Upgrade do Oracle Database Cloud Service de 11g para 19c

Thamires Samira Ferreira

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Sala Oracle no TDC | Trilha de Inovação com dados em nuvem

Índice

1. Considerações iniciais e pré requisitos

Recursos usados:

OCI

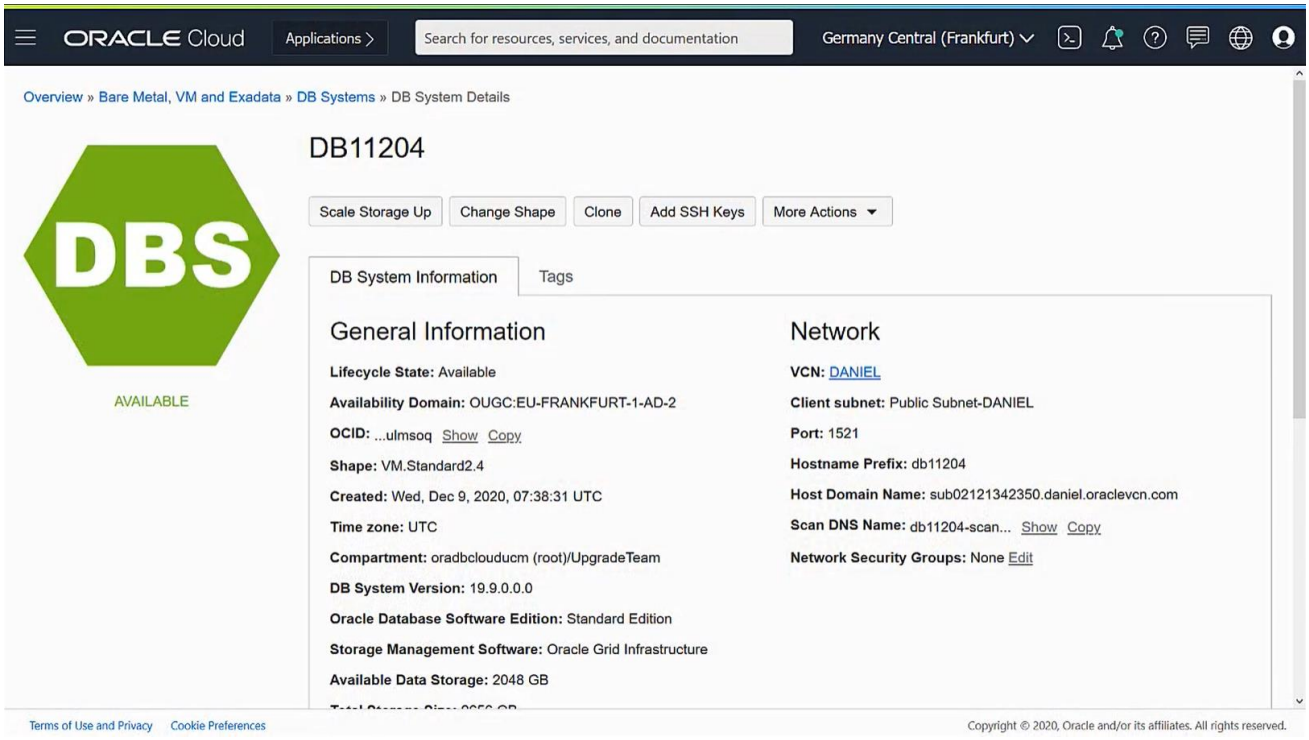
- Banco de dados 11gR2
- Db-System VM 2.1 Shape

Local

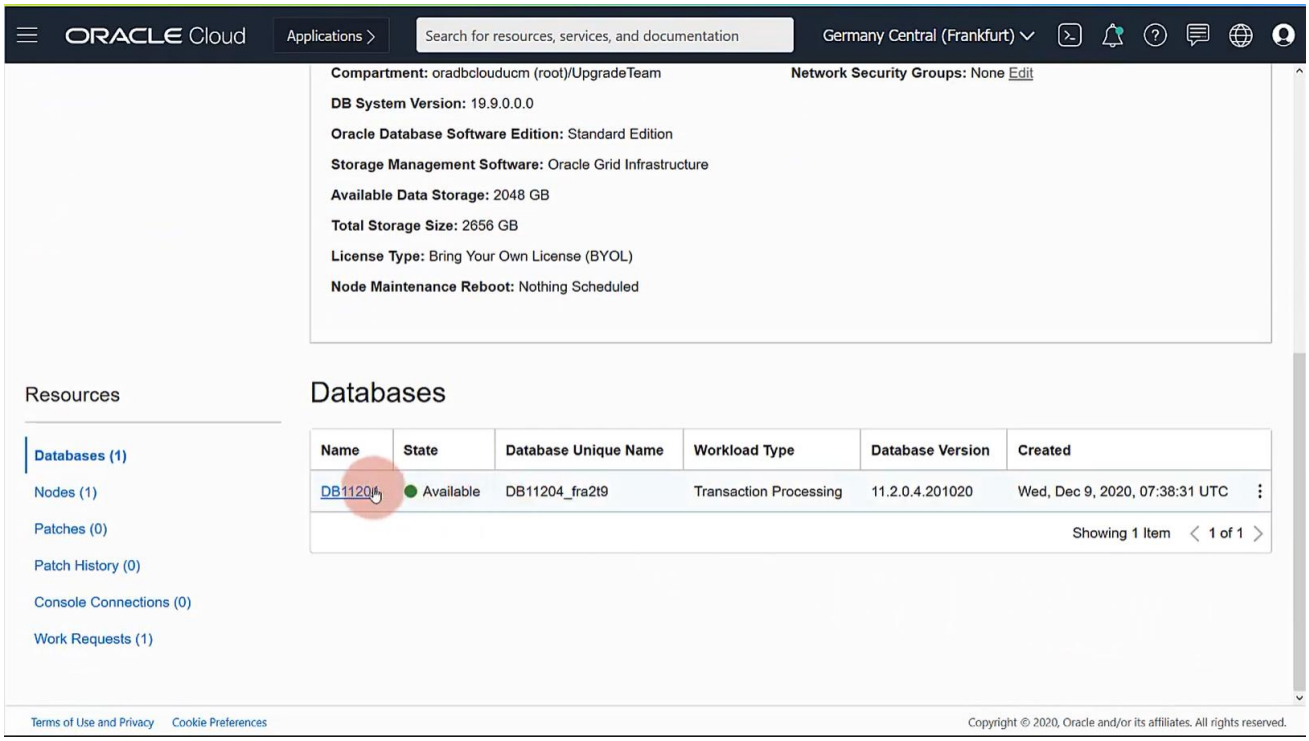
- Gerador de chaves SSH – usado: PuttyGen
- SSH Terminal Client – usado: Putty / MobaXterm

