

RMAN Recovery Katalog: Wozu ist der da und soll ich ihn benutzen?

Dierk Lenz

DOAG Database Day 2017

Herrmann & Lenz Services GmbH

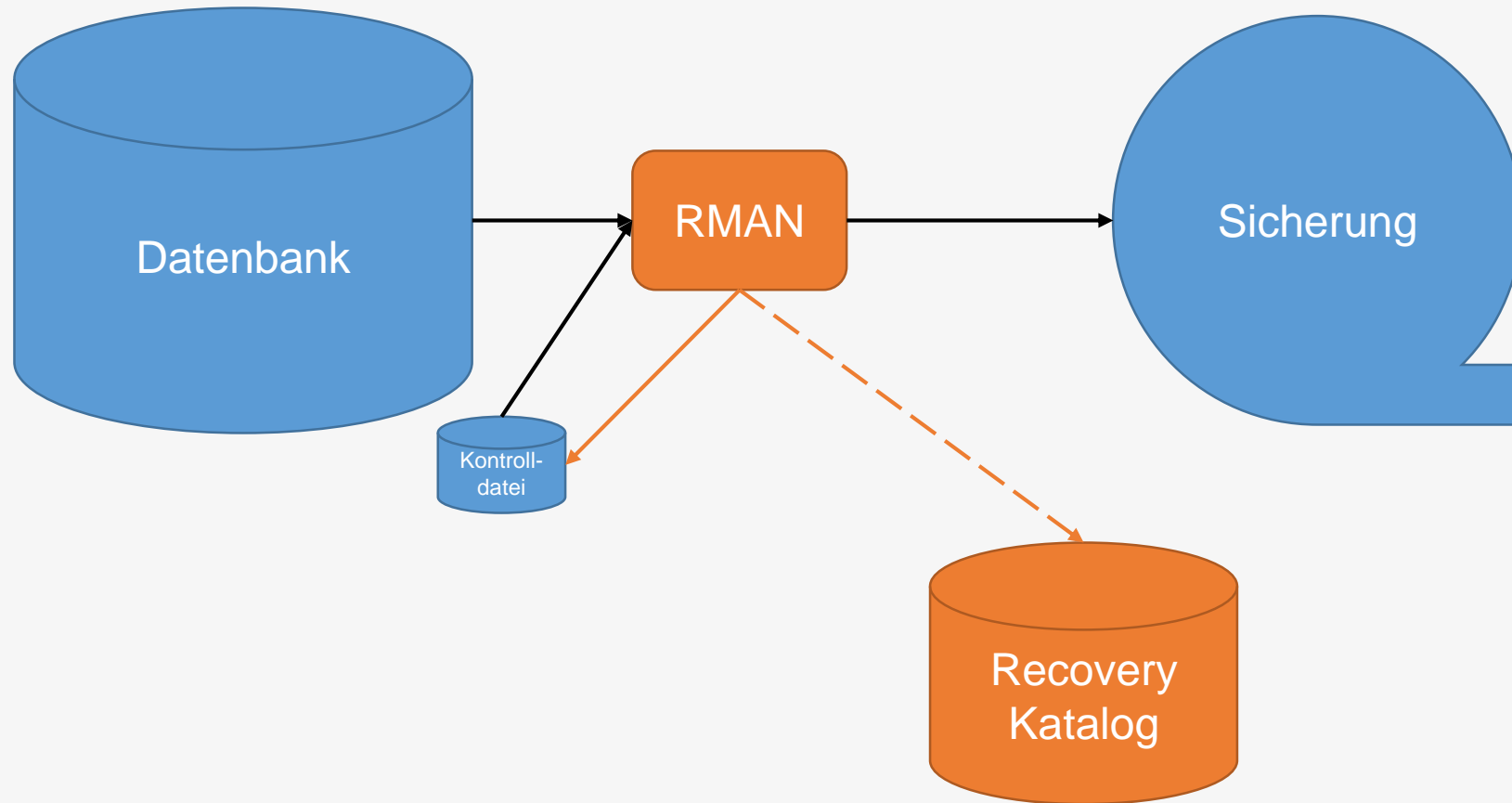
- Erfolgreich seit 1996 am Markt
- Firmensitz: Burscheid (bei Leverkusen)
- Beratung, Schulung und Betrieb/Fernwartung rund um das Thema Oracle Datenbanken
- Schwerpunktthemen: Hochverfügbarkeit, Tuning, Migrationen und Troubleshooting / Monitoring
- Herrmann & Lenz Solutions GmbH
 - Produkte: Monitoring Module, Taskzone

Was ist der Recovery Katalog?

