# **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 Installaton 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

ORACLE	
Oracle Linux 7.7	
Install Oracle Linux 7.7 Test this media & install Oracle Linux 7.7	
Troubleshooting >	
Oracle Linux 🚑	



INSTALLAT	TION SUMMARY	c	DRACLE LINUX	7.7 INSTALLATION Help!
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á	LANGUAGE SUPPORT English (United States)			
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A Please co	mplete items marked with this icon befo	ore continuing to	the next step.	ou ciick Begin Installation.



KEYBOARD LAYOUT	ORACLE LINUX 7.	7 INSTALLATION
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Swiss German; Alemannic; Alsatian (German (Switzerland))	Test the layout configuration below:
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	Options
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SOFTWARE SELECTION	ORACLE LINUX 7.7 INSTALLATION 때 ch Help!
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 Controlle	Z	Ethernet (ens33) Connected		ON
	Hardware Address	00:0C:29:AD:DC:CC		
	Speed	1000 Mb/s		
	IPv4 Address	10.56.2.46		
	IPv6 Address	2a02:120b:2c24:98d0:d 2a02:120b:2c24:98d1:b	1c6:7cd1:b623:8663/6 bef:b344:592:b86f/64	4
	Subnet Mask	255.255.0.0		
	Default Route	10.56.1.1		
	DNS	10.56.1.1		
+ -				Configu
Host name: vmora19	Apply		Current ho	st name:

INSTALLATIC	ON SUMMARY		ORACLE LINUX 7.7 INSTAL
9	DATE & TIME Europe/Zurich timezone		<b>KEYBOARD</b> Swiss German; Alan (Switze
á	LANGUAGE SUPPORT English (United States)		
SOFTWAR	E		
0	INSTALLATION SOURCE	4	SOFTWARE SELECTION Server with GUI
SYSTEM			
?	INSTALLATION DESTINATION Automatic partitioning selected		KDUMP Kdump is enabled
÷	NETWORK & HOST NAME Wired (ens33) connected		SECURITY POLICY No profile selected
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ROOT PASSWORD			ORACLE LINUX 7.7 INSTA
	The root account is used for administ	stering the system. Enter a password for	the root user.
	Root Password:	•••••	
			Strong
	Confirm:	•••••	





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

19c preinstall" installiert werden welches benötigte Komponenten hinzufügt 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

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	LICENSE INFORMATION License not accepted		
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## Anmelden als "oracle" und gnome Benuzerkonfiguration durchführen



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日本語	日本	
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	Cameroon Multilingual (QWERTY)	Preview	
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Privacy controls can be changed at any time from the Settings application.

🔀 gnome-initial-setup



Applications	Places	Help			Fri 10:51 📫 🐠 🖒
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	G	et online	Launch applications	Switch tasks	
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### Bildschirm Timeout abschalten



Applications Place	es	Settings								Fr	i 10:53	A (
	٩	Settings			Power			-	•	×		
	((1-	Wi-Fi		Power Saving								
Home	*	Bluetooth		Blank screen		Never	•					
0	9	Background		C								
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## SSH Schlüssenauthorisierung für root

Verzeichnis ~/.ssh und Schlüssel generieren:

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

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

😴 PuTTY Key Generate	PuTTY Key Generator ? X				
File Key Conversion	is Help				
Key Public key for pasting in SE0AyfPU +eTIU7NKKodXsRjyR OjDgMjYrcl2NYJ/xHE0 JTavmUkIg5wLM4ysO	nto OpenSSH authorize 5EcO/L/ciEWpszOdC0 5Fvulhrp1L9+VHB6x2u 9qm60gRp8jc/coUx20	d_keys file: dRCC1cNv5gJ1Wcy9F BggCxETLIWaUjr44OJx tSTvXXJ0tAKRukrYyA	kSYTgPj50IYz61 AucoR2TnpWf1 Fe18w/RHuFPw		
		27 22 24 70 11 22 24 1	¥		
Key fingerprint:	ssh-rsa 4096 11:d8:b3	:27:33:94:78:1b:03:64:d	4:3e:89:a8:c3:eb		
Key comment:	peterkoch				
Key passphrase:					
Confirm passphrase:					
Actions					
Generate a public/priva	ate key pair	[	Generate		
Load an existing private	e key file	[	Load		
Save the generated ke	у	Save public key	Save private key		
Parameters Type of key to generate		A ○ ED25519	O SSH-1 (BSA)		
Number of bits in a gen	erated key:		2048		

