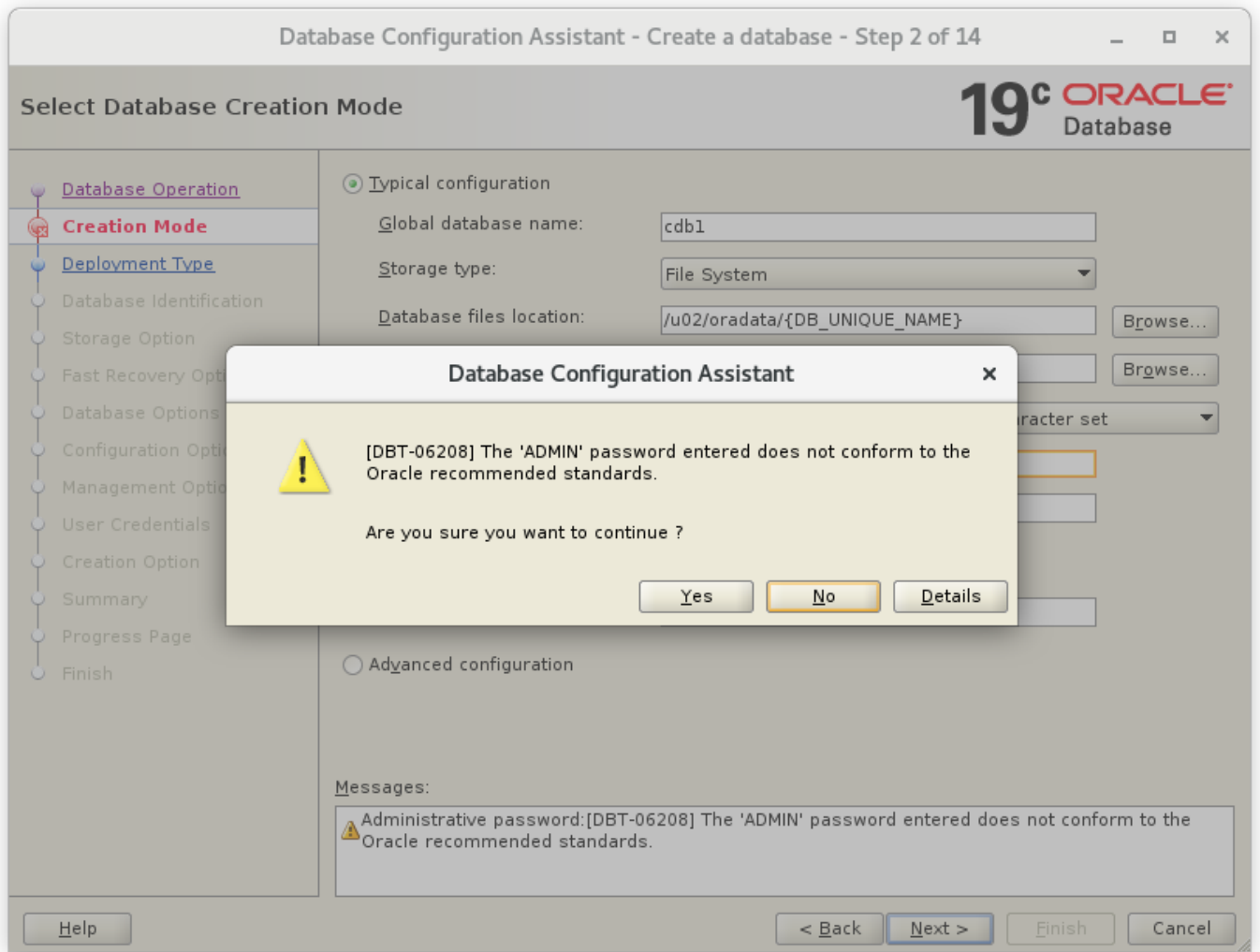
**Create as Container database**

Pluggable database name:

