



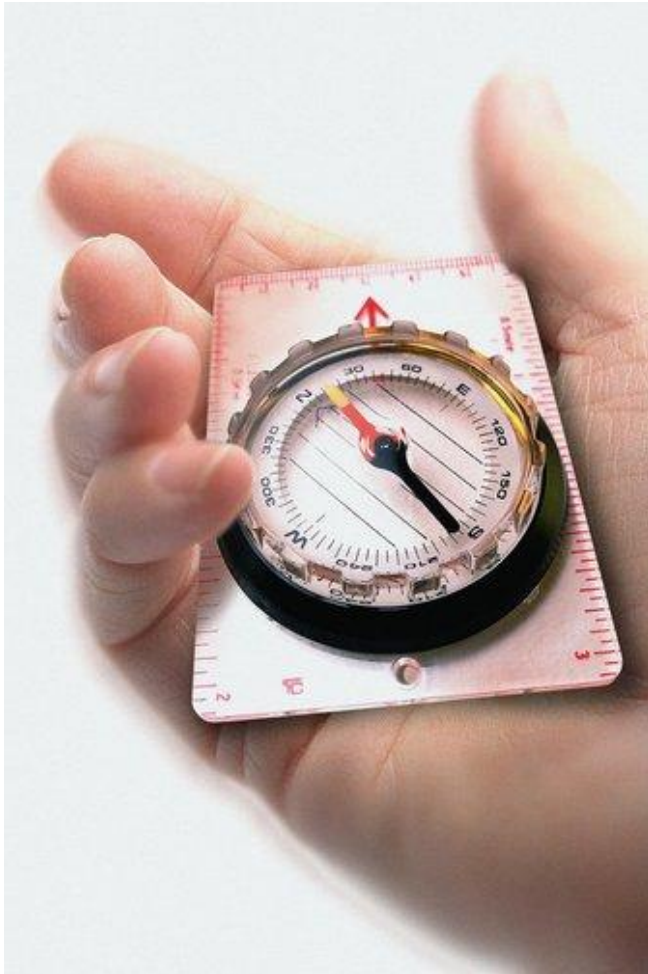
Recovery Manager





Course objectives

By completing this course, you will be able to:



- Describe the RMAN repository and recovery catalog
- Configure database parameters that affect RMAN
- Change RMAN default settings with `CONFIGURE`
- Use the RMAN `BACKUP` command
- Use various files for diagnostic purposes
- Control the size and location of trace files





Course topics

Course's plan:



- Managing RMAN
- Using Recovery Manager
- Diagnostic sources





Managing RMAN



Preview

- Describe the **RMAN** repository and recovery catalog
- Describe the Media Management Library interface
- Configure database parameters that affect **RMAN**
- Change **RMAN** default settings with **CONFIGURE**





Describe the RMAN repository and recovery catalog

Recovery Manager Features

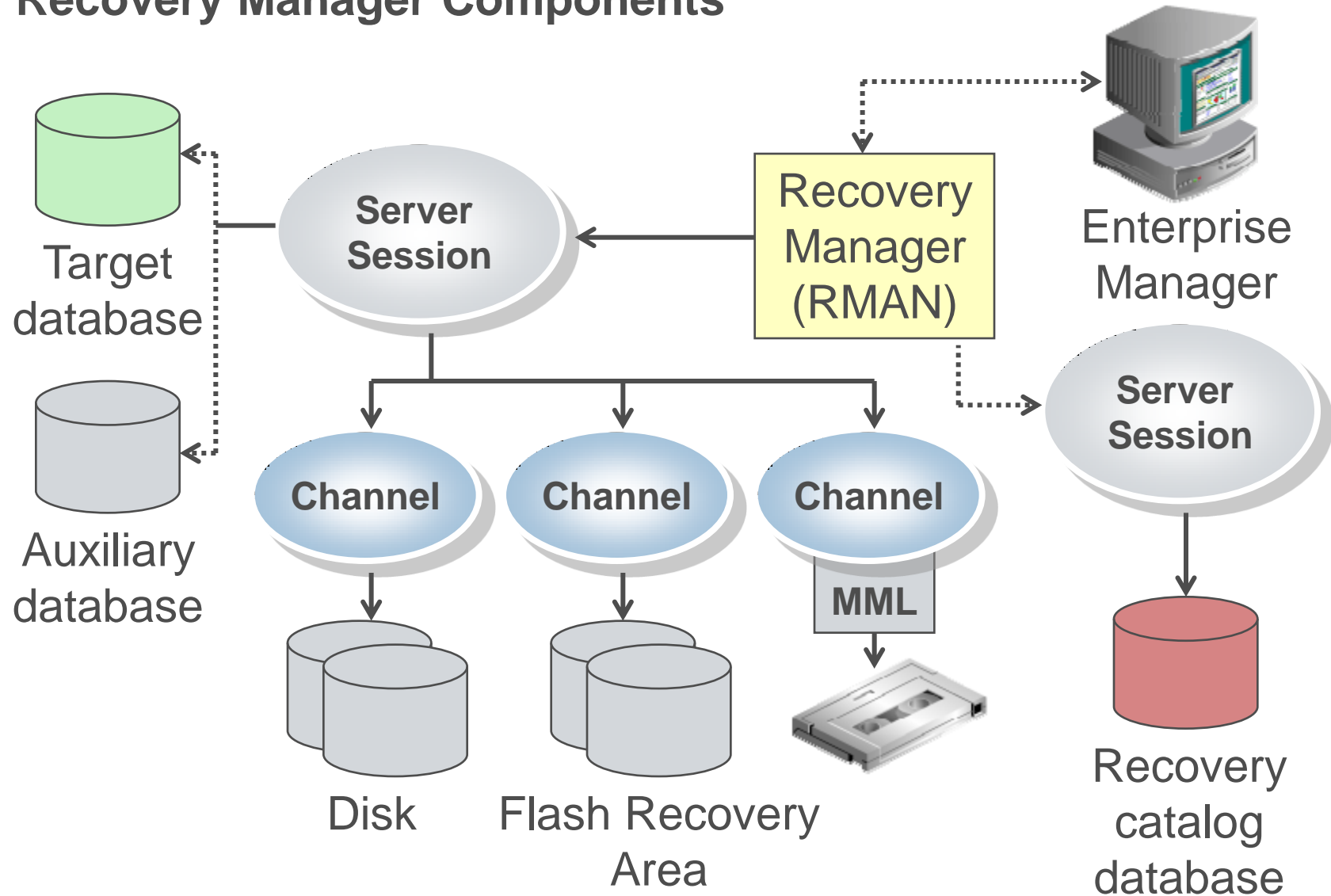
- **RMAN** provides a flexible way to:
 - Back up the database, tablespaces, data files, control files, and archived redo logs
 - Manage backup and recovery tasks
 - Perform incremental block-level backup and block-level media recovery
 - Detect corrupted blocks during backup
 - Use binary compression when creating backups





