
iTrain, moving with Technology
iTrain Education
Fulfilling your Vision
Passionate about iT
The Complete ERP Solution

Oracle Flashback

Presented By
Simon Swann
iTrain Education

Flashback

Coverage

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Connecting People with Business and Technology

- Introduction
- Brief History
- User Induced Trauma
- Extended Flashback Features
- Summary

Flashback

Introduction

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- Introduction: Several New Features
  - ASMM (automatic shared memory management)
    (ability to share memory in a more efficient manor)
  - ASM (automatic storage management)
    (store thousands of files in disk groups)
  - OMF (oracle managed files)
    (control of naming & location left to Oracle)
  - Enhancements to Flashback
    (allows speedy recovery from data loss)

Flashback

Brief History

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- Brief History:
  - Backup & Recovery
    main hallmark is the ability to recover from failure
  - Datafile loss, a set of Datafiles, Redologs, Controlfile loss
  - Restore options from:
    Physical backup copies, Rman backups or Export/Import

Flashback

User Induced Trauma

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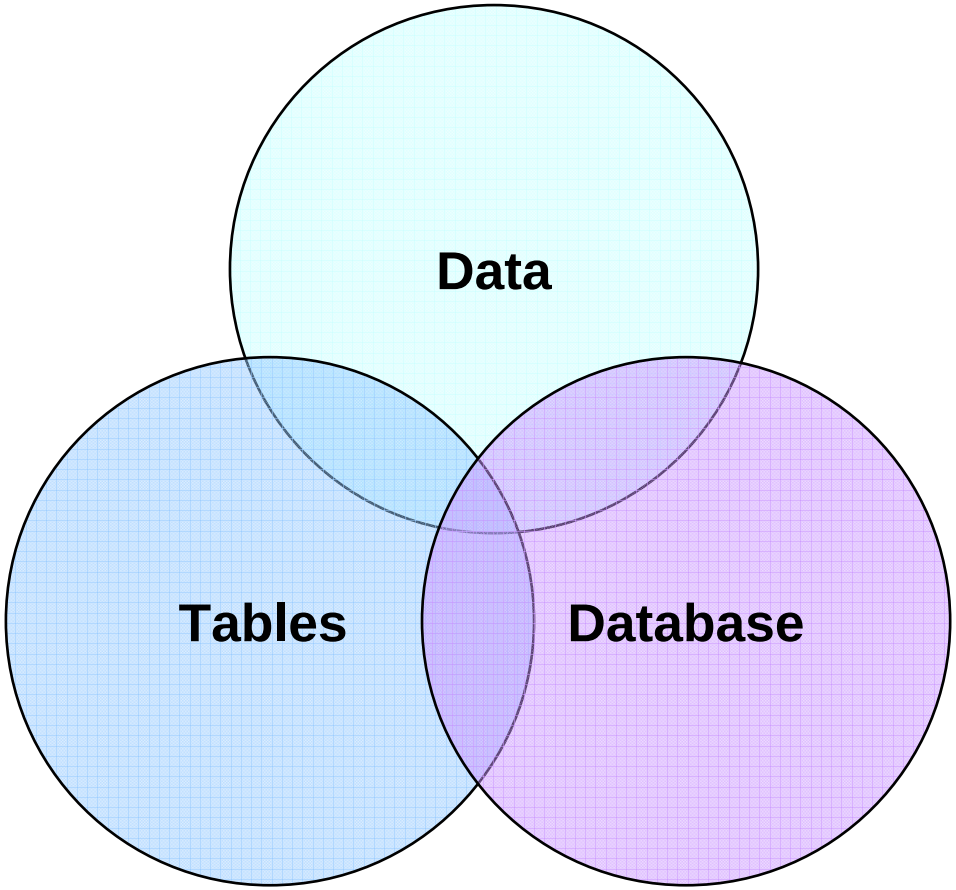
- Corruptions
- Human Errors



- Disasters
- Power Outage
- Hardware Failure

- Deletions
- Truncations
- Drops

Flashback

Recovery Questions

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- Database Recovery Time
  - How long will it take?
- Is the Backup good?
  - Has it been tested?
- Time spent Trouble Shooting
  - Do we have the relevant Backups onsite?
  - Have we recovered far enough back?

Flashback

Recovery Solutions

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- Logical Methods:
  - Export and Import
  - Datapump
- Physical Methods:
  - O/S Backup and Restore
  - RMAN Backup and Restore
- Flashback can be used to ‘speed up’ the recovery process in certain areas

Flashback

Features

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- What is it?
  - A feature that allows data, tables or the database to be flashed back to a previous point in time
- Introduced in Oracle 9i
  - DBMS_FLASHBACK package
- Expanded in Oracle 10g
  - Incorporated in SQL

- How does it work?
  - Technology was there in Rollback segments, which are used for transaction read consistency, commit or rollback and recovery assistance.

    Before data could be over written within the rollback segment
- Flashback makes use of Automatic Undo Management.
  - Undo_management=AUTO
  - Undo_tablespace=UNDOTBS
  - Undo_retention=3600

    Before data could possibly remain there for longer periods of time before being over written within the undo segment

