RMAN for Commando DBAs

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Agenda

- Backup Strategy
- RMAN Configuration
- Backup and Recovery
- Demo
RMAN> backup as backupset incremental level 0 database plus archivelog delete input;

/bkups

Basic Backup Strategy
Same but database and archivelogs separated

```
RMAN> backup as backupset incremental level 0 database;
RMAN> backup as backupset skip inaccessible
    (archivelog all not backed up 2 times);
```
Compressed RMAN Backup

RMAN> backup as compressed backupset incremental level 0 database plus archivelog delete input;
Sat: Incremental Level 0 [compressed] backupset
Sun: Incremental Level 1 [compressed] backupset
Mon: Incremental Level 1 [compressed] backupset
Tue: Incremental Level 1 [compressed] backupset
Wed: Incremental Level 1 [compressed] backupset
Thurs: Incremental Level 1 [compressed] backupset
Fri: Incremental Level 1 [compressed] backupset
Sat: Incremental Level 0 [compressed] backupset
Sun: Incremental Level 1 [compressed] backupset
... [ Repeat ] ...

Most Common Backup Schedule
To perform a level 0 baseline image copy:
rman2disk.ksh -d DBTOOLS1 -l baseline

To perform a level 1 incremental backup and update the baseline image copy:
rman2disk.ksh -d DBTOOLS1 -l 1 -r merge
Revised Backup Schedule

Jan 1: Full Image Copy Backup => LEVEL 0
Jan 2-31: Level 1 Update with Level 0 => it is LEVEL 0
Feb 1: Full Image Copy Backup => LEVEL 0
Feb 2-2[8-9]: Level 1 Update with Level 0 => it is LEVEL 0
Mar 1: Full Image Copy Backup => LEVEL 0
Mar 2-31: Level 1 Update with Level 0 => it is LEVEL 0
Apr 1: Full Image Copy Backup => LEVEL 0
..

Conceptually: We do not need to perform another full backup again
Encrypted RMAN Backup – Wallet Method

my561:/apps/oracle/admin/VISCOSITY
VISCOSITY > mkdir wallet

SQL> alter system set encryption key
identified by "mac123";

System altered.

Look for file in wallet directory:
 ewallet.p12
RMAN> configure encryption for database on;

using target database control file instead of recovery catalog
new RMAN configuration parameters:
CONFIGURE ENCRYPTION FOR DATABASE ON;
new RMAN configuration parameters are successfully stored

RMAN> set encryption on identified by oracle123 only;

executing command: SET encryption

RMAN> configure encryption algorithm 'AES256';

new RMAN configuration parameters:
CONFIGURE ENCRYPTION ALGORITHM 'AES256';
new RMAN configuration parameters are successfully stored
RMAN> show encryption algorithm;

RMAN configuration parameters for database with db_unique_name VISCOSITY are:
CONFIGURE ENCRYPTION ALGORITHM 'AES256';

RMAN> show encryption for database;

RMAN configuration parameters for database with db_unique_name VISCOSITY are:
CONFIGURE ENCRYPTION FOR DATABASE ON;

Look at v$rman_encryption_algorithms:
SQL> select * from v$rman_encryption_algorithms;

<table>
<thead>
<tr>
<th>ALGORITHM_ID</th>
<th>NAME</th>
<th>ALGORITHM_DESCRIPTION</th>
<th>IS_</th>
<th>RES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>AES128</td>
<td>AES 128-bit key</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>2</td>
<td>AES192</td>
<td>AES 192-bit key</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td>3</td>
<td>AES256</td>
<td>AES 256-bit key</td>
<td>NO</td>
<td>NO</td>
</tr>
</tbody>
</table>
1. Single centralized backup scheduler server
   Or
   Local On each Node

2. Execute Stored Script
   Or
   Execute RMAN Script

3. RMAN Catalog
   Or
   Control File Only

4. Export rman repository after backup

Backup Implementation
Considerations

5. Create separate catalog for each version of Databases supported?

6. Backup using MML (SBT_TAPE)
   Or
   Backup to FRA Then to Tape
   OR
   Backup to Disk  Or
   Backup to FRA Then copy backupset to /bkups
   Then sweep using NetBackup or Legato

7. BIGFILE
   Or
   32GB File Size

8. [ ... MORE ... ]
Agenda

- Backup Strategy
- RMAN Configuration
- Backup and Recovery
- Demo
$ export NLS_DATE_FORMAT to 'dd-mon-yyyy hh24:mi:ss'

Before:
Starting Control File and SPFILE Autobackup at 16-MAY-11
piece handle=/bkups/oracle/VISCOSITY/
 rman_ctl_c-2289964488-20110516-00.bak comment=NONE
Finished Control File and SPFILE Autobackup at 16-MAY-11

After:
Starting Control File and SPFILE Autobackup at 16-may-2011 16:41:56
piece handle=/bkups/oracle/VISCOSITY/
 rman_ctl_c-2289964488-20110516-01.bak comment=NONE
Finished Control File and SPFILE Autobackup at 16-may-2011 16:41:57
RMAN> spool log to '/tmp/dba/dbatools.log';
$ rman target / log /tmp/dba/dbatools.log

Option to append:
RMAN> spool log to '/tmp/dba/dbatools.log' append
$ rman target / log /tmp/dba/dbatools.log' append

Options from command line:
$ rman target / | tee $LOGFILE
$ rman target / > $LOGFILE
$ rman2disk.ksh -d DBATOOLS -l 0 | tee $LOGFILE
$ rman2disk.ksh -d DBATOOLS -l 0 > $LOGFILE
Enable BCT:
SQL> alter database enable block change tracking using file '+data';
Database altered.

You can query the v$block_change_tracking view the details.
  1* select * from v$block_change_tracking
SQL> /

<table>
<thead>
<tr>
<th>STATUS</th>
<th>FILENAME</th>
<th>BYTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENABLED</td>
<td>+DATA/viscosity/changetracking/ctf.263.751243155</td>
<td>11599872</td>
</tr>
</tbody>
</table>

Without the using files clause, oracle will create an OMF tracking file in the +data/SID/changetracking/ directory.
SQL> show parameter db_create_file_dest
RMAN compared to SQL*Plus

- sqlplus / as sysdba
  - startup;
  - shutdown immediate;

- rman target /
  - startup;
  - shutdown immediate;

---------------------------
- startup nomount;
- alter database mount;
DG Toolkit Option 10 → 20
20. Check if the password file exists for VISCOSITY on my561
rw-r---- 1 oracle oinstall 1536 May 7 01:39 /apps/oracle/product/11.2.0/db/dbs/orapwVISCOSITY
Password file exists.
Please proceed with the next steps ...
Checking password file entries on VISCOSITY
# Executing dg_check_password_file.sql on DB: VISCOSITY

