

15

Performing Database Backups

Objectives

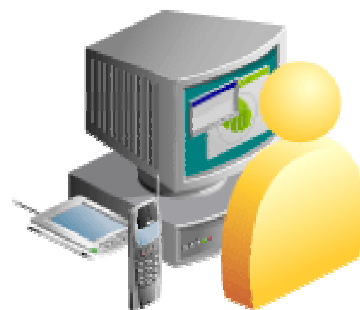
After completing this lesson, you should be able to do the following:

- **Create consistent database backups**
- **Back up your database without shutting it down**
- **Create incremental backups**
- **Automate database backups**
- **Monitor the flash recovery area**

Backup Solutions: Overview

Backups can be performed by using:

- **Recovery Manager**
- **Oracle Secure Backup**
- **A user-managed scenario**



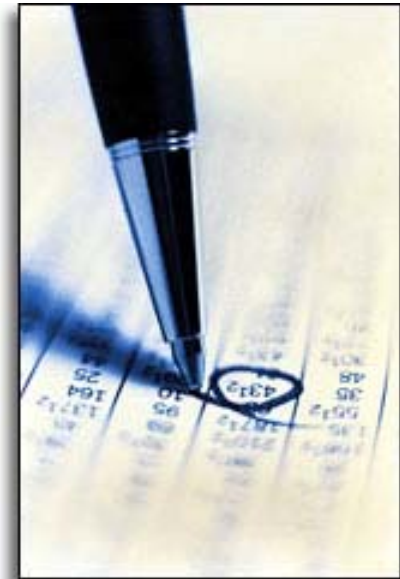
Oracle Secure Backup

- **Oracle Secure Backup and RMAN provide an end-to-end backup solution for Oracle environments:**
 - **Centralized tape backup management for file system data and the Oracle database**
 - **Most well-integrated media management layer for RMAN backups**
 - **Backup of any data anywhere on the network**
- **A single technical support resource for the entire backup solution expedites problem resolution.**
- **This ensures reliable data protection at lower cost and complexity.**

User-Managed Backup

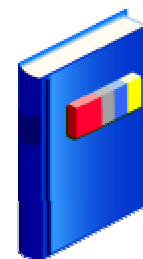
A user-managed scenario:

- Is a manual process of tracking backup needs and status.
- Requires the DBA to write scripts.
- Requires that database files be put in the correct mode for backup.
- Relies on operating system commands to make backups of files.



Terminology

- **Backup strategy may include:**
 - The entire database (whole)
 - A portion of the database (partial)
- **Backup type may indicate inclusion of:**
 - All information from all data files (full)
 - Only information that has changed since some previous backup (incremental)
- **Backups mode may be:**
 - Offline (consistent, cold)
 - Online (inconsistent, hot)



Terminology

Backups may be stored as:

- Image copies
- Backup sets

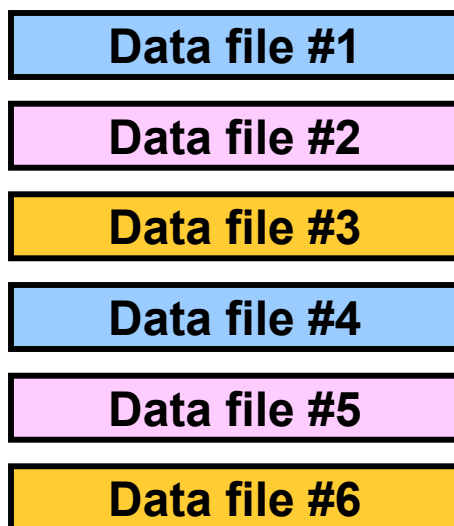
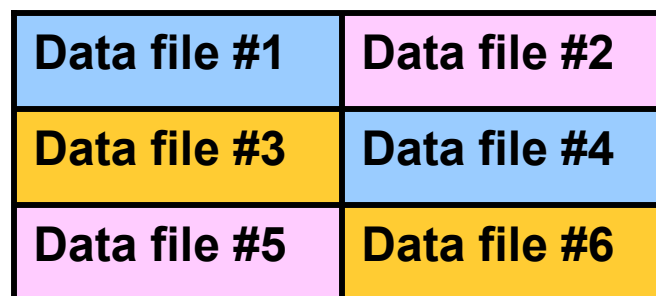


Image copies



Backup set

Recovery Manager (RMAN)

- **Enterprise Manager uses Recovery Manager (RMAN) to perform backup and recovery operations.**
- **RMAN:**
 - **Is a command-line client for advanced functions**
 - **Has powerful control and scripting language**
 - **Has a published API that enables interface with most popular backup software**
 - **Backs up data, control, archived log, and server parameter files**
 - **Backs up files to the disk or tape**

Configuring Backup Settings

Backup Settings

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

Disk Settings

Parallelism [Test Disk Backup](#)

Concurrent streams to disk drives

Disk Backup Location

Flash recovery area is your current the disk backup location. If you would like to override the disk backup location, specify an existing directory or diskgroup name.