2. Upgrade para DBSystems e Bare Metal na OCI

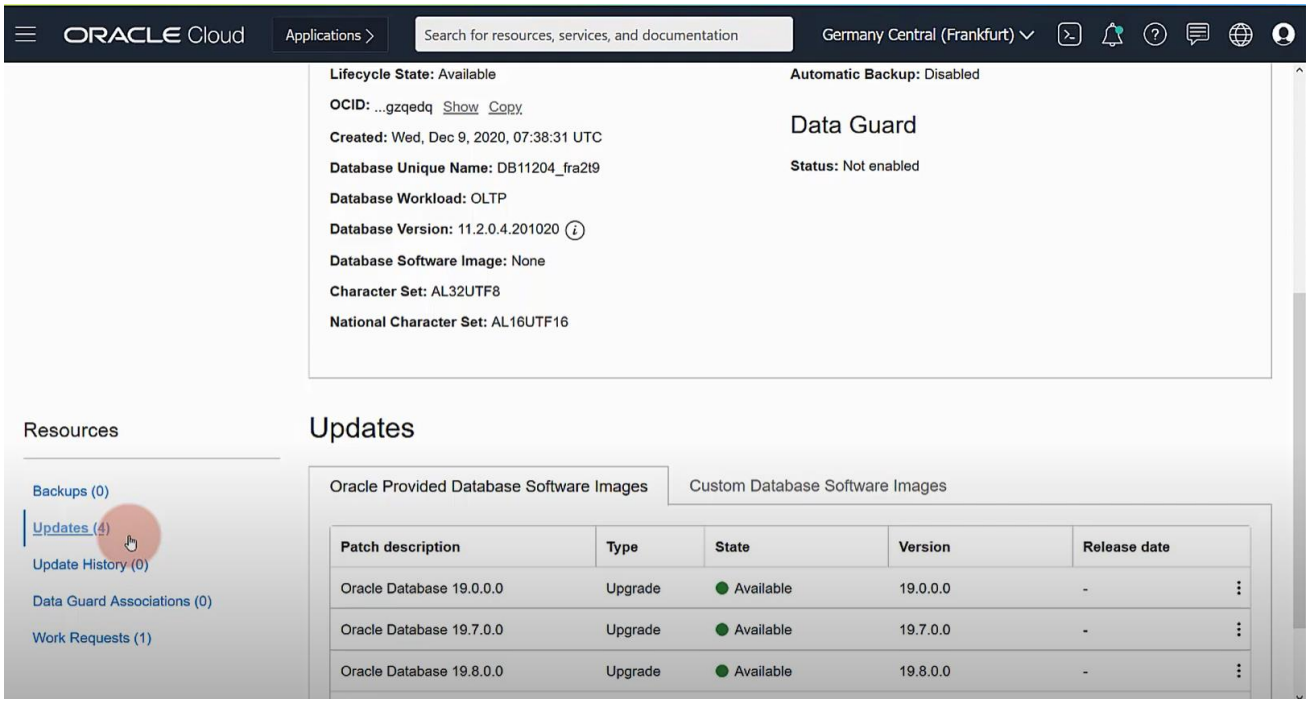
Navegue pelo menu inicial até o seu DB System