DG Toolkit Option: 20 → 40
40. Generate orapwd syntax for VISCOSITY and VISCOSITY_DR
-- If the orapwVISCOSITY file does not exist, then execute the following:
-- On the Primary Database Server - rac561 from the OS:
orapwd file=/u01/app/oracle/product/11.2.0/db/dbs/orapwVISCOSITY
entries=25 password=oracle123 force=yes ignorecase=y

Password File
RMAN> show retention policy;
RMAN configuration parameters for database with db_unique_name VISCOSITY are:
CONFIGURE RETENTION POLICY TO REDUNDANCY 1; # default

RMAN> configure retention policy to recovery window of 7 days;
new RMAN configuration parameters:
CONFIGURE RETENTION POLICY TO RECOVERY WINDOW OF 7 DAYS;
new RMAN configuration parameters are successfully stored

RMAN> show retention policy;
RMAN configuration parameters for database with db_unique_name VISCOSITY are:
CONFIGURE RETENTION POLICY TO RECOVERY WINDOW OF 8 DAYS;
RMAN> configure retention policy to redundancy 2;

old RMAN configuration parameters:
CONFIGURE RETENTION POLICY TO RECOVERY WINDOW OF 8 DAYS;
new RMAN configuration parameters:
CONFIGURE RETENTION POLICY TO REDUNDANCY 2;
new RMAN configuration parameters are successfully stored

RMAN> show retention policy;

RMAN configuration parameters for database with db_unique_name VISCOSITY are:
CONFIGURE RETENTION POLICY TO REDUNDANCY 2;
export date=`date +'\%Y\%m\%d\%H\%M'`;
export ORACLE_SID=$1

rman target / <<!!
CONFIGURE CHANNEL 1 DEVICE TYPE DISK FORMAT '/${BKUP1}/oracle/${ORACLE_SID}/${date}-%d-%U.ARCH'
MAXPIECESIZE 4000M;
CONFIGURE CHANNEL 2 DEVICE TYPE DISK FORMAT '/${BKUP2}/oracle/${ORACLE_SID}/${date}-%d-%U.ARCH'
MAXPIECESIZE 4000M;

sql 'ALTER SYSTEM SWITCH LOGFILE';
sql 'ALTER SYSTEM ARCHIVE LOG CURRENT';
backup archivelog all delete input;
!!
To Archivelog Or Not To Archivelog

40 #-- dg_preliminary_check_menu.ksh
# ------------------------------------------------------------- #
# Executing dg_check_archive_mode.sql on DB: DBATOOLS
# ------------------------------------------------------------- #
DB_UNIQUE_NAME              LOG_MODE
-----------------------------------------------
DBATOOLS                     ARCHIVELOG

[ "$ARCHIVE" != "TRUE" ] &&
{
  echo "You are not in archive log mode. Please enabled archive log mode.";
  echo "Syntax:
  shutdown immediate;
  startup mount;
  alter database archivelog;
  archive log start;
  alter database open;"
}

To Archivelog Or Not To Archivelog
• `LOG_ARCHIVE_DEST_1='LOCATION=USE_DB_RECOVERY_FILE_DEST`

• Always enable Flashback Database on primary and standby database

• MAA Best Practice:

  `DB_FLASHBACK_RETENTION_TARGET = 60` for just flashback re-instantiation

• MAA Best Practices:

  `DB_FLASHBACK_RETENTION_TARGET = minimum 6 hours` for protection from user errors, logical corruptions, and malicious users

• Can also be used for Snapshot Standby

---

**Fast Recovery Area (FRA)**
RMAN> show controlfile autobackup;

RMAN configuration parameters for database with db_unique_name DBATOOLS are:
CONFIGURE CONTROLFILE AUTOBACKUP OFF; # default

RMAN> configure controlfile autobackup on;

new RMAN configuration parameters:
CONFIGURE CONTROLFILE AUTOBACKUP ON;
new RMAN configuration parameters are successfully stored
RMAN> configure controlfile autobackup format for device type disk to '/bkups/oracle/VISCOSITY/rman_ctl_%F.bak';

using target database control file instead of recovery catalog
new RMAN configuration parameters:
CONFIGURE CONTROLFILE AUTOBACKUP FORMAT FOR DEVICE TYPE DISK TO '/bkups/oracle/VISCOSITY/rman_ctl_%F.bak';
new RMAN configuration parameters are successfully stored

Controlfile autobackup best practices
RMAN> show snapshot controlfile name;

RMAN configuration parameters for database with db_unique_name VISCOSITY are:
CONFIGURE SNAPSHOT CONTROLFILE NAME TO '/apps/oracle/product/11.2.0/db/dbs/snapcf_VISCOSITY.f'; # default

RMAN> configure snapshot controlfile name to '/bkups/oracle/VISCOSITY/snap_viscosity.ctl';

new RMAN configuration parameters:
CONFIGURE SNAPSHOT CONTROLFILE NAME TO '/bkups/oracle/VISCOSITY/snap_viscosity.ctl';
new RMAN configuration parameters are successfully stored
SQL> show parameter control_file_record

<table>
<thead>
<tr>
<th>NAME</th>
<th>TYPE</th>
<th>VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>control_file_record_keep_time</td>
<td>integer</td>
<td>7</td>
</tr>
</tbody>
</table>

As of Oracle Database 10g, you can use the catalog command to add/update:

- Obsolete backups
- Expired backups
- Deleted backups
- Etc.
Limit the size of backupset ➔ MaxSetSize
Configure maxsetsize to 1000g;

Limit the size of backup piece ➔ Maxpiecesize
Configure channel device type disk maxpiecesize=8g;

Throttle I/O ➔ Disk Rate
Configure channel 1 device type disk rate 250M;
Configure maxsetsize to 1000g;
Configure channel device type disk
maxpiecesize=8g;
Configure channel 1 device type disk rate 250M;

Configure maxsetsize clear;
Configure channel device type disk clear;
Configure channel 1 device type disk clear;
Configure channel 2 device type disk clear;
Create Tablespace for RMAN schema
SQL> create tablespace rman_d datafile '+mydata' size 100m autoextend on next 100m;
Tablespace created.

Create RMAN schema and assign privileges
SQL> create user rman identified by rman123 default tablespace rman_d temporary tablespace temp;
User created.

SQL> alter user rman quota unlimited on rman_d;
User altered.