**Advanced configuration**

**Messages:**

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



**Database Configuration Assistant - Create 'cdb1' database - Step 3 of 5**

**Summary**

**19<sup>c</sup> ORACLE Database**

- Database Operation
- Creation Mode
- Summary**
- Progress Page
- Finish

**Database Configuration Assistant**

- Global Settings**
  - Global database name: cdb1
  - Configuration type: Oracle Single Instance database
  - SID: cdb1
  - Create as Container database: Yes
  - Pluggable Database Name: pdb1
  - Number of Pluggable Databases: 1
  - Use Local Undo tablespace for PDBs: Yes
  - Database Files Storage Type: File System
  - Memory Configuration Type: Automatic Memory Management
  - Template name: General Purpose
- Initialization Parameters**
  - audit\_file\_dest: {ORACLE\_BASE}/admin/{DB\_UNIQUE\_NAME}/adump
  - audit\_trail: db
  - compatible: 19.0.0
  - db\_block\_size: 8 KB
  - db\_create\_file\_dest: /u02/oradata/{DB\_UNIQUE\_NAME}/
  - db\_name: cdb1
  - db\_recovery\_file\_dest: /u02/orafra/{DB\_UNIQUE\_NAME}
  - db\_recovery\_file\_dest\_size: 12732 MB
  - diagnostic\_dest: {ORACLE\_BASE}

Save Response File...

Help < Back Next > Finish Cancel



### Database Configuration Assistant - Create 'cdb1' database - Step 4 of 5

**Progress Page**

- Database Operation
- Creation Mode
- Summary
- Progress Page**
- Finish

**Progress**

8%

Copying database files : In Progress

**Status**

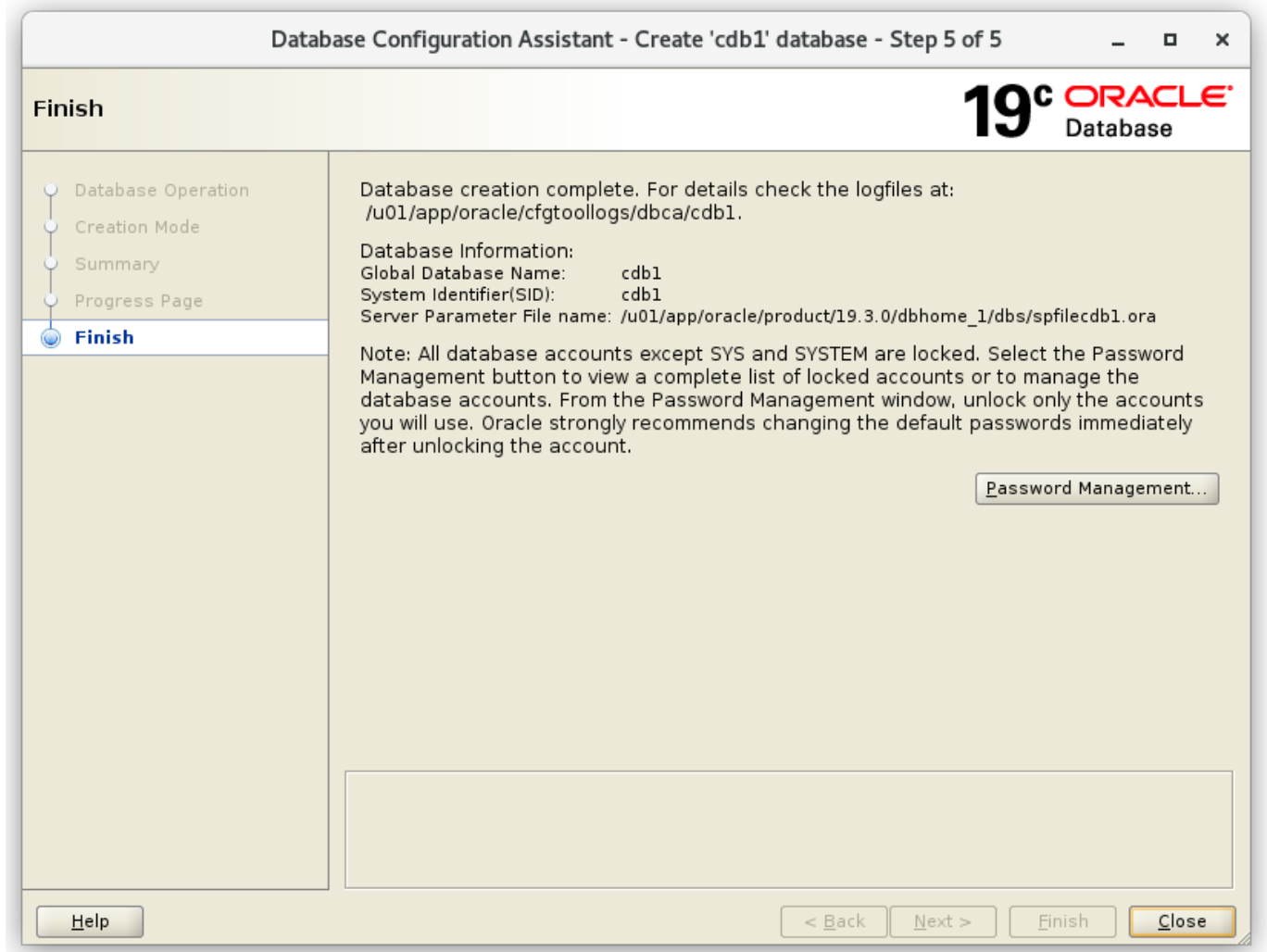
➔ DB Creation	In Progress
✔ • Prepare for db operation	Succeeded
➔ • Copying database files	In Progress
• Creating and starting Oracle instance	Pending
• Completing Database Creation	Pending
• Creating Pluggable Databases	Pending
• Executing Post Configuration Actions	Pending

