

Thema: TSP ASM Test auf Basis des Oracle Database Exadata Cloud Service

Personen

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Maßnahmen: (Ohne Termin=Sofort)

Nr.	Wer?	Was?	Bis Wann ?	Status?
2	Bodo	Vorbereitungen		
3	Bodo	Test Durchführung		
4	Bodo	Dokumentation		

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1. Planung

1.1 Testcase

Folgender Testcase ist durchzuführen:

```
TESTCASE (without REMAP, works with 11g but not with 12c)
```

```
~~~~~
```

```
SOURCE DATABASE
```

```
-----
```

```
create tablespace benni datafile size 1G;
create user benni identified by benni default tablespace benni temporary tablespace temp;
grant dba to benni;
create table benni.test (id number) tablespace benni;
insert into benni.test values (1111);
commit;
```

```
alter tablespace benni read only;
expdp system/oracle DUMPFILE=benni_tblspce.dmp DIRECTORY=DP_BG
TRANSPORT_TABLESPACES=BENNI TRANSPORT_FULL_CHECK=Y
```

```
TARGET DATABASE
```

```
-----
```

```
create user benni identified by benni default tablespace users temporary tablespace temp;
grant dba to benni;
impdp system/oracle DUMPFILE=benni_tblspce.dmp DIRECTORY=DP_BG
TRANSPORT_DATAFILES= +DG1/tzelos1/datafile/benni.1389.923056801
```

1.2 Vorgehensweise / Ablauf

- Provisionierung von 2x Oracle Database Exadata Cloud Instanz mit Version 12.1
- Erstellen von Testdaten in der neuen DB laut Testcase
 - Neuer TSP benni
 - Neue Tabelle test
- Workaround testen
Nach MOS Note: In 12c, TTS Import Will Fail with ORA-19721 if we Try to Attach a Read-only Tablespace Second Time. Also, Sharing the Same Read-Only Tablespace across Databases Is Not Possible. (**Doc ID 2094476.1**)

Dokumentation: [Using Oracle Database Exadata Cloud Service](#)

2. Provisionierung von 2 Datenbanken in der Exadata Cloud

2.1 Vorbereitungen

2.1.1 Überprüfung der ASM Instanz

V\$ASM_DISK	Contains one row for every disk discovered by the Oracle ASM instance, including disks that are not part of any disk group. This view performs disk discovery every time it is queried.
V\$ASM_DISK_IOSTAT	Displays information about disk I/O statistics for each Oracle ASM client. In an Oracle Database instance, only the rows for that instance are shown.
V\$ASM_DISK_STAT	Contains the same columns as V\$ASM_DISK , but to reduce overhead, does not perform a discovery when it is queried. It only returns information about any disks that are part of mounted disk groups in the storage system. To see all disks, use V\$ASM_DISK instead.
V\$ASM_DISKGROUP	Describes a disk group (number, name, size related info, state, and redundancy type). This view performs disk discovery every time it is queried.
V\$ASM_DISKGROUP_STAT	Contains the same columns as V\$ASM_DISKGROUP , but to reduce overhead, this view does not perform a discovery when it is queried. To see more complete information on all disks, use V\$ASM_DISKGROUP .
V\$ASM_ESTIMATE	Displays an estimate of the work involved in execution plans for Oracle ASM disk group rebalance and resync operations.
V\$ASM_FILE	Contains one row for every Oracle ASM file in every disk group mounted by the Oracle ASM instance.

```
su - grid
sqlplus / as sysasm
```

```
select * from v$asm diskgroup;
```

```
SQL> select * from v$asm diskgroup;
```

GROUP_NUMBER	NAME	SECTOR_SIZE	LOGICAL_SECTOR_SIZE	BLOCK_SIZE	ALLOCATION_UNIT_SIZE	STATE	
1	DATA3	512	512	4096	4194304	MOUNTED	
HIGH	104546304	103849656	0	696648	5808128	32680509	0
12.2.0.1.0							
11.2.0.4.0				N	0		
2	DBFSC3	512	512	4096	4194304	MOUNTED	
NORMAL	221184	147412	0	73772	6144	70634	0
12.2.0.1.0							
11.2.0.4.0				Y	0		
3	RECOC3	512	512	4096	4194304	MOUNTED	
HIGH	26136576	26093748	0	42828	1452032	8213905	0
12.2.0.1.0							
11.2.0.4.0				N	0		
4	ACFSC3_DG1	512	512	4096	4194304	MOUNTED	
NORMAL	737280	27832	0	709448	24576	1628	0
12.1.0.2.0							
11.2.0.2.0				N	0		
5	ACFSC3_DG2	512	512	4096	4194304	MOUNTED	
NORMAL	245760	11448	0	234312	8192	1628	0
12.1.0.2.0							
11.2.0.2.0				N	0		

```
select * from v$asm_disk;
```

```
select GROUP_NUMBER, FILE_NUMBER, BYTES, TYPE, CREATION_DATE, PERMISSIONS,
SPACE from v$asm_file
order by CREATION_DATE
```

2.1.2 Datenbank Files