- Optionaler Speicherort für Metadaten und Daten aus RMAN-Sicherungen
- Ein DB-Schema mit Rolle `RECOVERY_CATALOG_OWNER...`
Bitte NICHT in der zu sichernden DB!!!
- Führend immer die Kontrolldatei
(auch mit Recovery Katalog: schreiben in Kontrolldatei, dann sync mit Katalog)
- Eigene Versionsnummer für Recovery Katalog
 - Muss größer oder gleich der DB Version sein

Idee dahinter

- Was passiert beim Totalverlust des DB-Servers?
- Knackpunkt Kontrolldatei – entscheidend für den weiteren Verlauf der Wiederherstellung
 - u.a. Metadaten zu allen Sicherungen...
 - CREATE CONTROLFILE keine Option
- Längere Aufbewahrung der Metadaten



Muss ich einen haben?

- (Meistens) Nein!
- Ausnahme: Data Guard (Ort der zentralen Wahrheit!)
- Wenn nicht: Unbedingt CONTROLFILE AUTOBACKUP anschalten!

Warum soll ich trotzdem einen haben?

- Frei verfügbare Möglichkeit
- Redundante Sicherung der Sicherungs-Metadaten
- Langfristige Speicherung
(im Gegensatz zu `control_file_record_keep_time`
Tagen in der Kontrolldatei)
- RMAN Skripte im Katalog speicherbar

Ist das nur was für die Enterprise Edition?

- Nein!
- Auch SE-Datenbanken integrierbar
- Überlegungen unabhängig von der Edition

Wie geht das?

- Steuerung fast ausschließlich über RMAN (Kommandozeile!)
- Nach Einrichtung automatische Nutzung sobald RMAN eine CATALOG-Verbindung hat
- Einrichtung einer eigenen Datenbank
 - Aktuell: Enterprise Edition mit Partitioning Option (Bug...)
 - Nicht virtualisieren!
 - Ausschließlich den Recovery Katalog verwenden!

Recovery Katalog Benutzer anlegen (SQL*Plus)

```
SQL> create user rc identified by "rc";
```

User created.

```
SQL> alter user rc quota unlimited on data;
```

User altered.

```
SQL> grant recovery_catalog_owner to rc;
```

Grant succeeded.

Recovery Katalog anlegen

```
[oracle@vmora122 ~]$ rman catalog rc/rc
```

```
Recovery Manager: Release 12.2.0.1.0 - Production on Wed Mar  
8 09:22:53 2017
```

```
Copyright (c) 1982, 2017, Oracle and/or its affiliates. All  
rights reserved.
```

```
connected to recovery catalog database
```

```
RMAN> create catalog;
```

```
recovery catalog created
```

Recovery Katalog upgraden

- Notwendig bei neuen Versionen, Patchsets
- Recovery Katalog Datenbank sichern (!!!)
- Neues RMAN-Utility aufrufen und an Katalog verbinden

```
UPGRADE CATALOG;
```

Datenbank registrieren

```
[oracle@vmora122 ~]$ rman target / catalog rc/rc
```

```
Recovery Manager: Release 12.2.0.1.0 - Production on Wed Mar 8 11:40:27 2017
```

```
Copyright (c) 1982, 2017, Oracle and/or its affiliates. All rights reserved.
```

```
connected to target database: DLDB (DBID=1946607126)
```

```
connected to recovery catalog database
```

```
RMAN> register database;
```

```
database registered in recovery catalog
```

```
starting full resync of recovery catalog
```

```
full resync complete
```

Gespeicherte Skripte

- Lokal (privat für die verbundene Target-DB)
- Global (für alle DBs im Recovery Katalog)
- CREATE [GLOBAL] SCRIPT ...
- DELETE / REPLACE

Beispiel Skript

```
RMAN> CREATE GLOBAL SCRIPT full_compressed_backup
2> {
3> BACKUP AS COMPRESSED BACKUPSET DATABASE PLUS ARCHIVELOG
DELETE ALL INPUT;
4> DELETE OBSOLETE;
5> }
```

```
created global script full_compressed_backup
```

```
RMAN> RUN
2> {
3> EXECUTE SCRIPT full_compressed_backup;
4> }
```