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

- SSHAuth
  - Private key file: (Speicherort meiner ppk Datei)
- Session
  - $\,\circ\,$  Saved sessions: ora19 root
  - Save

Testen ob das Autologin funktioniert:



## 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>
        <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:



\$ 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 Passwort anmelden
- 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 ORACLE_SID=cdb1
export PDB_NAME=pdb1
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=N0
. oraenv
export ORAENV\_ASK=YES

dbstart \$0RACLE\_HOME

\$ nano ~/scripts/stop\_all.sh

#### ~/scripts/stop\_all.sh

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

export ORAENV\_ASK=N0
. oraenv
export ORAENV ASK=YES

dbshut \$0RACLE\_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 $0RACLE_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 \$0RACLE\_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 2 of 9	- '	□ ×
Select Database Installati	on Option 19°	<b>DRAC</b>	;re.
Configuration Option Database Installation Opt Install Type Typical Installation Root script execution Prerequisite Checks Summary Install Product Finish	Select the type of database installation you want to perform.		
✓ → →	< <u>B</u> ack <u>N</u> ext > Inst	all C	ancel

	Oracle Database 19c Installer - Step 3 of 11 ×
Select Database Edition	19° Database
Configuration Option Database Installation Options Database Edition Installation Location Create Inventory Operating System Groups Root script execution Prerequisite Checks Summary Install Product Finish	Which database edition do you want to install?            • Enterprise Edition         Oracle Database 19c 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 19c Standard Edition 2 is a full-featured data management solution ideally         suited to the needs of medium-sized businesses.
Help	< <u>Back</u> <u>Next</u> <u>Install</u> Cancel

		Oracle Database 19c Installer - Step 4 of 11	_ 0	×
Sp	ecify Installation Locati		RACL abase	€.
	<u>Configuration Option</u> <u>Database Installation Options</u>	Specify a path to place all Oracle software and configuration-related files installed by installation owner. This location is the Oracle base directory for the installation owner	this r.	
	Database Edition	Oracle base: /u01/app/oracle	B <u>r</u> owse.	
•	Installation Location			
	Create Inventory	This software directory is the Oracle Database home directory.		
0	Operating System Groups	Software location: /u01/app/oracle/product/19.3.0/dbhome_1		
0	Root script execution			
ψ	Prerequisite Checks			
0	Summary			
0	Install Product			
0	Finish			
•				
	Help	< <u>B</u> ack <u>N</u> ext > Install	Cance	el

	Oracle Database 19c Installer - Step 5 of 11 ×
Create Inventory	19° Database
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: /u01/app/oralnventory Browse Specify an operating system group whose members have write permission to the inventory directory(oralnventory). oralnventory <u>G</u> roup Name: oinstall
Help	< <u>B</u> ack <u>N</u> ext > <u>Install</u> Cancel

	Oracle Database 19c Installer - Step 6 of 11		_ □	×
Privileged Operating Sys	tem groups	<b>19</b> °	ORACL Database	. <b>E</b> .
Configuration Option Database Installation Options Database Edition Installation Location Create Inventory Operating System Groups Root script execution Prerequisite Checks Summary Install Product Finish	SYS privileges are required to create a database using operati Membership in OS Groups grants the corresponding SYS privil grants the SYSDBA privilege. Database Administrator (OSDBA) group: Database Operator (OSOPER) group (Optional): Database Backup and Recovery (OSBACKUPDBA) group: Data Guard administrative (OSDGDBA) group: Encryption Key Management administrative (OSKMDBA) group: Real Application Cluster administrative (OSRACDBA) group:	ing system (OS) a lege, eg. members dba • oper • backupdba • dgdba • kmdba • racdba •	uthentication. ship in OSDBA	
Help	< <u>B</u> ack	<u>N</u> ext >ins	stall Canc	el