```
SQL> select * from dba_data_files;
```

FILE_NAME	FILE_ID	TABLESPACE_NAME	BYTES	BLOCKS	STATUS	RELATIVE_FNO	AUT	MAXBYTES
+DATA3/TTSP02/DATAFILE/system.dbf	1	SYSTEM	2097152000	256000	AVAILABLE	1	YES	3.4360E+10
4194302	524288	2096103424	255872	SYSTEM				
+DATA3/TTSP02/DATAFILE/sysaux.dbf	3	SYSAUX	2097152000	256000	AVAILABLE	3	YES	3.4360E+10
4194302	524288	2096103424	255872	ONLINE				
+DATA3/TTSP02/PDBSEED/DATAFILE/system.dbf	5	UNDOTBS1	2097152000	256000	AVAILABLE	1024	YES	5.4976E+11
67108864	524288	2096103424	255872	ONLINE				
+DATA3/TTSP02/DATAFILE/users.dbf	6	UNDOTBS2	2097152000	256000	AVAILABLE	1024	YES	5.4976E+11
67108864	524288	2096103424	255872	ONLINE				
+DATA3/TTSP02/PDBSEED/DATAFILE/sysaux.dbf	7	USERS	1073741824	131072	AVAILABLE	7	YES	3.4360E+10
4194302	64000	1072693248	130944	ONLINE				

2.2 Bereitstellung der Exadata Cloud Datenbank Service Instanzen

Siehe Dokument OracleDB_12R1_Oracle_Exadata_Cloud_DOAG.docx

Exadata Cloud Datenbank Service “DB-TSP-ASM-Exadata-Test”: Datenbank 1 – TTSP02

Exadata Cloud Datenbank Service „DB-TSP-ASM-Exadata-Test-Ziel“: Datenbank 2 – TTSP03 ZIEL:

Oracle Database Cloud Service

Create Service

← Previous
Cancel

Service

Details

Confirmation

Create >

Confirmation

Confirm your responses and create this Oracle Database Cloud Service instance.

Subscription Details

Service Level: Oracle Database Exadata Cloud Service

Software Release: Oracle Database 12c Release 1

Software Edition: Enterprise Edition - Extreme Performance

Service Details

Service Name: DB-TSP-ASM-Exadata-Test-Ziel

Description: Database Exadata Service Instanz zum Testen des TSP
Read-only Workarounds - Zieldatenbank

Exadata System: mbliexacloud - Quarter Rack (2 nodes)

Backup and Recovery Details

Backup Destination: None

Database Configuration Details

DB Name (SID): TTSPZiel

PDB Name: TestZiel

Character Set: AL32UTF8 - Unicode Universal character set UTF-8 form 32-bit

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

Include GoldenGate: No

Standby Database Configuration Details

Standby Database with Data Guard: No

	Operation	Service Name	Service Type	Status	Start Time	End Time	Initiated By
▶	Create Service	DB-TSP-ASM-Exadata-...	Oracle Database ...	Succeeded	Feb 21, 2017 10:18:32 AM UTC	Feb 21, 2017 10:39:53 AM UTC	bodo.neuha...

2.3 Überprüfung nach der Provisionierung

2.3.1 Datenbank Files

```

1* select * from dba_data_files

FILE_NAME
-----
FILE_ID TABLESPACE_NAME          BYTES    BLOCKS STATUS    RELATIVE_FNO AUT    MAXBYTES    MAXBLOCKS
-----
INCREMENT_BY USER_BYTES USER_BLOCKS ONLINE_
-----
+DATAAC3/TTSPZiel1/DATAFILE/system.dbf
   1 SYSTEM                2097152000    256000 AVAILABLE          1 YES 3.4360E+10    4194302
   524288 2096103424         255872 SYSTEM
+DATAAC3/TTSPZiel1/DATAFILE/sysaux.dbf
   3 SYSAUX                2097152000    256000 AVAILABLE          3 YES 3.4360E+10    4194302
   524288 2096103424         255872 ONLINE
+DATAAC3/TTSPZiel1/PDBSEED/DATAFILE/system.dbf
   5 UNDOTBS1              2097152000    256000 AVAILABLE         1024 YES 5.4976E+11    67108864
   524288 2096103424         255872 ONLINE
+DATAAC3/TTSPZiel1/DATAFILE/users.dbf
   6 UNDOTBS2              2097152000    256000 AVAILABLE         1024 YES 5.4976E+11    67108864
   524288 2096103424         255872 ONLINE
+DATAAC3/TTSPZiel1/PDBSEED/DATAFILE/sysaux.dbf
   7 USERS                 1073741824    131072 AVAILABLE          7 YES 3.4360E+10    4194302
   64000 1072693248         130944 ONLINE
  
```

2.4 Tablespace Encryption

```
SQL> show parameter new
```

NAME	TYPE	VALUE
encrypt_new_tablespaces	string	CLOUD_ONLY

Ausschalten der automatischen TSP Encryption:

```
alter system set encrypt_new_tablespaces = DDL scope=both;
```

3. Workaround aus MOS Note 2094476.1 testen

3.1 Erstellen von Testdaten in der neuen DB

3.1.1 Datenstrukturen in SQL*Plus anlegen