Flashback Query

Feature

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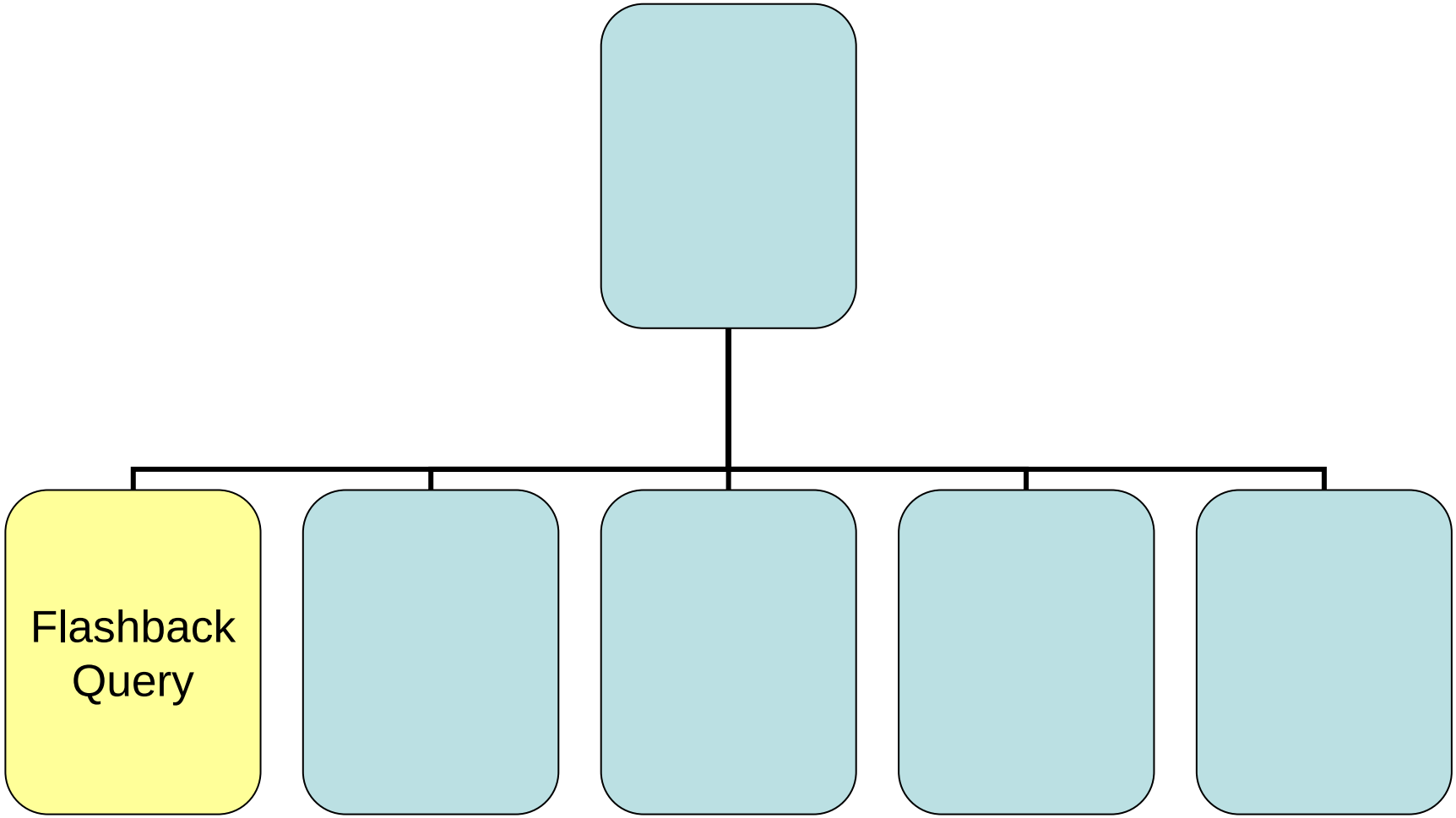
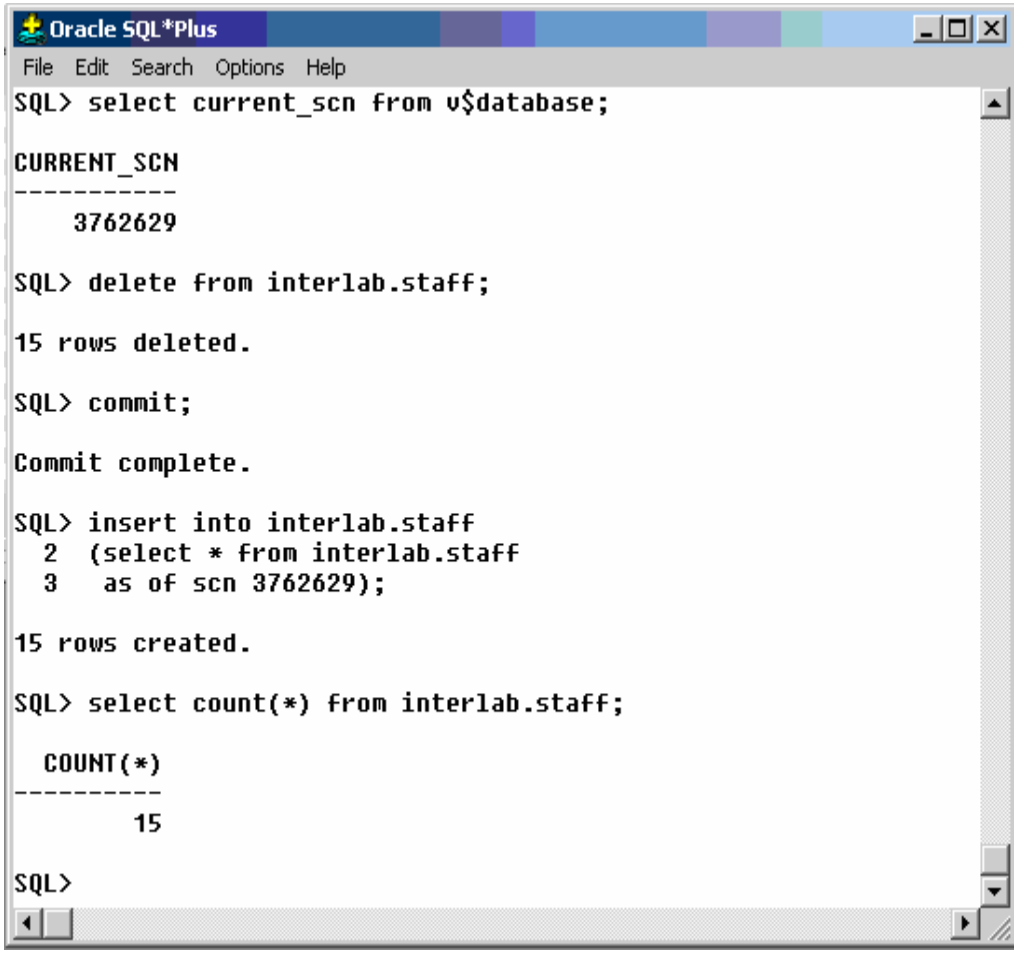


Flashback Query

Feature

- Allows Querying of data in the past
- CURRENT_SCN from V$DATABASE;



Flashback Query

Feature

- Flashback Query additions:
  - select * from <table_name>
    as of scn timestamp_to_scn (sysdate – 2/24);
  - select * from <table_name>
    as of scn timestamp_to_scn (sysdate – 0.25/24);