Details Revert All Revert Retry Skip

DBCA Log Location:  
/u01/app/oracle/cfgtoollogs/dbca/cdb1/trace.log\_2019-09-28\_08-14-58AM

Database Alert Log Location:  
/u01/app/oracle/diag/rdbms/cdb1/cdb1/trace/alert\_cdb1.log

Help< BackNext >FinishCancel



Server neu starten

## Weitere Schritte nach der Installation

### Als root

Datei `/etc/oratab` bearbeiten und das restart Flag auf 'Y' setzen damit die cdb1 beim DB Start ebenfalls automatisch startet:

```
# nano /etc/oratab
...
cdb1:/u01/app/oracle/product/19.3.0/dbhome_1:Y
...
```

### Als oracle

Den Listener und die DB aufstarten:

```
$ lsnrctl start
```

```
~/scripts/start_all.sh
```

Oracle Managed Files (OMF) aktivieren einstellen dass die PDB ebenfalls startet wenn die Instanz gestartet wird.

```
$ sqlplus / as sysdba
--
alter system set db_create_file_dest='/u02/oradata';
alter pluggable database pdb1 open;
alter pluggable database pdb1 save state;
```

## Automatisierung des DB Starts und des Herunterfahrens

Folgendes ist als root auszuführen:

Datei /etc/init.d/dbora erzeugen:

```
# nano /etc/init.d/dbora
```

[/etc/init.d/dbora](#)

```
#!/bin/sh
# chkconfig: 345 99 10
# description: Oracle auto start-stop script.
#
# Set ORA_OWNER to the user id of the owner of the
# Oracle database software.

ORA_OWNER=oracle

case "$1" in
    'start')
        # Start the Oracle databases:
        # The following command assumes that the oracle login
        # will not prompt the user for any values
        # Remove "&" if you don't want startup as a background process.
        su $ORA_OWNER -c "/home/oracle/scripts/start_all.sh >>
/home/oracle/scripts/startup_shutdown.log 2>&1" &

        touch /var/lock/subsys/dbora
        ;;
    'stop')
        # Stop the Oracle databases:
        # The following command assumes that the oracle login
        # will not prompt the user for any values
        su $ORA_OWNER -c "/home/oracle/scripts/stop_all.sh >>
/home/oracle/scripts/startup_shutdown.log 2>&1"
        rm -f /var/lock/subsys/dbora
        ;;

```

```
esac
```

Die Skript-Berechtigungen auf 750 einstellen

```
# chmod 750 /etc/init.d/dbora
```

Den „dbora“ Dienst mit passenden Runlevels assizieren und auf Auto-start einstellen

```
# chkconfig --add dbora
```