Kontrolldateiparameter

```
RMAN> show all;
```

```
RMAN configuration parameters for database with db_unique_name DLDB are:
```

```
CONFIGURE RETENTION POLICY TO REDUNDANCY 1; # default
```

```
CONFIGURE BACKUP OPTIMIZATION OFF; # default
```

```
CONFIGURE DEFAULT DEVICE TYPE TO DISK; # default
```

```
CONFIGURE CONTROLFILE AUTOBACKUP ON; # default
```

```
CONFIGURE CONTROLFILE AUTOBACKUP FORMAT FOR DEVICE TYPE DISK TO '%F'; # default
```

```
CONFIGURE DEVICE TYPE DISK PARALLELISM 1 BACKUP TYPE TO BACKUPSET; # default
```

```
CONFIGURE DATAFILE BACKUP COPIES FOR DEVICE TYPE DISK TO 1; # default
```

```
CONFIGURE ARCHIVELOG BACKUP COPIES FOR DEVICE TYPE DISK TO 1; # default
```

```
CONFIGURE MAXSETSIZE TO UNLIMITED; # default
```

```
CONFIGURE ENCRYPTION FOR DATABASE OFF; # default
```

```
CONFIGURE ENCRYPTION ALGORITHM 'AES128'; # default
```

```
CONFIGURE COMPRESSION ALGORITHM 'BASIC' AS OF RELEASE 'DEFAULT' OPTIMIZE FOR LOAD TRUE ; # default
```

```
CONFIGURE RMAN OUTPUT TO KEEP FOR 7 DAYS; # default
```

```
CONFIGURE ARCHIVELOG DELETION POLICY TO NONE; # default
```

```
CONFIGURE SNAPSHOT CONTROLFILE NAME TO '/u01/app/oracle/product/12.2.0.1/dbhome_1/dbs/snapcf_DLDB.f'; # default
```


Default für CONTROLFILE AUTOBACKUP

- Früher: OFF
- Mit `compatible >= 12.2`: ON
- Das hat gedauert...

Das Sicherungsverfahren

- **Beispielaufruf:**
`rman target / catalog rc/rc cmdfile full.rmn`
- **Problem:**
 - Wenn Recovery Catalog nicht verfügbar...
 - Dann keine Sicherung!
- **Lösung:**
 - Sicherung ohne Verbindung zum Recovery Catalog
`rman target / cmdfile full.rmn`
 - Dann mit Verbindung
`rman target / catalog rc/rc cmdfile resync.rmn`
 - `RESYNC CATALOG;`
- Hiermit keine gespeicherten Skripte möglich!

REPORT SCHEMA

```
RMAN> report schema;
```

```
Report of database schema for database with db_unique_name DLDB
```

```
List of Permanent Datafiles
```

```
=====
```

File	Size(MB)	Tablespace	RB	segs	Datafile Name
1	500	SYSTEM	YES		/u01/app/oracle/data/DLDB/datafile/o1_mf_system_dcjy4bo3_.dbf
2	500	SYSAUX	NO		/u01/app/oracle/data/DLDB/datafile/o1_mf_sysaux_dcjy4m87_.dbf
3	500	TSUNDO	YES		/u01/app/oracle/data/DLDB/datafile/o1_mf_tsundo_dcjy4r4d_.dbf
4	500	DATA	NO		/u01/app/oracle/data/DLDB/datafile/o1_mf_data_dcjy4xrb_.dbf

```
List of Temporary Files
```

```
=====
```

File	Size(MB)	Tablespace	Maxsize(MB)	Tempfile Name
1	500	TEMP	10240	/u01/app/oracle/data/DLDB/datafile/o1_mf_temp_dcjy4xoy_.tmp

REPORT NEED BACKUP

```
RMAN> report need backup;
```

```
RMAN retention policy will be applied to the command
```

```
RMAN retention policy is set to redundancy 2
```

```
Report of files with less than 2 redundant backups
```

```
File #bkps Name
```

```
-----  
1      0      /u01/app/oracle/data/DLDB/datafile/o1_mf_system_dcjy4bo3_.dbf  
2      0      /u01/app/oracle/data/DLDB/datafile/o1_mf_sysaux_dcjy4m87_.dbf  
3      0      /u01/app/oracle/data/DLDB/datafile/o1_mf_tsundo_dcjy4r4d_.dbf  
4      0      /u01/app/oracle/data/DLDB/datafile/o1_mf_data_dcjy4xrb_.dbf
```