Flashback Version

Feature

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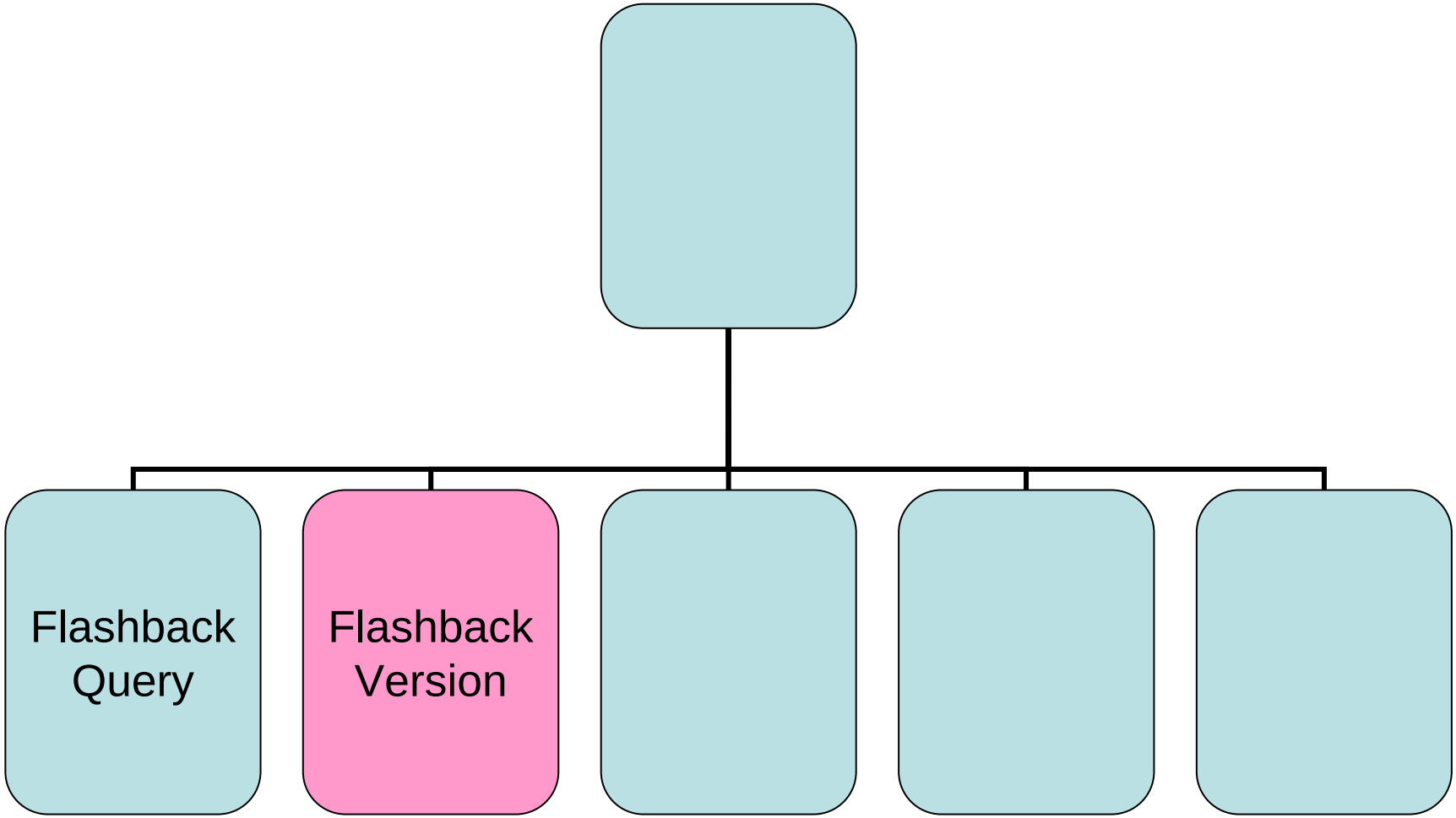

Flashback Version Query

Feature

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- A short term auditing feature that allows changes to individual rows to be tracked over a time period.

- The information about the transactions are stored in the Undo Segments.

Flashback Version Query

pseudocolumns

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- Use the ‘versions between’ clause to track the changes between different SCN values.
- VERSIONS_STARTSCN - starting SCN when the row acquired this value
- VERSIONS_STARTTIME - specifies a time rather than an SCN
- VERSIONS_ENDSCN - last SCN when the row held the value
- VERSIONS_ENDTIME - specifies a time rather than an SCN
- VERSIONS_XID - ID of the transaction involved
- VERSIONS_OPERATION - performing insert, update, delete

Flashback Version Query

example

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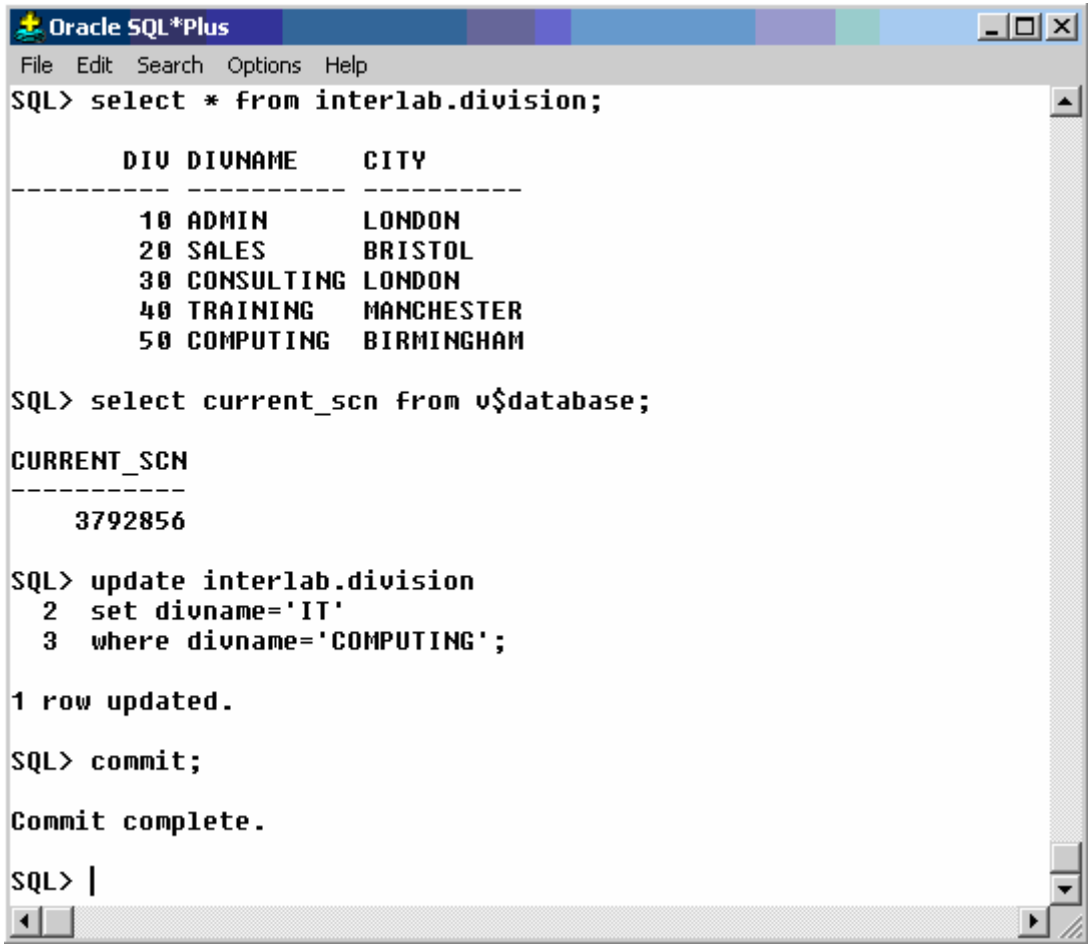
- Performing a Flashback Version Query against a table that has had a column heading change.