Disk Backup Type ☒ Backup Set

An Oracle backup file format that allows for more efficient backups by interleaving multiple backup files into one output file.

☐ Compressed Backup Set

An Oracle backup set in which the data is compressed to reduce its size.

☐ Image Copy

A bit-by-bit copy of database files that can be used as-is to perform recovery.

Host Credentials

To save the backup settings, supply operating system login credentials to access the target database.

* Username

* Password

☐ Save as Preferred Credential

Configuring Backup Settings

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.

- ☐ 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 this table.

Add

Select	Tablespace Name	Tablespace Number	Status	Contents
<input type="checkbox"/>	No Items Selected			

☒ **TIP** These tablespaces can be backed up separately using tablespace backup.

Retention Policy

- ☐ Retain All Backups

You must manually delete any backups

- ☐ Retain backups that are necessary for a recovery to any time within the specified number of days (point-in-time recovery)

Days

31

Recovery Window

- ☒ Retain at least the specified number of full backups for each datafile

Backups

1

Redundancy

Scheduling Backups: Strategy

Select whole or partial database backup.

Oracle-Suggested Backup

Schedule a backup using Oracle's automated backup strategy.

Schedule Oracle-Suggested Backup

This option will back up the entire database. The database will be backed up on daily and weekly intervals

Customized Backup

Select the object(s) you want to back up.

Schedule Customized Backup

- ☒ Whole Database
- ☐ Tablespaces
- ☐ Datafiles
- ☐ Archivelogs
- ☐ All Recovery Files on Disk

These files include all archivelogs and disk backups that are not already backed up to tape

Scheduling Backups: Options

Schedule Customized Backup: Options

Database	orcl.oracle.com
Backup Strategy	Customized Backup
Object Type	Whole Database

Cancel Step 1 of 4 Next

Backup Type

☒ Full Backup

☐ Use as the base of an incremental backup strategy

☐ Incremental Backup (Level 1)

Level 1 incremental backup includes all the changed blocks since the most recent level 0 backup (cumulative).

☐ Refresh the latest datafile copy on disk to the current time using the incremental backup

Scheduling Backups: Settings

Schedule Customized Backup: Settings

Database	orcl	
Backup Strategy	Customized Backup	<input type="button" value="Cancel"/> <input type="button" value="Back"/> Step 2 of 4 <input type="button" value="Next"/>
Object Type	Whole Database	

These are the settings for your current backup job. You can select your backup destination directly from this page. You can also view the default settings or override the settings by clicking the buttons below.

☒ Disk

Disk Backup Location **/u01/app/oracle/flash_recovery_area**

☐ Tape

Media Management Vendor(MMV) Library Parameters **not specified**


Scheduling Backups: Schedule

Schedule

Time Zone GMT -7:00

Start

☒ Immediately
☐ Later

Date Jun 7, 2005 
(example: Jun 7, 2005)

Time 2 00 ☒ AM ☐ PM


Repeat

☒ One Time Only
☐ Interval
☐ Monthly
☐ Yearly

Frequency 1 Minutes

Repeat Until

☒ Indefinite
☐ Custom

Date Jun 7, 2005 
(example: Jun 7, 2005)

Time 3 15 ☒ AM ☐ PM
(Ignored except when repeating by minutes or hours.)

Scheduling Backups: Review

Schedule Customized Backup: Review

Database	orcl	<input type="button" value="Cancel"/> <input type="button" value="Edit RMAN Script"/> <input type="button" value="Back"/> Step 4 of 4 <input type="button" value="Submit Job"/>
Backup Strategy	Customized Backup	
Object Type	Whole Database	



