15

Performing Database Backups

Objectives

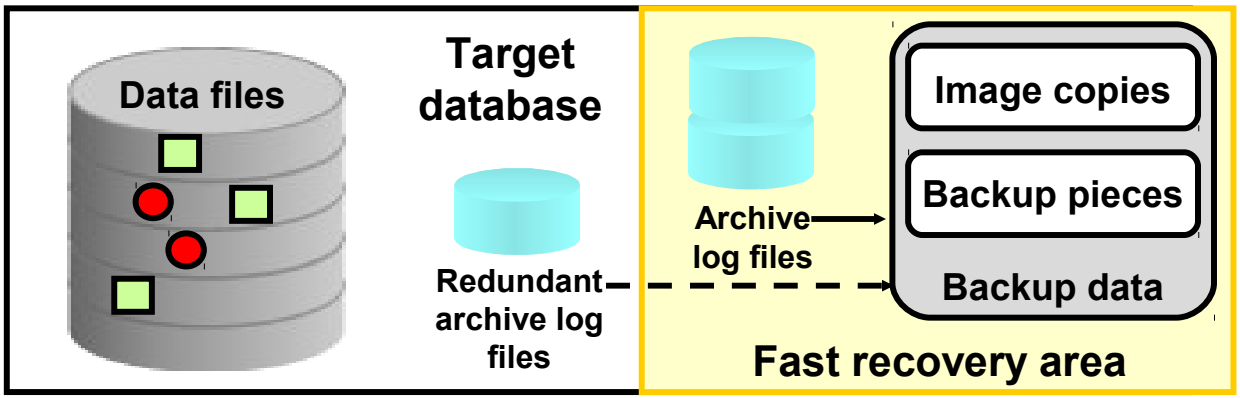
After completing this lesson, you should be able to:

- Create consistent database backups
- Back up your database without shutting it down
- Create incremental backups
- Automate database backups
- Manage backups and view backup reports
- Monitor the fast recovery area

Backup Solutions: Overview

Backups can be performed by using:

- Recovery Manager
- Oracle Secure Backup
- User-managed backup



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

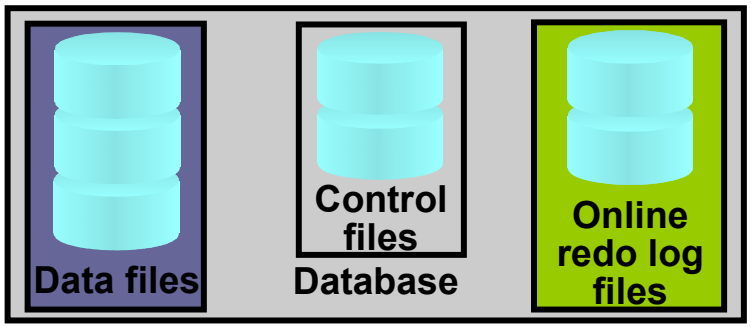
A user-managed scenario:

- Is a manual process of tracking backup needs and status
- Typically uses your own written 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:
  - Entire database (whole)
  - Portion of the database (partial)

- Backup type may indicate inclusion of:
  - All data blocks within your chosen files (full)
  - Only information that has changed since a previous backup (incremental)
    - Cumulative (changes since last level 0)
    - Differential (changes since last incremental)
- Backup mode may be:
  - Offline (consistent, cold)
  - Online (inconsistent, hot)



Terminology

Backups may be stored as:

- Image copies
- Backup sets

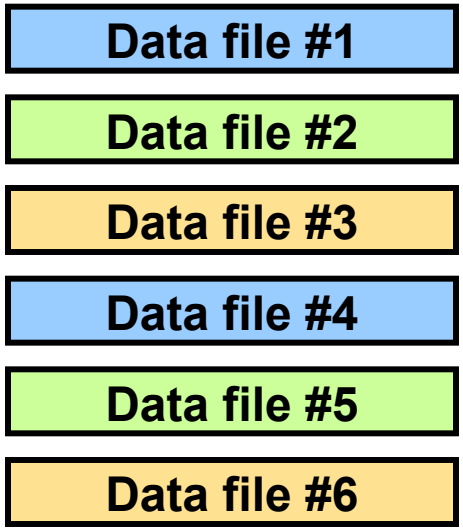
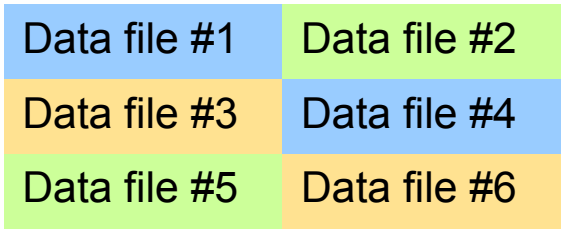


Image copies

(Duplicate data and log files in OS format)