	Oracle Database	e 19c Installer - Step 7 of 11	_ = ×
Root script execution cor	nfiguration	19	Database
Configuration Option Database Installation Options Database Edition Installation Location Create Inventory	During the software confi can choose to have the ir one of the options below. additional prerequisite ch Automatically run confi © Use "root" user <u>c</u> r	guration, certain operations have to be performed as nstaller perform these operations automatically by sp The input specified will also be used by the installer ecks. iguration scripts edential	s "root" user. You ecifying inputs for to perform
Operating System Groups	Pass <u>w</u> ord :		
Root script execution     Prerequisite Checks     Summary     Install Product     Finish	O Use <u>s</u> udo Program path : User name : Passw <u>o</u> rd :	/usr/bin/sudo oracle	Browse
Help		< Back Next >	nstall Cancel



	Oracle Database 19c Installer - Step 10 of 11	
Install Product	19° Databa	
Configuration Option Database Installation Options Database Edition Installation Location	Progress 11% Linking Utilities Executables	
Create Inventory     Operating System Groups     Root script execution     Prerequisite Checks     Summary     Install Product     Finish	<ul> <li>✓ Configure Local Node</li> <li>✓ Prepare</li> <li>✓ Link binaries</li> <li>✓ Setup</li> <li>✓ Pend</li> <li>Setup Oracle Base</li> <li>✓ Pend</li> <li>Execute Root Scripts</li> </ul>	ogress eeded ogress ing ing
A	Details Revert All Revert Retry	) <u>S</u> kip
Help	< <u>B</u> ack <u>N</u> ext > <u>I</u> nstall	Cancel

	Oracle Database 19c Installer - Step 10 of 11	_ 🗆 ×
Install Product	19	C ORACLE Database
Configuration Option Database Installation Option Database Edition Installation Location	Progress 63% Saving inventory	
Create Inventory	Oracle Database 19c Installer ×	Succeeded
Root script executi Prerequisite Check Summary Install Product Finish	Configuration scripts generated by the Installer need to be run as a privileged user (root). Installer will run these scripts using the privileged user credentials provided earlier. Are you sure you want to continue ? Yes No	Succeeded Succeeded Succeeded In Progress Pending
	Details Revert All Rev	ert <u>R</u> etry <u>S</u> kip
•	<b>19°</b> ORACLE <sup>®</sup> Database	
<u>H</u> elp	< <u>B</u> ack <u>N</u> ext >	Install Cancel

	Oracle Database 19c Installer - Step 11 of 11	_
Finish	19	C ORACLE Database
Configuration Option Database Installation Options Database Edition Installation Location Create Inventory Operating System Groups Root script execution Prerequisite Checks Summary Install Product Finish	The registration of Oracle Database was successful.	
Help	< <u>B</u> ack <u>N</u> ext >	Install <u>C</u> lose

[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 - Application - Step 1 of 14 _ 🗖 🗙					
Select Database Operation 19° Database					. <b>E</b> .	
•	Database Operation	Select the operation that you want to perform.				
- <b>3</b>	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	<ul> <li><u>Create a database</u></li> <li><u>Configure an existing database</u></li> <li><u>Delete database</u></li> <li><u>Manage templates</u></li> <li><u>Manage Pluggable databases</u></li> <li>Oracle RAC database Instance management</li> </ul>				
	<u>H</u> elp	<ul> <li><u>B</u>ack</li> <li><u>N</u>ext &gt;</li> </ul>	<u> </u>	ish 🛛	Cano	el