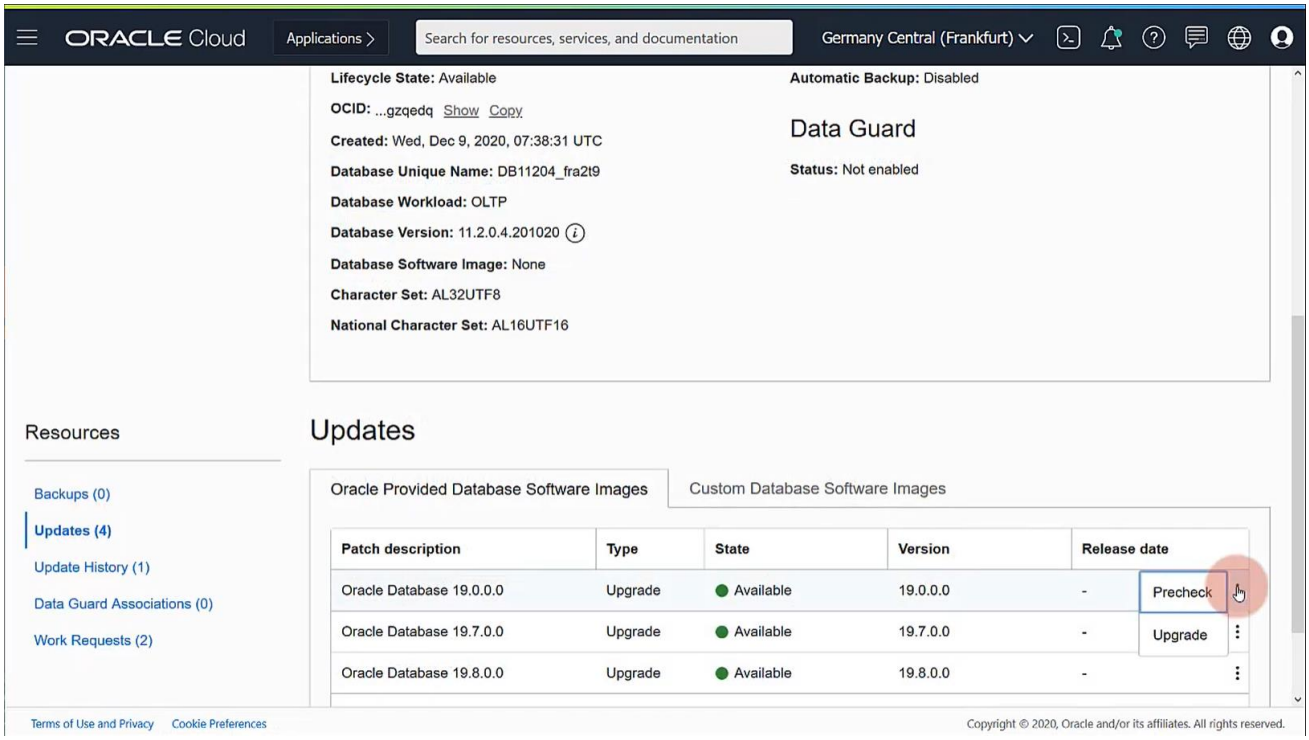
Clique no seu **banco de dados**

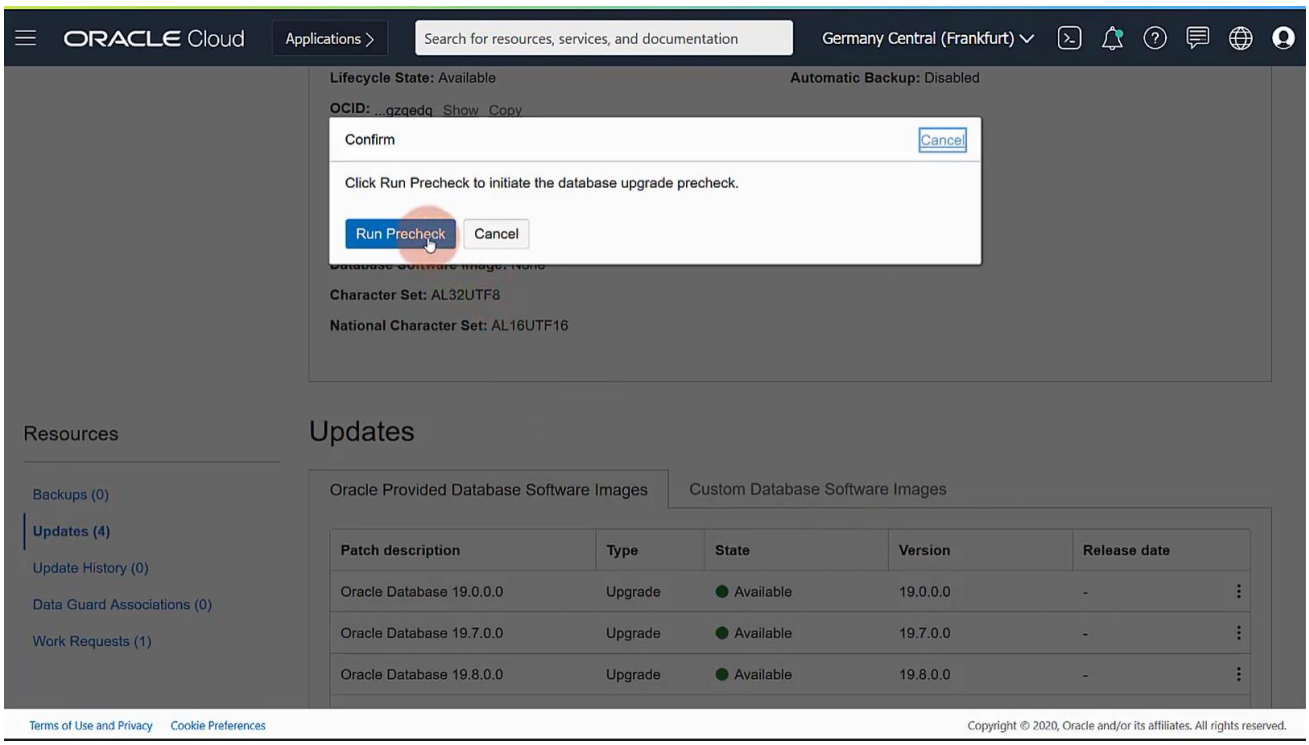


Em seguida navegue até a aba **updates**

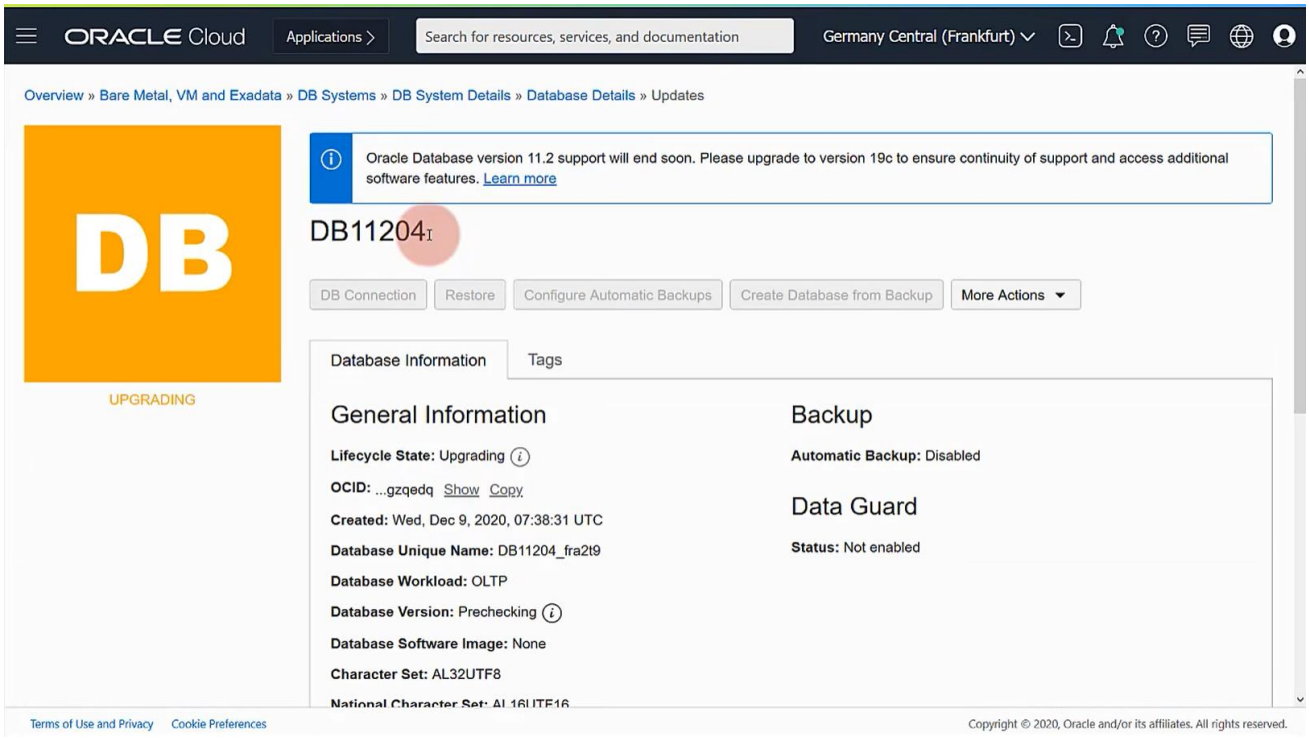