SQL> grant recovery_catalog_owner to rman;
Grant succeeded.
RECOVERY_CATALOG_OWNER System

Privileges:

• ALTER SESSION
• CREATE CLUSTER
• CREATE DATABASE LINK,
• CREATE PROCEDURE
• CREATE SEQUENCE
• CREATE SESSION,
• CREATE SYNONYM
• CREATE TABLE
• CREATE TRIGGER
• CREATE TYPE
• CREATE VIEW
Login to the recovery catalog database as rman and create the catalog:
RMANPROD > rman catalog rman/rman123

Recovery Manager: Release 11.2.0.2.0 - Production on Thu May 12 08:08:16 2011

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connected to recovery catalog database

RMAN> create catalog;

recovery catalog created
RMAN> register database;
database registered in recovery catalog
starting full resync of recovery catalog
full resync complete

RMAN> list incarnation;

List of Database Incarnations
<table>
<thead>
<tr>
<th>DB Key</th>
<th>Inc Key</th>
<th>DB Name</th>
<th>DB ID</th>
<th>STATUS</th>
<th>Reset SCN</th>
<th>Reset Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>15</td>
<td>VISCOSIT</td>
<td>2289964488</td>
<td>PARENT</td>
<td>1</td>
<td>05-SEP-10</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>VISCOSIT</td>
<td>2289964488</td>
<td>CURRENT</td>
<td>972274</td>
<td>07-MAY-11</td>
</tr>
</tbody>
</table>
• You can use EZCONNECT to connect to your database instances
• To start, you must have the EZCONNECT option specified in your NAMES.DIRECTORY_PATH

Here's the contents of the sqlnet.ora file:
# sqlnet.ora Network Configuration File: /apps/oracle/product/11.2.0/db/network/admin/sqlnet.ora
# Generated by Oracle configuration tools.

NAMES.DIRECTORY_PATH= (TNSNAMES, EZCONNECT)

ADR_BASE = /apps/oracle

---

**EZCONNECT Settings for RMAN**
CONNECT CATALOG username/password@net_service_name

Local Example:
$ rman target / catalog rman/rman123@//localhost/rmanprod

Remote Connectivity Example (No Catalog):
rac562:/home/oracle/work
VISK2 > rman target sys/oracle123@//rac560/DBATOOLS

Recovery Manager: Release 11.2.0.2.0 - Production on Mon May 16 10:46:37 2011

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connected to target database: DBATOOLS (DBID=1807895966)
VISCOSITY > rman target sys/oracle123@//my561/
VISCOSITY catalog rman/rman123@//my561/RMANPROD

Recovery Manager: Release 11.2.0.2.0 - Production on
Wed May 18 19:09:13 2011

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connected to target database: VISCOSIT
(DBID=2289964488)
connected to recovery catalog database

Remotely Connect to target and RMAN
Repository with EZConnect
Agenda

- Backup Strategy
- RMAN Configuration
- Backup and Recovery
- Demo
$ rman target=/ catalog=rman/rman_pass@RMANPROD cmdfile rman2disk.compress.rman

$ rman target=/ catalog=rman/rman_pass@RMANPROD cmdfile=rman2disk.compress.rman

$ rman target=/ catalog=rman/rman_pass@RMANPROD @rman2disk.compress.rman
Note: @ is synonymous with cmdfile

$ rman target=/ catalog=rman/rman_pass@RMANPROD script rman_script_name

**Invoking RMAN**
RMAN2DISK Backup

# Data Guard RMAN Backup to Disk Submenu: dg_rman2disk_menu.ksh
# Primary Host:  my561       Standby Host:  my561
#
# 10. Enable Block Change Tracking on the VISCOSITY on my561
# 20. Perform full level 0 backupset of VISCOSITY on my561
# 30. Perform compressed full level 0 backupset of VISCOSITY on my561
# 40. Perform backup as copy image backup of VISCOSITY on my561
#
# 50. Perform level 1 incremental backup of VISCOSITY on my561
# 60. Perform level 1 compressed incremental backup of VISCOSITY on my561
# 70. Perform level 1 incremental backup for recover (UPDATE IMAGE COPY)
#       of VISCOSITY on my561
#
# 100. Configure archivelog retention policy for VISCOSITY on my561
# 110. Configure archivelog retention policy for VISCOSITY_DR on my561
#
#  x. Exit  
#
# Enter Task Number:
• RMAN recover … block
• RMAN substitution variables
• RMAN compression
• Multi-section Backups
• Data Repair Advisor
RMAN> backup database skip readonly;

Ideal for:
1. data warehouse environments
2. Old partitioned data that's in it's own tablespace
   You make the tablespace read-only first
3. Data Archive retention to follow ILM (information life cycle management)
   
   [ i.e after one year move data to tier 2 storage (may skip this part) ]
   After 2 years, move data to tier 3 storage and read-only
   After seven years, drop partition
RMAN> backup database skip offline;

Data files that are completely missing:
RMAN> backup database skip inaccessible;

You can skip readonly, offline and inaccessible all at once:
RMAN> backup as compressed backupset database skip readonly skip offline skip inaccessible;
At Database Level – Best Practice

- SQL> alter database force logging;

May want to enforce logging at tablespace level:

- SQL> alter tablespace TS_NAME force logging;
- MV tablespace
- Temp tablespace for reports and stage data

Need to enable force logging monitoring
Execute dg_check_force_logging.sql to check Force Logging
Execute dg_check_unrecoverable.sql to check Unrecoverable Activity
New Syntax and Enhancements
  • recover … block
  • Searches flashback logs first for good version of corrupt block

New Syntax Example:
  • recover datafile 13 block 10 datafile 20 block 11;

Previous Blockrecover command:
  • BLOCKRECOVER DATAFILE 13 BLOCK 10 DATAFILE 20 BLOCK 11 from backupset;
Example of how we did RMAN substitution prior to 11g

```bash
export RMAN_BACKUP_LEVEL=$SH/rman_backup.sql

cat $RMAN_BACKUP_LEVEL | sed
  -e "s/###_DATE_###/$ORADATE/g" \ 
  -e "s/###_ORACLE_SID_###/$ORACLE_SID/g" \ 
  -e "s/###_BACKUP_LEVEL_###/$BACKUP_LEVEL/g" \ 
  -e "s/###_sqlspfile_###/$SPFILE_BACKUP_SYNTAX/g" \ 
  > $RMAN_SCRIPT
```
CONNECT TARGET /
BACKUP DATABASE TAG '&1';
BACKUP ARCHIVELOG ALL TAG '&2';
EXIT;

rman @/tmp/backup.sql USING DB_27MAR08 ARCH_25MAR08
RMAN Substitution Variables

cat back.ksh
export param1=$1
export param2=$2
rman target / cmdfile=/tmp/back2.sql using $param1 $param2

VISK > ./back.ksh db_27mar arch_27mar

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connected to target database: VISK (DBID=354790782)

RMAN> BACKUP DATABASE TAG 'db_27mar';
2> BACKUP ARCHIVELOG ALL TAG 'arch_27mar';
3> EXIT;
Starting backup at 26-MAR-08
using target database control file instead of recovery catalog
allocated hannel: ORA_DISK_1

cat back2.sql
BACKUP DATABASE TAG '&1';
BACKUP ARCHIVELOG ALL TAG '&2';
EXIT;
Within RMAN:
rmans target /
RMAN> @back2.sql db_27mar arch_27mar