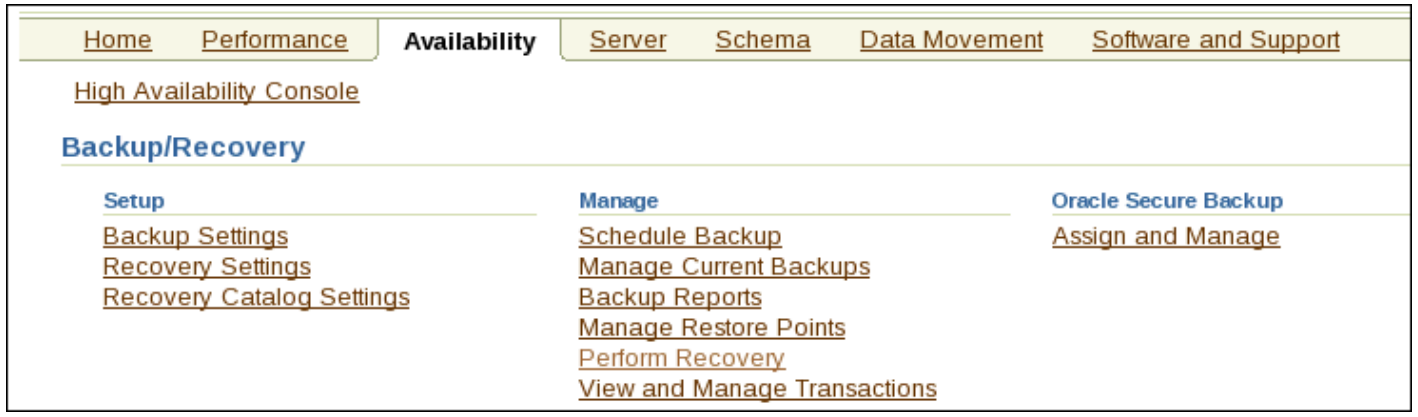


Backup set

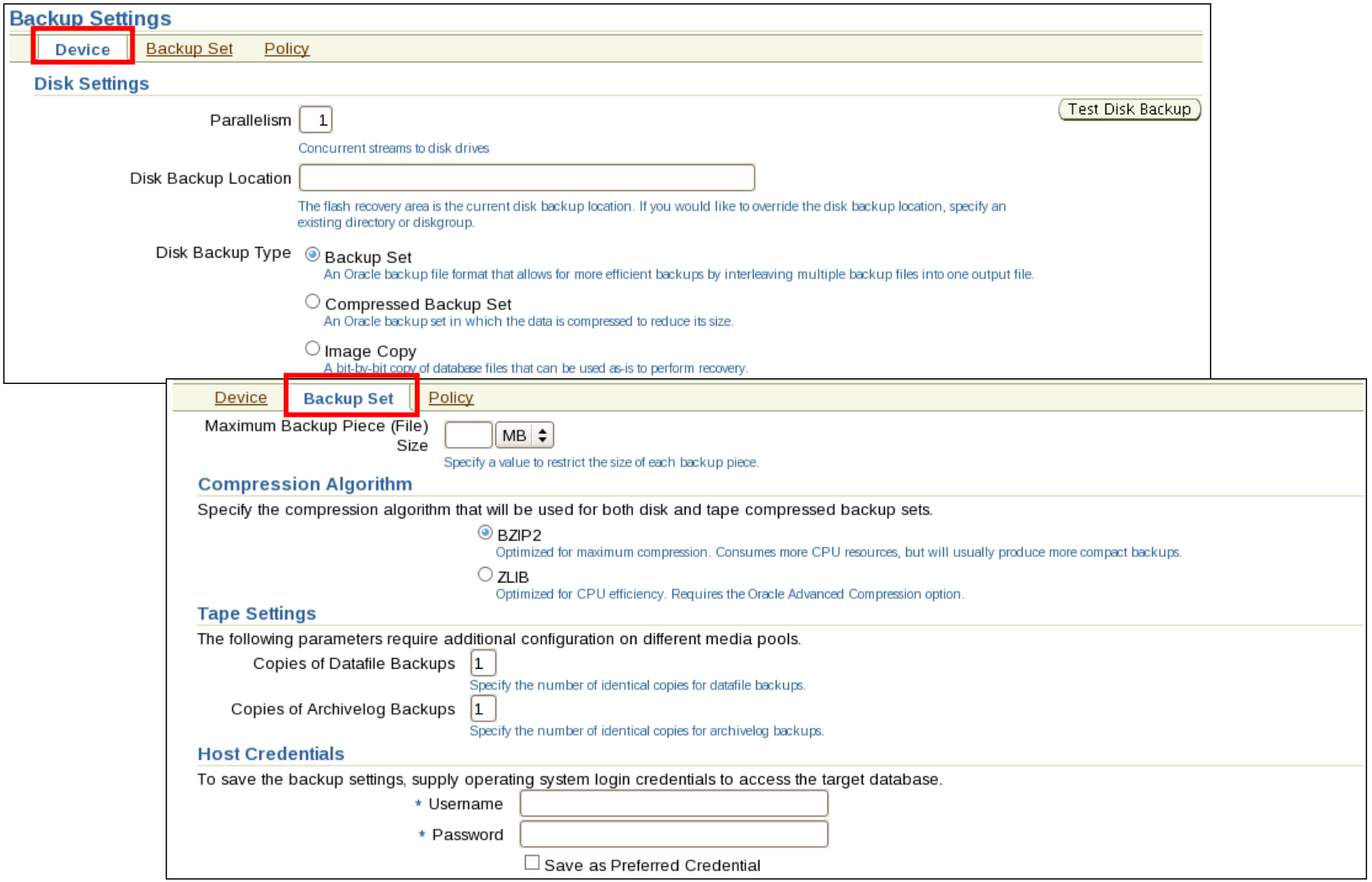
(Binary, compressed files in Oracle proprietary format)

Recovery Manager (RMAN)

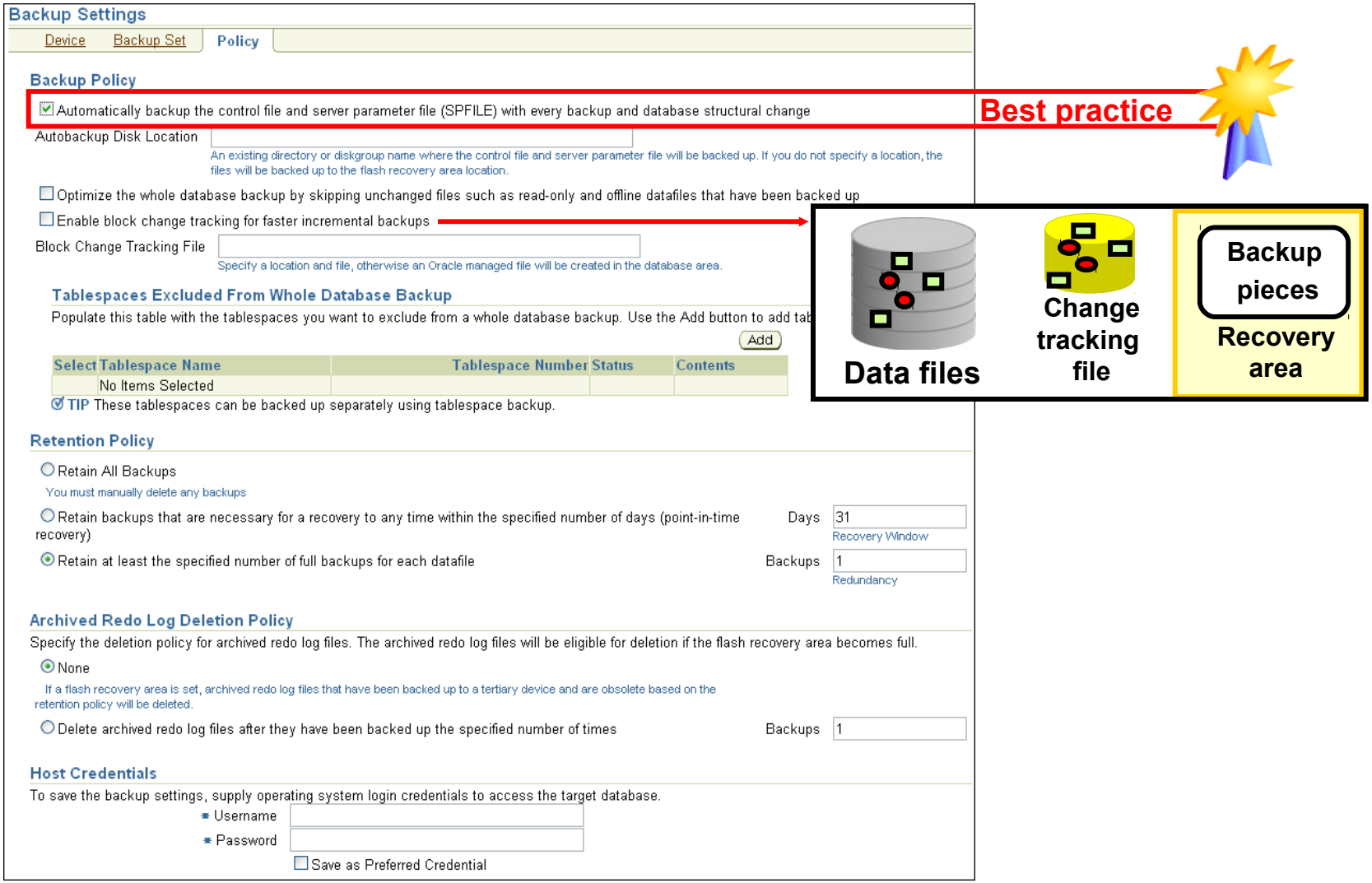
- Powerful control and scripting language
- Integrated with Enterprise Manager
- Published API that enables interface with most popular backup software
- Backing up data, control, archived log, and server parameter files
- Backing up files to the disk or tape