Describe the RMAN repository and recovery catalog

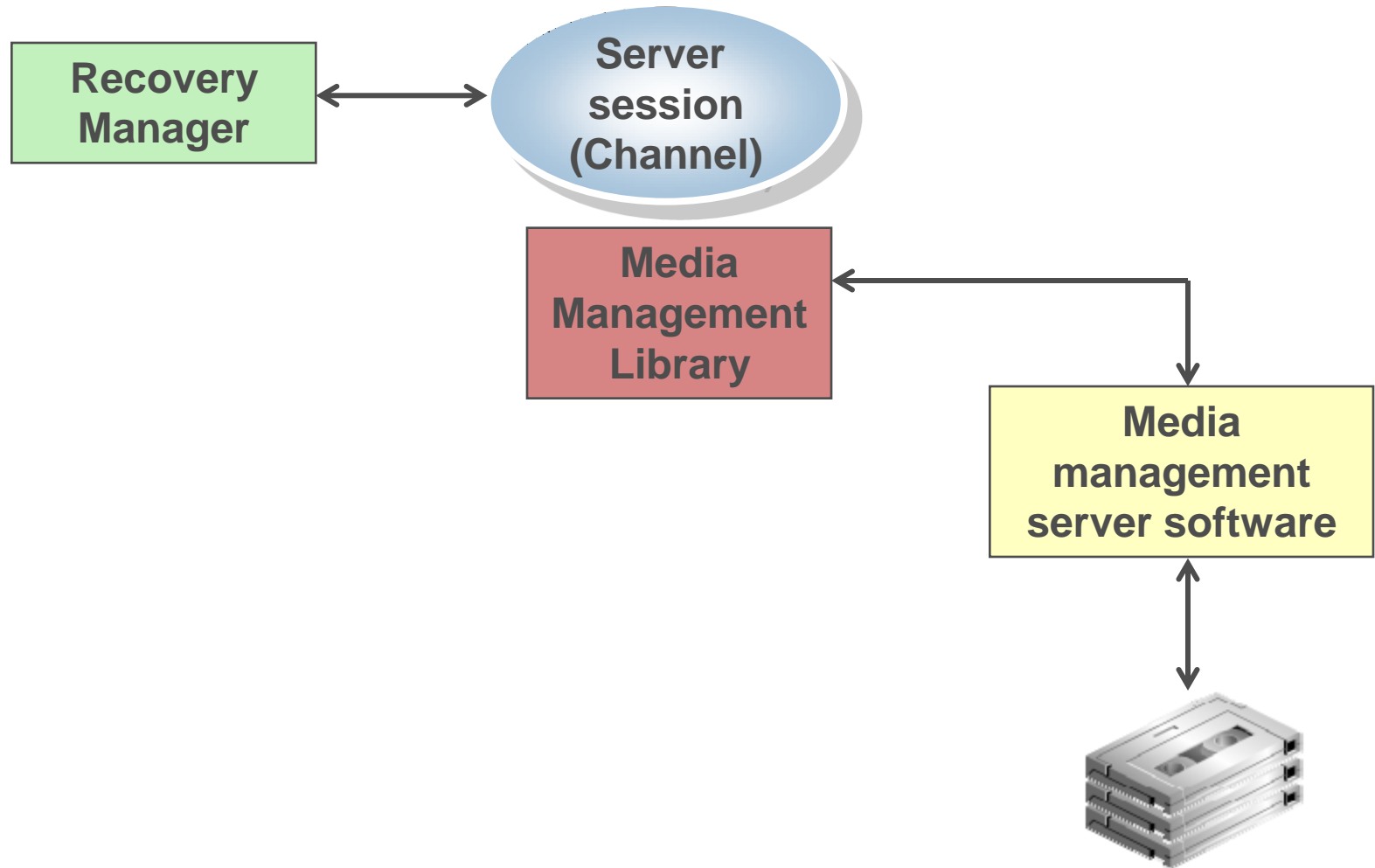
Recovery Manager Components





Describe the Media Management Library interface

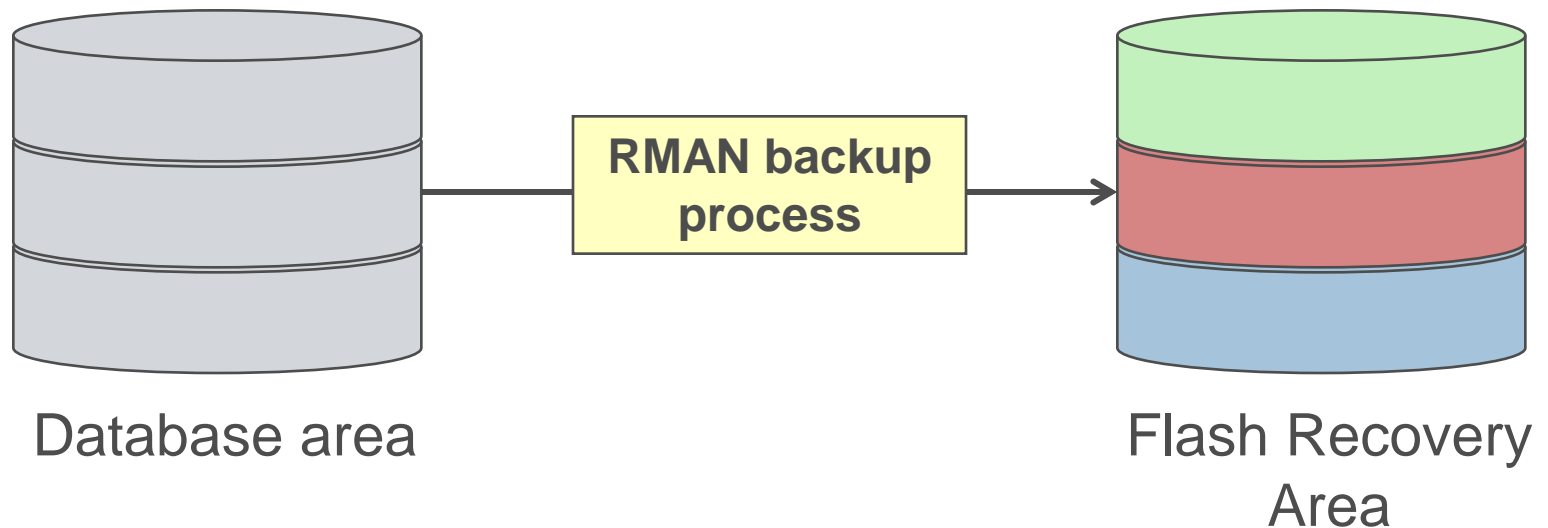
Media Management





Describe the Media Management Library interface

Using a Flash Recovery Area with RMAN





Configure database parameters that affect RMAN

Setting Parameters for RMAN

- Database initialization parameters:
 - `CONTROL_FILE_RECORD_KEEP_TIME`
 - `DB_RECOVERY_FILE_DEST` and `DB_RECOVERY_FILE_DEST_SIZE`
- Environment variables:
 - `NLS_DATE_FORMAT`
 - `NLS_LANG`





Configure database parameters that affect RMAN

RMAN Usage Considerations

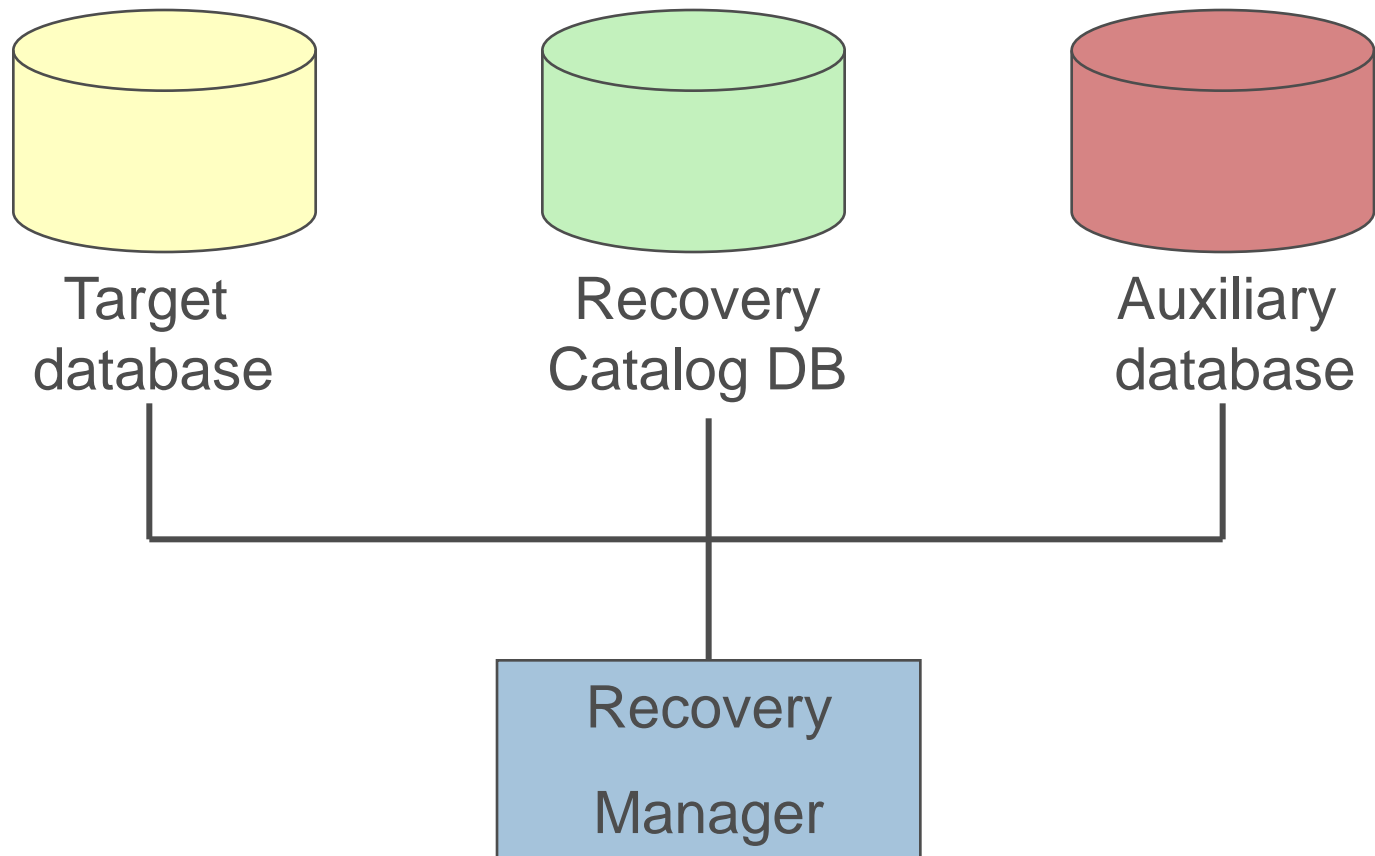
- Resources: Shared memory, more processes.
- Privileges given to users
 - Database: SYSDBA.
 - Operating System: Access to devices.
- Remote operations
 - Set up the password file.
 - Ensure that the password file is backed up.





Configure database parameters that affect RMAN

Connection Types with RMAN





Configure database parameters that affect RMAN

Starting RMAN

■ Starting **RMAN** locally:

```
UNIX : $ ORACLE_SID=DB01; export ORACLE_SID  
      $ rman target system/manager
```

```
Windows NT : C:\> set ORACLE_SID=DB01  
             C:\> rman target /
```

■ Starting **RMAN** remotely:

```
rman target sys/password@DB01
```





Configure database parameters that affect RMAN

Additional RMAN Command Line Arguments

- Writing **RMAN** output to a log file:

```
$ rman TARGET sys/oracle  
LOG $HOME/oradata/u03/rman.log APPEND
```

- Executing a command file when **RMAN** is invoked:

```
$ rman TARGET sys/oracle  
CMDFILE='$HOME/scripts/my_rman_script.rcv'
```

- Establishing database connections on **RMAN** startup:

```
$ rman TARGET SYS/sys_pwd@orcl CATALOG  
rman/rman@rcat AUXILIARY sys/aux_pwd@aux1
```





Change RMAN default settings with CONFIGURE

Configuring Persistent Settings for RMAN

- **RMAN** is preset with default configuration settings.
- Use the **CONFIGURE** command to:
 - Configure automatic channels.
 - Specify the backup retention policy.
 - Specify the number of backup copies to be created.
 - Set the default backup type to **BACKUPSET** or **COPY**.
 - Limit the size of backup sets.
 - Exempt a tablespace from backup.
 - Enable and disable backup optimization.
 - Configure automatic backups of control files.





Change RMAN default settings with CONFIGURE

Configuring RMAN Settings Using EM

Backup/Recovery

- [Schedule Backup](#)
- [Perform Recovery](#)
- [Manage Current Backups](#)
- [Configure Backup Settings](#)
- [Configure Recovery Settings](#)
- [Configure Recovery Catalog Settings](#)

Database: orcl.us.oracle.com > Configure Backup Settings

Configure Backup Settings

Device	Backup Set	Policy
Maximum Backup Piece (File) Size <input type="text" value=""/> MB <input type="button" value="v"/> <small>Specify a value to restrict the size of each backup piece.</small>		

Tape Settings

The following parameters require additional configuration on different media pools.

Copies of Datafile Backups	<input type="text" value="1"/> <small>Specify the number of identical copies for datafile backups.</small>
Copies of Archivelog Backups	<input type="text" value="1"/> <small>Specify the number of identical copies for archivelog backups.</small>

Host Credentials

To save the backup settings, supply operating system login credentials.

★ Username	<input type="text"/>
★ Password	<input type="password"/>
<input checked="" type="checkbox"/> Save as Preferred Credential	





Change RMAN default settings with CONFIGURE

Control File Auto backups

```
RMAN> CONFIGURE CONTROLFILE AUTOBACKUP ON;
```

Database: orcl.us.oracle.com > Configure Backup Settings

Configure Backup Settings

[Device](#) [Backup Set](#) **Policy**

Backup Policy

☒ Automatically backup the control file and server parameter file (SPFILE) with every backup and database structural change

Autobackup Disk Location

An existing directory or diskgroup name where the control file and server parameter file will be backed up. If you do not specify a location, the files will be backed up to the flash recovery area location.





Change RMAN default settings with **CONFIGURE**

Retention Policies

- A retention policy describes which backups will be kept and for how long.
- There are two types of retention policies:
 - Recovery window: Establishes a period of time within which point-in-time recovery must be possible.
 - Redundancy: Establishes a fixed number of backups that must be kept (Backups that are in excess of this can be deleted).
- These policies are mutually exclusive and can be set with the **CONFIGURE** command.





Change RMAN default settings with CONFIGURE

Managing Persistent Settings

- Use the **SHOW** command to list current settings:

```
RMAN> SHOW CONTROLFILE AUTOBACKUP FORMAT;  
RMAN> SHOW EXCLUDE;  
RMAN> SHOW ALL;
```

- Use the **CLEAR** command to reset any persistent setting to its default value:

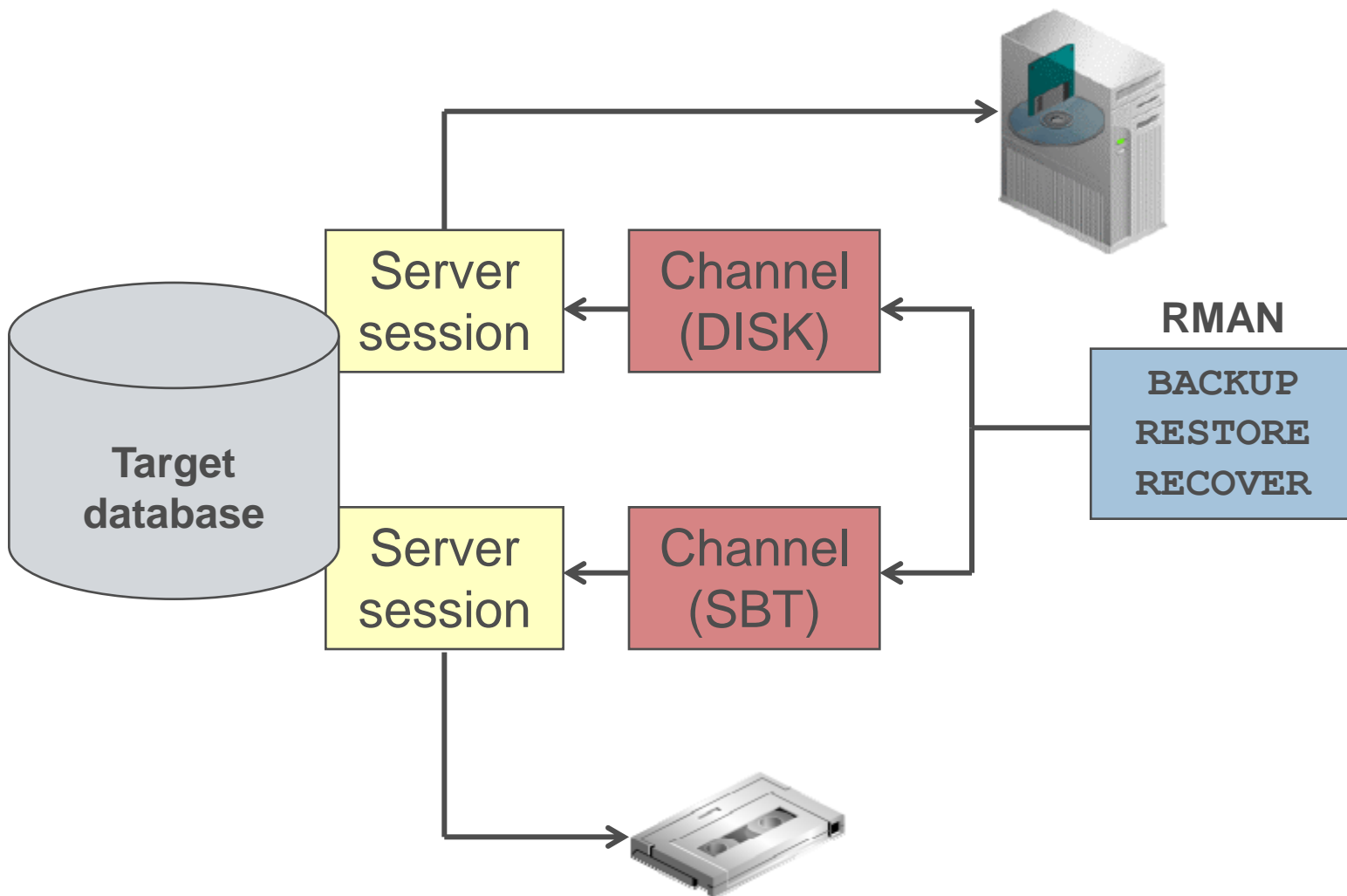
```
RMAN> CONFIGURE BACKUP OPTIMIZATION CLEAR;  
RMAN> CONFIGURE MAXSETSIZE CLEAR;  
RMAN> CONFIGURE DEFAULT DEVICE TYPE CLEAR;
```





Change RMAN default settings with CONFIGURE

Channel Allocation





Change RMAN default settings with CONFIGURE

Automatic and Manual Channel Allocation

- Change the default device type for automatic channel allocation:

```
RMAN>CONFIGURE DEFAULT DEVICE TYPE TO sbt;
```

- Manually allocate a channel:

```
RMAN>RUN {  
  2>ALLOCATE CHANNEL c1 DEVICE TYPE disk;  
  3>BACKUP DATAFILE '/u01/oradata/user01.dbf';  
  4>}
```





Change RMAN default settings with CONFIGURE

Channel Control Options

- Configure parallelism:

```
RMAN> CONFIGURE DEVICE TYPE DISK PARALLELISM 3;
```

- Specify the maximum backup piece size:

```
RMAN> CONFIGURE CHANNEL DEVICE TYPE DISK  
2> MAXPIECESIZE 2G;
```


- Format the name of generated backup files:

```
RMAN> RUN {  
2> ALLOCATE CHANNEL d1 DEVICE TYPE DISK  
3> FORMAT '/disk1/backups/%U' ;  
4> BACKUP DATABASE PLUS ARCHIVELOG; }
```






Part 1 Summary



**Describe the
RMAN repository
and recovery
catalog**



**Describe the
Media
Management
Library interface**



**Configure
database
parameters that
affect RMAN**



**Change RMAN
default settings
with CONFIGURE**





Part 1 Stop-and-think

Do you have any questions ?





Using Recovery Manager



Preview

- Use the **RMAN BACKUP** command
- Manage the backups with **RMAN**





Use the **RMAN** **BACKUP** command

Issuing Recovery Manager Commands

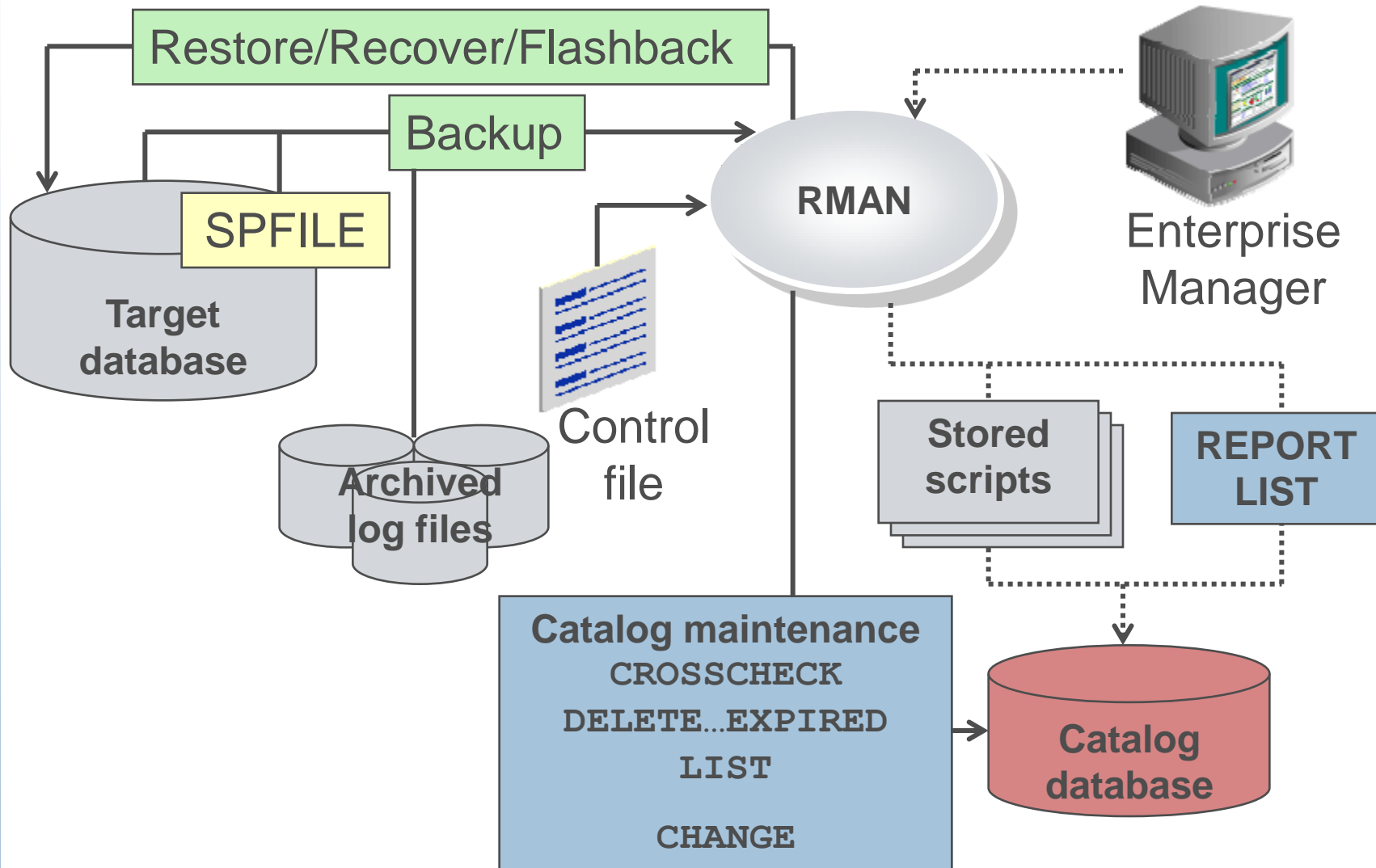
- Interactive client
 - Type commands at **RMAN** prompt.
 - Use when doing analysis, running reports or stored scripts.
- Batch mode
 - Use with automated jobs.
 - Specify a command file when starting **RMAN**.
 - Set the log file to obtain information.
- Pipe interface
 - Specify the **PIPE** command line argument.
 - Use to communicate data between sessions or between **RMAN** and an external application.





Use the RMAN BACKUP command

RMAN Command Overview





Use the **RMAN BACKUP** command

RMAN Commands

- **RMAN** commands are of the following types:
 - Stand-alone
 - Executed individually at the **RMAN** prompt.
 - Cannot appear as subcommands within **RUN**.
 - Job
 - Must be within the brackets of **RUN**.
 - Executed as a group.
 - Stand-alone or job
 - Can be executed at the **RMAN** prompt and run individually.
 - Can be run within the brackets of **RUN** and executed within a group.





Use the RMAN BACKUP command

Job Command: Example

■ RUN command:

```
RMAN> RUN {  
  2> BACKUP AS BACKUPSET  
  3> FORMAT '/u01/db01/backup/%d_%s_%p'  
  4> DURATION 10:00 MINIMIZE LOAD  
  5> (DATABASE) ;  
  6> SQL'alter system archive log current';  
  7> }
```

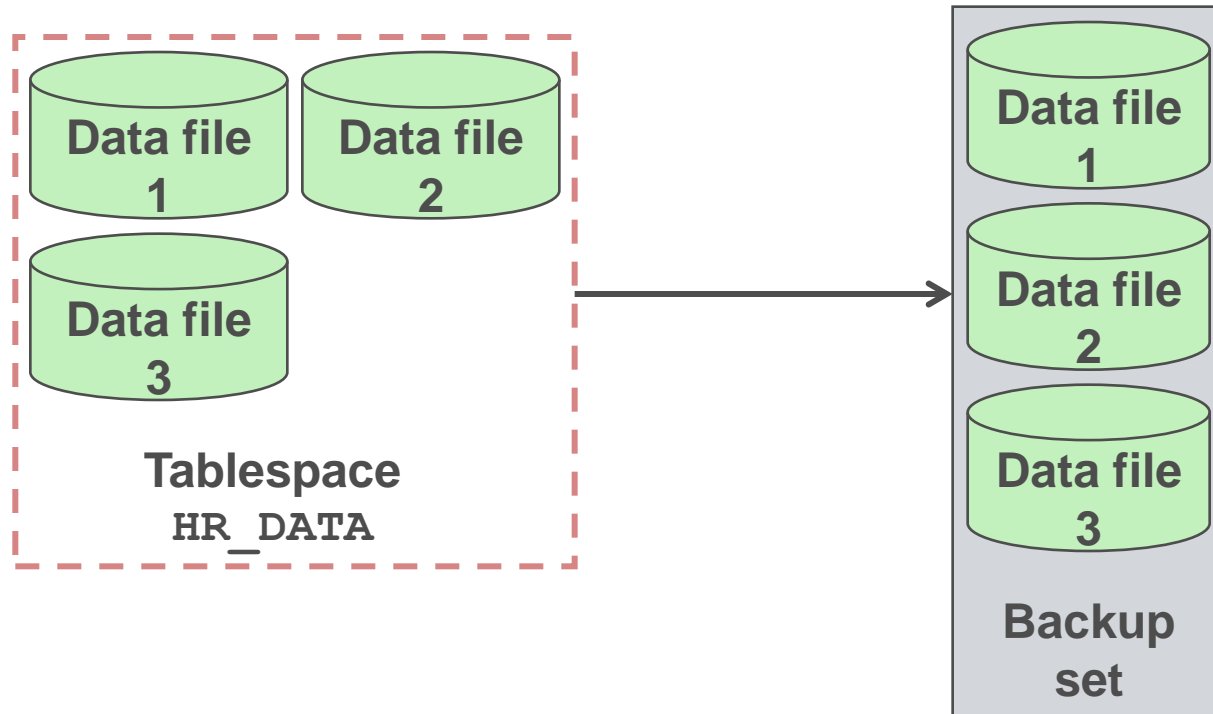




Use the RMAN BACKUP command

The BACKUP Command

```
RMAN> BACKUP AS BACKUPSET  
2> FORMAT '/BACKUP/df_%d_%s_%p.bus'  
3> TABLESPACE hr_data;
```





Use the RMAN BACKUP command

Backup Constraints

- The database must be mounted or opened.
- Online redo log backups are not supported.
- Only “clean” backups are usable in **NOARCHIVELOG** mode.
- Only “current” data file backups are usable in **ARCHIVELOG** mode.