```
.. ./TTSP02.env
```

```
sqlplus / as sysdba
```

```
alter session set container = test02;
```

```
create tablespace benni datafile size 1G;
```

```
1* select * from dba_tablespaces
```

TABLESPACE_NAME	BLOCK_SIZE	INITIAL_EXTENT	NEXT_EXTENT	MIN_EXTENTS	MAX_EXTENTS	MAX_SIZE	PCT_INCREASE
SYSTEM	65536	8192	65536	1	2147483645	2147483645	
SYSTEM	ONLINE	PERMANENT	LOGGING	YES	LOCAL	SYSTEM	NO
SYSTEM	MANUAL	DISABLED	NOT APPLY	NO	STORAGE	NO	
SYSAUX	65536	8192	65536	1	2147483645	2147483645	
SYSAUX	ONLINE	PERMANENT	LOGGING	YES	LOCAL	SYSTEM	NO
SYSAUX	AUTO	DISABLED	NOT APPLY	NO	STORAGE	NO	
PDB_TEMP	1048576	8192	1048576	1	2147483645		0
PDB_TEMP	ONLINE	TEMPORARY	NOLOGGING	NO	LOCAL	UNIFORM	NO
PDB_TEMP	MANUAL	DISABLED	NOT APPLY	NO	STORAGE	NO	
USERS	65536	8192	65536	1	2147483645	2147483645	
USERS	ONLINE	PERMANENT	LOGGING	NO	LOCAL	SYSTEM	NO
USERS	AUTO	DISABLED	NOT APPLY	NO	STORAGE	NO	
BENNI	65536	8192	65536	1	2147483645	2147483645	
BENNI	ONLINE	PERMANENT	LOGGING	NO	LOCAL	SYSTEM	NO
BENNI	AUTO	DISABLED	NOT APPLY	NO	STORAGE	NO	

```
select TABLESPACE_NAME,STATUS,ENCRYPTED from dba_tablespaces;
```

TABLESPACE_NAME	STATUS	ENC
SYSTEM	ONLINE	NO
SYSAUX	ONLINE	NO
PDB_TEMP	ONLINE	NO
USERS	ONLINE	NO
BENNI	ONLINE	NO

```
SQL> select * from dba_data_files;

FILE_NAME
-----
FILE_ID TABLESPACE_NAME          BYTES    BLOCKS STATUS    RELATIVE_FNO AUT    MAXBYTES    MAXBLOCKS
-----
INCREMENT_BY USER_BYTES USER_BLOCKS ONLINE_
-----
+DATAC3/TTSP02/TEST02/test02_system_fb.dbf
      8 SYSTEM                629145600    76800 AVAILABLE          1 YES 3.4360E+10    4194302
524288  628097024                76672 SYSTEM
+DATAC3/TTSP02/TEST02/test02_undotbs1.dbf
      9 SYSAUX                4924112896    601088 AVAILABLE          4 YES 3.4360E+10    4194302
524288  4923064320                600960 ONLINE
+DATAC3/TTSP02/TEST02/test02_users01.dbf
     10 USERS                 5242880        640 AVAILABLE         10 YES 3.4360E+10    4194302
160    4194304                512 ONLINE
+DATAC3/TTSP02/48BB1AD3225313E5E0532266918DEEC3/DATAFILE/benni.321.936534579
     11 BENNI                 1073741824    131072 AVAILABLE         11 NO 0                0
0    1072693248                130944 ONLINE
```

Datenfile: +DATAC3/TTSP02/48BB1AD3225313E5E0532266918DEEC3/DATAFILE/benni.321.936534579

```
create user benni identified by benni default tablespace benni temporary
tablespace pdb_temp;
grant dba to benni;
create table benni.test (id number) tablespace benni;
insert into benni.test values (1111);
commit;
```

3.1.2 Directory für Export anlegen

SOURCE Datenbank:

```
create directory DP_BG as '/home/oracle/TSP_EXP_Test/';
```

TARGET Datenbank:

```
create directory DP_BG as '/home/oracle/TSP_EXP_Test/';
```

3.1.3 Service der PDBs test02 und testziel in tnsnames.ora eintragen

Ist beim Provisionieren schon automatisch eingetragen => keine Aktion notwendig!

3.2 Export durchführen