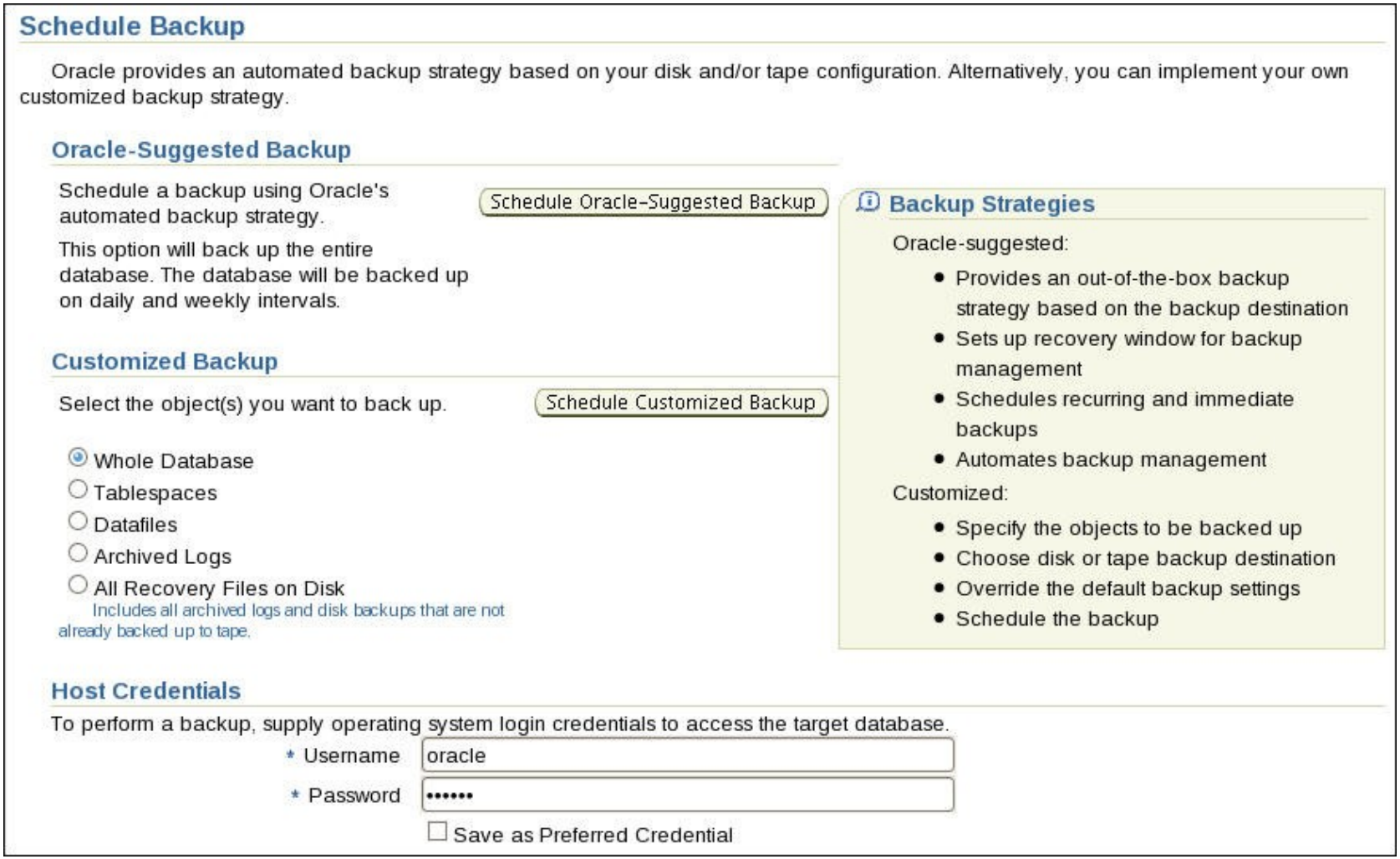
Configuring Backup Settings



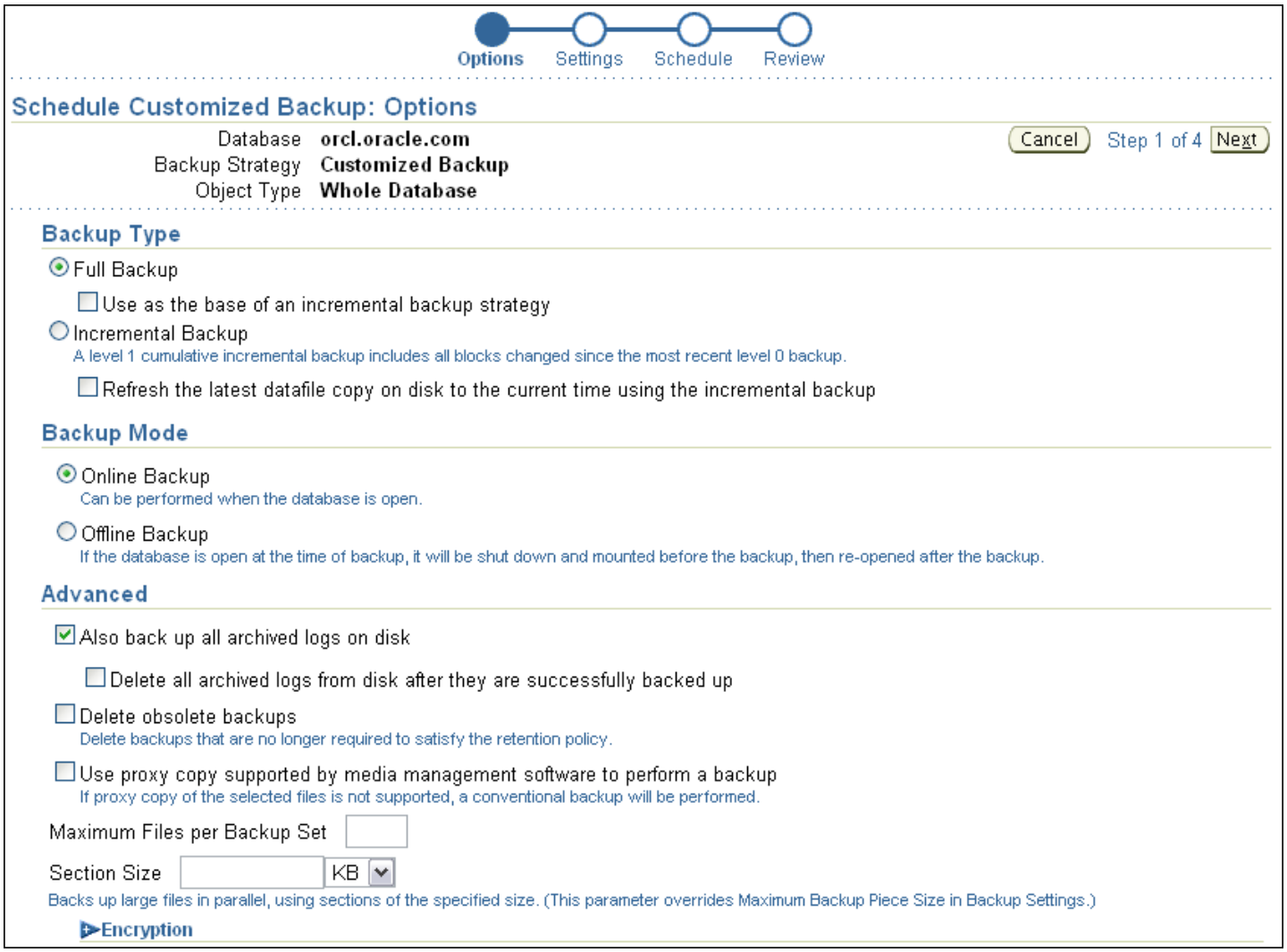
Configuring Backup Settings