RMAN> BACKUP DATABASE TAG 'db_27mar';
Starting backup at 26-MAR-08
using target database control file instead of recovery catalog
allocated channel: ORA_DISK_1
channel ORA_DISK_1: SID=105 device type=DISK

Execute RMAN script from file
RMAN> create script rman2disk_level0 from file '/tmp/rman_fulldb.rman';
script commands will be loaded from file /tmp/rman_fulldb.rman
created script rman2disk_level0

Contents of rman_fulldb.rman
my561:/tmp
VISCOSITY > cat rman_fulldb.rman
{
allocate channel c1 type disk format '/apps/oracle/admin/VISCOSITY/bkups/%U.DB';
allocate channel c2 type disk format '/apps/oracle/admin/VISCOSITY/bkups/%U.DB';
allocate channel c3 type disk format '/apps/oracle/admin/VISCOSITY/bkups/%U.DB';
backup database
include current controlfile;
release channel c1;
release channel c2;
release channel c3;
}

Create RMAN Stored Scripts (local)
Replace Existing Script:
RMAN> replace script rman2disk_level0 from file '/tmp/rman_fullpdb.rman';

script commands will be loaded from file /tmp/rman_fullpdb.rman
replaced script rman2disk_level0

Execute Script:
RMAN> run
2> { 
3> execute script rman2disk_level0; 
4> }
Printing the script:
RMAN> print script rman2disk_level0;

printing stored script: rman2disk_level0
{
allocate channel c1 type disk format '/apps/oracle/admin/VISCOSITY/bkups/%U.DB';
allocate channel c2 type disk format '/apps/oracle/admin/VISCOSITY/bkups/%U.DB';
allocate channel c3 type disk format '/apps/oracle/admin/VISCOSITY/bkups/%U.DB';
backup as copy incremental level 0 database
include current controlfile;
release channel c1;
release channel c2;
release channel c3;
}

Printing the script to a file:
RMAN> print script rman2disk_level0 to file '/tmp/rman2disk_level0.rman';

script rman2disk_level0 written to file /tmp/rman2disk_level0.rman
Creating Global script from 1 parameter
RMAN> create global script rman2disk_global_level0 from file '/tmp/rman2disk_level0.rman';

script commands will be loaded from file /tmp/rman2disk_level0.rman
created global script rman2disk_global_level0

Contents of Revised /tmp/rman2disk_level0.rman script:
VISCOSITY > cat /tmp/rman2disk_level0.rman
{
allocation channel c1 type disk format '/apps/oracle/admin/&1/bkups/%U.DB';
allocation channel c2 type disk format '/apps/oracle/admin/&1/bkups/%U.DB';
allocation channel c3 type disk format '/apps/oracle/admin/&1/bkups/%U.DB';
backup as copy incremental level 0 database
include current controlfile;
release channel c1;
release channel c2;
release channel c3;
}

Executing the new GLOBAL script:
RMAN> run {
2> execute script rman2disk_global_level0 using VISCOSITY ;
3> }

Create Global Script
List scripts:
RMAN> list script names;

List of Stored Scripts in Recovery Catalog
Scripts of Target Database VISCOSIT

<table>
<thead>
<tr>
<th>Script Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>rman2disk_level0</td>
<td></td>
</tr>
</tbody>
</table>

Global Scripts

<table>
<thead>
<tr>
<th>Script Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>rman2disk_global_level0</td>
<td></td>
</tr>
</tbody>
</table>

Commenting scripts (have to use replace on existing scripts):
RMAN> replace script rman2disk_level0 comment 'Full Level 0 image copy backup of the database' from file '/tmp/rman_fulldb.rman';

script commands will be loaded from file /tmp/rman_fulldb.rman
replaced script rman2disk_level0
RMAN> show all;

RMAN configuration parameters for database with db_unique_name VISK4 are:
CONFIGURE RETENTION POLICY TO REDUNDANCY 1; # default
CONFIGURE BACKUP OPTIMIZATION OFF; # default
CONFIGURE DEFAULT DEVICE TYPE TO DISK; # default
CONFIGURE CONTROLFILE AUTOBACKUP OFF; # default
CONFIGURE CONTROLFILE AUTOBACKUP FORMAT FOR DEVICE TYPE DISK TO "%F"; # default
CONFIGURE DEVICE TYPE DISK PARALLELISM 1 BACKUP TYPE TO BACKUPSET;
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 'BZIP2'; # default
CONFIGURE ARCHIVELOG DELETION POLICY TO NONE; # default
CONFIGURE SNAPSHOT CONTROLFILE NAME TO '/apps/oracle/product/11.1.0/DB/dbs/snapcf_VISK4.f'; # default
Set compression in Oracle Database 11g Release 1:

RMAN> configure compression algorithm 'zlib';

using target database control file instead of recovery catalog
new RMAN configuration parameters:
CONFIGURE COMPRESSION ALGORITHM 'zlib';
new RMAN configuration parameters are successfully stored
New Compression options in Oracle Database 11g Release 2:

RMAN> SET COMPRESSION ALGORITHM ‘LOW|MEDIUM|HIGH’;

RMAN> SET COMPRESSION ALGORITHM 'HIGH';

executing command: SET compression

RMAN> show compression algorithm;

RMAN configuration parameters for database with db_unique_name VISCOSITY are:
CONFIGURE COMPRESSION ALGORITHM 'HIGH' AS OF RELEASE 'DEFAULT' OPTIMIZE FOR LOAD TRUE;
```sql
1. select algorithm_name, algorithm_description, algorithm_compatibility, is_default, requires_aco
2. from v$rman_compression_algorithm
3. SQL> /

<table>
<thead>
<tr>
<th>Name</th>
<th>ALGORITHM_DESCRIPTION</th>
<th>Compatibility</th>
<th>IS_REQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>BZIP2</td>
<td>good compression ratio</td>
<td>9.2.0.0.0</td>
<td>NO NO</td>
</tr>
<tr>
<td>BASIC</td>
<td>good compression ratio</td>
<td>9.2.0.0.0</td>
<td>YES NO</td>
</tr>
<tr>
<td>LOW</td>
<td>maximum possible compression speed</td>
<td>11.2.0.0.0</td>
<td>NO YES</td>
</tr>
<tr>
<td>ZLIB</td>
<td>balance between speed and compression ratio</td>
<td>11.0.0.0.0</td>
<td>NO YES</td>
</tr>
<tr>
<td>MEDIUM</td>
<td>balance between speed and compression ratio</td>
<td>11.0.0.0.0</td>
<td>NO YES</td>
</tr>
<tr>
<td>HIGH</td>
<td>maximum possible compression ratio</td>
<td>11.2.0.0.0</td>
<td>NO YES</td>
</tr>
</tbody>
</table>
```