```
alter tablespace benni read only;
```

```
SQL> select * from dba_tablespaces;
```

TABLESPACE_NAME	BLOCK SIZE	INITIAL EXTENT	NEXT EXTENT	MIN_EXTENTS	MAX_EXTENTS	MAX SIZE	PCT_INCREASE	MIN_EXTLEN	STATUS	CONTENTS	LOGGING	FOR EXTENT MAN	ALLOCATIO	PLU	SEGMENT	DEF_TAB	RETENTION	BIG PREDICA	ENC		
SYSTEM	65536	8192	65536	1	2147483645	2147483645	0	65536	ONLINE	PERMANENT	LOGGING	YES	LOCAL	SYSTEM	NO	MANUAL	DISABLED	NOT APPLY	NO	STORAGE	NO
SYSAUX	65536	8192	65536	1	2147483645	2147483645	0	65536	ONLINE	PERMANENT	LOGGING	YES	LOCAL	SYSTEM	NO	AUTO	DISABLED	NOT APPLY	NO	STORAGE	NO
PDB_TEMP	1048576	8192	1048576	1	2147483645	2147483645	0	1048576	ONLINE	TEMPORARY	NOLOGGING	NO	LOCAL	UNIFORM	NO	MANUAL	DISABLED	NOT APPLY	NO	STORAGE	NO
USERS	65536	8192	65536	1	2147483645	2147483645	0	65536	ONLINE	PERMANENT	LOGGING	NO	LOCAL	SYSTEM	NO	AUTO	DISABLED	NOT APPLY	NO	STORAGE	NO
BENNI	65536	8192	65536	1	2147483645	2147483645	0	65536	READ ONLY	PERMANENT	LOGGING	NO	LOCAL	SYSTEM	NO	AUTO	DISABLED	NOT APPLY	NO	STORAGE	NO

Alert.log (/u02/app/oracle/diag/rdbms/ttsp02/TTSP021/trace/alert_TTSP021.log):

```
alter tablespace benni read only
Tue Feb 21 12:58:32 2017
Converting block 0 to version 10 format
Completed: alter tablespace benni read only
```

```
expdp system/TestTSP_02@test02 DUMPFILE=benni_tblspce.dmp DIRECTORY=DP_BG
TRANSPORT_TABLESPACES=BENNI TRANSPORT_FULL_CHECK=Y
```

```
Export: Release 12.1.0.2.0 - Production on Tue Feb 21 13:04:15 2017
Copyright (c) 1982, 2014, Oracle and/or its affiliates. All rights reserved.

Connected to: Oracle Database 12c EE Extreme Perf Release 12.1.0.2.0 - 64bit Production
With the Partitioning, Real Application Clusters, Automatic Storage Management, Oracle Label Security,
OLAP, Advanced Analytics and Real Application Testing options
Starting "SYSTEM"."SYS_EXPORT_TRANSPORTABLE_01": system/*****@test02 DUMPFILE=benni_tblspce.dmp DIRECTORY=DP_BG TRANSPORT_TABLESPACES=BE
NNI TRANSPORT_FULL_CHECK=Y
Processing object type TRANSPORTABLE_EXPORT/PLUGTS_BLK
Processing object type TRANSPORTABLE_EXPORT/TABLE
Processing object type TRANSPORTABLE_EXPORT/TABLE_STATISTICS
Processing object type TRANSPORTABLE_EXPORT/STATISTICS/MARKER
Processing object type TRANSPORTABLE_EXPORT/POST_INSTANCE/PLUGTS_BLK
Master table "SYSTEM"."SYS_EXPORT_TRANSPORTABLE_01" successfully loaded/unloaded
*****
Dump file set for SYSTEM.SYS_EXPORT_TRANSPORTABLE_01 is:
/home/oracle/TSP_EXP_Test/benni_tblspce.dmp
*****
Datafiles required for transportable tablespace BENNI:
+DATA3/TTSP02/48BB1AD3225313E5E0532266918DEEC3/DATAFILE/benni.321.936534579
Job "SYSTEM"."SYS_EXPORT_TRANSPORTABLE_01" successfully completed at Tue Feb 21 13:04:50 2017 elapsed 0 00:00:27
```

Datenbank TTSP02 schließen :

```
srvctl stop database -db TTSP02
```

Alert.log (/u02/app/oracle/diag/rdbms/ttsp02/TTSP021/trace/alert_TTSP021.log):

```
Tue Feb 21 13:21:22 2017
Stopping background process VKTM
Tue Feb 21 13:21:29 2017
freeing rdom 0
Tue Feb 21 13:21:32 2017
Instance shutdown complete
```

3.3 Datafile auf ASM-Ebene auf read only setzen

```

su - grid
sqlplus / as sysasm

ALTER DISKGROUP DATA3 SET ATTRIBUTE 'access_control.enabled' = 'true';

ALTER DISKGROUP DATA3 SET PERMISSION OWNER=Read only, GROUP=Read only,
OTHER=Read only FOR FILE
'+DATA3/TTSP02/48BB1AD3225313E5E0532266918DEEC3/DATAFILE/benni.321.936534579';