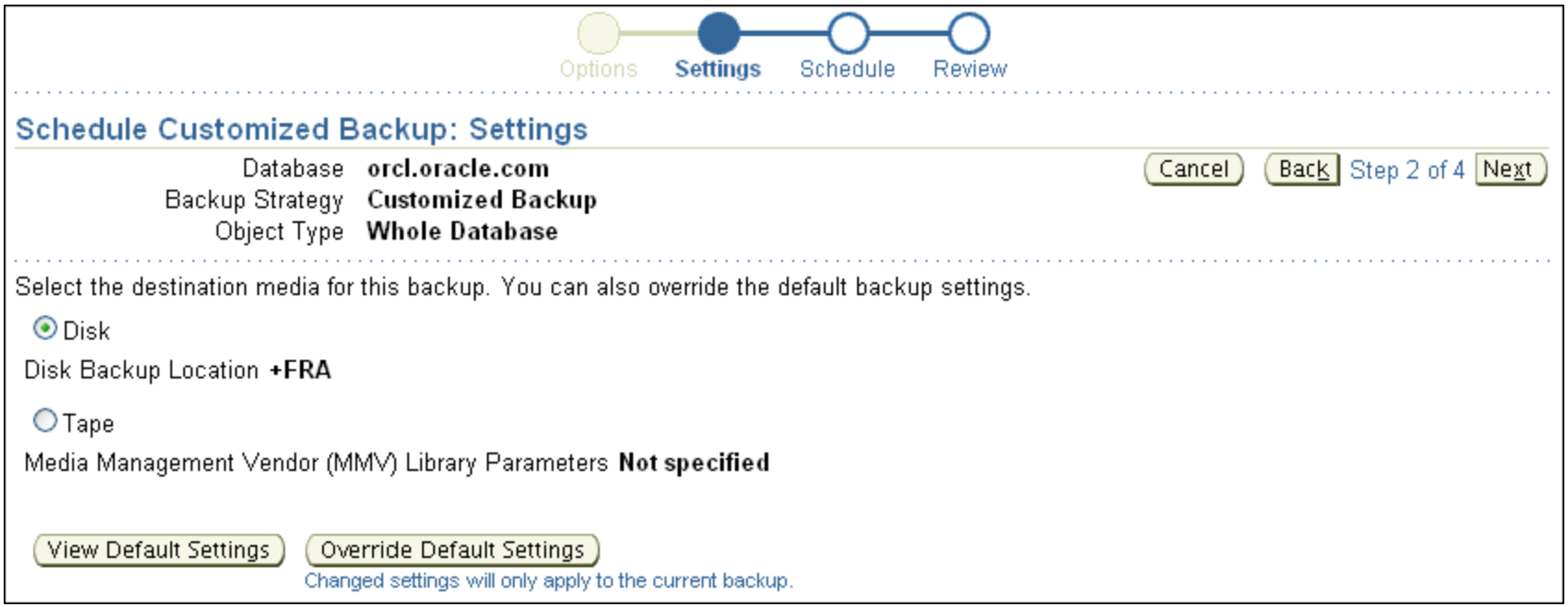
Scheduling Backups: Strategy



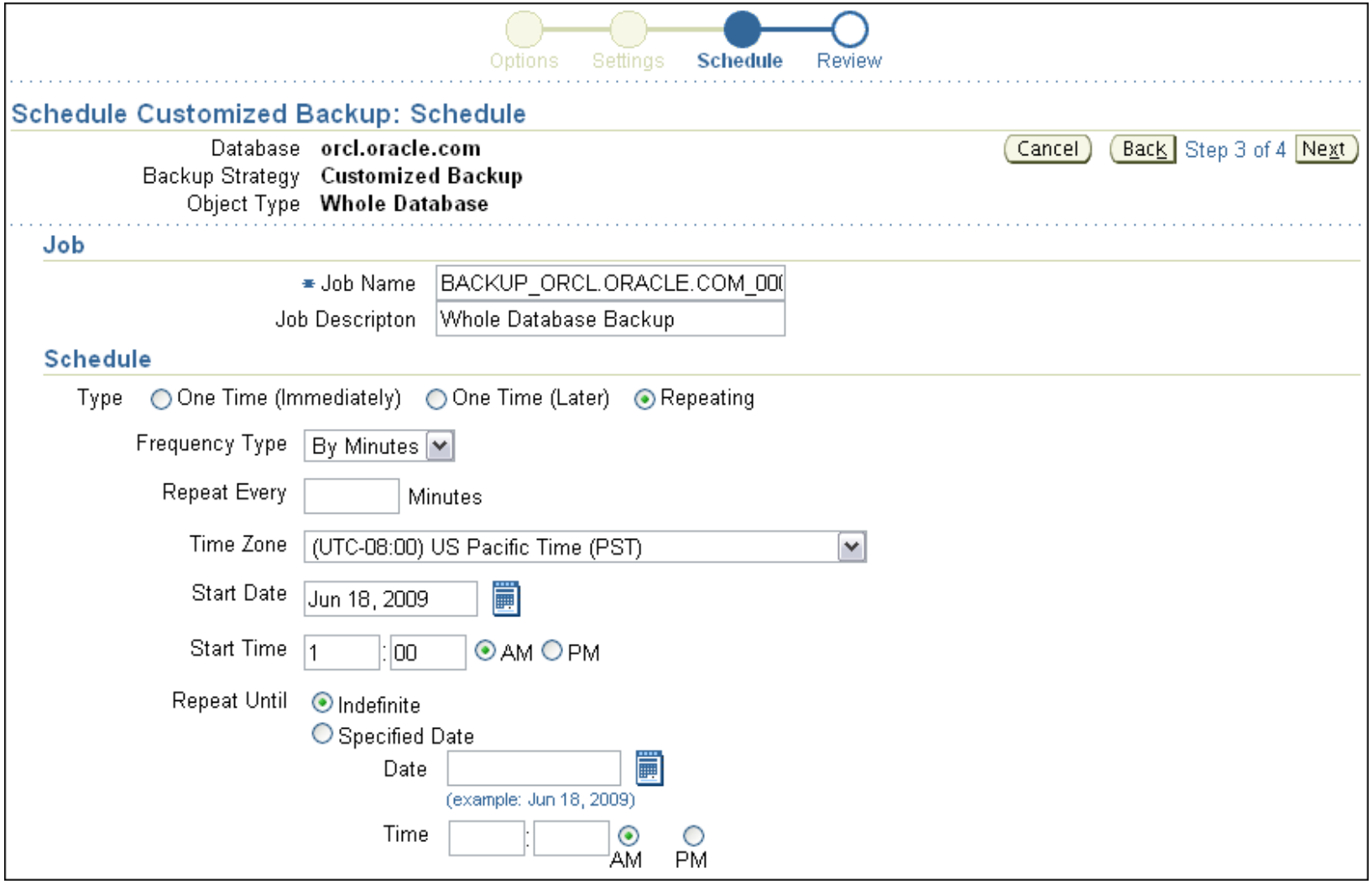
Scheduling Backups: Options



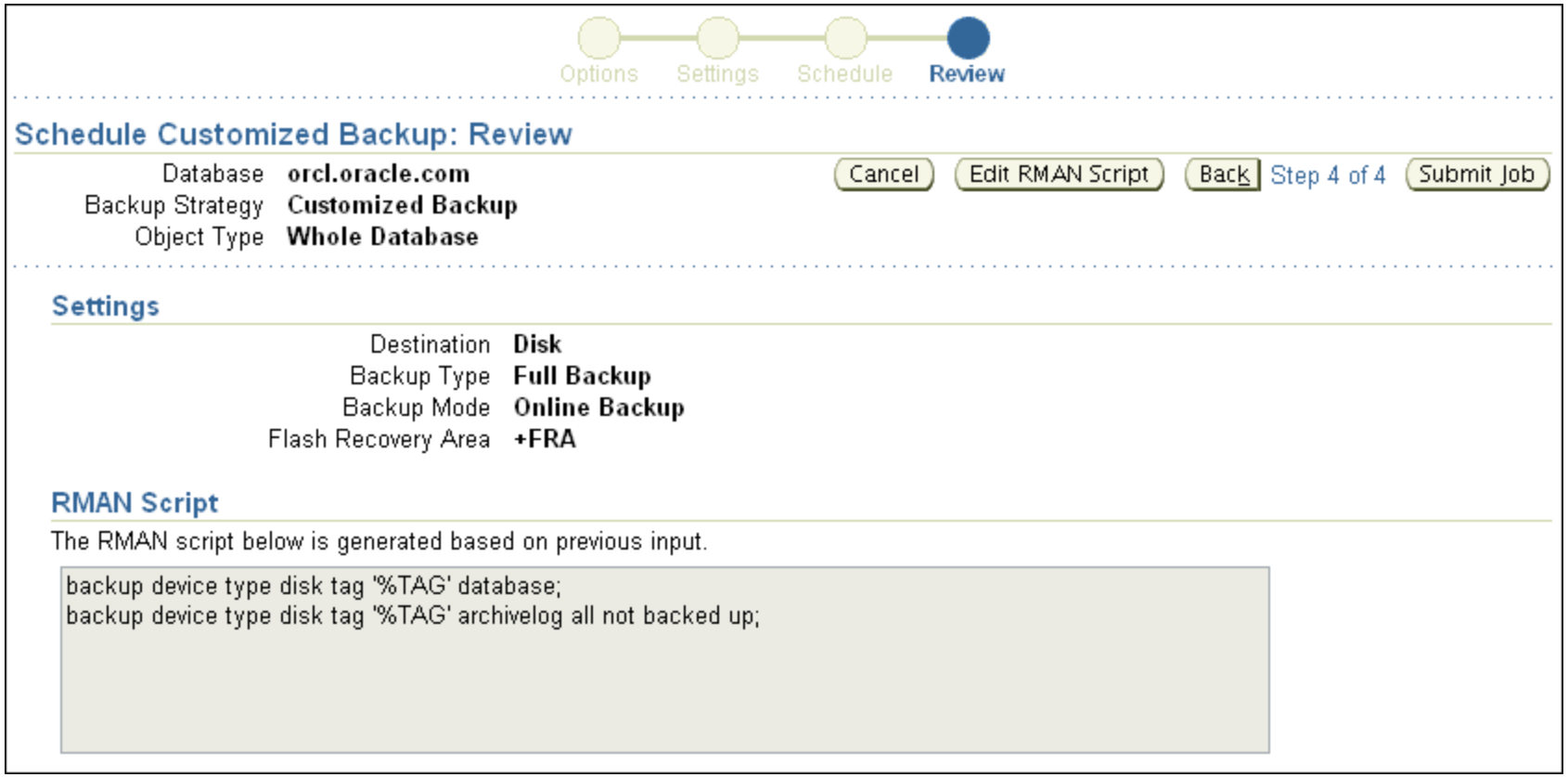