6 rows selected.
## RAC Compression Example

<table>
<thead>
<tr>
<th>SESSION_KEY</th>
<th>INPUT_TYPE</th>
<th>Ratio</th>
<th>IN_SIZE</th>
<th>OUT_SIZE</th>
<th>DAY</th>
<th>START_TIME</th>
</tr>
</thead>
<tbody>
<tr>
<td>1220</td>
<td>DB INCR</td>
<td>5.50</td>
<td>1.74T</td>
<td>322.37G</td>
<td>fri</td>
<td>11-feb 18:0</td>
</tr>
<tr>
<td>1216</td>
<td>ARCHIVELOG</td>
<td>1.00</td>
<td>115.90G</td>
<td>115.90G</td>
<td>fri</td>
<td>11-feb 16:0</td>
</tr>
<tr>
<td>1212</td>
<td>ARCHIVELOG</td>
<td>1.00</td>
<td>112.98G</td>
<td>112.98G</td>
<td>fri</td>
<td>11-feb 07:0</td>
</tr>
<tr>
<td>1613</td>
<td>DB INCR</td>
<td>6.80</td>
<td>1.91T</td>
<td>289.18G</td>
<td>fri</td>
<td>11-feb 18:0</td>
</tr>
<tr>
<td>1609</td>
<td>ARCHIVELOG</td>
<td>1.00</td>
<td>4.68G</td>
<td>4.68G</td>
<td>fri</td>
<td>11-feb 16:0</td>
</tr>
<tr>
<td>1605</td>
<td>ARCHIVELOG</td>
<td>1.00</td>
<td>93.95G</td>
<td>93.95G</td>
<td>fri</td>
<td>11-feb 07:0</td>
</tr>
<tr>
<td>1625</td>
<td>DB INCR</td>
<td>5.60</td>
<td>1.90T</td>
<td>350.04G</td>
<td>fri</td>
<td>11-feb 18:0</td>
</tr>
<tr>
<td>1621</td>
<td>ARCHIVELOG</td>
<td>1.00</td>
<td>124.16G</td>
<td>124.16G</td>
<td>fri</td>
<td>11-feb 16:0</td>
</tr>
<tr>
<td>1613</td>
<td>ARCHIVELOG</td>
<td>1.00</td>
<td>156.54G</td>
<td>156.54G</td>
<td>fri</td>
<td>11-feb 07:0</td>
</tr>
</tbody>
</table>
RMAN> backup section size 500m tablespace trans_d;

Starting backup at 18-MAR-08
using target database control file instead of recovery catalog
allocated channel: ORA_DISK_1
channel ORA_DISK_1: SID=124 device type=DISK
channel ORA_DISK_1: starting full datafile backup set
channel ORA_DISK_1: specifying datafile(s) in backup set
input datafile file number=00006 name=+DATA/visk4/datafile/trans_d.275.649684237
backing up blocks 1 through 64000

...  
backing up blocks 64001 through 128000
backing up blocks 128001 through 192000
backing up blocks 256001 through 262144
...
RMAN> backup as compressed backupset section size 500m tablespace trans_d;

Starting backup at 18-MAR-08
using channel ORA_DISK_1
channel ORA_DISK_1: starting compressed full datafile backup set
channel ORA_DISK_1: specifying datafile(s) in backup set
input datafile file number=00006 name=+DATA/visk4/datafile/trans_d.275.649684237
backing up blocks 1 through 64000
channel ORA_DISK_1: starting piece 1 at 18-MAR-08
channel ORA_DISK_1: finished piece 1 at 18-MAR-08
RMAN Multisection Backups

SQL> select file#, section_size
    from v$backup_datafile;

   FILE#  SECTION_SIZE
---------- -----------
     1         0
     2         0
     3         0
     5         0
     4         0
     0         0
     0         0
     6   64000
     6   64000

 9 rows selected.

SQL> select pieces, multi_section
    from v$backup_set;

   PIECES  MUL
--------- ---
     1    NO
     1    NO
     1    NO
     1    NO
     5   YES
     5   YES

 6 rows selected.
Also called Active Database Duplication (11gR1 Requirements)

- Both source and target must be of same OS
- Oracle Net has to be setup for both target and duplicate database (even if the source and target is on the same host)
- Must have the same sysdba password enforced through the password file
- Source database can be open or in mounted state
- If the source database is open, it must be in archivelog mode
- If the source database is in mounted mode, it must have been shutdown clean before it was mounted
- By default, the password file will not be copied so you must specify the password file clause inside the duplicate command
Duplicate Source to Target with identical directory structures:

RMAN> connect target sys/oracle@prod1
RMAN> connect auxiliary sys/oracle@dupdb
RMAN> duplicate target database to dupdb
2> from active database
3> spfile
4> nofilenamecheck;

RMAN Active Database Duplication Example #1
RMAN> duplicate target database
to test1
from active database
spfile
parameter_value_convert
'/u01/app/oracle/eleven/eleven','/u10/app/oracle/test1'
set log_file_name_convert
'/u05/app/oracle/eleven','/u10/app/oracle/test1'
db_file_name_convert '/u10/app/oracle/eleven',
'/u10/app/oracle/test1';
Connect to the destination recovery catalog

$ rman

RMAN> connect catalog rman/rman@rmanprod

RMAN> import catalog rman1/rman1@rmantest;

Starting import catalog at 08-APR-07
connected to source recovery catalog database
import validation complete
database unregistered from the source recovery catalog
Finished import catalog at 08-APR-07

RMAN>
Automatically unregisters the databases in the source catalog

- RMAN> import catalog rman1/ rman1@rmantest no unregister;

Merge specific DBID or DB_NAME

- RMAN> import catalog rman1/ rman1@rmantest dbid = 123456, 123457;
- RMAN> import catalog rman1/ rman1@rmantest db_name = VISK1, VISK4;
RMAN> connect catalog rman/rman@nick
connected to recovery catalog database
RMAN> grant catalog for database test1, test2 to virtual1;
Grant succeeded.

RMAN> connect catalog virtual1/virtual1@catdb
connected to recovery catalog database
RMAN> create virtual catalog;
found eligible base catalog owned by RMAN
created virtual catalog against base catalog owned by RMAN
RMAN> grant register database to virt_user1;
RMAN> revoke register database from virtual_user1;

RMAN> revoke catalog for database test1 from virt_user1;
RMAN> revoke all privileges from virt_user1;
RMAN> list failure;

using target database control file instead of recovery catalog
List of Database Failures
==============================

<table>
<thead>
<tr>
<th>Failure ID</th>
<th>Priority</th>
<th>Status</th>
<th>Time Detected</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>182</td>
<td>HIGH</td>
<td>OPEN</td>
<td>20-MAR-08</td>
<td>One or more non-system datafiles are missing</td>
</tr>
</tbody>
</table>
RMAN> list failure 182 detail;