Escolha a versão desejada da lista e inicie o pre-check

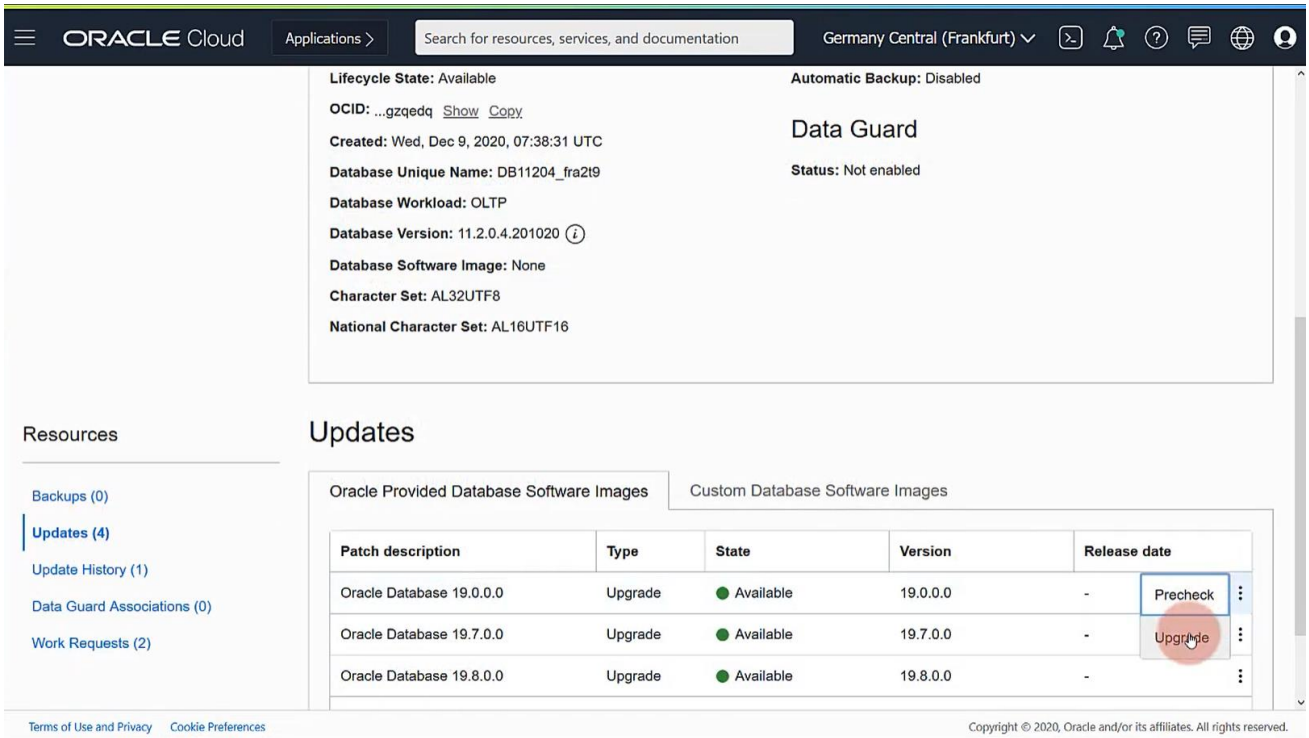


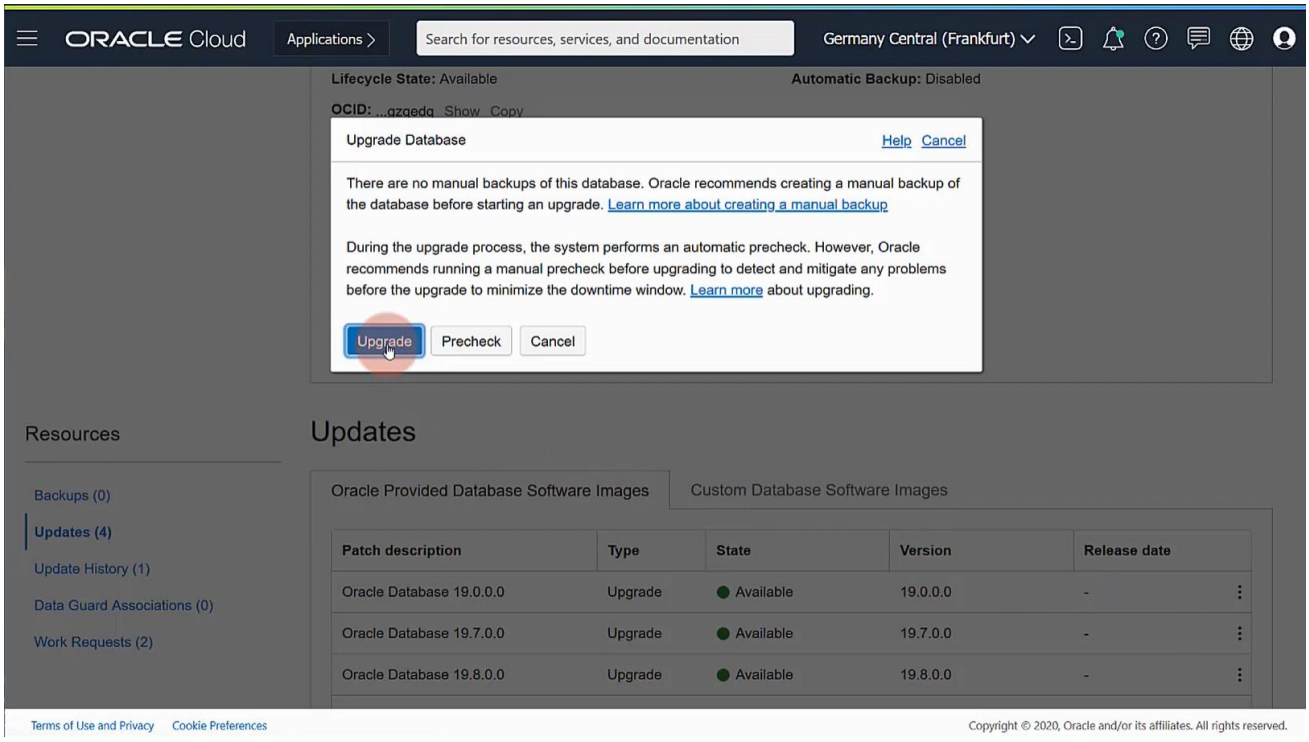


O DB-Sysem entrará em status de "**upgrade**" por alguns minutos