Scheduling Backups: Settings



Scheduling Backups: Schedule

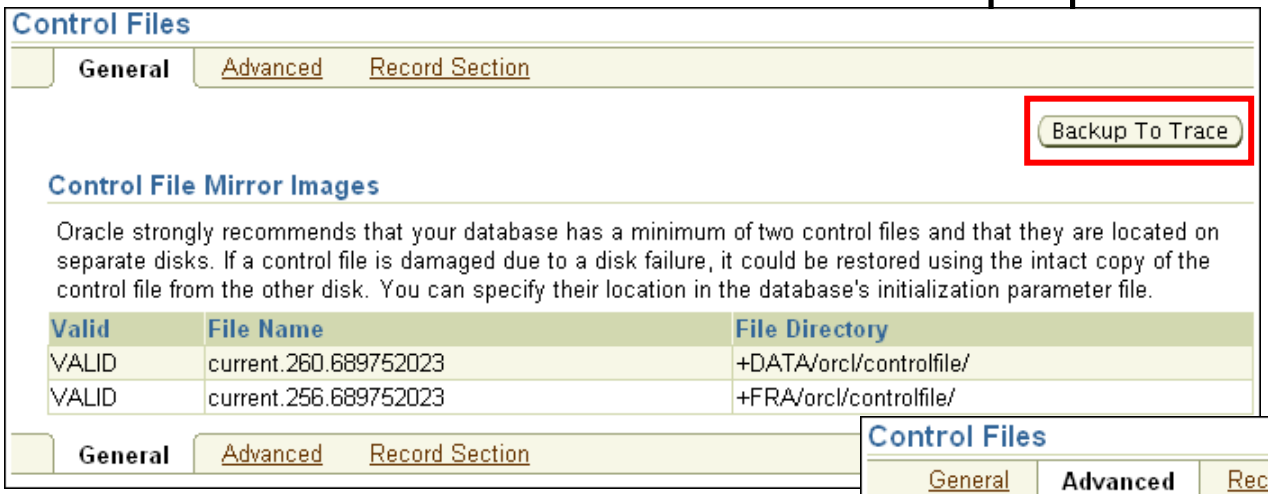


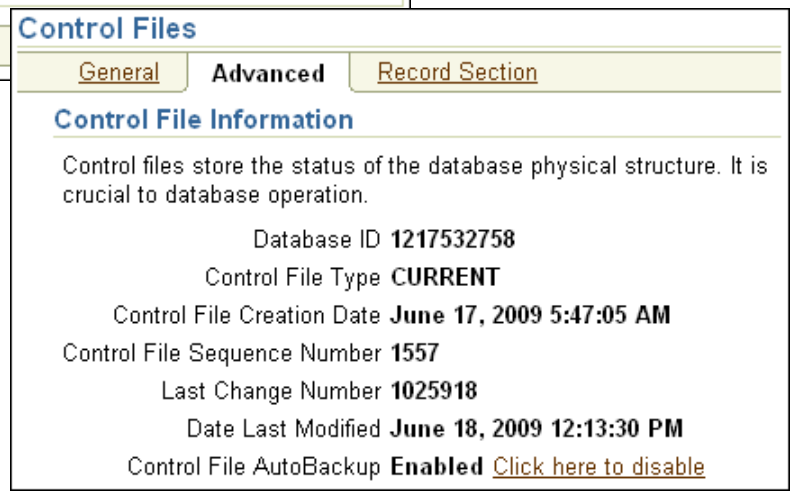