Flashback Version Query

Feature

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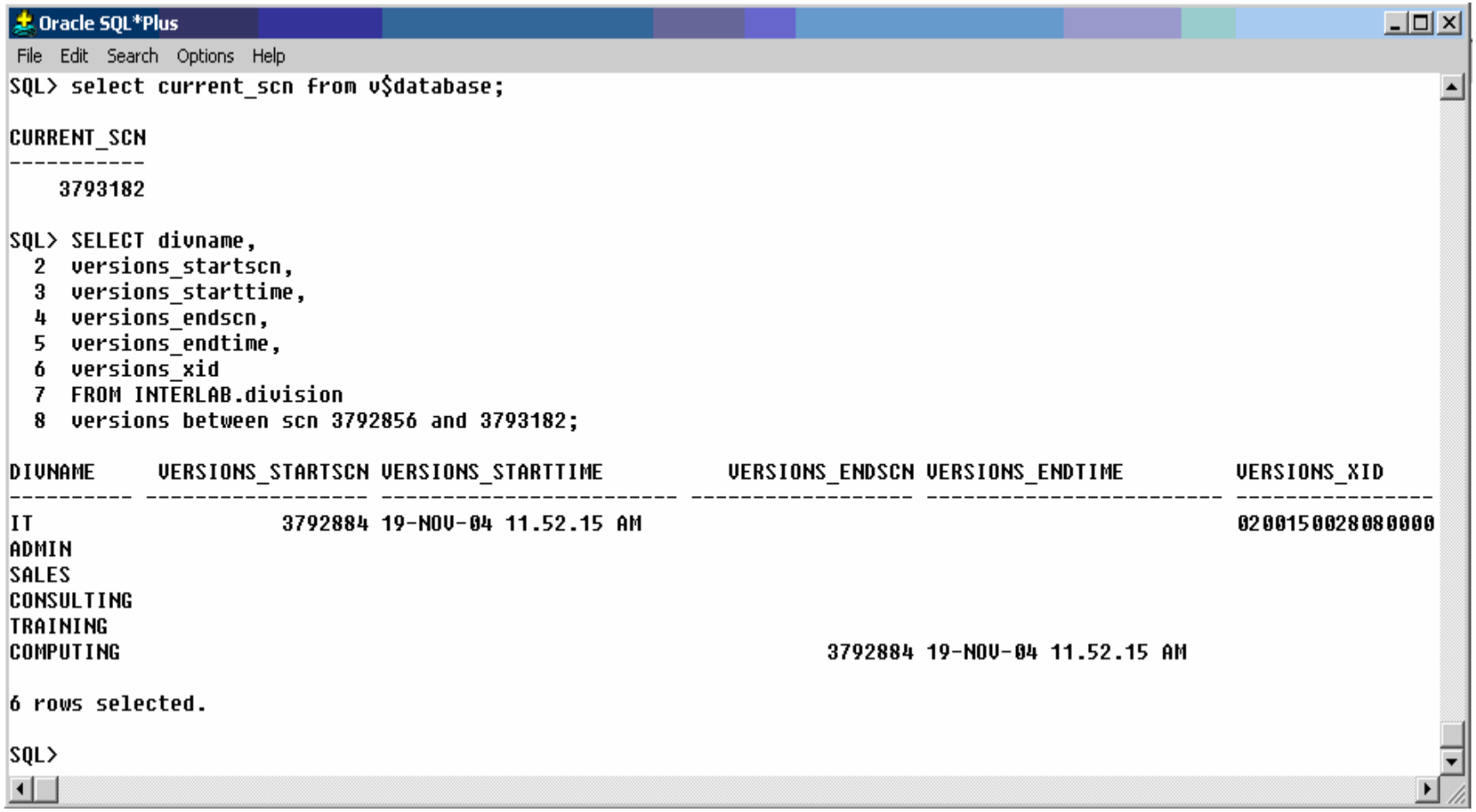

Flashback Transaction

Feature

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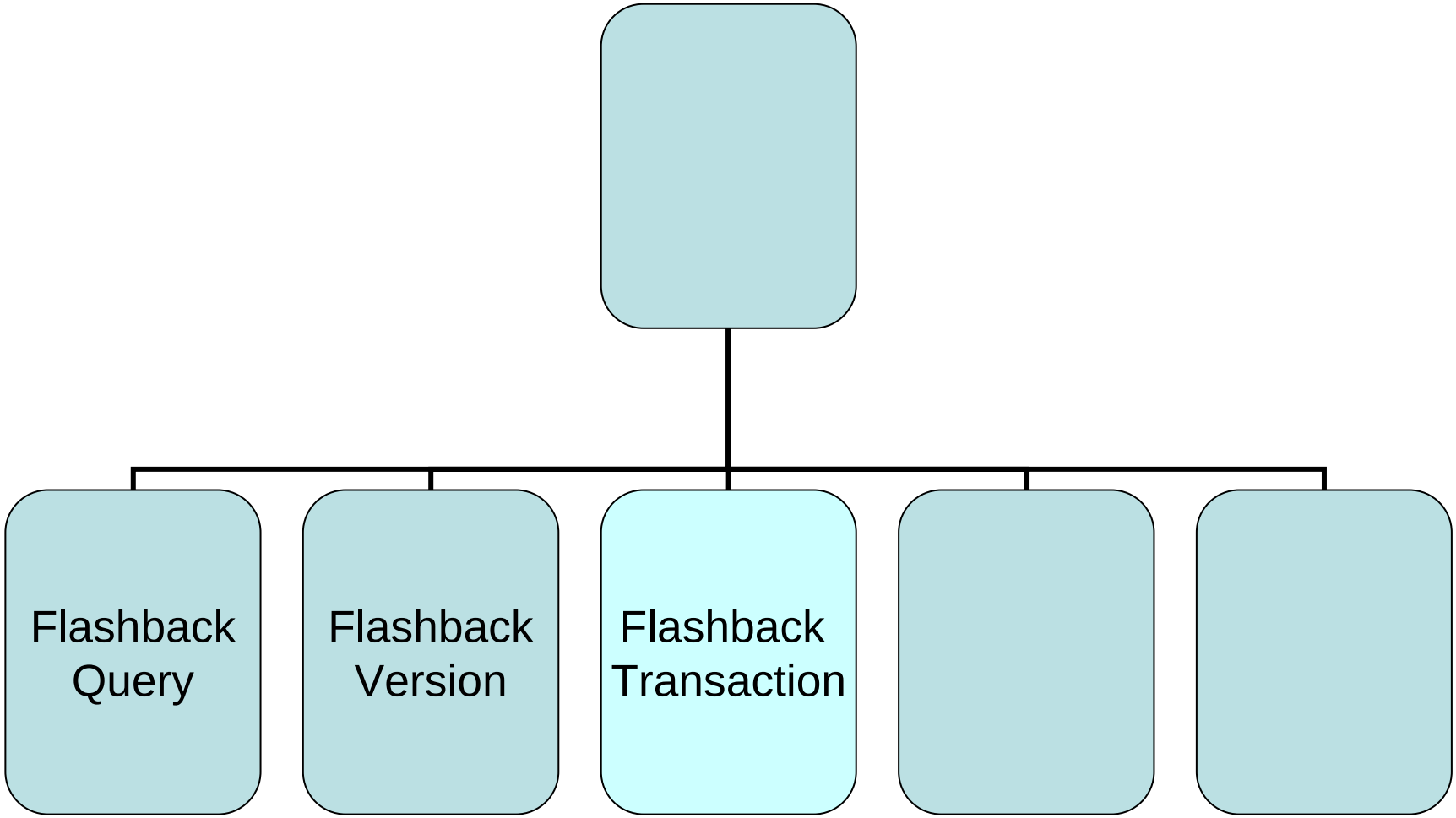