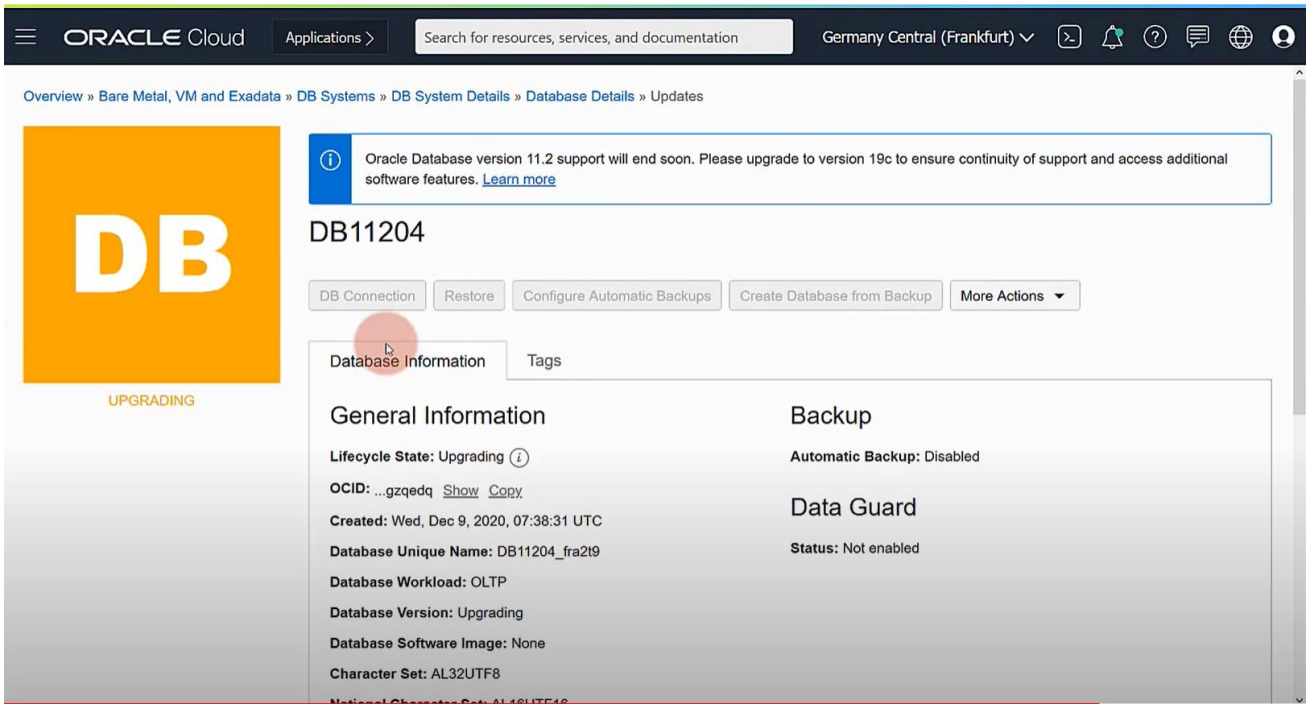


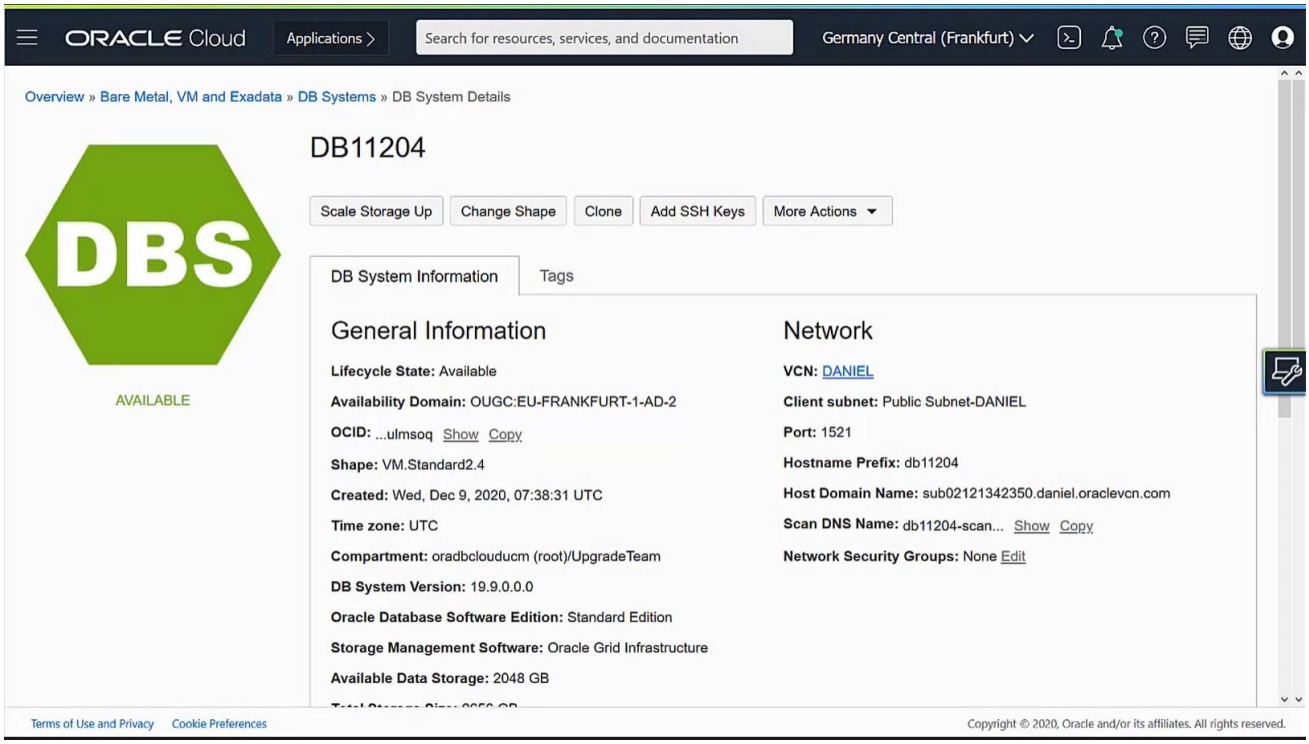
Quando o processo finalizar podemos ir até o menu **upgrade** e iniciar o upgrade do banco de dados