Scheduling Backups: Review



Backing Up the Control File to a Trace File

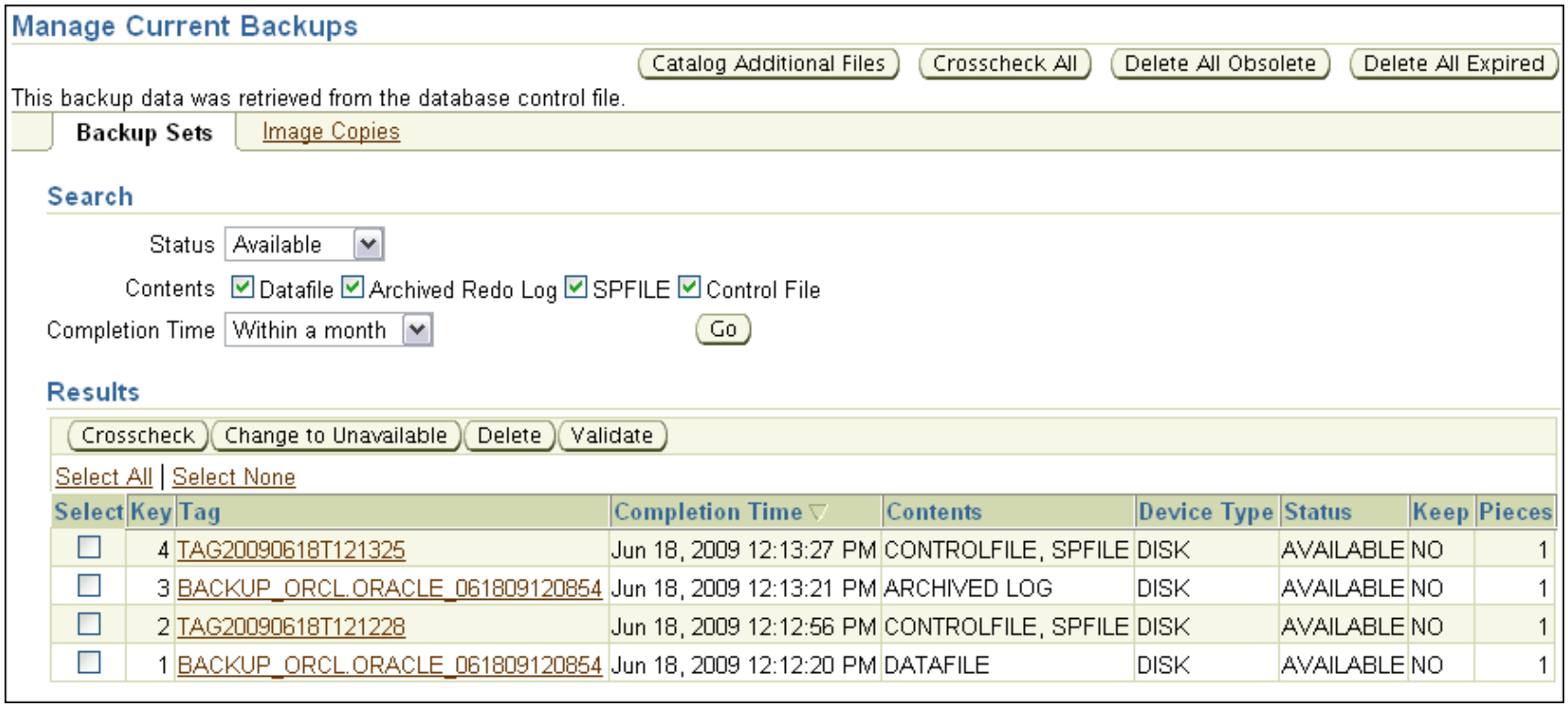
Control files have an additional backup option.