Flashback Transaction Query

Feature

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- Displays detailed transaction information
- Information about transactions affecting a table can be obtained using the view 'FLASHBACK_TRANSACTION_QUERY'
- The view contains a column 'XID' which can be joined to the 'VERSIONS_XID' row returned by the 'VERSIONS_BETWEEN' clause.

Flashback Transaction Query

Feature

- The view contains a column ‘XID’ which can be joined to the ‘VERSIONS_XID’ row returned by the ‘VERSIONS_BETWEEN’ clause.

```
select * from flashback_transaction_query
where xid in
(select hextoraw(versions_xid)
from division
versions between scn 3792856 and 3793944);
```

Flashback Table

Feature

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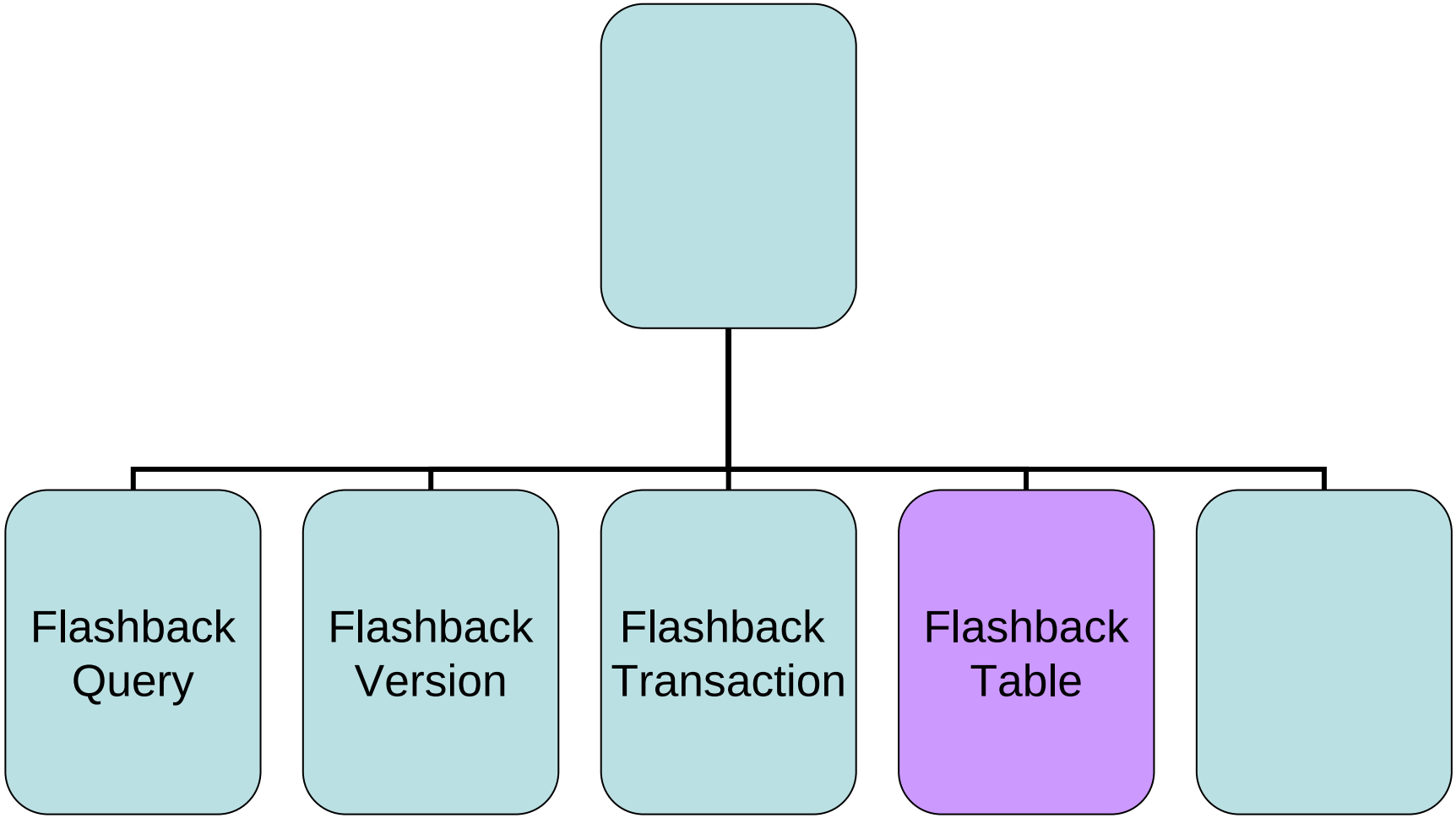

Flashback Table

Feature

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- Allows a table to be rolled back to a particular point in time
- The relevant information will need to be in the ‘UNDO SEGMENTS’ and ‘ROW MOVEMENT’ must be enabled
- When you use the Flashback Table feature to restore a table to a specific point in time, all associated objects, such as, indexes, constraints, and triggers will be restored