select * from v$asm_file
  where group_number = 1
     and type = 'DATAFILE';

```

FILE#	GROUP#	NAME	SIZE	STATUS	TYPE	BLOCKS	SECTORS	COARSE	FINISH	PERMISSIONS	STATUS	
1	310	16777526	936527309	8192	DATAFILE	76801	629153792	1912602624	HIGH	COARSE	21-FEB-17 21-FEB-17 U rw-rw-rw-	0
0	0	273	0	2301952	0	COLD	COLD	0	0	0	0	N
1	315	16777531	936527589	8192	DATAFILE	601089	4924121088	1.4798E+10	HIGH	COARSE	21-FEB-17 21-FEB-17 U rw-rw-rw-	0
0	0	2910	4920	35905536	0	COLD	COLD	0	0	0	0	N
0	0	0	0	0	0	0	0	0	0	0	0	N
1	316	16777532	936527589	8192	DATAFILE	76801	629153792	1912602624	HIGH	COARSE	21-FEB-17 21-FEB-17 U rw-rw-rw-	0
0	0	8739	4743	114139136	0	COLD	COLD	0	0	0	0	N
0	0	0	0	0	0	0	0	0	0	0	0	N
1	318	16777534	936527603	8192	DATAFILE	641	5251072	25165824	HIGH	COARSE	21-FEB-17 21-FEB-17 U rw-rw-rw-	0
0	0	269	0	2203648	0	COLD	COLD	0	0	0	0	N
0	0	0	0	0	0	0	0	0	0	0	0	N
1	321	16777537	936534579	8192	DATAFILE	131073	1073750016	3246391296	HIGH	COARSE	21-FEB-17 21-FEB-17 U r---r---r---	0
0	0	0	0	0	0	COLD	COLD	0	0	0	0	N
0	0	0	0	0	0	0	0	0	0	0	0	N

34 rows selected.

3.4 Import in der Zieldatenbank durchführen

```

. ./TTSPZiel.env

sqlplus / as sysdba

alter session set container = testziel;

create user benni identified by benni default tablespace users temporary
tablespace pdb_temp;
grant dba to benni;

```

```
1* select * from dba_tablespaces
```

TABLESPACE_NAME	BLOCK_SIZE	INITIAL_EXTENT	NEXT_EXTENT	MIN_EXTENTS	MAX_EXTENTS	MAX_SIZE	PCT_INCREASE
SYSTEM	65536	8192	65536	1	2147483645	2147483645	
65536 ONLINE	PERMANENT	LOGGING	YES LOCAL	SYSTEM	NO	MANUAL	DISABLED NOT APPLY
		DISABLED					NO STORAGE NO
SYSAUX	65536	8192	65536	1	2147483645	2147483645	
65536 ONLINE	PERMANENT	LOGGING	YES LOCAL	SYSTEM	NO	AUTO	DISABLED NOT APPLY
		DISABLED					NO STORAGE NO
PDB_TEMP	1048576	8192	1048576	1048576	1	2147483645	0
1048576 ONLINE	TEMPORARY	NOLOGGING	NO LOCAL	UNIFORM	NO	MANUAL	DISABLED NOT APPLY
		DISABLED					NO STORAGE NO
USERS	65536	8192	65536	1	2147483645	2147483645	
65536 ONLINE	PERMANENT	LOGGING	NO LOCAL	SYSTEM	NO	AUTO	DISABLED NOT APPLY
		DISABLED					NO STORAGE NO

```
impdp system/TestTSP_03@testziel DUMPFILE=benni_tblspce.dmp DIRECTORY=DP_BG
TRANSPORT_DATAFILES=
'+DATAC3/TTSP02/48BB1AD3225313E5E0532266918DEEC3/DATAFILE/benni.321.936534579'
```

```
Import: Release 12.1.0.2.0 - Production on Wed Feb 22 10:41:53 2017
Copyright (c) 1982, 2014, Oracle and/or its affiliates. All rights reserved.
Connected to: Oracle Database 12c EE Extreme Perf Release 12.1.0.2.0 - 64bit Production
With the Partitioning, Real Application Clusters, Automatic Storage Management, Oracle Label Security,
OLAP, Advanced Analytics and Real Application Testing options
Master table "SYSTEM"."SYS_IMPORT_TRANSPORTABLE_01" successfully loaded/unloaded
Starting "SYSTEM"."SYS_IMPORT_TRANSPORTABLE_01": system/*****@testziel DUMPFILE=benni_tblspce.dmp DIRECTORY=DP_BG TRAN
SPORT_DATAFILES='+DATAC3/TTSP02/48BB1AD3225313E5E0532266918DEEC3/DATAFILE/benni.321.936534579
Processing object type TRANSPORTABLE_EXPORT/PLUGTS_BLK
Processing object type TRANSPORTABLE_EXPORT/TABLE
Processing object type TRANSPORTABLE_EXPORT/TABLE STATISTICS
Processing object type TRANSPORTABLE_EXPORT/STATISTICS/MARKER
Processing object type TRANSPORTABLE_EXPORT/POST_INSTANCE/PLUGTS_BLK
Job "SYSTEM"."SYS_IMPORT_TRANSPORTABLE_01" successfully completed at Wed Feb 22 10:42:16 2017 elapsed 0 00:00:18
```

Alert.log (/u02/app/oracle/diag/rdbms/ttspziel/TTSPZiel1/trace/alert_TTSPZiel1.log):

```
DWOO started with pid=111, OS id=50899, job SYSTEM.SYS_IMPORT_TRANSPORTABLE_01
Wed Feb 22 10:41:59 2017
DWOO started with pid=126, OS id=50922, wid=1, job SYSTEM.SYS_IMPORT_TRANSPORTABLE_01
diag_adl: Plug in tablespace BENNI with datafile
diag_adl: '+DATAC3/TTSP02/48BB1AD3225313E5E0532266918DEEC3/DATAFILE/benni.321.936534579'
diag_adl:
diag_adl: XDB installed.
diag_adl:
diag_adl: XDB initialized.
diag_adl: ALTER TABLESPACE "BENNI" READ WRITE
diag_adl: ORA-1114 signalled during: ALTER TABLESPACE "BENNI" READ WRITE...
```