List of Database Failures
=========================

<table>
<thead>
<tr>
<th>Failure ID</th>
<th>Priority</th>
<th>Status</th>
<th>Time Detected</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>182</td>
<td>HIGH</td>
<td>OPEN</td>
<td>20-MAR-08</td>
<td>One or more non-system datafiles are missing</td>
</tr>
</tbody>
</table>

Impact: See impact for individual child failures

List of child failures for parent failure ID 182

<table>
<thead>
<tr>
<th>Failure ID</th>
<th>Priority</th>
<th>Status</th>
<th>Time Detected</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>210</td>
<td>HIGH</td>
<td>OPEN</td>
<td>20-MAR-08</td>
<td>Datafile 8: '/u30/oradata/VISK/transd_01.dbf' is missing</td>
</tr>
</tbody>
</table>

Impact: Some objects in tablespace TRANS_D might be unavailable

DRA – List Failure Detail
RMAN> advise failure;

List of Database Failures
========================

<table>
<thead>
<tr>
<th>Failure ID</th>
<th>Priority</th>
<th>Status</th>
<th>Time Detected</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>182</td>
<td>HIGH</td>
<td>OPEN</td>
<td>20-MAR-08</td>
<td>One or more non-system datafiles are missing</td>
</tr>
</tbody>
</table>

analyzing automatic repair options; this may take some time
..
analyzing automatic repair options complete

Mandatory Manual Actions
========================
no manual actions available

Optional Manual Actions
========================
1. If file /u30/oradata/VISK/transd_01.dbf was unintentionally renamed or moved, restore it

Automated Repair Options
========================
Option Repair Description
------ ------------------
1     Restore and recover datafile 8
    Strategy: The repair includes complete media recovery with no data loss
    Repair script: /apps/oracle/diag/rdbms/visk/VISK/hm/reco_3536057071.hm
RMAN> repair failure;

Strategy: The repair includes complete media recovery with no data loss
Repair script: /apps/oracle/diag/rdbms/visk/VISK/hm/reco_3536057071.hm

contents of repair script:
# restore and recover datafile
sql 'alter database datafile 8 offline';
restore datafile 8;
recover datafile 8;
sql 'alter database datafile 8 online';

Do you really want to execute the above repair (enter YES or NO)? yes
executing repair script

sql statement: alter database datafile 8 offline

Starting restore at 20-MAR-08
using channel ORA_DISK_1

creating datafile file number=8 name=/u30/oradata/VISK/transd_01.dbf
restore not done; all files read only, offline, or already restored
Finished restore at 20-MAR-08
..
..
sql statement: alter database datafile 8 online
repair failure complete

DRA – Repairing the Failure

77
The failure is no longer listed after the repair action:

RMAN> list failure;

no failures found that match specification

List Closed Failures:

RMAN> list failure closed;

List of Database Failures

<table>
<thead>
<tr>
<th>Failure ID</th>
<th>Priority</th>
<th>Status</th>
<th>Time Detected</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>105</td>
<td>CRITICAL</td>
<td>CLOSED</td>
<td>08-MAR-08</td>
<td>System datafile 1: '+DATA/visk/datafile/system.257.648832243' needs media recovery</td>
</tr>
<tr>
<td>102</td>
<td>CRITICAL</td>
<td>CLOSED</td>
<td>08-MAR-08</td>
<td>Control file needs media recovery</td>
</tr>
<tr>
<td>185</td>
<td>HIGH</td>
<td>CLOSED</td>
<td>20-MAR-08</td>
<td>Datafile 8: '/u30/oradata/VISK/transd_01.dbf' is missing Impact: Some objects in tablespace TRANS_D might be unavailable</td>
</tr>
<tr>
<td>123</td>
<td>HIGH</td>
<td>CLOSED</td>
<td>08-MAR-08</td>
<td>Datafile 4: '+DATA/visk/datafile/users.260.648832243' needs media recovery Impact: Some objects in tablespace USERS might be unavailable</td>
</tr>
<tr>
<td>117</td>
<td>HIGH</td>
<td>CLOSED</td>
<td>08-MAR-08</td>
<td>Datafile 3: '+DATA/visk/datafile/undotbs1.259.648832243' needs media recovery Impact: Some objects in tablespace UNDOTBS1 might be unavailable</td>
</tr>
<tr>
<td>111</td>
<td>HIGH</td>
<td>CLOSED</td>
<td>08-MAR-08</td>
<td>Datafile 2: '+DATA/visk/datafile/sysaux.258.648832243' needs media recovery Impact: Some objects in tablespace SYSAUX might be unavailable</td>
</tr>
<tr>
<td>108</td>
<td>HIGH</td>
<td>CLOSED</td>
<td>08-MAR-08</td>
<td>One or more non-system datafiles need media recovery</td>
</tr>
</tbody>
</table>
RMAN> list failure high;
List of Database Failures
=========================

<table>
<thead>
<tr>
<th>Failure ID</th>
<th>Priority</th>
<th>Status</th>
<th>Time Detected</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>182</td>
<td>HIGH</td>
<td>OPEN</td>
<td>20-MAR-08</td>
<td>One or more non-system datafiles are missing</td>
</tr>
</tbody>
</table>

Change failure priority from High to Low
RMAN> change failure 182 priority low;
List of Database Failures
=========================

<table>
<thead>
<tr>
<th>Failure ID</th>
<th>Priority</th>
<th>Status</th>
<th>Time Detected</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>182</td>
<td>HIGH</td>
<td>OPEN</td>
<td>20-MAR-08</td>
<td>One or more non-system datafiles are missing</td>
</tr>
</tbody>
</table>

Do you really want to change the above failures (enter YES or NO)? yes
changed 1 failures to LOW priority
RMAN> list failure low;

List of Database Failures
========================

<table>
<thead>
<tr>
<th>Failure ID</th>
<th>Priority</th>
<th>Status</th>
<th>Time Detected</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>182</td>
<td>LOW</td>
<td>OPEN</td>
<td>20-MAR-08</td>
<td>One or more non-system datafiles are missing</td>
</tr>
</tbody>
</table>

*Note:*  
Once the priority is changed to a low priority, the failure will no longer show up on the list failure command.
1 select advise_id, rank, message
2* from v$ir_manual_checklist
SQL> /

<table>
<thead>
<tr>
<th>ADVISE_ID</th>
<th>RANK</th>
<th>MESSAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>201</td>
<td>0</td>
<td>If file /u30/oradata/VISK/transd_01.dbf was unintentionally renamed or moved, restore it</td>
</tr>
</tbody>
</table>

Dynamic View to list failure advise
RMAN> repair failure preview;

using target database control file instead of recovery catalog
RMAN-00571:
======================================================================
RMAN-00569: =============== ERROR MESSAGE STACK FOLLOWS ===============
RMAN-00571:
======================================================================
RMAN-00569: ERROR MESSAGE STACK FOLLOWS
RMAN-00571:
======================================================================
RMAN-03002: failure of repair command at 03/20/2008 07:47:52
RMAN-06954: REPAIR command must be preceded by ADVISE command in same session