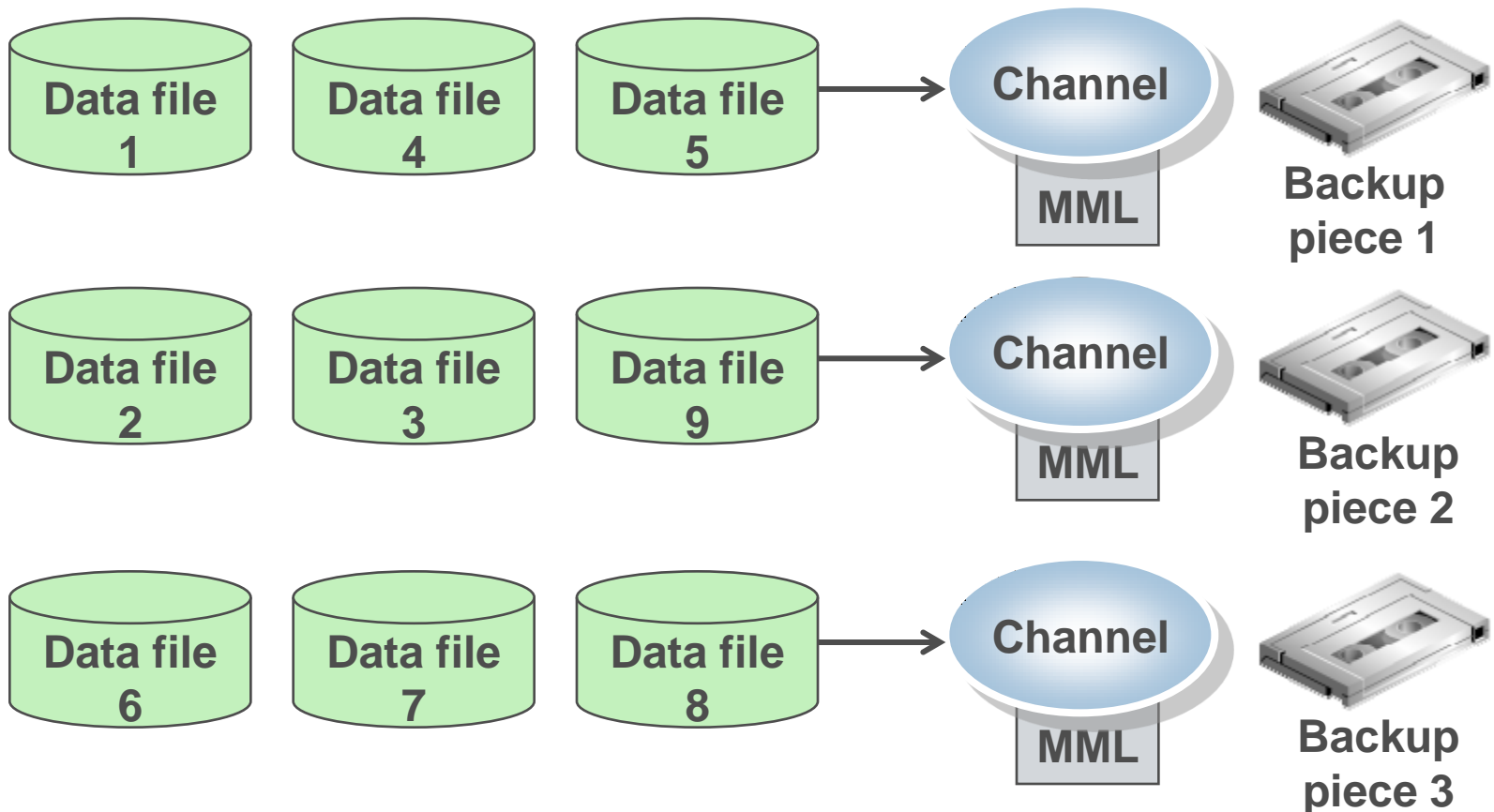




Use the RMAN BACKUP command

Parallelization of Backup Sets

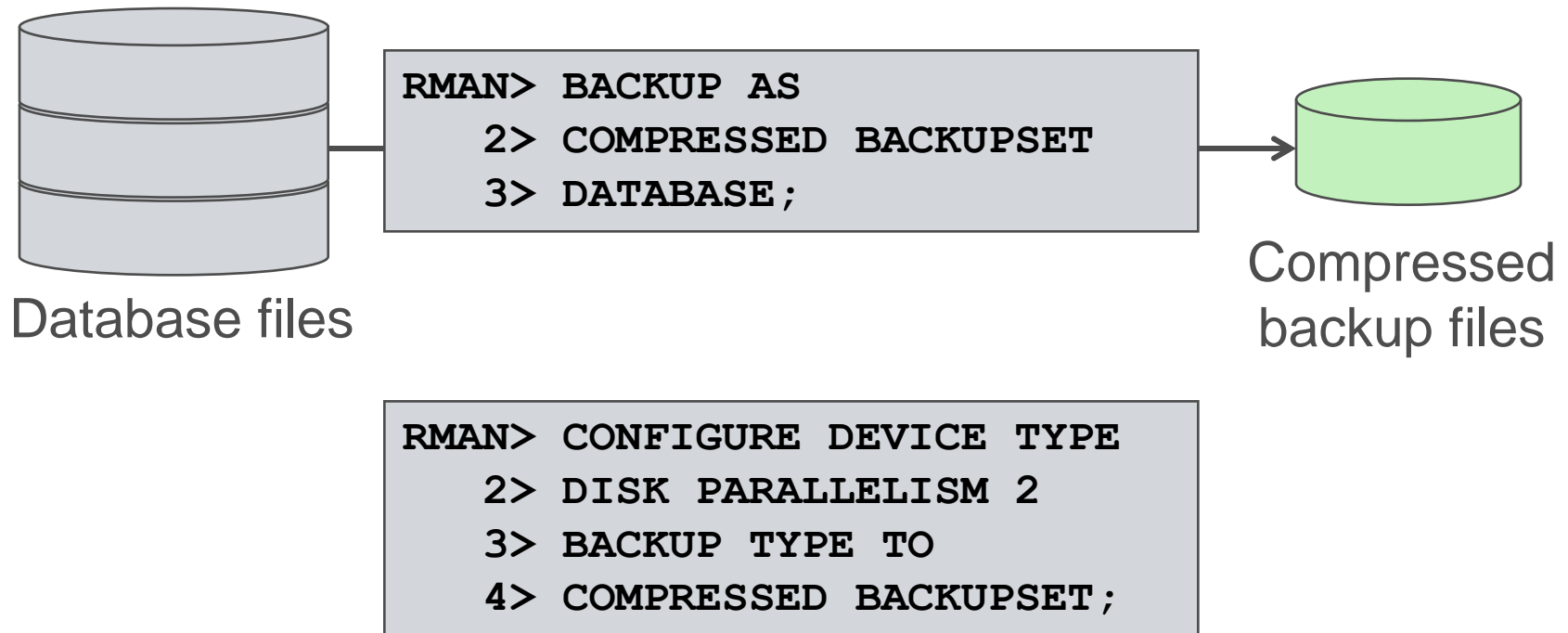
- Allocate multiple channels and assign files to specific channels.





Use the RMAN BACKUP command

Compressed Backups

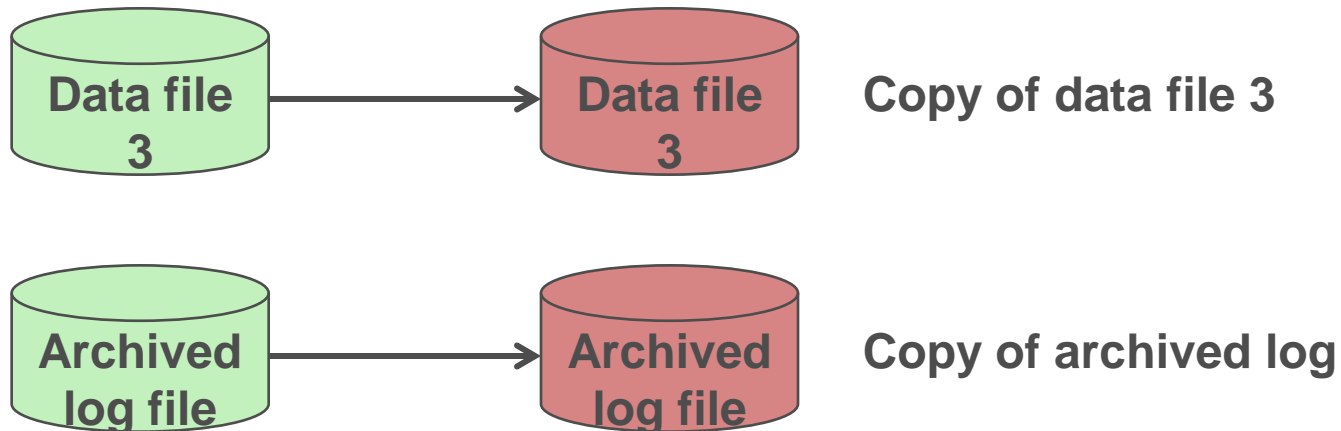




Use the RMAN BACKUP command

Image Copy

```
RMAN> BACKUP AS COPY
  2> DATAFILE '/ORADATA/users_01_db01.dbf'
  3> FORMAT '/BACKUP/users01.dbf' tag=DF3;
RMAN> BACKUP AS COPY
  2> ARCHIVELOG LIKE 'arch_1060.arc'
  3> FORMAT 'arch_1060.bak';
```



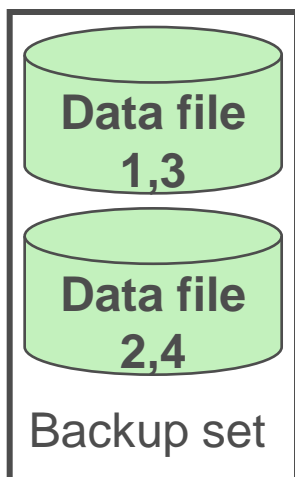


Use the RMAN BACKUP command

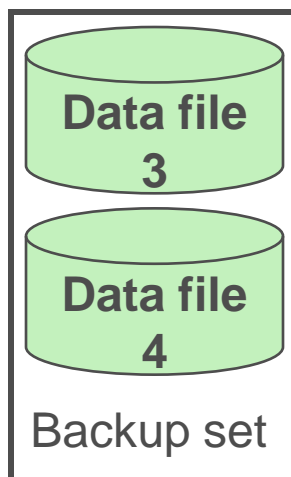
Tags for Backups and Image Copies

- A tag is a logical name assigned to a backup set or image copy.

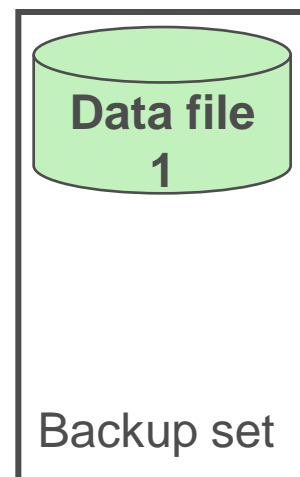
Month_full_backup



week_full_backup



Wednesday_1_backup





Use the RMAN BACKUP command

BACKUP Options

- Check for physical block corruptions.
- Scan for logical corruptions in addition to physical corruptions.
- Set a threshold on the number of detected corruptions allowed before aborting.
- Validate the target input files before performing a backup operation.
- Duplex the backup set.
- Overwrite an existing backup set or image copy.
- Pass control over the data transfer between storage devices and the data files on disk to the media management layer.