```
sqlplus / as sysdba
```

```
alter session set container = testziel;
```

```

1* select * from dba_tablespaces

TABLESPACE_NAME          BLOCK_SIZE INITIAL_EXTENT NEXT_EXTENT MIN_EXTENTS MAX_EXTENTS  MAX_SIZE PCT_INCREASE
-----
MIN_EXTLEN STATUS        CONTENTS  LOGGING  FOR_EXTENT_MAN ALLOCATIO_PLU SEGMEN_DEF_TAB_RETENTION  BIG_PREDICA_ENC
-----
COMPRESS_FOR            DEF_INME DEF_INME DEF_INMEMORY_DI DEF_INMEMORY_COMP DEF_INMEMORY_
-----
SYSTEM                   8192      65536      1 2147483645 2147483645
65536 ONLINE            PERMANENT LOGGING YES LOCAL SYSTEM NO MANUAL DISABLED NOT APPLY NO STORAGE NO
DISABLED

SYSaux                   8192      65536      1 2147483645 2147483645
65536 ONLINE            PERMANENT LOGGING YES LOCAL SYSTEM NO AUTO DISABLED NOT APPLY NO STORAGE NO
DISABLED

PDB_TEMP                 8192      1048576   1048576 1 2147483645 0
1048576 ONLINE          TEMPORARY NOLOGGING NO LOCAL UNIFORM NO MANUAL DISABLED NOT APPLY NO STORAGE NO
DISABLED

USERS                    8192      65536      1 2147483645 2147483645
65536 ONLINE            PERMANENT LOGGING NO LOCAL SYSTEM NO AUTO DISABLED NOT APPLY NO STORAGE NO
DISABLED

BENNI                    8192      65536      1 2147483645 2147483645
65536 READ ONLY PERMANENT LOGGING NO LOCAL SYSTEM YES AUTO DISABLED NOT APPLY NO STORAGE NO
DISABLED

```

```

SQL> select * from benni.test;

-----
ID
-----
1111

```

Keine Änderung im Alert.log!

Alert.log (/u02/app/oracle/diag/rdbms/ttspziel/TTSPZiel1/trace/alert_TTSPZiel1.log):

```

DWO0 started with pid=111, OS id=50899, job SYSTEM.SYS_IMPORT_TRANSPORTABLE_01
Wed Feb 22 10:41:59 2017

DWO0 started with pid=126, OS id=50922, wid=1, job SYSTEM.SYS_IMPORT_TRANSPORTABLE_01
diag_adl:Plug in tablespace BENNI with datafile
diag_adl: '+DATA3/TTSP02/48BB1AD3225313E5E0532266918DEEC3/DATAFILE/benni.321.936534579'
diag_adl:
diag_adl:XDB installed.
diag_adl:
diag_adl:XDB initialized.
diag_adl:ALTER TABLESPACE "BENNI" READ WRITE
diag_adl:ORA-1114 signalled during: ALTER TABLESPACE "BENNI" READ WRITE...

```

Damit ist der Zugriff auf die Daten mit dem Workaround OK.

Aufräumen nach dem Zugriff:

```
drop tablespace benni INCLUDING CONTENTS KEEP DATAFILES;
```

Alert.log (/u02/app/oracle/diag/rdbms/ttspziel/TTSPZiel1/trace/alert_TTSPZiel1.log):

```

Wed Feb 22 10:41:59 2017

DWO0 started with pid=126, OS id=50922, wid=1, job SYSTEM.SYS_IMPORT_TRANSPORTABLE_01
diag_adl:Plug in tablespace BENNI with datafile
diag_adl: '+DATA3/TTSP02/48BB1AD3225313E5E0532266918DEEC3/DATAFILE/benni.321.936534579'
diag_adl:
diag_adl:XDB installed.
diag_adl:
diag_adl:XDB initialized.
diag_adl:ALTER TABLESPACE "BENNI" READ WRITE
diag_adl:ORA-1114 signalled during: ALTER TABLESPACE "BENNI" READ WRITE...
Wed Feb 22 10:53:18 2017
drop tablespace benni INCLUDING CONTENTS KEEP DATAFILES
Completed: drop tablespace benni INCLUDING CONTENTS KEEP DATAFILES

```

3.5 Erneuter Zugriff aus der Quelldatenbank

./TTSP02.env