Flashback Table

Feature

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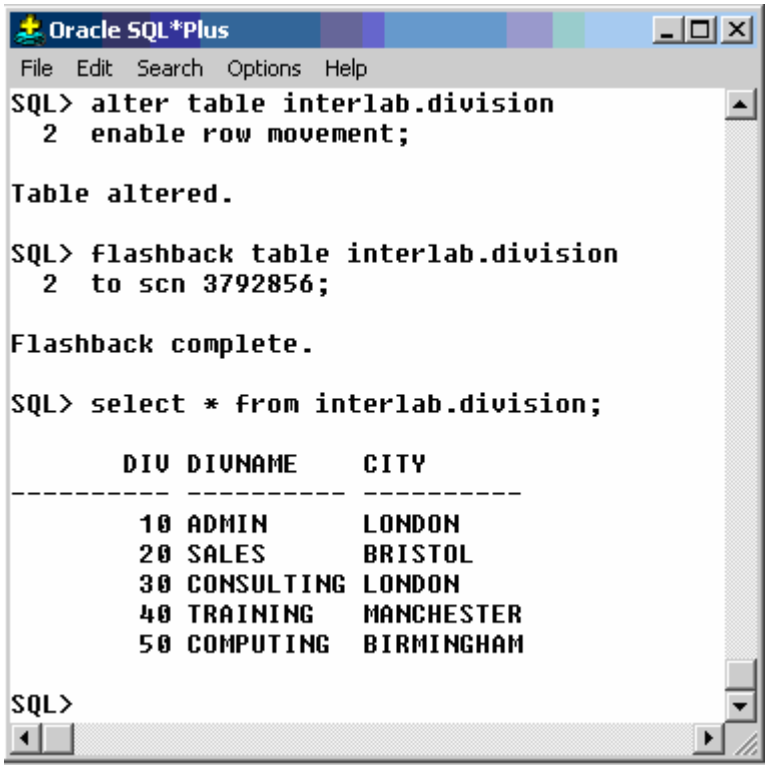
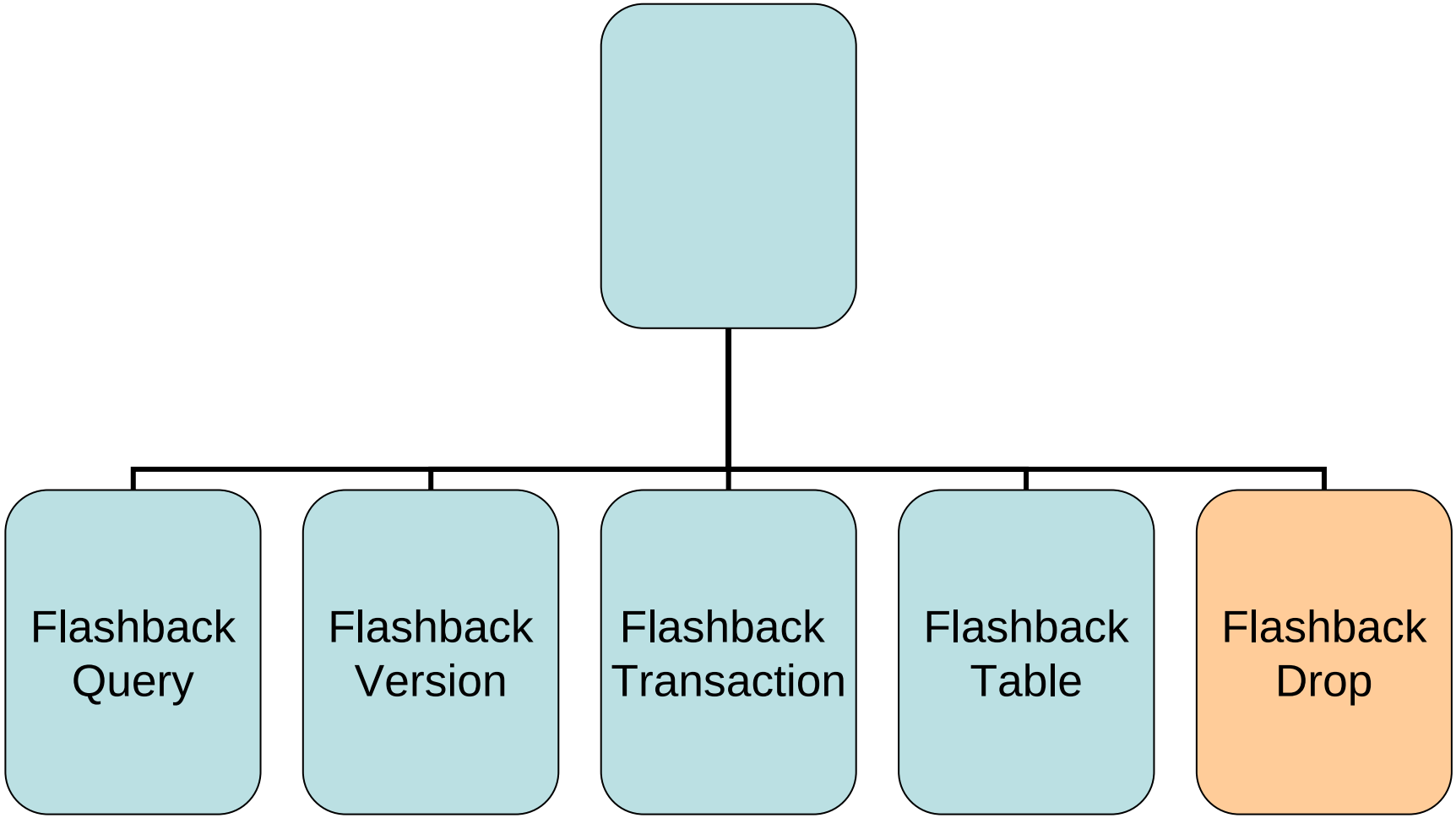
Flashback Table allows you to recover a table or tables to a specific point in time without restoring a backup.



Flashback Drop

Feature



Flashback Drop

Feature

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- Acts as a ‘RECYCLEBIN’ allowing dropped tables to be retrieved

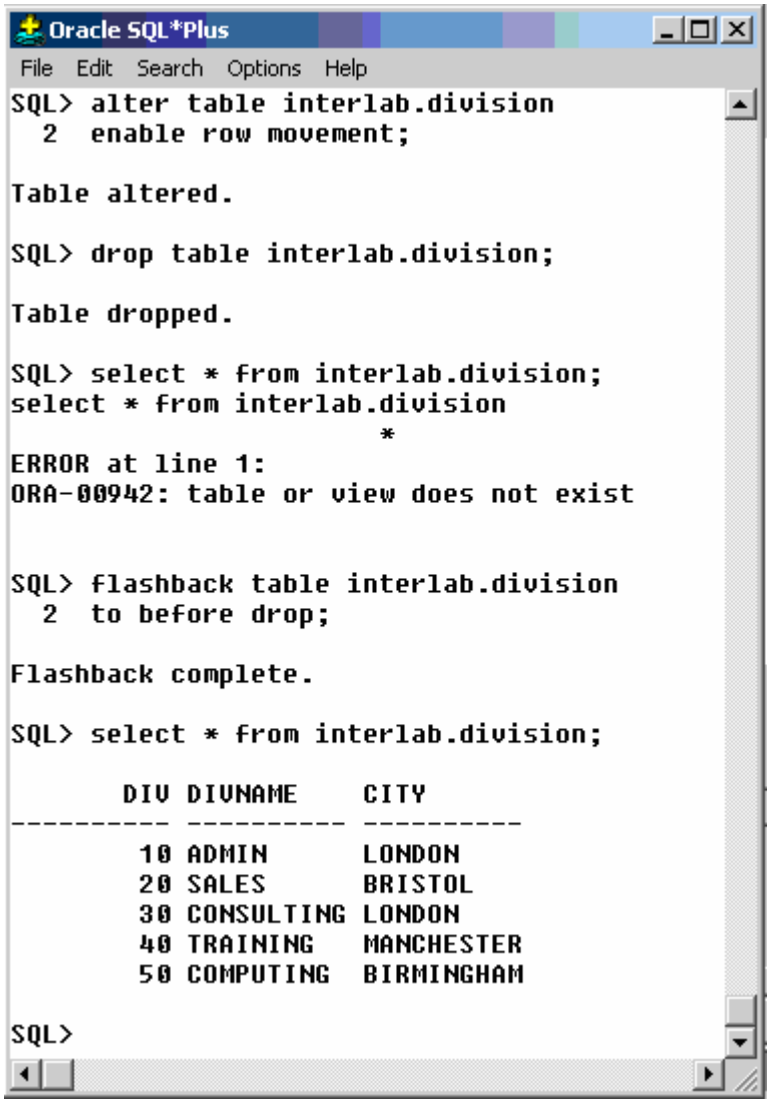
- Flashback Drop is a variation of Flashback table as it handles rolling back a dropped table