Use the RMAN BACKUP command

Backing Up Archived Redo Logs

- Online redo log file switch is automatic.
- Archived log failover is performed.
- You can specify a range of archived redo logs to back up.
- Backup sets include only archived redo log files.

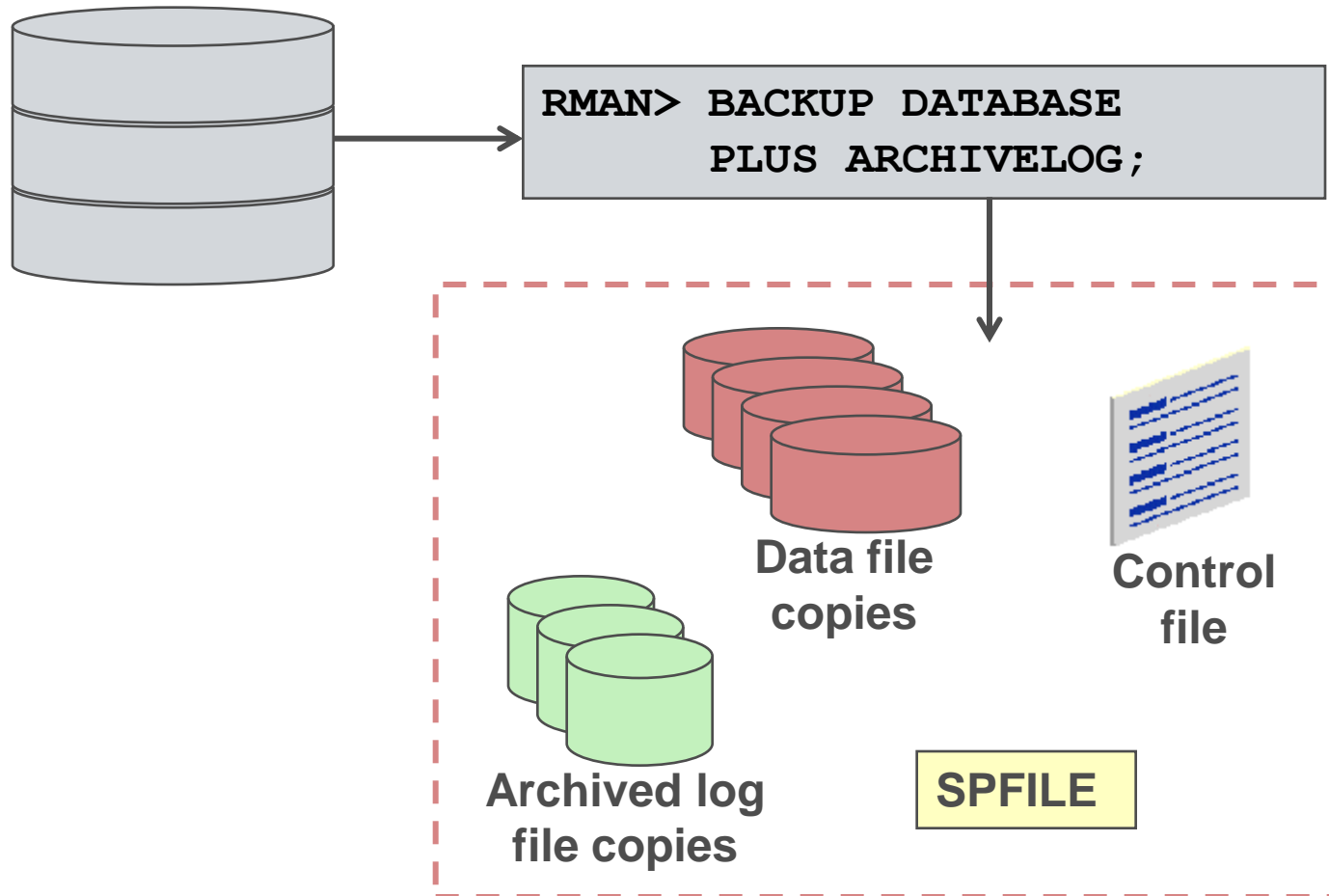
```
RMAN> BACKUP  
  2> FORMAT '/disk1/backup/ar_%t_%s_%p'  
  3> ARCHIVELOG FROM SEQUENCE=234  
  4> DELETE INPUT;
```





Use the RMAN BACKUP command

Copying the Whole Database

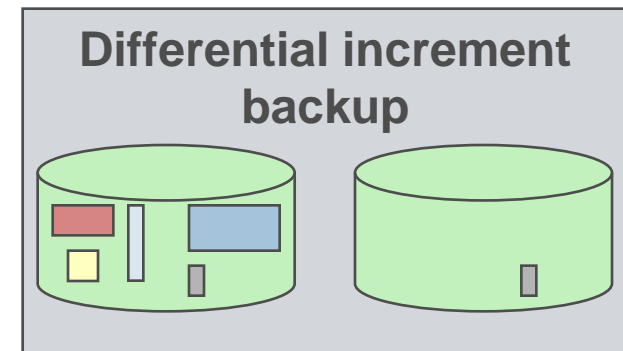
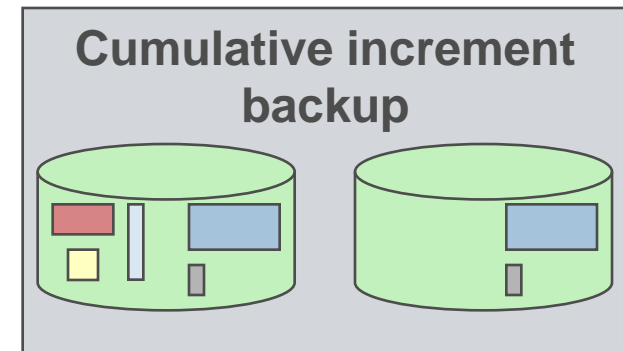
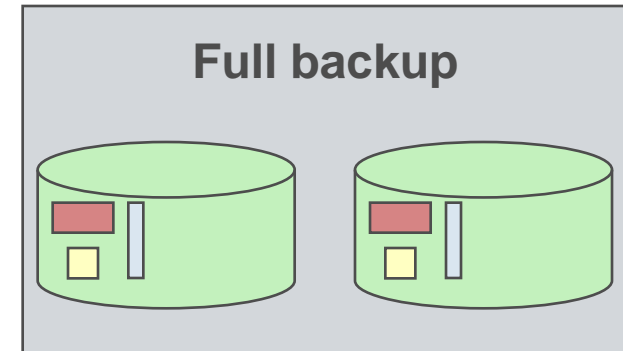




Use the RMAN BACKUP command

Making Incremental Backups

- A *level 0 incremental backup*, similar to a full backup, contains all data file blocks.
- A *cumulative level 1 incremental backup* contains only blocks modified since the last level 0 incremental backup.
- A *differential level 1 incremental backup* contains only blocks modified since the last incremental backup.

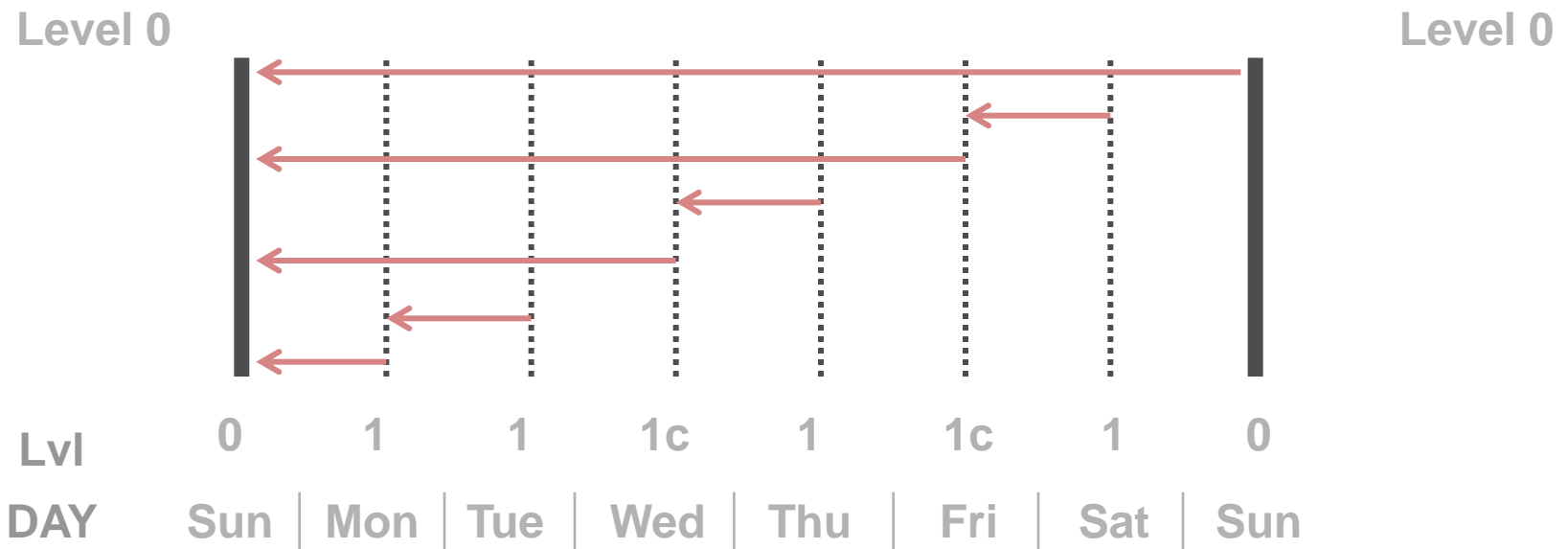




Use the RMAN BACKUP command

Incremental Backup: Example

- A differential incremental backup contains all blocks changed since the last incremental backup.
- A cumulative incremental backup contains all blocks changed since the last level 0 incremental backup.

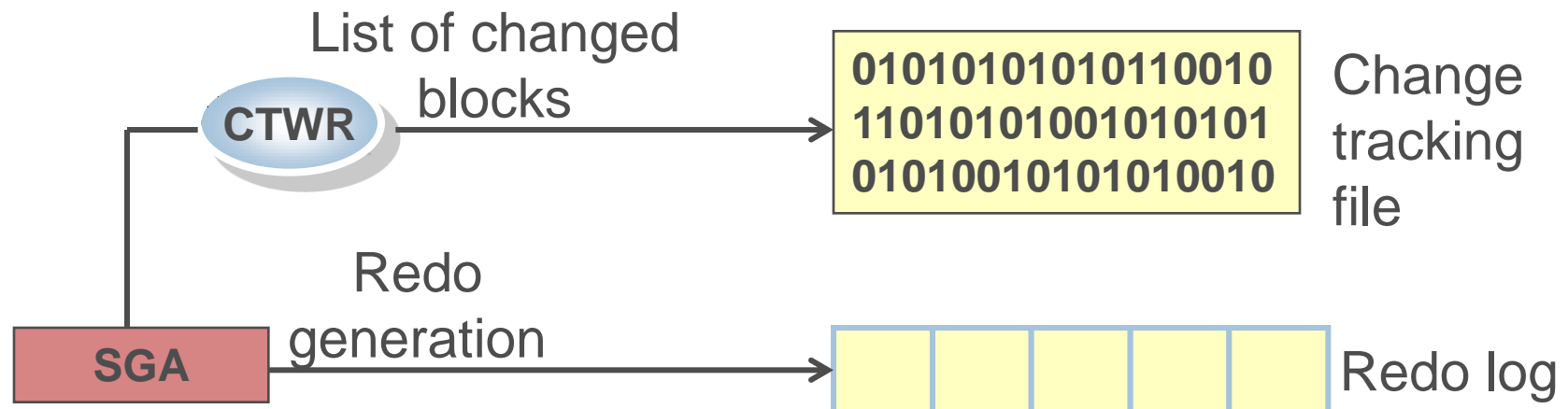




Use the RMAN BACKUP command

Block Change Tracking

- Records changed blocks in a change tracking file.
- Is used automatically by **RMAN** if enabled.
- Optimizes incremental backups by avoiding full data file scans during backup.