Advise Before Repair
Execute the repair in PREVIEW mode to see what DATA Recovery Advisor will do:

RMAN> repair failure preview;
Strategy: The repair includes complete media recovery with no data loss
Repair script: /apps/oracle/diag/rdbms/visk/VISK/hm/reco_395520741.hm

contents of repair script:
  # restore and recover datafile
  sql 'alter database datafile 8 offline';
  restore datafile 8;
  recover datafile 8;
  sql 'alter database datafile 8 online';
The results of the repair failure command are captured in the V$IR_REPAIR view:

1  select repair_id, advise_id, summary, rank
2* from v$ir_repair

SQL> /

<table>
<thead>
<tr>
<th>REPAIR_ID</th>
<th>ADVISE_ID</th>
<th>SUMMARY</th>
<th>RANK</th>
</tr>
</thead>
<tbody>
<tr>
<td>202</td>
<td>201</td>
<td>NO DATA LOSS</td>
<td>1</td>
</tr>
<tr>
<td>267</td>
<td>266</td>
<td>NO DATA LOSS</td>
<td>1</td>
</tr>
</tbody>
</table>
RMAN> validate database;

Starting validate at 21-MAR-08
using channel ORA_DISK_1
cchannel ORA_DISK_1: starting validation of datafile
cchannel ORA_DISK_1: specifying datafile(s) for validation
input datafile file number=00008 name=/u30/oradata/VISK/transd_01.dbf
.. 
input datafile file number=00007 name=+DATA/visk/datafile/visk_aes256.268.649637901
channel ORA_DISK_1: validation complete, elapsed time: 00:00:15
List of Datafiles
==============
File Status Marked Corrupt Empty Blocks Blocks Examined High SCN
---- ------ -------------- ------------ --------------- ----------
3 OK 0              15           3840            1379409
File Name: +DATA/visk/datafile/undotbs1.259.648863163
Block Type Blocks Failing Blocks Processed
---------- -------------- ----------------
Data 0 0
Index 0 0
Other 0 3825
.. 
Control File OK 0 594
Finished validate at 21-MAR-08
Validate at a Granular Level

RMAN> validate tablespace VISK_AES256;
RMAN> validate datafile 7;
RMAN> validate datafile 7 block 100;

Validate options:
1. Recovery area
2. Recovery files
3. Spfile
4. Tablespace
5. Controlfilecopy
6. Backupset
10g
• delete noprompt archivelog until time 'sysdate -2' backed up 2 times to device type disk;
• backup … delete input;

11g
• Configure archivelog deletion policy to backed 2 times to disk;
• Configure archivelog delete policy to none;
RMAN> catalog backuppiece '/backups/oracle/dbatools/DBATOOLS.2681.1.649573370.A';

RMAN> run
2> {
3> allocate channel d1 type disk;
4> restore archivelog from logseq 6889 until logseq 6949;
5> release channel d1;
6> }

Restore Archivelog (Non-RAC)
RMAN> restore archivelog from logseq 123476 until logseq 123485 thread 1;
RMAN> restore archivelog from logseq 53581 until logseq 53590 thread 2;
RMAN> restore archivelog from logseq 56726 until logseq 56735 thread 3;
RMAN> catalog start with '+FRA/dbatools/archivelog/2010_04_27/';
using target database control file instead of recovery catalog
searching for all files that match the pattern +FRA/dbatools/archivelog/2010_04_27/

List of Files Unknown to the Database
=====================================  
File Name: +FRA/dbatools/archivelog/2010_04_27/thread_1_seq_134.1626.717411623  
File Name: +FRA/dbatools/archivelog/2010_04_27/thread_1_seq_141.1667.717458707

Do you really want to catalog the above files (enter YES or NO)? YES

cataloging files...
cataloging done

List of Cataloged Files
======================
File Name: +FRA/dbatools/archivelog/2010_04_27/thread_1_seq_134.1626.717411623  
File Name: +FRA/dbatools/archivelog/2010_04_27/thread_1_seq_141.1667.717458707
• Restore the standby database or the primary database controlfile according to the database role which is defined in the recovery olog.
  
  RMAN> restore controlfile;

• Restore the primary database control file using both the current control file and standby control file backups.
  
  RMAN> restore primary controlfile;

• Restore the standby control file using both the current control file and standby control file backups.
  
  RMAN> restore standby controlfile;
Duplicate Database From Active Database

Execute ./dg_duplicate_database.ksh manually or from DG Toolkit

Provides step-by-step script based on dg.conf

```bash
# -- Add the listener list entries for both primary and standby database listener.ora files
# -- Primary
SID_LIST_LISTENER =
   (SID_LIST =
      (SID_DESC =
         (SDU=32767)
         (GLOBAL_DBNAME = VISK1)
         (ORACLE_HOME = /u01/app/oracle/product/11.2.0/db)
         (SID_NAME = VISK1)
      )
   )

# -- Standby
SID_LIST_LISTENER =
   (SID_LIST =
      (SID_DESC =
         (SDU=32767)
         (GLOBAL_DBNAME = VISK_DR1)
         (ORACLE_HOME = /u01/app/oracle/product/11.2.0/db)
         (SID_NAME = VISK_DR1)
      )
   )
```

Duplicate Database From Active Database
# 1. Reload the listener on both the primary and standby database server
#       lsnrctl reload listener
# -- Create password file on the standby database server: # rac562
orapwd file=/u01/app/oracle/product/11.2.0/db/dbs/orapwVISK_DR1 entries=25
password=oracle123
# -- Create the following initialization file for the VISK_DR1 instance:
# /u01/app/oracle/product/11.2.0/db/dbs/initVISK_DR1.ora
db_name=VISK
db_unique_name=VISK_DR
cluster_database=false
# -- Add the following to your tnsnames.ora file on both the primary and standby DB
VISK_CLONE =
  (DESCRIPTION =
    (ADDRESS_LIST =
      (ADDRESS = (PROTOCOL = TCP)(HOST = rac562-vip)(PORT = 1521))
    )
  (CONNECT_DATA =
    (SERVER = DEDICATED)
    (SID=VISK_DR1)
  )
)
rman <EOF
connect target sys/oracle123@VISK_PRI;
connect auxiliary sys/oracle123@VISK_CLONE;
run {
allocate channel prmy1 type disk;
allocate channel prmy2 type disk;
allocate channel prmy3 type disk;
allocation auxiliary channel stby type disk;
duplicate target database for standby from active database
spfile
parameter_value_convert 'VISK','VISK_DR'
set 'db_unique_name'='VISK_DR'
set 'db_file_name_convert'='+DATA/VISK','+DATA2/VISK_DR'
set log_file_name_convert='+FRA/VISK','+FRA/VISK_DR','+DATA/VISK','+DATA2/VISK_DR'
set control_files='+FRA/VISK_DR/control.ctl'
set log_archive_max_processes='5'
set fal_client='VISK_STDBY'
set fal_server='VISK_PRI'
set standby_file_management='AUTO'
set log_archive_config='dg_config=(VISK,VISK_DR)'
set log_archive_dest_1='service=VISK LGWR ASYNC valid_for=(ONLINE_LOGFILES,PRIMARY_RC'
db_unique_name=VISK'
set cluster_database='FALSE'
nofilenamecheck;
sql channel prmy1 "alter system set log_archive_config='"dg_config=(VISK,VISK_DR)"