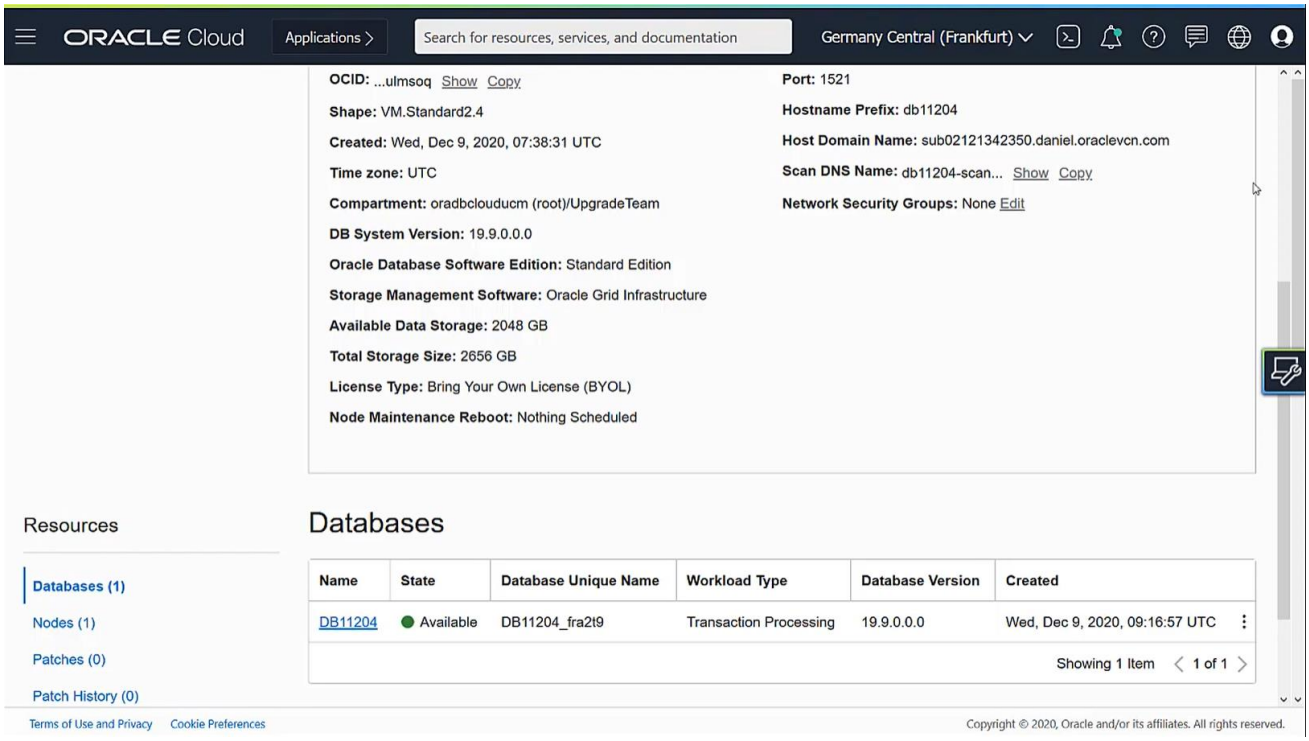




Aguarde até que o processo termine







Está pronto o upgrade!
Quando voltar ao status disponível verifique a versão do banco via console e ssh.

2.1 Atividades pós upgrade

Após uma atualização bem-sucedida, observe o seguinte:

- A Oracle recomenta remover a antiga DBHOME

```
[root@host]$ dbcli list-dbhomes
[root@host]$ dbcli delete-dbhome -i <id>
[root@host]$ dbcli describe-job -i <id>
```

- Verifique se os backups automáticos estão habilitados para o banco de dados, se você os desabilitou antes da atualização.
- Edite o parâmetro COMPATIBLE do banco de dados Oracle para refletir a nova versão do software do banco de dados Oracle.

```
SQL> alter system set compatible='19.0.0' scope=spfile;
SQL> shutdown immediate
SQL> startup
```

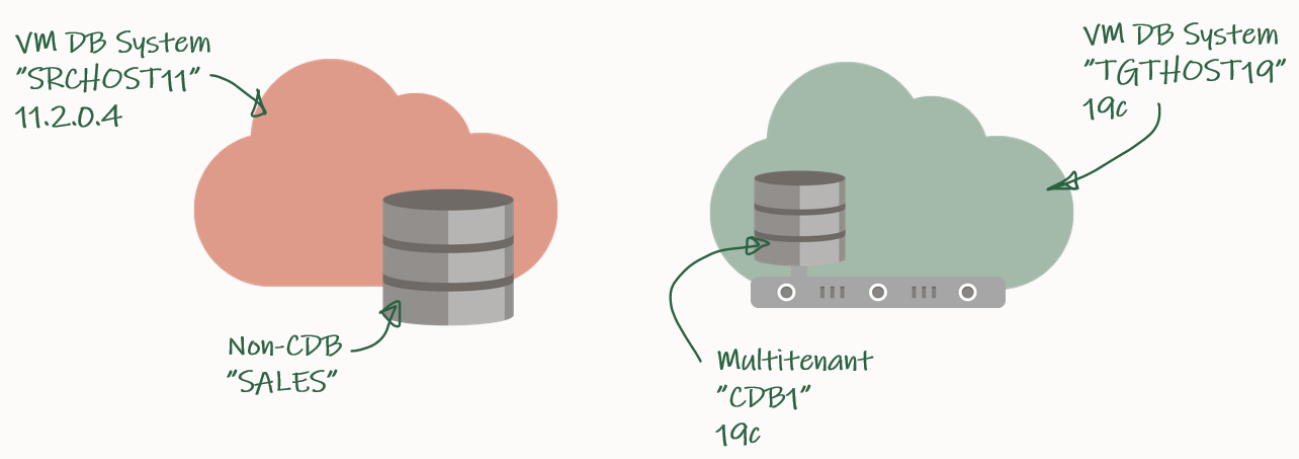
Sempre defina COMPATIBLE para o valor padrão da versão.