Use the RMAN BACKUP command

Enabling Block Change Tracking

```
SQL> ALTER DATABASE ENABLE  
2> BLOCK CHANGE TRACKING  
3> USING FILE '/mydir/rman_change_track.f'  
4> REUSE;
```

ORACLE Enterprise Manager 10g Database Control

Database: orcl.us.oracle.com > Configure Backup Settings

Configure Backup Settings

Device Backup Set Policy

Backup Policy

☐ Automatically backup the control file and server parameter file (SPFILE) with every backup and database structural change

Autobackup Disk Location:
An existing directory or diskgroup name where the control file and server parameter file will be backed up. If you do not specify a location, the backup will be written to the flash recovery area location.

☐ Optimize the whole database backup by skipping unchanged files such as read-only and offline datafiles that have been backed up

☒ Enable block change tracking for faster incremental backups

Block Change Tracking File:
Specify a location and file, otherwise an Oracle managed file will be created in the database area.

Tablespaces Excluded From Whole Database Backup

Populate this table with the tablespaces you want to exclude from a whole database backup. Use the Add button to add tablespaces to the list.

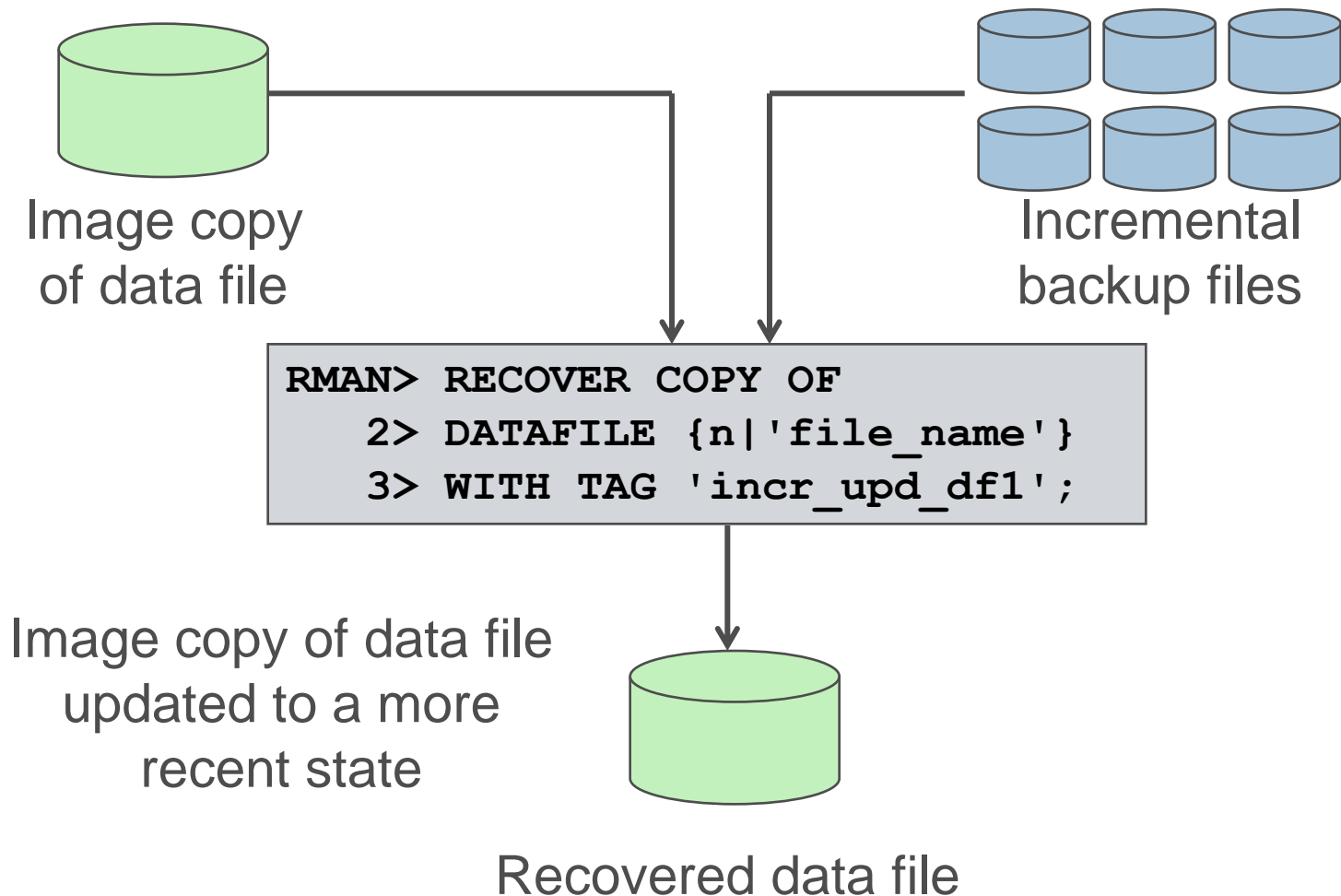
Add





Use the RMAN BACKUP command

Incrementally Updating Backups





Use the RMAN BACKUP command

LIST Command Operations

- List backup sets and copies of data files :

```
RMAN> LIST BACKUP OF DATABASE;
```

```
RMAN> LIST BACKUP OF DATAFILE  
2> '/db01/ORADATA/u03/users01.dbf';
```

- Lists backup sets and copies of any data file for a specified tablespace :

```
RMAN> LIST COPY OF TABLESPACE "SYSTEM";
```

- Lists backup sets and copies containing archive logs for a specified range :

```
RMAN> LIST COPY OF DATABASE ARCHIVELOG  
2> FROM TIME='SYSDATE-7' ;
```





Use the RMAN BACKUP command

The REPORT Command

- Produces a detailed analysis of the repository.
- Produces reports to answer :
 - Which files need a backup?
 - Which backups can be deleted?
 - Which files are unrecoverable?





Use the RMAN BACKUP command

■ The REPORT NEED BACKUP Command

- Lists all data files that require a backup.
- Assumes the most recent backup is used during a restore.
- Provides four options :
 - Incremental.
 - Days.
 - Redundancy.
 - Recovery window.
- Uses the current retention policy configuration if no options are specified.





Use the RMAN BACKUP command

REPORT NEED BACKUP: Examples

- Files needing three or more incremental backups for recovery:

```
RMAN> REPORT NEED BACKUP incremental 3;
```

- Files have not been backed up for three days:

```
RMAN> REPORT NEED BACKUP days 3;
```

- Backup needed if there are not two or more:

```
RMAN> REPORT NEED BACKUP redundancy 2;
```

- Backup needed to recover 3 days past:

```
RMAN> REPORT NEED BACKUP  
2> recovery window of 3 days;
```





Use the RMAN BACKUP command

REPORT OBSOLETE and DELETE OBSOLETE

- Find all obsolete recovery files using the current retention policy settings:

```
RMAN> REPORT OBSOLETE;
```

- List the obsolete recovery files, if no more than two backup copies are needed:

```
RMAN> REPORT OBSOLETE REDUNDANCY 2;
```

- Delete the backup set with a backup set key of 4:

```
RMAN> DELETE BACKUPSET 4;
```

- Delete the recovery files considered obsolete, because they have more than two backups:

```
RMAN> DELETE OBSOLETE REDUNDANCY 2;
```





Manage the backups with RMAN

Managing Backups with Enterprise Manager

ORACLE Enterprise Manager 10g Database Control

Setup Preferences Help Logout

Database

Database: orcl.us.oracle.com > Manage Current Backups Logged in As SYS

Manage Current Backups

Catalog Additional Files Crosscheck All Delete All Obsolete Delete All Expired

This backup data was retrieved from the database control file.

Backup Sets [Image Copies](#)

Search

Status: Available

Contents: ☒ Datafile ☒ Archived Redo Log ☒ SPFILE ☒ Control File

Completion Time: Within a month

GO

Results

Select	Key	Tag	Completion Time	Contents	Device Type	Status	Obsolete	Keep	Pieces
No items found.									





Manage the backups with RMAN

RMAN Dynamic Views

- V\$ARCHIVED_LOG
- V\$BACKUP_CORRUPTION
- V\$BACKUP_DEVICE
- V\$BACKUP_FILES
- V\$BACKUP_PIECE
- V\$BACKUP_REDOLOG
- V\$BACKUP_SET
- V\$BACKUP_SPFILE
- V\$COPY_CORRUPTION
- V\$RMAN_CONFIGURATION





Manage the backups with RMAN

Monitoring RMAN Backups

- Correlate server sessions with channels using the **SET COMMAND ID** command.
- Query **V\$PROCESS** and **V\$SESSION** to determine which sessions correspond to which **RMAN** channels.
- Query **V\$SESSION_LONGOPS** to monitor the progress of backups and copies.
- Use an operating system utility to monitor the process or threads.





Part 2 Summary



**Use the RMAN
BACKUP
command**



**Manage the
backups with
RMAN**





Part 2 Stop-and-think

Do you have any questions ?





Diagnostic sources



Preview

- Use various files for diagnostic purposes
- Use Enterprise Manager to view alerts
- Adjust thresholds for tracked metrics
- Control the size and location of trace files





Use various files for diagnostic purposes

Diagnostic Files

- The `alert.log` file.
- Trace files.
- Core dump files.
- System log files.





Use various files for diagnostic purposes

The Alert Log

- The Alert Log contains:
 - All internal errors.
 - Administrative operations, such as **CREATE**, **ALTER**, and **DROP** statements.
 - Shared server errors.
 - Materialized view refresh errors.
 - Initialization parameter values.





Use various files for diagnostic purposes

What is in the `alert.log` File ?

- Every instance generates a file called `alert.log`, which logs the following information:
 - Diagnostic data from background and foreground processes.
 - Summary information regarding errors and pointers to trace files for detailed information.
 - Information since database creation (unless purged) that might be useful in backtracking a problem.





Use various files for diagnostic purposes

Viewing Recent Alert Log Entries

Most Recent Alert Log Entries

This shows the last 100,000 bytes of the alert log, displaying the most recent log entries.

Number of Lines Displayed **1,769**

ORA-00312: online log 3 thread 1: '/u01/app/oracle/oradata/mon May 3 08:14:51 2004
ARC1: Evaluating archive log 3 thread 1 sequence 832
Mon May 3 08:14:51 2004
orcl; ARC1: Beginning to archive log 3 thread 1 sequence
Mon May 3 08:14:51 2004
Errors in file '/u01/app/oracle/admin/orcl/bdump/orcl_arc1_00023060.trc':
ORA-19815: WARNING: db_recovery_file_dest_size of 2147483648 bytes is 99.76% used, and only 524288 bytes remain. You have the following choices to free up space from flash recovery area:

1. Consider changing your RMAN retention policy.
If you are using dataguard, then consider changing RMAN archive log deletion policy.

2. Backup files to tertiary device such as tape using the RMAN command BACKUP RECOVERY AREA.

3. Add disk space and increase the db_recovery_file_dest_size parameter to reflect the new space.

4. Delete unnecessary files using the RMAN DELETE command.
If an OS command was used to delete files, then use RMAN CROSSCHECK and DELETE EXPIRED commands.