Sie können die Datenbank als root mit dem Dienst starten und herunterfahren, was genau das ist das beim Neustart des Systems geschieht:

```
# service dbora stop  
# service dbora start
```

## Enterprise Manager Express aktivieren (optional)



Diesen Teil bezeichne ich als optional, da der Web-basierte Enterprise Manager Express von Oracle 19c nur noch ein müder Abklatsch der früheren Enterprise Manager ist (deshalb nennen sie ihn wohl auch „Express“). Er taugt nur noch dazu den Status der DB grob zu beobachten, alle echten Management-Funktionen fehlen jedoch völlig. Der Nutzen ist deshalb äusserst fraglich.

Als oracle:

```
$ sqlplus / as sysdba  
--  
exec dbms_xdb_config.sethttpsport(5500);
```

Test im Browser

ORACLE ENTERPRISE MANAGER  
DATABASE EXPRESS

Username

Password

Container Name

ORACLE

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ORACLE Enterprise Manager Database Express

CDB1 (19.3.0.0.0) Performance

### Database Home

1 min Auto-Refresh

**Status**

- Up Time: 8 minutes, 56 seconds
- Type: Single Instance (cdb1)
- Version: 19.3.0.0.0 Enterprise Edition
- Platform Name: Linux x86 64-bit
- Thread: 1
- Archiver: Stopped
- Last Backup Time: N/A
- Incident(s): 0

**Performance**

Activity Services Containers

2.4  
1.6  
0.8  
0.0

11:51:20 AM 11:59:00 AM 12:06:40 PM 12:14:20 PM 12:22:00 PM 12:29:40 PM 12:37:20 PM 12:45:00 PM  
Sep 28, 2019 GMT+0200

Other  
User I/O  
CPU  
CPU Cores

**Resources**

Host CPU: 0%  
Active Sessions: 0  
Memory: total\_sga, total\_pga, target\_pga, shared pool, large pool, java pool, buffer cache, Shared IO Pool  
Data Storage: PDB1: 0.0G

SQL Monitor - Last Hour (20 max)

# Administration

## Tablespaces in pdb1 erzeugen

Sie denken vielleicht, dass es eine gute Idee ist, die Tablespaces unter den Verzeichnissen /u01 oder /u02 zu speichern, auch weil die Oracle-Dokumente über „optimale flexible Architektur“ dies zu suggerieren scheinen. Wenn Sie diese Anleitung befolgt haben, wird jedoch beim Überprüfen der verfügbaren Festplattengröße ein Problem angezeigt:

```
$ df -h
```

Filesystem	Size	Used	Avail	Use%	Mounted on
devtmpfs	1.8G	0	1.8G	0%	/dev
tmpfs	1.8G	960M	879M	53%	/dev/shm
tmpfs	1.8G	9.5M	1.8G	1%	/run
tmpfs	1.8G	0	1.8G	0%	/sys/fs/cgroup
/dev/mapper/ol_vmora19-root	50G	28G	23G	55%	/
/dev/sda1	1014M	331M	684M	33%	/boot
/dev/mapper/ol_vmora19-home	445G	36G	409G	9%	/home
tmpfs	368M	0	368M	0%	/run/user/54321
tmpfs	368M	12K	368M	1%	/run/user/42

Wie Sie sehen können, befinden sich /u01 und /u02 unter /dev/mapper/ol\_vmora19-root, was 50 GB gross ist. Der grösste Teil des Laufwerks ist jedoch unter /home verfügbar, nämlich 445 GB. Deshalb platziere ich meine Anwendungs-Tablespaces jeweils unter /home/oracle:

```
$ mkdir /home/oracle/pdb1
$ chmod 750 /home/oracle/pdb1
```

```
$ sqlplus / as sysdba
```

Tablespaces kreieren und auflisten:

```
SQL> ALTER SESSION SET CONTAINER = pdb1;
SQL> CREATE TABLESPACE lu_agrar_dat DATAFILE
'/home/oracle/pdb1/lu_agrar_dat.dbf' SIZE 100M AUTOEXTEND ON NEXT 100M;
SQL> CREATE TABLESPACE lu_agrar_inx DATAFILE
'/home/oracle/pdb1/lu_agrar_inx.dbf' SIZE 100M AUTOEXTEND ON NEXT 100M;
SQL> SELECT TABLESPACE_NAME, STATUS, CONTENTS FROM DBA_TABLESPACES;
```