```
srvctl start database -db TTSP02
```

```
sqlplus / as sysdba
```

```
1* select * from cdb_tablespace
```

TABLESPACE_NAME	BLOCK_SIZE	INITIAL_EXTENT	NEXT_EXTENT	MIN_EXTENTS	MAX_EXTENTS	MAX_SIZE	PCT_INCREASE	MIN_EXTLEN	STATUS	CONTENTS	LOGGING	FOR EXTENT MAN	ALLOCATIO	PLU	SEGMENT	DEF_TAB	RETENTION	BIG	PREDICA	ENC
COMPRESS_FOR	DEF_INME	DEF_INME	DEF_INMEMORY_DI	DEF_INMEMORY_COMP	DEF_INMEMORY	CON_ID														
SYSTEM	65536	8192	65536	1	2147483645	2147483645		ONLINE	PERMANENT	LOGGING	YES	LOCAL	SYSTEM	NO	MANUAL	DISABLED	NOT APPLY	NO	STORAGE	NO
										DISABLED										1
SYSAUX	65536	8192	65536	1	2147483645	2147483645		ONLINE	PERMANENT	LOGGING	YES	LOCAL	SYSTEM	NO	AUTO	DISABLED	NOT APPLY	NO	STORAGE	NO
										DISABLED										1
UNDOTBS1	65536	8192	65536	1	2147483645	2147483645		ONLINE	UNDO	LOGGING	NO	LOCAL	SYSTEM	NO	MANUAL	DISABLED	NOGUARANTEE	YES	STORAGE	NO
										DISABLED										1
TEMP	1048576	8192	1048576	1048576	1	2147483645		ONLINE	TEMPORARY	NOLOGGING	NO	LOCAL	UNIFORM	NO	MANUAL	DISABLED	NOT APPLY	YES	STORAGE	NO
										DISABLED										1
UNDOTBS2	65536	8192	65536	1	2147483645	2147483645		ONLINE	UNDO	LOGGING	NO	LOCAL	SYSTEM	NO	MANUAL	DISABLED	NOGUARANTEE	YES	STORAGE	NO
										DISABLED										1
USERS	65536	8192	65536	1	2147483645	2147483645		ONLINE	PERMANENT	LOGGING	NO	LOCAL	SYSTEM	NO	AUTO	DISABLED	NOT APPLY	NO	STORAGE	NO
										DISABLED										1
SYSTEM	65536	8192	65536	1	2147483645	2147483645		ONLINE	PERMANENT	LOGGING	YES	LOCAL	SYSTEM	NO	MANUAL	DISABLED	NOT APPLY	NO	STORAGE	NO
										DISABLED										3
SYSAUX	65536	8192	65536	1	2147483645	2147483645		ONLINE	PERMANENT	LOGGING	YES	LOCAL	SYSTEM	NO	AUTO	DISABLED	NOT APPLY	NO	STORAGE	NO
										DISABLED										3
PDB_TEMP	1048576	8192	1048576	1048576	1	2147483645		ONLINE	TEMPORARY	NOLOGGING	NO	LOCAL	UNIFORM	NO	MANUAL	DISABLED	NOT APPLY	NO	STORAGE	NO
										DISABLED										3
USERS	65536	8192	65536	1	2147483645	2147483645		ONLINE	PERMANENT	LOGGING	NO	LOCAL	SYSTEM	NO	AUTO	DISABLED	NOT APPLY	NO	STORAGE	NO
										DISABLED										3
BENNI	65536	8192	65536	1	2147483645	2147483645		READ ONLY	PERMANENT	LOGGING	NO	LOCAL	SYSTEM	NO	AUTO	DISABLED	NOT APPLY	NO	STORAGE	NO
										DISABLED										3

```
alter session set container = test02;
```

```
SQL> select * from benni.test;
```

ID
1111

Alert.log (/u02/app/oracle/diag/rdbms/ttsp02/TTSP021/trace/alert_TTSP021.log):

```
Wed Feb 22 10:57:43 2017
Opening pdb TEST02 (3) with no Resource Manager plan active
Pluggable database TEST02 opened read write
Completed: ALTER PLUGGABLE DATABASE ALL OPEN
Starting background process CJQQ
Wed Feb 22 10:57:43 2017
CJQQ started with pid=98, OS id=79106
Completed: ALTER DATABASE OPEN /* db agent *//* (1:62577:30632) */
```

Versuch den Tablespace wieder zum Ändern zu öffnen:

```
alter tablespace benni read write;
```

```
SQL> alter tablespace benni read write;
alter tablespace benni read write
*
ERROR at line 1:
ORA-01114: IO error writing block to file 11 (block # 1)
ORA-01110: data file 11: '+DATAC3/TTSP02/48BB1AD3225313E5E0532266918DEEC3/DATAFILE/benni.321.936534579'
ORA-27009: cannot write to file opened for read
```

Alert.log (/u02/app/oracle/diag/rdbms/ttsp02/TTSP021/trace/alert_TTSP021.log):

```
Thu Feb 23 08:52:04 2017
alter tablespace benni read write
ORA-1114 signalled during: alter tablespace benni read write...
```

Fehlermeldung wie zu erwarten, da das ASM File noch auf read only steht.

Datafile auf ASM-Ebene wieder auf read write setzen:

```
su - grid
sqlplus / as sysasm
```

```
ALTER DISKGROUP DATAC3 SET PERMISSION OWNER=read write, GROUP= read write,
OTHER= read write FOR FILE
'+DATAC3/TTSP02/48BB1AD3225313E5E0532266918DEEC3/DATAFILE/benni.321.936534579';
```

