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Performing Block Media Recovery

Objectives

After completing this lesson, you should be able to:

- Proactively check for block corruption
- Perform block media recovery

What Is Block Corruption?

- Whenever a block is read or written, a consistency check is performed.
  - Block version
  - DBA (data block address) value in cache as compared to the DBA value in the block buffer
  - Block-checksum, if enabled
- A corrupt block is identified as being one of the following:
  - Media corrupt
  - Logically (or software) corrupt

Block Corruption Symptoms: ORA-01578

The error `ORA-01578: "ORACLE data block corrupted (file # %s, block # %s)"`:

- Is generated when a corrupted data block is found
- Always returns the tablespace relative file number and block number
- Is returned to the session that issued the query being performed when the corruption was discovered
- Appears in the `alert.log` file

How to Handle Corruption

- Check the alert log and operating system log file.
- Use available diagnostic tools to find out the type of corruption.
- Determine whether the error persists by running checks multiple times.

```
ANALYZE TABLE emp VALIDATE STRUCTURE CASCADE ONLINE;
```

- Recover data from the corrupted object if necessary.
- Resolve any hardware issues:
  - Memory boards
  - Disk controllers
  - Disks
- Recover or restore data from the corrupt object if necessary.

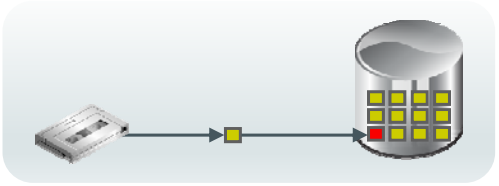
Setting Parameters to Detect Corruption

Parameter	Use
DB_BLOCK_CHECKING	Prevent memory and data corruption
DB_BLOCK_CHECKSUM	Detect I/O storage, disk corruption

Tip: Test first, because these parameters have a performance impact.

Block Media Recovery

- Block media recovery:
  - Is invoked using the RMAN **RECOVER...BLOCK** command
    - Restores blocks by using flashback logs and full or level 0 backups
    - Media recovery is performed using redo logs.
- The **V$DATABASE_BLOCK_CORRUPTION** view displays blocks marked corrupt.



Prerequisites for Block Media Recovery

- The target database must be in ARCHIVELOG mode.
- The backups of the data files containing the corrupt blocks must be full or level 0 backups.
- RMAN can use only archived redo logs for the recovery.
- The corrupted data block can be restored from Flashback Logs if available.

Recovering Individual Blocks

The RMAN **RECOVER...BLOCK** command:

- Identifies the backups containing the blocks to recover
- Reads the backups and accumulates requested blocks into in-memory buffers
- Manages the block media recovery session by reading the archive logs from backup if necessary

```
RECOVER DATAFILE 6 BLOCK 3; Recover a single block

RECOVER                     Recover multiple blocks
DATAFILE 2 BLOCK 43         in multiple data files
DATAFILE 2 BLOCK 79
DATAFILE 6 BLOCK 183;

RECOVER CORRUPTION LIST;    Recover all blocks logged in
                            V$DATABASE_BLOCK_CORRUPTION
```


Best Practice: Proactive Checks

Invoking proactive health check of the database and its components:

- Health Monitor or RMAN `VALIDATE DATABASE` command
- Checking for logical and physical corruption
- Findings logged in the ADR

Summary

In this lesson, you should have learned how to:

- Proactively check for block corruption
- Perform block media recovery

Practice Overview

- Repairing Block Corruption