- Em sistemas de banco de dados de máquina virtual, certifique-se de que o arquivo .bashrc no diretório inicial do usuário Oracle foi atualizado para apontar para o início do banco de dados 19c.

```
export OLD_HOME=/u01/app/oracle/product/11.2.0.4/dbhome_1
export NEW_HOME=/u01/app/oracle/product/19.0.0.0/dbhome_2
cp ~/.bashrc ~/.bashrc_backup_`(date -u +%Y%m%d-%H%M%S)`
sed -i "s,$OLD_HOME,$NEW_HOME,g" ~/.bashrc
source ~/.bashrc
```

3. Upgrade para 19c multitenant de on-prem e Exadata Cloud Service – downtime mínimo.

Para fazer o upgrade e passar de non-cdb para container database um paço a mais precisa ser realizado no upgrade. A aquitetura que vemos abaixo pode ser contruida manualmente para diminuir downtime. Podemos criar um novo ambiente com os binários instalados e pronto para receber o plug do banco de origem em um pdb.



Passo a passo para executar uma técnica com minimo downtime:

- Provisione um servidor temporário com binários do 11g e 19c
- Faça um backup de nível 0 enquanto o banco de dados de origem (Doc ID 790559.1)
- Restaure o banco de dados no servidor de destino
- Faça backup incremental no banco de dados de origem
- Recupere o banco temporário destino usando backup incremental
- Inicio do downtime, restinja o acesso ao banco de origem.
- Transfira os ultimos archives da origem para o destino.
- Recupere e abra o banco de destino
- Inicie o upgrade do banco de destino
- Describe, check de compatibilidade e Plug-in (Doc ID 2392653.1 -> TDE)
- Validações de integridade, conectividade etc.

3.1 Backup origem e restore no destino

```
[opc@srchost11]$ sudo mkdir -p /mnt/upgsales

[opc@srchost11]$ sudo mount x.x.x.x:/upgsales /mnt/upgsales

[oracle@srchost11]$ mkdir -p /mnt/upgsales/backup
[oracle@srchost11]$ cp
/opt/oracle/dcs/commonstore/wallets/tde/$ORACLE_UNQNAME/ewallet.p12
/mnt/upgsales/
[oracle@srchost11]$ cp $ORACLE_HOME/dbs/orapw$ORACLE_SID
/mnt/upgsales/orapw$ORACLE_SID

SQL> CREATE PFILE='/mnt/upgsales/init.ora' FROM SPFILE;

RMAN>
run {
allocate channel CH01 device type disk;
allocate channel ch02 device type disk;
allocate channel CH03 device type disk;
allocate channel CH04 device type disk;
allocate channel CH05 device type disk;
BACKUP INCREMENTAL LEVEL 0 DATABASE FORMAT '/mnt/upgsales/backup/lvl0%U' PLUS
ARCHIVELOG FORMAT '/mnt/upgsales/backup/arch%U' ;
BACKUP CURRENT CONTROLFILE FORMAT '/mnt/upgsales/backup/controlfile';}
```

Destino

```
[opc@tgthost19]$ sudo mkdir -p /mnt/upgsales
[opc@tgthost19]$ sudo mount x.x.x.x:/upgsales /mnt/upgsales
[oracle@tgthost19]$ cp /mnt/upgsales/init.ora
$ORACLE_HOME/dbs/initSALES.ora
[oracle@tgthost19]$ cp /mnt/upgsales/orapwSALES
$ORACLE_HOME/dbs/orapwSALES
[oracle@tgthost19]$ mkdir -p
/opt/oracle/dcs/commonstore/wallets/tde/SALES
[oracle@tgthost19]$ cp /mnt/upgsales/ewallet.p12
/opt/oracle/dcs/commonstore/wallets/tde/SALES/
```

```
[oracle@tgthost19]$ mkdir -p /u01/app/oracle/admin/SALES/adump
[oracle@tgthost19]$ vi $ORACLE_HOME/dbs/initSALES.ora

--remover parametros com duplo underscore
Set audit_file_dest='/u01/app/oracle/admin/SALES/adump'
Set control_files='+RECO/sales/controlfile/current.256.1048859635'
Set SALES.sga_target=6G
Set SALES.pga_aggregate_target=2G
Set db_unique_name='SALES'
--fim vi

[oracle@tgthost19]$ $ORACLE_HOME/bin/srvctl stop database -db
$ORACLE_UNQNAME

[oracle@tgthost19]$ export ORACLE_UNQNAME=SALES
[oracle@tgthost19]$ export ORACLE_SID=SALES
[oracle@tgthost19]$ sql / as sysdba

SQL> STARTUP NOMOUNT
[oracle@tgthost19]$ rman target /

RMAN> RESTORE CONTROLFILE FROM '/mnt/upgsales/backup/controlfile';
RMAN> ALTER DATABASE MOUNT;
RMAN> sql 'ADMINISTER KEY MANAGEMENT SET KEYSTORE OPEN FORCE KEYSTORE
IDENTIFIED BY <SALES-keystore-password>';
RMAN> sql "ADMINISTER KEY MANAGEMENT CREATE LOCAL AUTO_LOGIN KEYSTORE
FROM KEYSTORE
''/opt/oracle/dcs/commonstore/wallets/tde/$ORACLE_UNQNAME/'' IDENTIFIED
BY <SALES-keystore-password>";
RMAN> CATALOG START WITH '/mnt/upgsales/backup' NOPROMPT;
RMAN> RESTORE DATABASE;


-- Para os incrementais:

[oracle@srchost11]$ rman target /

SALES RMAN> BACKUP INCREMENTAL LEVEL 1 DATABASE FORMAT
'/mnt/upgsales/backup/lvl1%U' PLUS ARCHIVELOG FORMAT
'/mnt/upgsales/backup/arch%U';

[oracle@tgthost19]$ rman target /

RMAN SALES> CATALOG START WITH '/mnt/upgsales/backup'
NOPROMPT;
RMAN SALES> RECOVER DATABASE;
```