CONFIGURE RETENTION POLICY

```
RMAN> CONFIGURE RETENTION POLICY TO REDUNDANCY 2;
```

```
new RMAN configuration parameters:
```

```
CONFIGURE RETENTION POLICY TO REDUNDANCY 2;
```

```
new RMAN configuration parameters are successfully  
stored
```

```
starting full resync of recovery catalog
```

```
full resync complete
```

BACKUP DATABASE

```
RMAN> BACKUP DATABASE PLUS ARCHIVELOG DELETE ALL INPUT;
```

```
Starting backup at 08.03.2017 12:03:41
```

```
current log archived
```

```
allocated channel: ORA_DISK_1
```

```
channel ORA_DISK_1: SID=33 device type=DISK
```

```
channel ORA_DISK_1: starting archived log backup set
```

```
channel ORA_DISK_1: specifying archived log(s) in backup set
```

```
input archived log thread=1 sequence=16 RECID=1 STAMP=938088221
```

```
channel ORA_DISK_1: starting piece 1 at 08.03.2017 12:03:42
```

```
channel ORA_DISK_1: finished piece 1 at 08.03.2017 12:03:43
```

```
piece handle=/u01/app/oracle/data/DLDB/backupset/2017_03_08/o1_mf_annnn_TAG20170308T120342_dczs8g90_.bkp  
tag=TAG20170308T120342 comment=NONE
```

```
channel ORA_DISK_1: backup set complete, elapsed time: 00:00:01
```

```
channel ORA_DISK_1: deleting archived log(s)
```

```
archived log file name=/u01/app/oracle/data/DLDB/archivelog/2017_03_08/o1_mf_1_16_dczs8fg0_.arc RECID=1 STAMP=938088221
```

```
Finished backup at 08.03.2017 12:03:43
```

```
Starting backup at 08.03.2017 12:03:43
using channel ORA_DISK_1
channel ORA_DISK_1: starting full datafile backup set
channel ORA_DISK_1: specifying datafile(s) in backup set
input datafile file number=00001 name=/u01/app/oracle/data/DLDB/datafile/o1_mf_system_dcjy4bo3_.dbf
input datafile file number=00002 name=/u01/app/oracle/data/DLDB/datafile/o1_mf_sysaux_dcjy4m87_.dbf
input datafile file number=00003 name=/u01/app/oracle/data/DLDB/datafile/o1_mf_tsundo_dcjy4r4d_.dbf
input datafile file number=00004 name=/u01/app/oracle/data/DLDB/datafile/o1_mf_data_dcjy4xrb_.dbf
channel ORA_DISK_1: starting piece 1 at 08.03.2017 12:03:43
channel ORA_DISK_1: finished piece 1 at 08.03.2017 12:03:58
piece handle=/u01/app/oracle/data/DLDB/backupset/2017_03_08/o1_mf_nnndf_TAG20170308T120343_dczs8j79_.bkp
tag=TAG20170308T120343 comment=NONE
channel ORA_DISK_1: backup set complete, elapsed time: 00:00:15
Finished backup at 08.03.2017 12:03:58
```

```
Starting backup at 08.03.2017 12:03:58
current log archived
using channel ORA_DISK_1
channel ORA_DISK_1: starting archived log backup set
channel ORA_DISK_1: specifying archived log(s) in backup set
input archived log thread=1 sequence=17 RECID=2 STAMP=938088238
channel ORA_DISK_1: starting piece 1 at 08.03.2017 12:03:59
channel ORA_DISK_1: finished piece 1 at 08.03.2017 12:04:00
piece
handle=/u01/app/oracle/data/DLDB/backupset/2017_03_08/o1_mf_annnn_TAG20170308T120359_dczs8
z4r_.bkp tag=TAG20170308T120359 comment=NONE
channel ORA_DISK_1: backup set complete, elapsed time: 00:00:01
channel ORA_DISK_1: deleting archived log(s)
archived log file
name=/u01/app/oracle/data/DLDB/archivelog/2017_03_08/o1_mf_1_17_dczs8yxp_.arc RECID=2
STAMP=938088238
Finished backup at 08.03.2017 12:04:00
```


Starting Control File and SPFILE Autobackup at 08.03.2017 12:04:00

piece

handle=/u01/app/oracle/data/DLDB/autobackup/2017_03_08/o1_mf_s_938088240_dczs90kl_.bkp

comment=NONE

Finished Control File and SPFILE Autobackup at 08.03.2017 12:04:01

Vielen Dank für Ihre Aufmerksamkeit!