- Dropped tables are ‘RENAMED’ in the ‘RECYCLEBIN’ and can be retrieved using the ‘FLASHBACK DROP’ command

Flashback Drop

Feature

- Tables must be in Locally managed tablespaces
- Tables must not be in the SYSTEM tablespace



Flashback Drop

Feature

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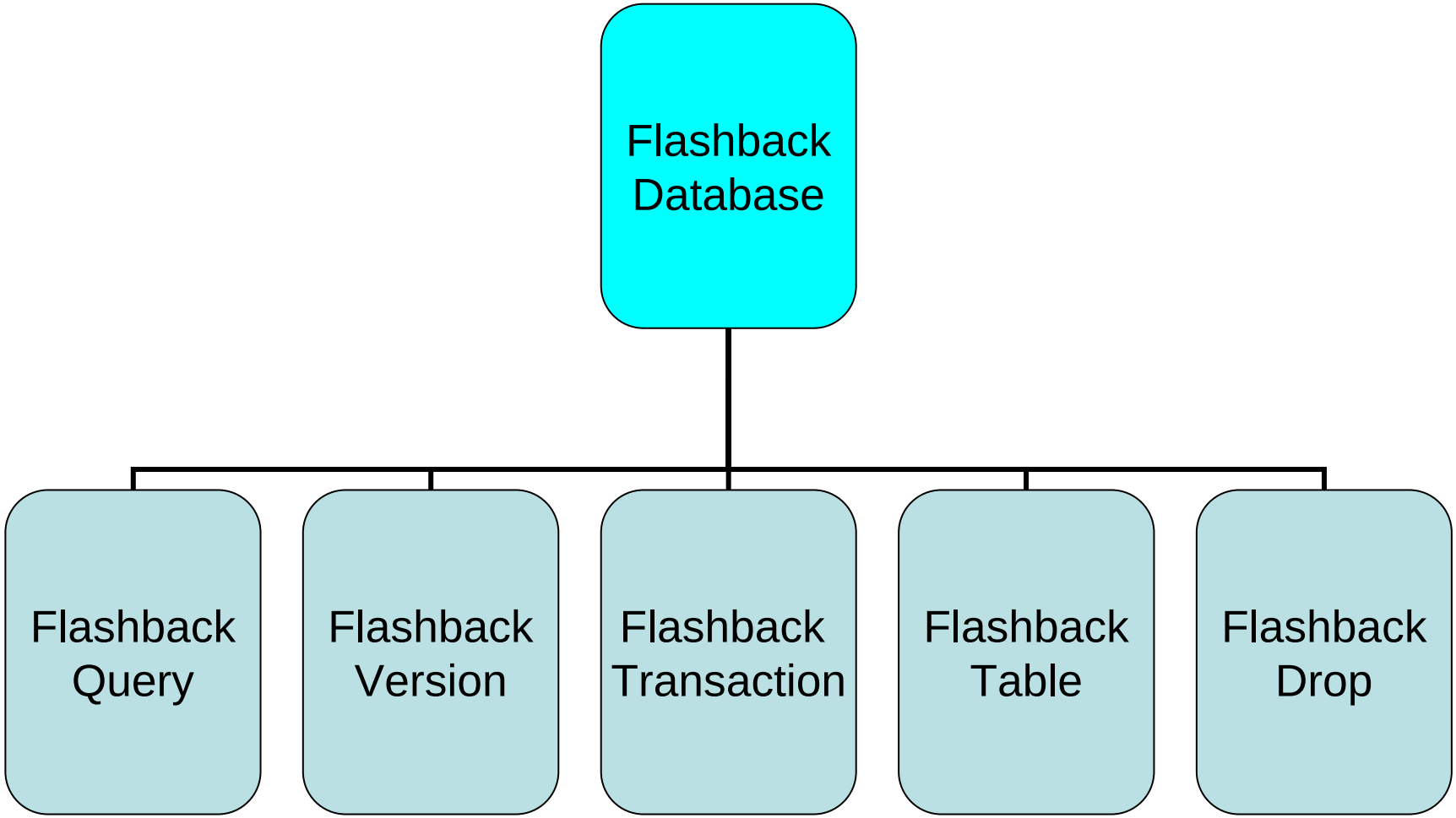
- Purge Recyclebin:
  - Will remove ALL dropped objects from individual USERS recyclebin
  - Select * from user_recyclebin
  - Show recyclebin
  - Purge recyclebin

- Purge DBA Recyclebin:
  - Will remove ALL dropped objects from all users recyclebin
  - Select * from DBA_recyclebin
  - Show DBA_recyclebin
  - Purge DBA_recyclebin