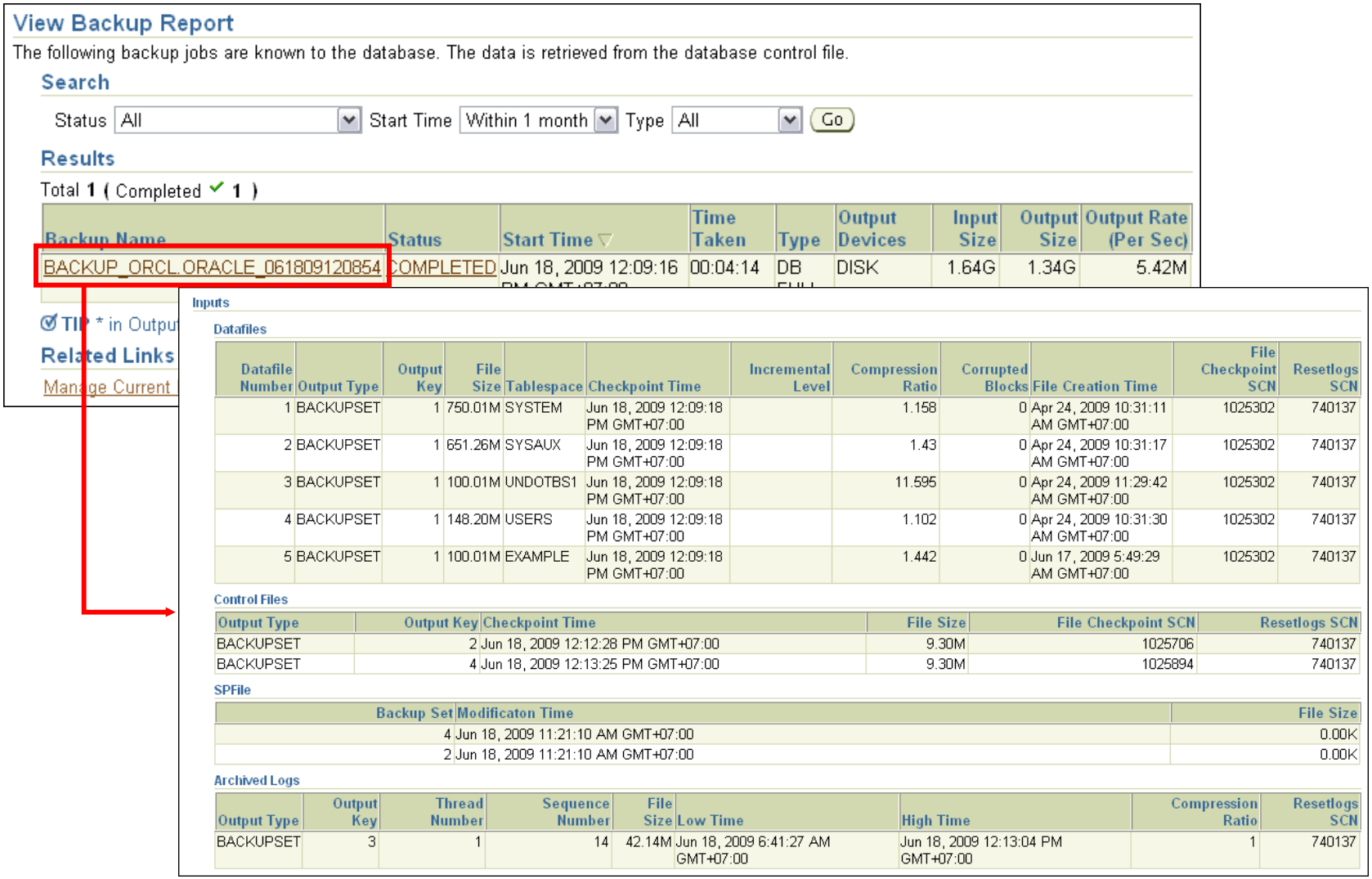
Control file trace backups may be used to recover from loss of all control files.

Managing Backups



Select	Key	Tag	Completion Time	Contents	Device Type	Status	Keep	Pieces
☐	4	TAG20090618T121325	Jun 18, 2009 12:13:27 PM	CONTROLFILE, SPFILE	DISK	AVAILABLE	NO	1
☐	3	BACKUP_ORCL.ORACLE_061809120854	Jun 18, 2009 12:13:21 PM	ARCHIVED LOG	DISK	AVAILABLE	NO	1
☐	2	TAG20090618T121228	Jun 18, 2009 12:12:56 PM	CONTROLFILE, SPFILE	DISK	AVAILABLE	NO	1
☐	1	BACKUP_ORCL.ORACLE_061809120854	Jun 18, 2009 12:12:20 PM	DATAFILE	DISK	AVAILABLE	NO	1

Viewing Backup Reports



View Backup Report

The following backup jobs are known to the database. The data is retrieved from the database control file.

Search

Status All Start Time Within 1 month Type All Go

Results

Total 1 (Completed ✓ 1)

Backup Name	Status	Start Time	Time Taken	Type	Output Devices	Input Size	Output Size	Output Rate (Per Sec)
BACKUP_ORCL.ORACLE_061809120854	COMPLETED	Jun 18, 2009 12:09:16 PM GMT+07:00	00:04:14	DB FULL	DISK	1.64G	1.34G	5.42M

TIP * in Output

Related Links

Manage Current

Inputs

Datafiles

Datafile Number	Output Type	Output Key	File Size	Tablespace	Checkpoint Time	Incremental Level	Compression Ratio	Corrupted Blocks	File Creation Time	File Checkpoint SCN	Resetlogs SCN
1	BACKUPSET	1	750.01M	SYSTEM	Jun 18, 2009 12:09:18 PM GMT+07:00		1.158	0	Apr 24, 2009 10:31:11 AM GMT+07:00	1025302	740137
2	BACKUPSET	1	651.26M	SYSAUX	Jun 18, 2009 12:09:18 PM GMT+07:00		1.43	0	Apr 24, 2009 10:31:17 AM GMT+07:00	1025302	740137
3	BACKUPSET	1	100.01M	UNDOTBS1	Jun 18, 2009 12:09:18 PM GMT+07:00		11.595	0	Apr 24, 2009 11:29:42 AM GMT+07:00	1025302	740137
4	BACKUPSET	1	148.20M	USERS	Jun 18, 2009 12:09:18 PM GMT+07:00		1.102	0	Apr 24, 2009 10:31:30 AM GMT+07:00	1025302	740137
5	BACKUPSET	1	100.01M	EXAMPLE	Jun 18, 2009 12:09:18 PM GMT+07:00		1.442	0	Jun 17, 2009 5:49:29 AM GMT+07:00	1025302	740137

Control Files

Output Type	Output Key	Checkpoint Time	File Size	File Checkpoint SCN	Resetlogs SCN
BACKUPSET	2	Jun 18, 2009 12:12:28 PM GMT+07:00	9.30M	1025706	740137
BACKUPSET	4	Jun 18, 2009 12:13:25 PM GMT+07:00	9.30M	1025894	740137