3.2 Preupgrade

```
[oracle@srchost11]$ cp preupgrade_19_cbuild_7_lf.zip
$ORACLE_HOME/rdbms/admin
[oracle@srchost11]$ cd $ORACLE_HOME/rdbms/admin
[oracle@srchost11]$ unzip preupgrade_19_cbuild_7_lf.zip

[oracle@srchost11]$ mkdir -p /mnt/upgsales/preupg_logs_SALES
[oracle@srchost11]$ cd /mnt/upgsales/preupg_logs_SALES
[oracle@srchost11]$ $ORACLE_HOME/jdk/bin/java -jar
$ORACLE_HOME/rdbms/admin/preupgrade.jar FILE TEXT DIR .

SALES SQL> SET SERVEROUT ON
SALES SQL>
@/mnt/upgsales/preupg_logs_SALES/preupgrade_fixups.sql
```

3.3 Inicio do downtime, restinja o acesso ao banco de origem.

```
[oracle@srchost11]$ sqlplus / as sysdba

SALES SQL> SHUTDOWN IMMEDIATE
SALES SQL> STARTUP RESTRICT

[oracle@srchost11]$ rman target /

SALES RMAN> sql 'ALTER SYSTEM ARCHIVE LOG CURRENT';
SALES RMAN> BACKUP INCREMENTAL LEVEL 1 DATABASE FORMAT
'/mnt/upgsales/backup/lvl1%U' PLUS ARCHIVELOG FORMAT
'/mnt/upgsales/backup/arch%U';
```

Target

```
[oracle@tgthost19]$ rman target /

RMAN SALES> CATALOG START WITH '/mnt/upgsales/backup' NOPROMPT;

RMAN> RECOVER DATABASE;

[oracle@tgthost19]$ sqlplus / as sysdba

SALES SQL> ALTER DATABASE OPEN RESETLOGS UPGRADE;
```

Upgrade

```
[oracle@tgthost19]$ mkdir -p /mnt/upgsales/upg_logs_SALES
[oracle@tgthost19]$ dbupgrade -l /mnt/upgsales/upg_logs_SALES
SQL> STARTUP

SQL> --Recompile
SQL> @$ORACLE_HOME/rdbms/admin/utlrp
SQL> --Check outcome of upgrade
SQL> @$ORACLE_HOME/rdbms/admin/utlusts.sql
SQL> --Post-upgrade fixups
SQL> @/mnt/upgsales/preupg_logs_$SOURCE_SID/postupgrade_fixups.sql
SQL> --Timezone file upgrade
SQL> SET SERVEROUTPUT ON
SQL> @$ORACLE_HOME/rdbms/admin/utltz_upg_check.sql
SQL> @$ORACLE_HOME/rdbms/admin/utltz_upg_apply.sql

[oracle@tgthost19]$ more /mnt/upgsales/preupg_logs_SALES/preupgrade.log
```

3.4 Describe, check de compatibilidade e Plug-in

```
SQL> ADMINISTER KEY MANAGEMENT EXPORT ENCRYPTION KEYS WITH SECRET "<a-
secret-password>" TO '/mnt/upgsales/key_export_SALES' FORCE KEYSTORE
IDENTIFIED BY <SALES-keystore-password>;
SALES SQL> SHUTDOWN IMMEDIATE
SALES SQL> STARTUP MOUNT
SALES SQL> ALTER DATABASE OPEN READ ONLY;
SALES SQL> EXEC DBMS_PDB.DESCRIBE('/mnt/upgsales/manifest_sales.xml');
SALES SQL> SHUTDOWN IMMEDIATE
[oracle@tgthost19]$ source ~/.bashrc
[oracle@tgthost19]$ env | grep ORA
[oracle@tgthost19]$ $ORACLE_HOME/bin/srvctl start database -db
$ORACLE_UNQNAME

CDB1 SQL> SET SERVEROUT ON
CDB1 SQL> BEGIN
    IF
DBMS_PDB.CHECK_PLUG_COMPATIBILITY('/mnt/upgsales/manifest_sales.xml',
'SALES') THEN
        DBMS_OUTPUT.PUT_LINE('SUCCESS');
    ELSE
        DBMS_OUTPUT.PUT_LINE('ERROR');
    END IF;
END;
/

CDB1 SQL> SELECT type, message, action FROM pdb_plug_in_violations WHERE
name='SALES' and status='PENDING';
```

```
CDB1 SQL> CREATE PLUGGABLE DATABASE SALES USING
'/mnt/upgsales/manifest_sales.xml' MOVE;
CDB1 SQL> ALTER PLUGGABLE DATABASE SALES OPEN;

--TDE

CDB1 SQL> ALTER SESSION SET CONTAINER=SALES;
CDB1 SQL> ADMINISTER KEY MANAGEMENT IMPORT ENCRYPTION KEYS WITH SECRET
"a-secret-password" FROM '/mnt/upgsales/key_export_SALES' FORCE KEYSTORE
IDENTIFIED BY <CDB1-keystore-password> WITH BACKUP;


--Complete the conversion
CDB1 SQL> ALTER SESSION SET CONTAINER=SALES;
CDB1 SQL> @$ORACLE_HOME/rdbms/admin/noncdb_to_pdb.sql
CDB1 SQL> SHUTDOWN IMMEDIATE
CDB1 SQL> STARTUP
CDB1 SQL> ALTER SESSION SET CONTAINER=CDB$ROOT;
CDB1 SQL> SELECT type, message, action FROM pdb_plug_in_violations WHERE
name='SALES' and status='PENDING';
CDB1 SQL> ALTER SESSION SET CONTAINER=CDB$ROOT;
CDB1 SQL> SELECT OPEN_MODE, RESTRICTED FROM V$PDBS WHERE NAME='SALES';
CDB1 SQL> ALTER PLUGGABLE DATABASE SALES SAVE STATE;

CDB1 SQL> ALTER SESSION SET CONTAINER=SALES;

--Conversão completa! Valide o banco de dados.
```

Referencias e links úteis

Upgrading a Database - https://docs.oracle.com/en-us/iaas/Content/Database/Tasks/dbsystem_upgrading_database.htm

RMAN Restore of Backups as Part of a Database Upgrade (Doc ID 790559.1)

How to UnPlug/Plug-in PDB (TDE Enabled) in DBaaS Environment (Doc ID 2392653.1)

How to Download and Run Oracle's Database Pre-Upgrade Utility (Doc ID 884522.1)

Performing Preupgrade Checks Using AutoUpgrade - https://docs.oracle.com/en/database/oracle/oracle-database/19/upgrd/using-autoupgrade-utility-perform-checks.html#GUID-A177DDAB-C617-476B-8718-041333DAA67B