TABLESPACE_NAME	STATUS	CONTENTS
SYSTEM	ONLINE	PERMANENT
SYSAUX	ONLINE	PERMANENT
UNDOTBS1	ONLINE	UNDO
TEMP	ONLINE	TEMPORARY
USERS	ONLINE	PERMANENT
LU_AGRAR_DAT	ONLINE	PERMANENT
LU_AGRAR_INX	ONLINE	PERMANENT

7 rows selected.

Überprüfen dass die neuen Tablespaces tatsächlich nur in pdb1 verfügbar sind:

```
SQL> ALTER SESSION SET CONTAINER = CDB$ROOT;
SQL> SELECT TABLESPACE_NAME, STATUS, CONTENTS FROM DBA_TABLESPACES;
```

TABLESPACE_NAME	STATUS	CONTENTS
SYSTEM	ONLINE	PERMANENT
SYSAUX	ONLINE	PERMANENT
UNDOTBS1	ONLINE	UNDO
TEMP	ONLINE	TEMPORARY
USERS	ONLINE	PERMANENT

### Tablespaces aus pdb1 entfernen und löschen

```
$ sqlplus / as sysdba
```

Tablespaces anzeigen und löschen:

```
SQL> ALTER SESSION SET CONTAINER = pdb1;
SQL> SELECT TABLESPACE_NAME, STATUS, CONTENTS FROM DBA_TABLESPACES;
SQL> DROP TABLESPACE lu_agrar INCLUDING CONTENTS AND DATAFILES;
```

### Speicherverbrauch überwachen

```
$ sqlplus / as sysdba
```

Speicherverbrauch pro Tablespace überwachen:

```
SQL> select tablespace_name, round(bytes/1024/1024) MB,
round(bytes/1024/1024/1024,3) GB from cdb_data_files;
```

Beispielausgabe:

TABLESPACE_NAME	MB	GB
USERS	5	.005
UNDOTBS1	65	.063
SYSTEM	840	.82
SYSAUX	580	.566
SYSTEM	290	.283
SYSAUX	430	.42
UNDOTBS1	220	.215
USERS	5	.005
LU_AGRAR_DAT	50	.049
LU_AGRAR_INX	50	.049

Wenn sie nur die Summe aller Benutzer-Daten wollen:

```
SQL> select round(sum(bytes)/1024/1024) MB,
```

```
round(sum(bytes)/1024/1024/1024,3) GB from cdb_data_files -  
> where tablespace_name not like 'SYS%' and tablespace_name not like  
'UNDO%';
```

Beispielausgabe:

MB	GB
-----	-----
2535	2.476

## TNSNAMES Eintrag bei Clients

```
VMORA19 =  
  (DESCRIPTION =  
    (ADDRESS = (PROTOCOL = TCP)(HOST = vmora19)(PORT = 1521))  
    (CONNECT_DATA =  
      (SERVER = DEDICATED)  
      (SERVICE_NAME = pdb1)  
    )  
  )
```

## Ablaufen der Passworte verhindern

Möglicherweise möchten Sie das Ablaufen des Kennworts zumindest für SYSTEM und die BPS-Superuser deaktivieren.

```
$ sqlplus / as sysdba
```

Die Profile kontrollieren:

```
SQL> alter session set container = pdb1;  
SQL> select profile from DBA_USERS where username = 'SYSTEM';  
SQL> select profile from DBA_USERS where username = 'LU_AGRAR';
```

Einstellungen in den Profilen kontrollieren, z.B. im DEFAULT Profil:

```
SQL> select resource_name, limit from dba_profiles where profile='DEFAULT';
```

Auf unlimitiert ändern:

```
SQL> alter profile DEFAULT limit password_life_time UNLIMITED;
```

Einen Benutzer wieder entsperren:

```
SQL> alter user LU_AGRAR identified by lu_a***** account unlock;
```



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