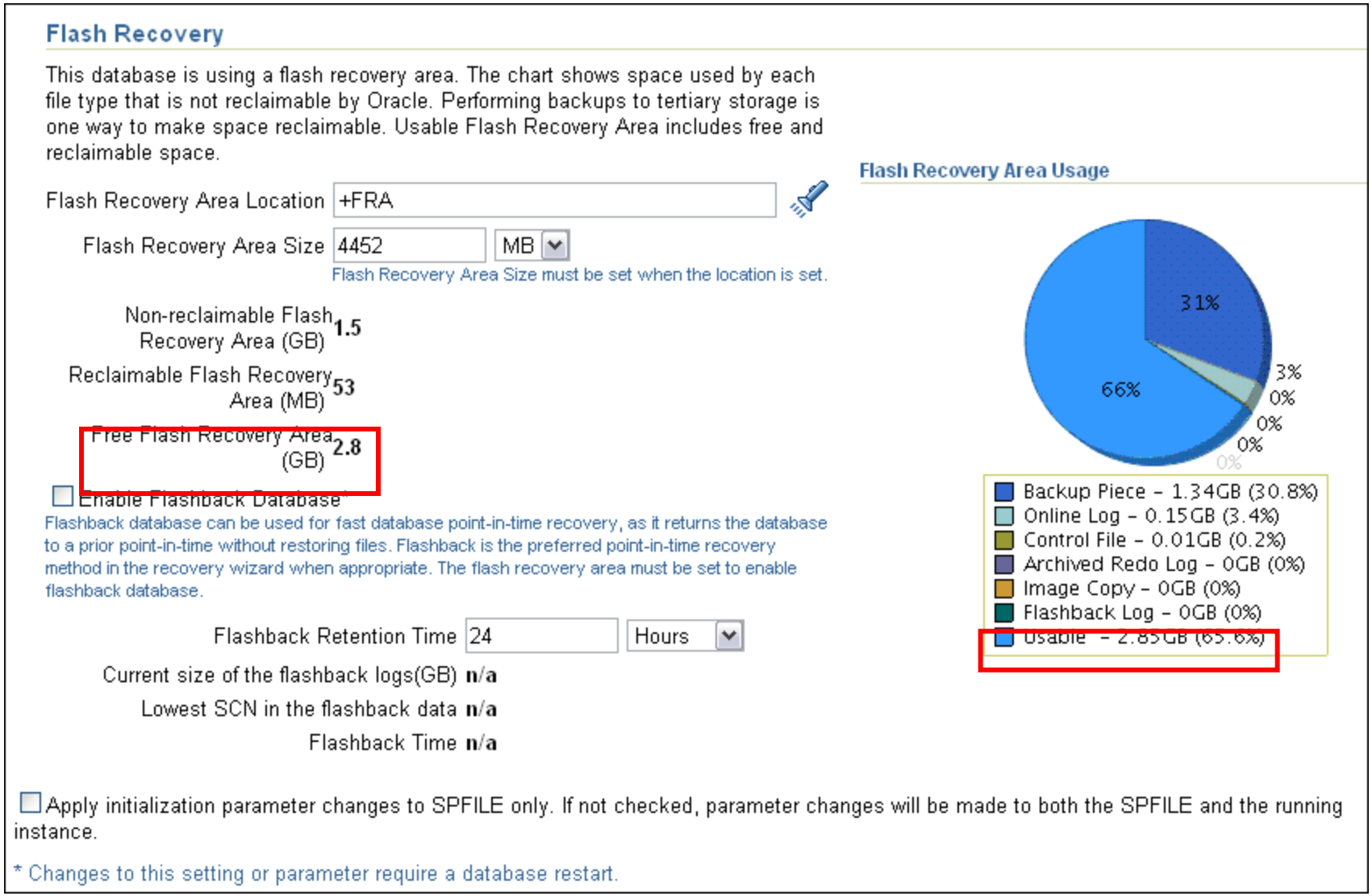
SPFile

Backup Set	Modificaton Time	File Size
4	Jun 18, 2009 11:21:10 AM GMT+07:00	0.00K
2	Jun 18, 2009 11:21:10 AM GMT+07:00	0.00K

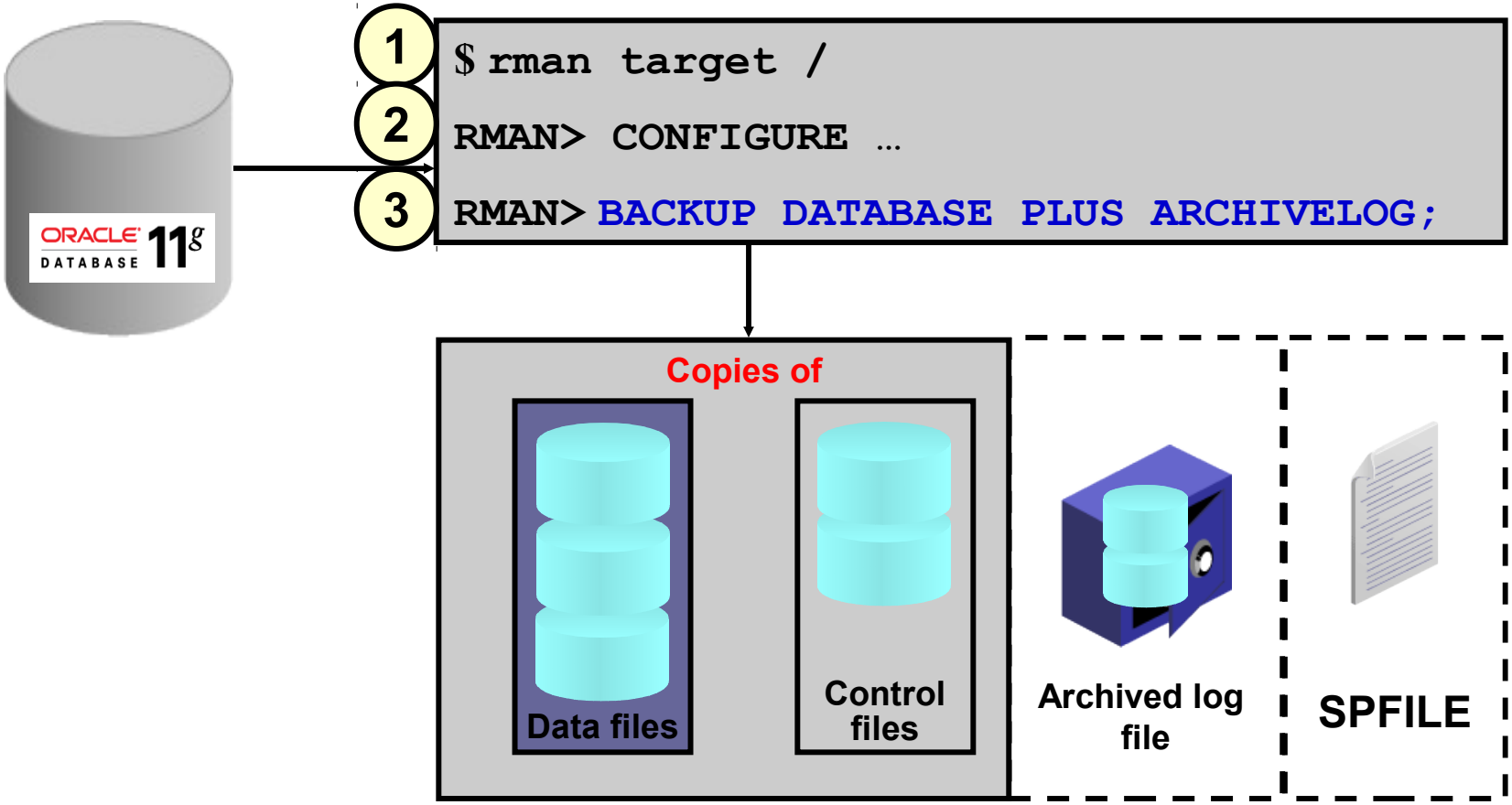
Archived Logs

Output Type	Output Key	Thread Number	Sequence Number	File Size	Low Time	High Time	Compression Ratio	Resetlogs SCN
BACKUPSET	3	1	14	42.14M	Jun 18, 2009 6:41:27 AM GMT+07:00	Jun 18, 2009 12:13:04 PM GMT+07:00	1	740137

Monitoring the Fast Recovery Area



Using the RMAN Command Line



Quiz

Using the change-tracking feature, an image copy backup performed by RMAN can skip blocks that have not changed since the last backup.

1. True
2. False

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
- Manage backups and view backup reports
- Monitor the fast recovery area

Practice 15 Overview: Creating Database Backups

This practice covers the following topics:

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