	Database Configuration Assistant - Create a database - Step 2 of 14 _ C X				
Se	Select Database Creation Mode 19 Database				
<b>→ →</b> -> -> -> -> -> -> -> -> -> -> -> -> ->	Database Operation Creation Mode Deployment Type Database Identification Storage Option Fast Recovery Option Database Options Configuration Options	<ul> <li>Typical configuration</li> <li>Global database name:</li> <li>Storage type:</li> <li>Database files location:</li> <li>Fast Recovery Area (FRA):</li> <li>Database character set:</li> </ul>	cdb1         File System         /u02/oradata/{DB_UNIQUE_NAME}         /u02/orafra/{DB_UNIQUE_NAME}         Browse         AL32UTF8 - Unicode UTF-8 Universal character set		
	Management Options User Credentials Creation Option	Confirm <u>p</u> assword:	se		
0-0-0	Summary Progress Page Finish	Pluggable database name: Advanced configuration	pdb1		
Messages: Administrative password:[DBT-06208] The 'ADMIN' password entered does not conform to the Oracle recommended standards.					
	Help < Back Next > Finish Cancel				

Database Configuration Assistant - Create a database - Step 2 of 14 ×					
Se	Select Database Creation Mode 19 Database				
	Database Operation Creation Mode Deployment Type Database Identification	<ul> <li>Typical configuration</li> <li>Global database name:</li> <li>Storage type:</li> <li>Database files lesstion:</li> </ul>	cdb1 File System		
0	Storage Option		/u02/oradata/{DB_UNIQUE_NAME}	Browse	
Ý	Fast Recovery Opti	Database Configur	ation Assistant	Browse	
0-0-0-0-0	Database Options Configuration Optio Management Optio User Credentials	[DBT-06208] The 'ADMIN' passv Oracle recommended standard Are you sure you want to contin	word entered does not conform to the ls. nue ?	racter set	
ļ	Summary		Yes <u>N</u> o <u>D</u> etails	s	
	Progress Page Finish	○ Ad <u>v</u> anced configuration			
	Messages: Administrative password:[DBT-06208] The 'ADMIN' password entered does not conform to the Oracle recommended standards.				
	Help		< <u>B</u> ack <u>N</u> ext >	Einish Cancel	



Datab	ase Configuration Assistant - Create 'cdb1' database - Step 4 of 5 Z
Progress Page	19° ORACLE Database
Database Operation     Creation Mode     Summary     Progress Page	Progress 8% Copying database files : In Progress
Finish	Status       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         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	< <u>B</u> ack <u>N</u> ext > <u>F</u> inish Cancel

Datab	ase Configuration Assistant - Create 'cdb1' database - Step 5 of 5 ×
Finish	19° Database
<ul> <li>✓ Database Operation</li> <li>✓ Creation Mode</li> <li>✓ Summary</li> <li>✓ Progress Page</li> <li>✓ Finish</li> </ul>	Database creation complete. For details check the logfiles at: /u01/app/oracle/cfgtoollogs/dbca/cdb1. Database Information: Global Database Name: cdb1 System Identifier(SID): cdb1 Server Parameter File name: /u01/app/oracle/product/19.3.0/dbhome_1/dbs/spfilecdb1.ora Note: All database accounts except SYS and SYSTEM are locked. Select the Password Management button to view a complete list of locked accounts or to manage the database accounts. From the Password Management window, unlock only the accounts you will use. Oracle strongly recommends changing the default passwords immediately after unlocking the account. Password Management
<u>H</u> elp	<u>Back</u> <u>N</u> ext > <u>Finish</u> <u>Close</u>

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 assiziieren 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 denStatus 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

#### 30.04.2024 06:22

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	Username system		
	Password •••••••		
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## Administration

\$ df -h

## 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:

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
<pre>/dev/mapper/ol_vmora19-root</pre>	50G	28G	23G	55% /
/dev/sdal	1014M	331M	684M	33% /boot
<pre>/dev/mapper/ol_vmora19-home</pre>	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	UNLINE	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 CONTAIN	INER = CDB	ООТ;
SQL> SELECT TABLESPACE_NAME,	STATUS, CON	TENTS 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,

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> 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 system identified by ****** account unlock;
```

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