ORACLE Enterprise Manager 10g Database Control

Database: orcl.us.oracle.com > Alert Log Errors

Alert Log Errors

Latest Data Collected From Target: 2004-02-07 06:27:48 View Data [All] Refresh

Alert Log Entries Containing ORA- Errors

Clear Every Open Alert Purge Every Alert

Clear Purge

Select All | Select None

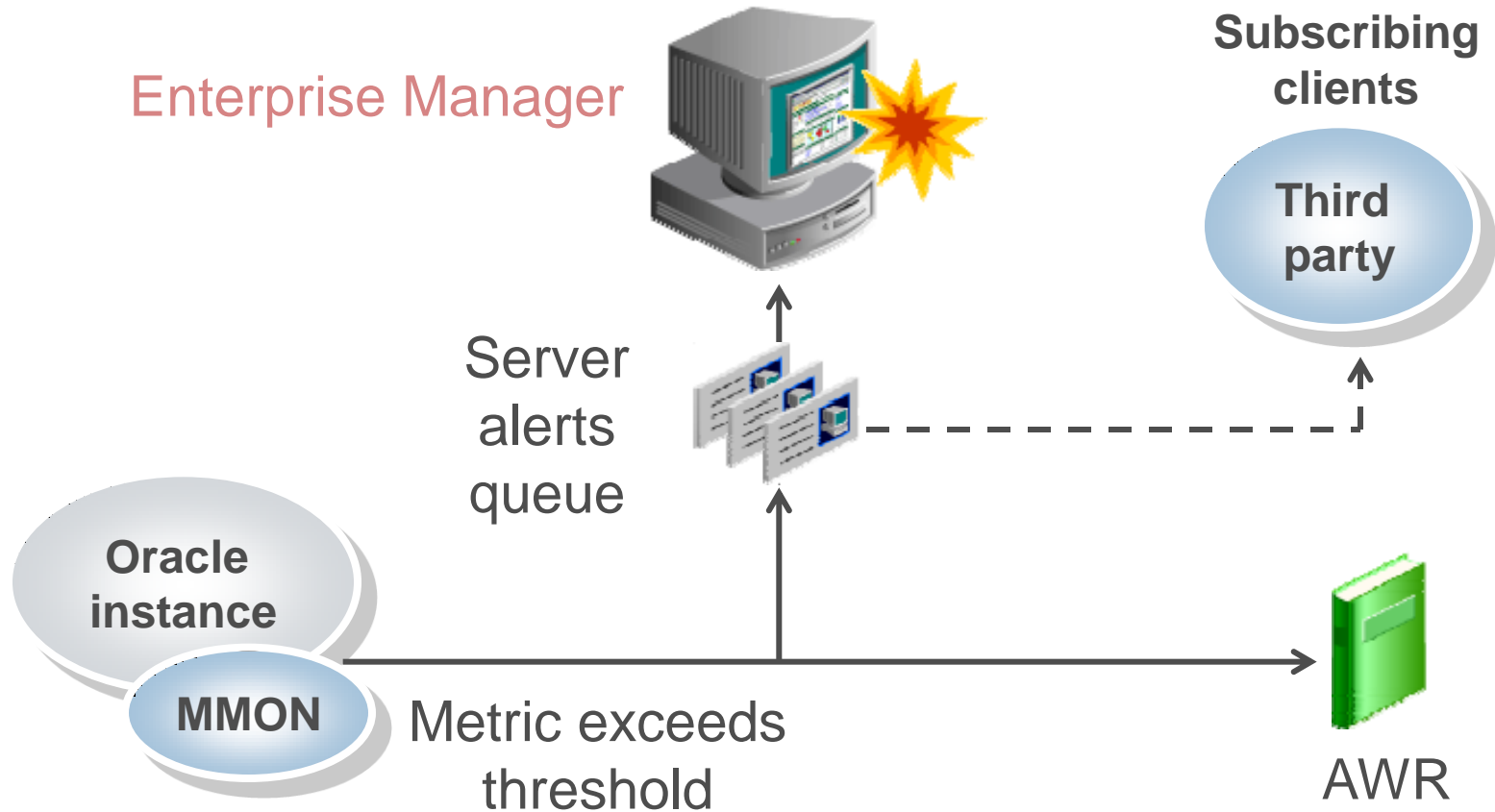
Select	Severity	Category	Time	Alert Log Error Stack	Line Number
<input type="checkbox"/>	✓	Generic Alert Log Error	Sat Feb 7 08:03:56 2004	ORA-12012: error on auto execute of job 23 ORA-01017: invalid username/password, logon denied ORA-06512: at 'SYS.DBMS_SNAPSHOT', line 1673 ORA-06512: at 'SYS.DBMS_SNAPSHOT', line 2079 ORA-06512: at 'SYS.DBMS_IREFRESH', line 663 ORA-06512: at 'SYS.DBMS_REFRESH', line 195 ORA-06512: at line 1 Trace File: /u01/app/oracle/admin/orcl/bdump/orcl_00023060.trc	2000

TIP Purging an Open Alert will cause it to Clear.



Use various files for diagnostic purposes

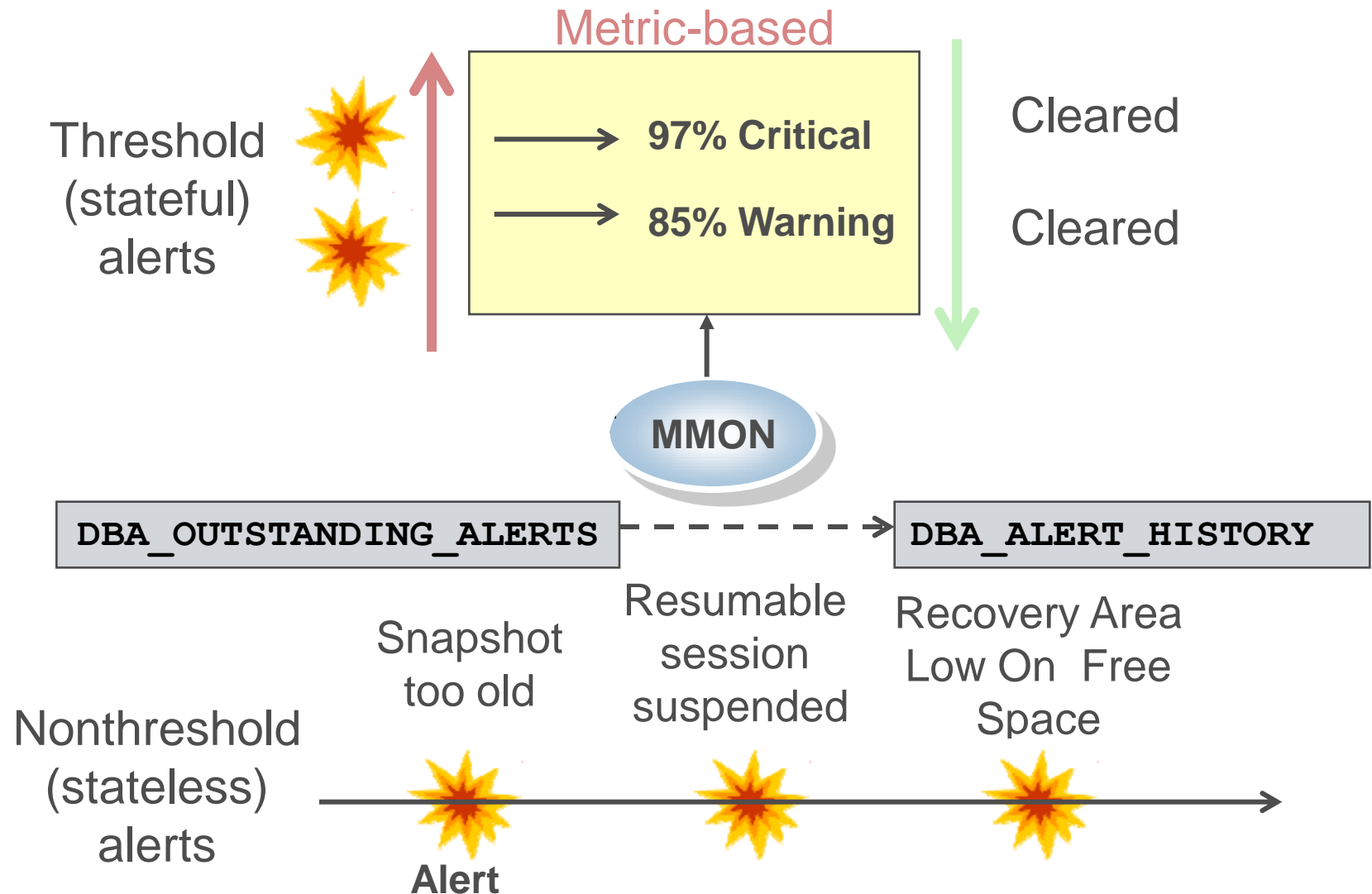
Alert Models Architecture





Use various files for diagnostic purposes

Server-Generated Alert Types





Use Enterprise Manager to view alerts

Viewing Alerts with Enterprise Manager

■ Alert General View:

<u>Severity</u> ▾	<u>Category</u>	<u>Name</u>	<u>Message</u>	<u>Alert Triggered</u>	<u>Last Value</u>	<u>Time</u>
✖	Alert Log	Archiver Hung Alert Log Error	<u>The archiver hung at time/line number:</u> <u>Sat May 1 05:51:59 2004/10382.</u>	May 3, 2004 8:18:22 AM	0	May 3, 2004 8:18:22 AM

Related Alerts

<u>Severity</u> ▾	<u>Target Name</u>	<u>Target Type</u>	<u>Category</u>	<u>Name</u>	<u>Message</u>	<u>Alert Triggered</u>	<u>Last Value</u>	<u>Time</u>
⚠	edrsr12p1.us.oracle.com	Host	Filesystems	Filesystem Space Available (%)	<u>Filesystem /</u> <u>has only 18%</u> <u>available space</u>	May 4, 2004 4:12:16 PM	11	May 5, 2004 12:12:16 PM

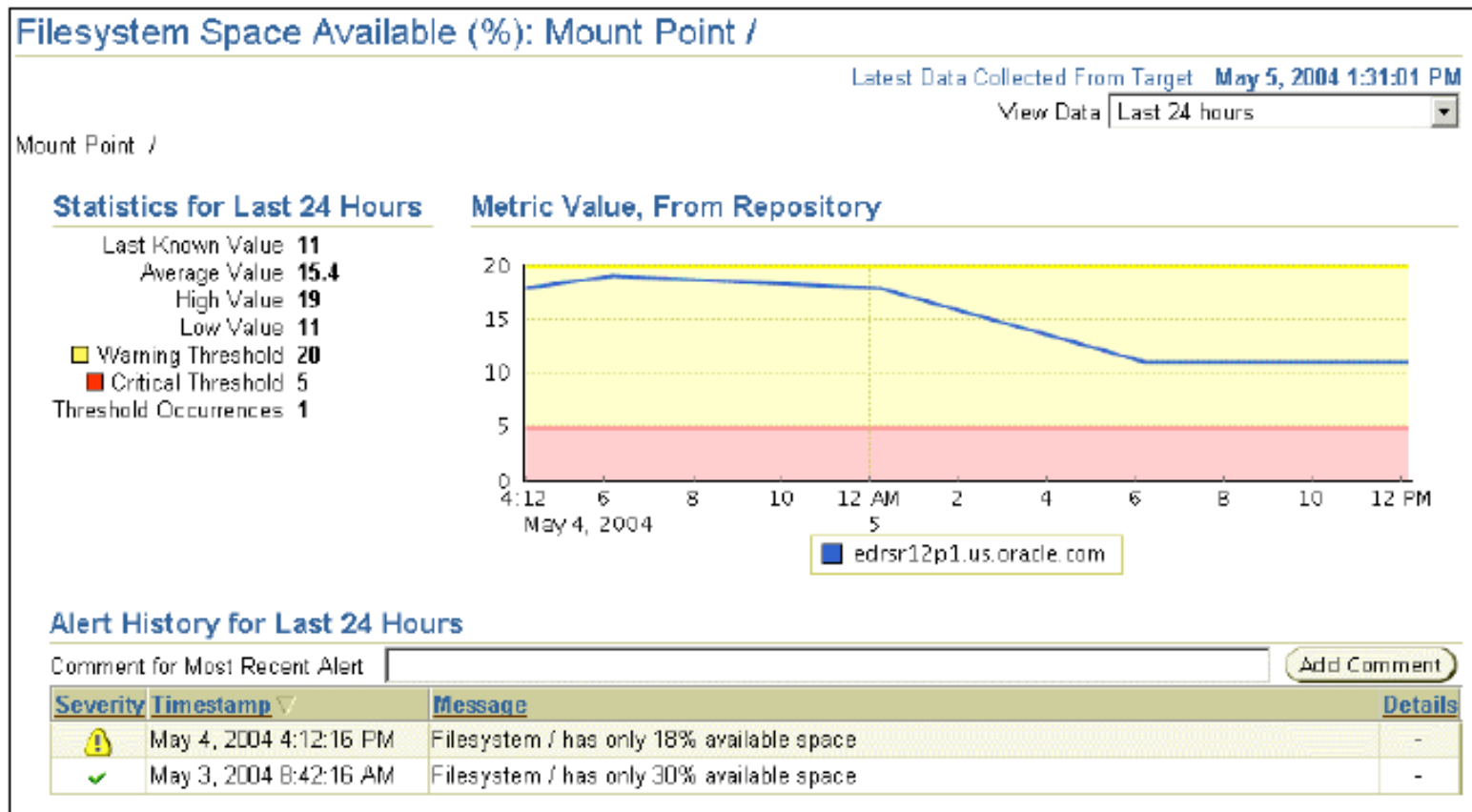




Use Enterprise Manager to view alerts

Viewing Alerts with Enterprise Manager

■ Alert Details:





Use Enterprise Manager to view alerts

Alerts Notification

ORACLE Enterprise Manager 10g Database Control

Setup Preferences Help Logout

Database

Preferences

Properties Targets Availability **Metrics** Objects Methods More

Edit Notification Rule Database Availability and Critical States: Metrics

Select the metrics and their severities for which you would like to receive notifications. [Cancel](#) [Back](#) [Step 4 of 7](#) [Next](#)

Severity States

Select the severity states for which you would like to receive notification.