```
select * from v$asm_file
where group_number = 1
and type = 'DATAFILE';
```

DATAFILE	1	310	16777526	936527309	8192	76801	629153792	1912602624											
	0	0	0	0		HIGH	COARSE	21-FEB-17	21-FEB-17	U	rw-rw-rw-								
	0	0	573	0	4759552	0	COLD COLD	0	0	0									0 N
DATAFILE	1	315	16777531	936527589	8192	601089	4924121088	1.4798E+10											
	0	0	0	0		HIGH	COARSE	21-FEB-17	21-FEB-17	U	rw-rw-rw-								
	0	0	4786	10269	55369728	0	COLD COLD	0	0	0									0 N
	0	0	0	0		148340736		0	0										
DATAFILE	1	316	16777532	936527589	8192	76801	629153792	1912602624											
	0	0	0	0		HIGH	COARSE	21-FEB-17	21-FEB-17	U	rw-rw-rw-								
	0	0	12061	9717	149520384	0	COLD COLD	0	0	0									0 N
	0	0	0	0		110223360		0	0										
DATAFILE	1	318	16777534	936527603	8192	641	5251072	25165824											
	0	0	0	0		HIGH	COARSE	21-FEB-17	21-FEB-17	U	rw-rw-rw-								
	0	0	569	0	4661248	0	COLD COLD	0	0	0									0 N
	0	0	0	0				0	0										
DATAFILE	1	321	16777537	936534579	8192	131073	1073750016	3246391296											
	0	0	0	0		HIGH	COARSE	21-FEB-17	22-FEB-17	U	rw-rw-rw-								
	0	0	298	0	2506752	0	COLD COLD	0	0	0									0 N
	0	0	0	0				0	0										

Erneuter Versuch den Tablespace wieder zum Ändern zu öffnen:

```
su - oracle
. ./TTSP02.env

sqlplus / as sysdba
alter session set container = test02;

alter tablespace benni read write;
```

```
SQL> select * from dba_tablespaces;
```

TABLESPACE_NAME	BLOCK_SIZE	INITIAL_EXTENT	NEXT_EXTENT	MIN_EXTENTS	MAX_EXTENTS	MAX_SIZE	PCT_INCREASE	MIN_EXTLEN	STATUS	CONTENTS	LOGGING	FOR EXTENT_MAN	ALLOCATIO	PLU	SEGMENT	DEF_TAB	RETENTION	BIG	PREDICA	ENC
SYSTEM	65536	8192	65536	1	2147483645	2147483645		65536	ONLINE	PERMANENT	LOGGING	YES LOCAL	SYSTEM	NO	MANUAL	DISABLED	NOT APPLY	NO	STORAGE	NO
SYSAUX	65536	8192	65536	1	2147483645	2147483645		65536	ONLINE	PERMANENT	LOGGING	YES LOCAL	SYSTEM	NO	AUTO	DISABLED	NOT APPLY	NO	STORAGE	NO
PDB_TEMP	1048576	8192	1048576	1	2147483645			1048576	ONLINE	TEMPORARY	NOLOGGING	NO LOCAL	UNIFORM	NO	MANUAL	DISABLED	NOT APPLY	NO	STORAGE	NO
USERS	65536	8192	65536	1	2147483645	2147483645		65536	ONLINE	PERMANENT	LOGGING	NO LOCAL	SYSTEM	NO	AUTO	DISABLED	NOT APPLY	NO	STORAGE	NO
BENNI	65536	8192	65536	1	2147483645	2147483645		65536	ONLINE	PERMANENT	LOGGING	NO LOCAL	SYSTEM	NO	AUTO	DISABLED	NOT APPLY	NO	STORAGE	NO

Alert.log (/u02/app/oracle/diag/rdbms/ttsp02/TTSP021/trace/alert_TTSP021.log):

```
Thu Feb 23 11:38:17 2017
alter tablespace benni read write
Completed: alter tablespace benni read write
```

```
SQL> select * from benni.test;
```

ID
1111

```
insert into benni.test values (2222);

commit;

update benni.test set ID = 3333 where ID = 2222;

commit;

delete from benni.test where ID = 3333;

commit;
```

```
SQL> insert into benni.test values (2222);

1 row created.

SQL> select * from benni.test;

      ID
-----
     1111
     2222

SQL> update benni.test set ID = 3333 where ID = 2222;

1 row updated.

SQL> commit;

Commit complete.

SQL> select * from benni.test;

      ID
-----
     1111
     3333

SQL> delete from benni.test where ID = 3333;

1 row deleted.

SQL> commit;

Commit complete.

SQL> select * from benni.test;

      ID
-----
     1111
```

Alert.log (/u02/app/oracle/diag/rdbms/ttsp02/TTSP021/trace/alert_TTSP021.log):

```
Thu Feb 23 11:38:17 2017
alter tablespace benni read write
Completed: alter tablespace benni read write
```

Keine Fehlermeldungen in der Alert.log

Damit ist der Workaround auch aus Sicht der Original-Datenbank OK.

4. Ergebnis

Der Workaround konnte erfolgreich auf der Oracle Exadata Cloud Umgebung getestet werden.

Damit ist bewiesen, dass der Workaround für einen Read-only Transportable Tablespace Austausch zweier Datenbanken in einer RAC Umgebung mit ASM Storage funktioniert.