Oracle – Data Recovery Advisor
About me

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Who we are
dbi services

Experts At Your Service
> 40 specialists in IT infrastructure
> Certified, experienced, passionate

Based In Switzerland
> 100% self-financed Swiss company
> Over CHF 6 mio. turnover

Leading In Infrastructure Services
> More than 100 customers in CH, D, & F
> Over 40 SLAs dbi FlexService contracted

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Agenda

1. What is DRA – Data Recovery Advisor?
2. Using the Data Recovery Advisor
3. Data Failures
4. Conclusion
What is Data Recovery Advisor?

Just an advisor?

Introduction

> DRA features
Oracle – Database Recovery Advisor

What is Data Recovery Advisor?
Introduction

Oracle Database features to
> Automatically diagnose database failures
> Determine and present appropriated repair option
> *Execute repair at user’s request*

Objectives
> Provide repair 2\(^{nd}\) opinion
  > 4 eyes principle
> Reduce MTTR
> Reduce Human Error
  > At least challenge DBA decision
What is Data Recovery Advisor?
Introduction

Introduced in Oracle 11gR1

> Available in
  > RMAN
  > Enterprise Manager

> Documented in Oracle Backup Recovery Guide
  > Chapter 15

http://docs.oracle.com/cd/E11882_01/backup.112/e10642/rcmrepai.htm#CHDDBECC
What is Data Recovery Advisor?

Introduction

What is a failure?

- Persistent data corruption
  - File loss (data, redo, control)
  - Block corruption

- Failures are recorded in Automatic Diagnostic Repository

What is not covered by DRA?

- Logical failures / Users’ errors
  - Table drop
  - Data deletion
  - Data corruption
What is Data Recovery Advisor?

DRA features

- Pro-active detection
- Present Failures
- Diagnose Failures
- Repair Failures
What is Data Recovery Advisor?

DRA features

“Pro-active” detection
- Integrated with Health Monitor
- Block, undo, redo, archivelogs, data dictionary corruption
- Findings stored in Automatic Diagnostic Repository
- Runs after an error occurs OR manually on DBA request
- Allows faster diagnostic

Present failures
- Shows detected failures
- Manages severity
- Problems are grouped for simultaneous resolution
What is Data Recovery Advisor?

DRA features

Diagnose failures
- Evaluate available backup data
- Automated vs Manual
- Check for data loss
- Define component to restore
- Define restore point
- Full vs Point In Time
What is Data Recovery Advisor?

DRA features

Repair failures

- Propose a repair method
- Script generated
- **Script can be run to fix failures**
- Multiple repair actions may be required to fix all failures
Using the Data Recovery Advisor

- Command-line
- Data Dictionary Views
- Packages PL/SQL for DRA
Using the Data Recovery Advisor
Command-line

Simply use the RMAN command-line interface:

- Health Monitor
  - Access data Failure
- Data Recovery Advisor
  - List failure
  - Advise failure
  - Repair Failure
  - Change Failure
- DBA
  - Perform Proactive checks

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Using the Data Recovery Advisor
Command-line

Simply use the RMAN command-line interface:

- Display current failures
- Proactively detect failures (limited)
- Provide Failures details

Detect & Diagnose Failures

- List failure
- Advise failure
- Repair Failure
- Change Failure
Using the Data Recovery Advisor Command-line

Simply use the RMAN command-line interface:

List of all options:
- ALL
- CRITICAL
- HIGH
- LOW
- CLOSED
- EXCLUDE FAILURE
- DETAIL
- #
- List failure
- Advise failure
- Repair Failure
- Change Failure
Using the Data Recovery Advisor Command-line

Simply use the RMAN command-line interface:

- Best Practices
- List step by step / Automatically or Manually
- Creating a script

Determine Repair Options

- List failure
- Advise failure
- Repair Failure
- Change Failure

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Using the Data Recovery Advisor Command-line

Simply use the RMAN command-line interface:

- Automatically fix failures
- Confirmation before executing
- Creating a script
- PREVIEW option

Execute Repairs

- List failure
- Advise failure
- Repair Failure
- Change Failure
Using the Data Recovery Advisor Command-line

Simply use the RMAN command-line interface:

- Close / Exclude Failures
- Change priority
- Modify Failures
  - List failure
  - Advise failure
  - Repair Failure
  - Change Failure
Several views added to support DRA

- **V$IR views**

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**Using the Data Recovery Advisor**

**Data dictionary views**

- **V$IR** views

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Using the Data Recovery Advisor
Packages PL/SQL for RMAN

List of Packages:

- DBMS_BACKUP_RESTORE.BACKUPCANCEL
- DBMS_BACKUP_RESTORE.RESTORECANCEL
- DBMS_BACKUP_RESTORE.PROXYCANCEL
- DBMS_BACKUP_RESTORE.CFILEUSECURRENT
- DBMS_BACKUP_RESTORE.DEVICESTATUS
- DBMS_BACKUP_RESTORE.BMRCANCEL
- DBMS_BACKUP_RESTORE.FLASHBACKCANCEL
- DBMS_BACKUP_RESTORE.CLEANUPPGACONTEXT (new 12.1)
- DBMS_BACKUP_RESTORE.SETRMANSTATUSROWID

List of V$:

- v$controlfile_record_section
- v$database
- v$instance
- v$parameter
- v$option
- v$archived_log
Insight & Infrastructure at your service.
Case 1: Data File Loss

- **Problem:**
  - Error while starting the database
    - Database can’t be open and remains in MOUNT
  - Error while accessing data
    - Objects not stored in data file can still be used

```
ERROR at line 1:
ORA-01116: error in opening database file 4
ORA-01110: data file 4: '/u01/oradata/DBPROD/users01DBPROD.dbf'
ORA-27041: unable to open file
Linux-x86_64 Error: 2: No such file or directory
Additional information: 3
```
Case 2: Database Loss

- Problem:
  - Database doesn’t start anymore

```
SQL> startup
ORACLE instance started.

Total System Global Area 1068937216 bytes
Fixed Size 2235208 bytes
Variable Size 616563896 bytes
Database Buffers 444596224 bytes
Redo Buffers 5541888 bytes
ORA-00205: error in identifying control file, check alert log for more info
```
Case 3: Database Loss and control files

- Problem:
  - Database doesn’t start anymore without catalog

SQL> startup
ORACLE instance started.

Total System Global Area 1068937216 bytes
Fixed Size 2235208 bytes
Variable Size 616563896 bytes
Database Buffers 444596224 bytes
Redo Buffers 5541888 bytes
ORA-00205: error in identifying control file, check alert log for more info
Conclusion

- So what?
- Limitations
Should I use it???

YES

Why?

- It works!!!
- Covers easily about 80% to 90% of cases
- Operation controlling – 4 eyes principle
- Reduce human errors
- Reduces time to recover
Conclusion
Limitations

“Requires an RMAN Catalog in case of control file loss”

Failure detection still mostly requires error first
> No automated scan or testing

Does not repair Standby databases

No RAC support

RMAN> list failure;
using target database control file instead of recovery catalog
RMAN-00571: -----------------------------------------------
RMAN-00569: ------------- ERROR MESSAGE STACK FOLLOWS -------------
RMAN-00571: -----------------------------------------------
RMAN-03002: failure of list command at 03/12/2012 20:38:08
RMAN-05533: LIST FAILURE is not supported on RAC database
Any questions? Please do ask.

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We look forward to working with you!