Schedule Customized Backup: Review: Edit RMAN Script

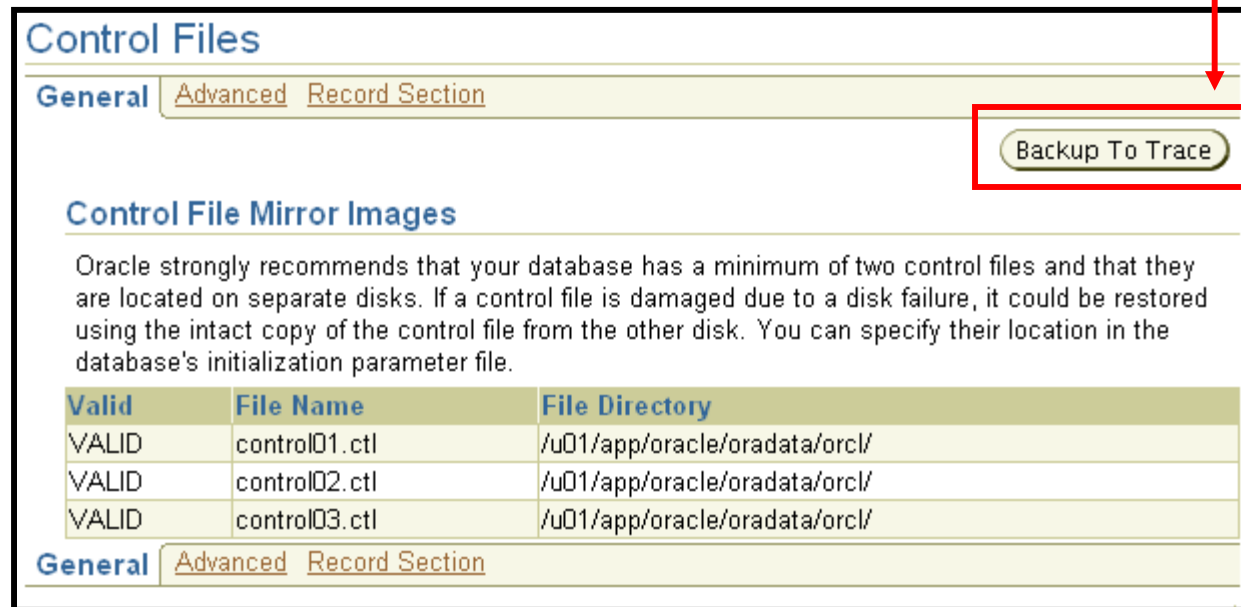
You can modify the RMAN script before submitting it. However, you will not be able to go back to previous wizard pages if you modify the script.

```
backup device type disk tag '%TAG' database include current controlfile;
backup device type disk tag '%TAG' archivelog all not backed up;
```

Click Edit RMAN Script to review RMAN commands.

Backing Up the Control File to a Trace File

Control files have an additional backup option.



Control Files

[General](#) [Advanced](#) [Record Section](#)

Backup To Trace

Control File Mirror Images

Oracle strongly recommends that your database has a minimum of two control files and that they are located on separate disks. If a control file is damaged due to a disk failure, it could be restored using the intact copy of the control file from the other disk. You can specify their location in the database's initialization parameter file.

Valid	File Name	File Directory
VALID	control01.ctl	/u01/app/oracle/oradata/orcl/
VALID	control02.ctl	/u01/app/oracle/oradata/orcl/
VALID	control03.ctl	/u01/app/oracle/oradata/orcl/

[General](#) [Advanced](#) [Record Section](#)

Control file trace backups may be used to recover from loss of all control files.

Managing Backups

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

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

Completion Time

[GO](#)

Results

[Crosscheck](#)

[Change to Unavailable](#)

[Delete](#)

[Select All](#) | [Select None](#)

Select	Key	Tag	Completion Time ▾	Contents	Device Type	Status	Obsolete	Keep	Pieces
<input type="checkbox"/>	3	BACKUP_ORCL_000006_120303103223	Dec 3, 2003 10:48:48 AM	ARCHIVED LOG	DISK	AVAILABLE	NO	NO	1
<input type="checkbox"/>	2	BACKUP_ORCL_000006_120303103223	Dec 3, 2003 10:41:41 AM	DATAFILE, SPFILE, CONTROLFILE	DISK	AVAILABLE	NO	NO	1

Flash Recovery Area

Monitor the flash recovery area to:

- **Configure flashback logging**
- **Size the recovery area**
- **View current space consumption**

Flash Recovery Area

It is highly recommended that you use flash recovery area to automate your disk backup management.

Flash Recovery Area Location

Flash Recovery Area Size

Flash Recovery Area Size must be set when the location is set

☐ Enable flashback logging for fast database point-in-time recovery*

The flash recovery area must be set to enable flashback logging. When using flashback logs, you may recover your entire database to a prior point-in-time without restoring files. Flashback is the preferred point-in-time recovery method in the recovery wizard when appropriate.

Specify how far back you wish to flash the database in the future

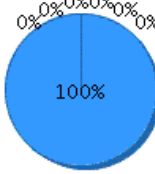
Flashback Retention Time

Current size of the flashback logs (GB) **n/a**

Lowest SCN in the flashback data **n/a**

Flashback Time **n/a**

Flash Recovery Area Usage



Category	Percentage
Control File	0%
Online Log	0%
Archive Log	0%
Backup Piece	0%
Image Copy	0%
Flashback Log	0%
Usable	100%

Summary

In this lesson, you should have learned how to:

- **Create consistent database backups**
- **Back up your database without shutting it down**
- **Create incremental backups**
- **Automate database backups**
- **Monitor the flash recovery area**

Practice Overview: Creating Database Backups

This practice covers the following topics:

- **Configuring your database for backups**
- **Backing up your database while the database is open for user activity**
- **Scheduling automatic nightly incremental backups for your database**