☒ Critical
☐ Warning
☐ Clear

Metrics

Severity states apply to all selected metrics.

Available Metrics

- Archiver Hung Alert Log Error
- Audited User
- Average File Read Time (centi-seconds)
- Average File Write Time (centi-seconds)
- Average Users Waiting Count
- BB Checkpoints (per second)

Selected Metrics

- Process Limit Usage (%)
- Session Limit Usage (%)
- Blocking Session Count
- Archiver Hung Alert Log Error Status
- Data Block Corruption Alert Log Error S
- Generic Alert Log Error Status

Move Move All



Use Enterprise Manager to view alerts

Alert Log Monitoring Configuration

Generic Alert Log Error Monitoring Configuration

Oracle Enterprise Manager can raise an Alert Log Error alert for each distinct sequence of ORA- errors it finds in the alert log. If there are ORA- errors occurring in the alert log that should not contribute to database alerts, use the Filter Expression to suppress the errors. Every distinct ORA- error that is not filtered will result in a separate Alert Log Error alert.

Alert Log Filtering

If there is an ORA- error occurring in the alert log that should not be considered a Generic Alert Log Error, it can be filtered out by supplying a Filter Expression. When the ORA- error stack fully matches this expression, Oracle Enterprise Manager will ignore the ORA- error entirely.

Alert Log Filter Expression

TIP This expression must be a Perl-style regular expression and only an exact match of the pattern will suppress.

Example To match "ORA-00600: internal error code, arguments [qerfxFetch_01], [], [], [], [], []" you might give the pattern ".*ORA-00600: "\[qerfxFetch[^\]]*\]"."

Alert Thresholds

You can modify the critical and warning thresholds for the Generic Alert Log Error alert.

Critical Threshold for Generic Alert Log Errors

Warning Threshold for Generic Alert Log Errors

TIP This expression must be a Perl-style regular expression and any occurrence of the pattern found in the error stack is considered to be a match.

Example To match "ORA-00600: internal error code, arguments [qerfxFetch_01], [], [], [], [], []" you might give the pattern "00600: "\[qerfxFetch[^\]]*\]"."

Note The Alert Log Error Filter also affects the Generic Alert Log Error Status alert.

Note To modify thresholds of all other Alert Log Error alerts, visit the Edit Metric Thresholds page.

Cancel

Apply





Adjust thresholds for tracked metrics

Editing Thresholds

Database: [orcl.us.oracle.com](#) > [Manage Metrics](#) > Edit Thresholds

Edit Thresholds

You can set a warning and critical threshold for each of the metrics below. When a threshold is reached, an alert will be generated and the response action, if specified, executed. The response action can be any command or script, with a fully qualified path, that is accessible to the Management Agent.

Cancel

OK

TIP Some metrics do not allow a default set of thresholds for all their monitored objects. Click "Specify Multiple Thresholds" to set thresholds for specific objects.

Related Link [Response to Target Down](#)

Copy Thresholds From Metric Baseline

Specify Multiple Thresholds

Select	Metric	Comparison Operator	Warning Threshold	Critical Threshold	Response Action
<input checked="" type="radio"/>	Archive Area Used (%)	>	80		
<input type="radio"/>	Archiver Hung Alert Log Error	Contains		ORA-	
<input type="radio"/>	Archiver Hung Alert Log Error Status	>	0		
<input type="radio"/>	Audited User	=	SYS		
<input type="radio"/>	Average Users Waiting Count				
<input type="radio"/>	Administrative	>	10		





Adjust thresholds for tracked metrics

Viewing Initialization Parameters

ORACLE Enterprise Manager 10g Database Control

Database: orcl.us.oracle.com > Initialization Parameters

Logged in As SYS

Initialization Parameters

Show SQL Revert Apply

Current SPFile

The parameter values listed here are currently used by the running instance(s). You can change static parameters in SPFile mode.

Filter Go

Filter on a name or partial name

Save to File Show All

Previous 1-25 of 256 Next 25

Name	Help	Revisions	Value	Type	Basic	Default	Dynamic	Category
cluster_database	?		FALSE	Boolean	✓	✓		Cluster Database
compatible	?		10.1.0.1.0	String	✓			Miscellaneous
control_files	?		'/u01/app/oracle/oradata/orcl/control01.ctl', '/u01/app/oracle/oradata/orcl/control02.ctl', '/u01/app/oracle/oradata/orcl/control03.ctl'	String	✓			File Configuration
db_block_size	?		8192	Integer	✓			Memory
db_create_file_dest	?		<input type="text"/>	String	✓	✓	✓	File Configuration
db_create_online_log_dest_1	?		<input type="text"/>	String	✓	✓	✓	File Configuration
db_create_online_log_dest_2	?		<input type="text"/>	String	✓	✓	✓	File Configuration
db_create_online_log_dest_3	?		<input type="text"/>	String	✓	✓	✓	File





Control the size and location of trace files

Trace Files

- Every server process, on encountering an exception, writes diagnostic data to a trace file.
- The trace file header contains the following information:
 - OS and version.
 - Oracle version and options installed.
 - Instance name.
 - Process ID.





Control the size and location of trace files

Specifying the Location of Trace Files

- Initialization parameters controlling the location and size of trace files include:
 - `BACKGROUND_DUMP_DEST`
 - `USER_DUMP_DEST`
 - `MAX_DUMP_FILE_SIZE`





Control the size and location of trace files

Controlling Trace File Size

- Using Enterprise Manager:

Database: orcl.us.oracle.com > Initialization Parameters Logged in As SYS

Initialization Parameters

Show SQL Revert Apply

Current SPFile

The parameter values listed here are currently used by the running instance(s). You can change static parameters in SPFile mode.

Filter: Go Save to File
Filter on a name or partial name

<a>Name ▲	<a>Help	<a>Revisions	<a>Value	<a>Type	<a>Basic	<a>Default	<a>Dynamic	<a>Category
max_dump_file_size	<a>ⓘ		<input type="text" value="UNLIMITED"/>	String		✓	✓	Diagnostics and Statistics

Save to File





Control the size and location of trace files

Controlling Trace File Writes

- Trace files are usually generated by a server process upon encountering an error.
- Some background processes like **ARC n** , have parameters that control the amount and type of trace information generated.
- In some instances, trace files can be generated for server processes at user request.

```
SQL> ALTER SESSION SET SQL_TRACE TRUE;
```





Control the size and location of trace files

Using Enterprise Manager to Enable and View SQL Tracing

Database: orcl.us.oracle.com ▶ Top Consumers Logged in As SYS

View Data Real Time: Manual Refresh

Top Consumers

Collected From May 5, 2004 2:51:16 PM To May 5, 2004 2:51:31 PM

[Overview](#) [Top Services](#) [Top Modules](#) [Top Actions](#) [Top Clients](#) [Top Sessions](#)

[Show Active SQL](#) [Customize](#)

[Kill Session](#) [View](#) [Disable SQL Trace](#) [Enable SQL Trace](#)

Select	SID	DB User	CPU (1/100 sec)	PGA Memory (bytes)	Physical Reads	Logical Reads	Hard Parses	Total Parses	Disk Sorts	Status	Program	OS PID	Machine	OS User	Timeout (seconds)
<input checked="" type="radio"/>	234	SH	499	1940044	4230	12	0	0	1	ACTIVE	sqlplus@EDRSR12P1 (TNS V1-V3)	31715	EDRSR12P1	oracle	
<input type="radio"/>	241	DBSNMP	8	432716	0	0	0	11	0	ACTIVE	OMS	31739	EDRSR12P1		
<input type="radio"/>	240	SYSMAN	4	1677900	2	197	0	22	0	ACTIVE	OMS	26106	EDRSR12P1		
<input type="radio"/>	248	SYSMAN	3	1153612	0	54	0	0	0	ACTIVE	OMS	25649	EDRSR12P1		
<input type="radio"/>	258	DBSNMP	1	957004	0	39	0	4	0	ACTIVE	emagent@EDRSR12P1 (TNS V1-V3)	25631	EDRSR12P1	oracle	
<input type="radio"/>	251	SYSMAN	0	1153612	0	28	0	1	0	ACTIVE	OMS	25645	EDRSR12P1		
<input type="radio"/>	275	SMON	0	498252	0	0	0	0	0	ACTIVE	oracle@EDRSR12P1 (SMON)	25398	EDRSR12P1	oracle	

```
SQL> SELECT * FROM dba_enabled_traces;
```





Control the size and location of trace files


System Log Files

- System log files capture error messages and exceptions encountered at the OS level.
- These would be useful if a hardware or OS problem is suspected.





Part 3 Summary




**Use various
files for
diagnostic
purposes**



**Use Enterprise
Manager to view
alerts**



**Adjust
thresholds for
tracked metrics**



**Control the size
and location of
trace files**





Part 3 Stop-and-think

Do you have any questions ?

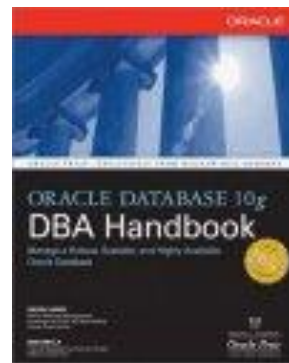
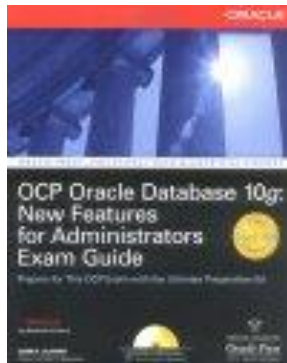




For more

If you want to go into these subjects more deeply, ...

Publications



<http://www.oracle.../bookstore/>

Web sites

<http://www.labo-oracle.com>

<http://www.oracle.com>

<http://otn.oracle.com>

Courses

Cursus: Merise & SQL

Cursus: PL/SQL

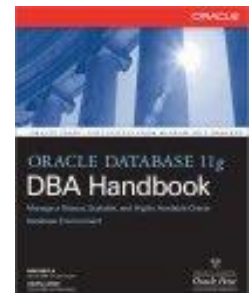
Cursus: DBA1 & DBA2

Cursus: DWH, OAS & BIS

Certifications

1Z0-042

1Z0-043





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The end