sql channel prmy1 "alter system set log_archive_dest_1= "service=VISK_STDBY LGWR ASY
valid_for=(online_logfiles,primary_role) db_unique_name=VISK_DR"

sql channel prmy1 "alter system set log_archive_max_processes=5"

sql channel prmy1 "alter system set fal_client=VISK_PRI"

sql channel prmy1 "alter system set fal_server=VISK_STDBY"

sql channel prmy1 "alter system set standby_file_management=auto"

sql channel prmy1 "alter system set log_archive_dest_state_1=enable"

sql channel prmy1 "alter system archive log current"

sql channel stby "alter database recover managed standby database
using current logfile disconnect";

}
On the Target Linux Server:
CONVERT DATAFILE
'+'DATA/rmanprod/datafile/undotbs2.526.730996117'
,'+'DATA/rmanprod/datafile/undotbs3.525.730996119'
,'+'DATA/rmanprod/datafile/undotbs4.511.730996121'
,'+'DATA/rmanprod/datafile/users.510.730996125'
,'+'DATA/rmanprod/datafile/rman_data.716.731075857'
from PLATFORM 'Solaris[tm] OE (64-bit)'
FORMAT='+'DATA'
parallelism=6;

Migrate from One Platform to another
I.E. Solaris 64-bit to Linux 64-bit
Agenda

- Backup Strategy
- RMAN Configuration
- Backup and Recovery
- Reports
- Demo
RMAN> crosscheck backup;
RMAN> list recoverable backup;

List of Backup Sets
=====================
BS Key  Size       Device Type Elapsed Time Completion Time
------- ---------- ----------- ------------ -------------------
1       304.04M    DISK        00:00:22     16-may-2011 16:40:09
BP Key: 1   Status: AVAILABLE  Compressed: NO  Tag: TAG20110516T163947
Piece Name: /bkups/oracle/VISCOSITY/201105161639-VISCOSIT-02mcg36j_1_1.ARCh

List of Archived Logs in backup set 1
Thrd Seq  Low SCN   Low Time            Next SCN  Next Time
----- ----- ----------- -------------------- -------- --------
1  2     975686     07-may-2011 01:39:43 997225     07-may-2011 08:05:14
1  3     997225     07-may-2011 08:05:14 1020095    07-may-2011 18:13:49
...
RMAN> crosscheck backup;
RMAN> report obsolete;

Example:
RMAN> report obsolete;

using target database control file instead of recovery catalog
RMAN retention policy will be applied to the command
RMAN retention policy is set to redundancy 2
Report of obsolete backups and copies

<table>
<thead>
<tr>
<th>Type</th>
<th>Key</th>
<th>Completion Time</th>
<th>Filename/Handle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Backup Set</td>
<td>1</td>
<td>16-may-2011 16:40:09</td>
<td></td>
</tr>
<tr>
<td>Backup Piece</td>
<td>1</td>
<td>16-may-2011 16:40:09</td>
<td>/bkups/oracle/VISCOSITY/201105161639-VISCOSIT-02mcg36j_1_1.ARCH</td>
</tr>
<tr>
<td>Backup Set</td>
<td>2</td>
<td>16-may-2011 16:40:13</td>
<td></td>
</tr>
<tr>
<td>Backup Piece</td>
<td>2</td>
<td>16-may-2011 16:40:13</td>
<td>/bkups/oracle/VISCOSITY/rman_ctl_c-2289964488-20110516-00.bak</td>
</tr>
<tr>
<td>Backup Set</td>
<td>3</td>
<td>16-may-2011 16:41:55</td>
<td></td>
</tr>
</tbody>
</table>
RMAN> list expired backup;

specification does not match any backup in the repository

RMAN> list expired archivelog all;

specification does not match any archived log in the repository
RMAN> report schema;

Report of database schema for database with db_unique_name VISCOSITY

List of Permanent Datafiles

<table>
<thead>
<tr>
<th>File Size(MB)</th>
<th>Tablespace</th>
<th>RB segs</th>
<th>Datafile Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 700</td>
<td>SYSTEM</td>
<td>***</td>
<td>+DATA/viscosity/datafile/system.256.750476297</td>
</tr>
<tr>
<td>2 550</td>
<td>SYSAUX</td>
<td>***</td>
<td>+DATA/viscosity/datafile/sysaux.257.750476297</td>
</tr>
<tr>
<td>3 30</td>
<td>UNDOTBS1</td>
<td>***</td>
<td>+DATA/viscosity/datafile/undotbs1.258.750476297</td>
</tr>
<tr>
<td>4 5</td>
<td>USERS</td>
<td>***</td>
<td>+DATA/viscosity/datafile/users.259.750476297</td>
</tr>
<tr>
<td>5 100</td>
<td>TOOLS</td>
<td>***</td>
<td>+DATA/viscosity/datafile/tools.262.750694447</td>
</tr>
</tbody>
</table>

List of Temporary Files

<table>
<thead>
<tr>
<th>File Size(MB)</th>
<th>Tablespace</th>
<th>Maxsize(MB)</th>
<th>Tempfile Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 20</td>
<td>TEMP</td>
<td>32767</td>
<td>+DATA/viscosity/tempfile/temp.260.750476375</td>
</tr>
</tbody>
</table>
RMAN> report unrecoverable;

DG Toolkit Option 10→30:
Checking for forced logging at the database level
# # Executing dg_check_force_logging.sql on DB: VISCOSITY
# #
NO
# #
Forced Logging is not enabled. Please execute the following:
Syntax: alter database force logging;
# #
# # Executing dg_check_unrecoverable.sql on DB: VISCOSITY
# #
Checking for datafiles with unrecoverable activities
Checking for tablespace(s) that are not being logged

Identify Unrecoverable Activity

DBAExpert.com
SQL> create restore point ck_doug_2011_rp guarantee flashback database;

Restore point created.

RMAN> list restore point all;

using target database control file instead of recovery catalog

<table>
<thead>
<tr>
<th>SCN</th>
<th>RSP Time</th>
<th>Type</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1246875</td>
<td></td>
<td>GUARANTEED</td>
<td>17-may-2011 11:06:57</td>
</tr>
</tbody>
</table>

CK_DOUG_2011_RP
• Neither DBAExpert.com nor the authors guarantee this document to be error-free. Please provide comments and feedback to ckim@DBAExpert.com

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