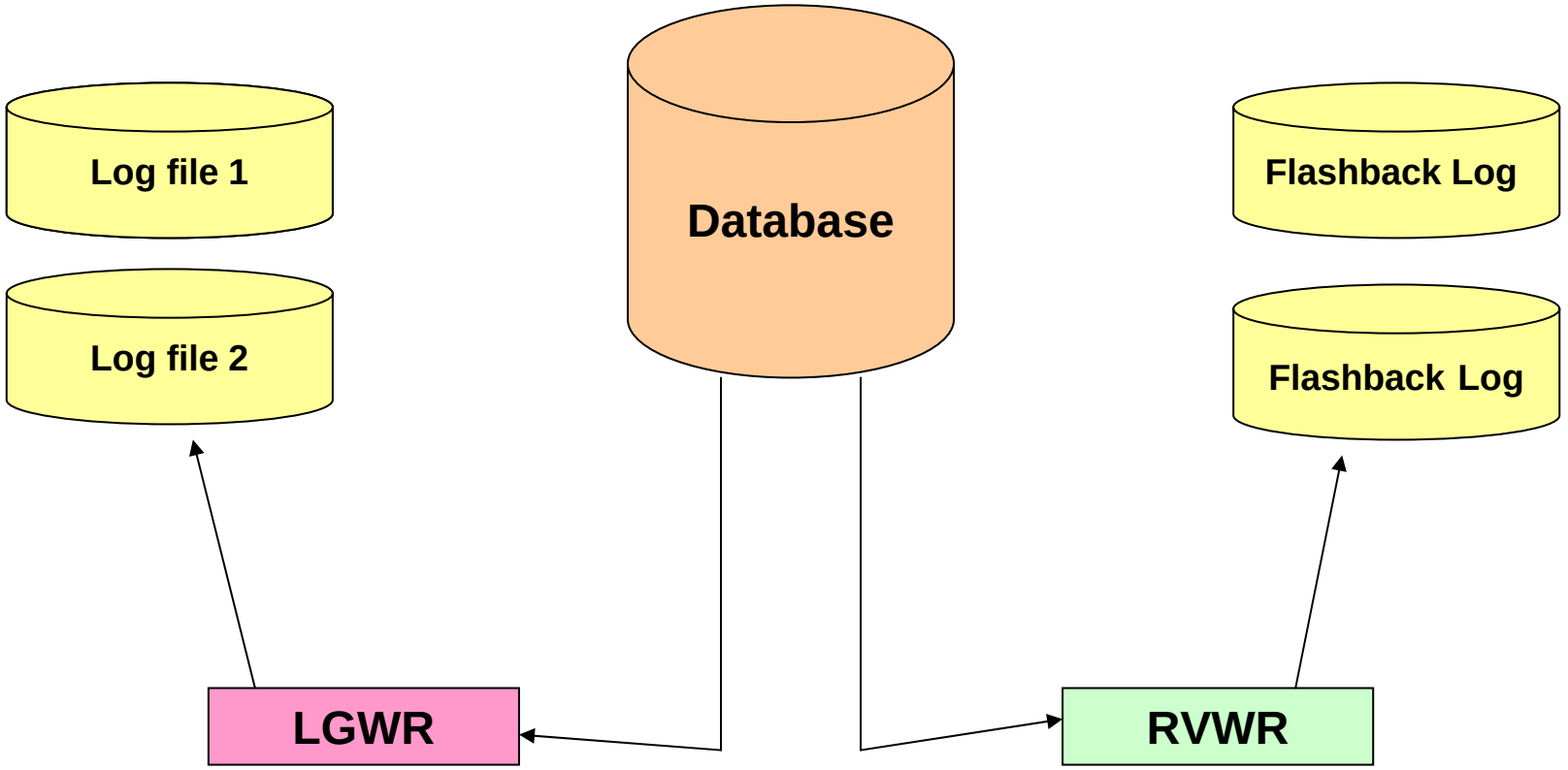
Flashback Database

Feature



Flashback Database

Feature



Flashback Database

Feature

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- Initialization Parameters to be defined:
  - DB_RECOVERY_FILE_DEST_SIZE
  - Alter system set DB_RECOVERY_FILE_DEST_SIZE=8g scope=both;
  - DB_RECOVERY_FILE_DEST
  - Alter system set DB_RECOVERY_FILE_DEST=`C:\flash` scope=both;

Flashback Database

Feature

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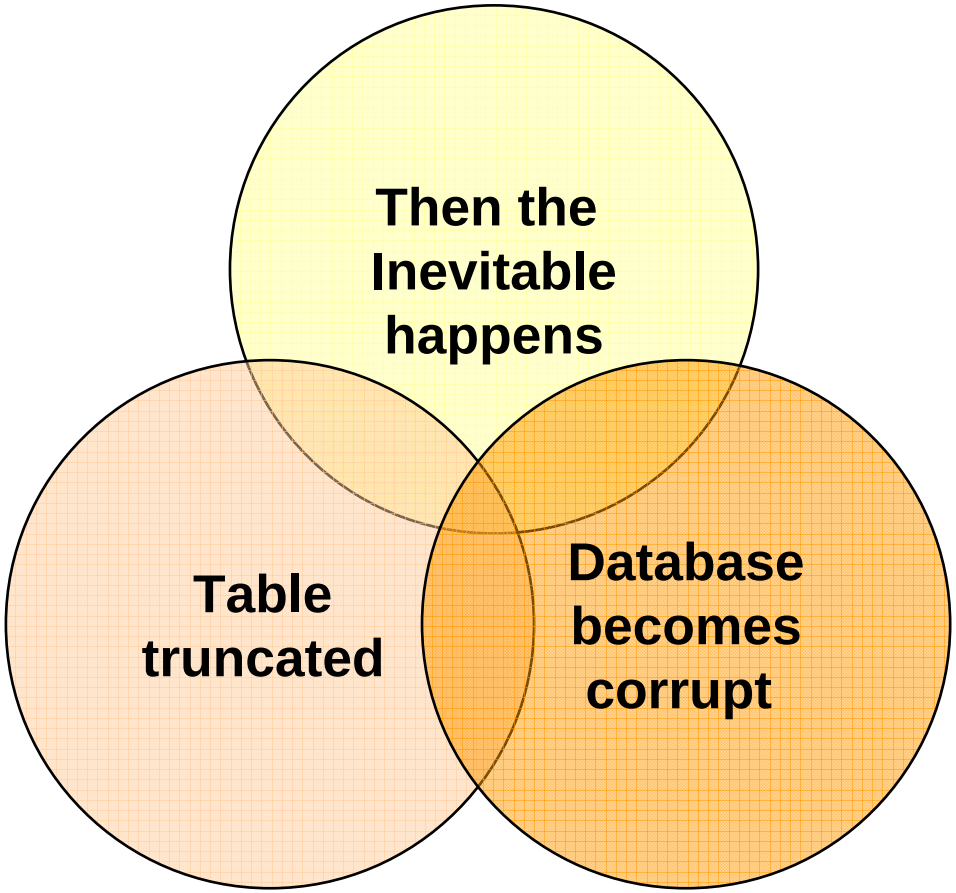
- SHUTDOWN IMMEDIATE
- STARTUP MOUNT
- ALTER DATABASE FLASHBACK ON
- ALTER DATABASE OPEN
- Select CURRENT_SCN, FLASHBACK_ON
  From V$DATABASE

  To monitor Flashback Database use
  V$flashback_database_stat

Flashback Database

Feature



Flashback Database

Feature

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- Performing a FLASHBACK DATABASE recovery:
  - SHUTDOWN IMMEDIATE
  - STARTUP MOUNT
  - FLASHBACK DATABASE to SCN <scn>
  - ALTER DATABASE OPEN RESETLOGS

Flashback Database

Feature

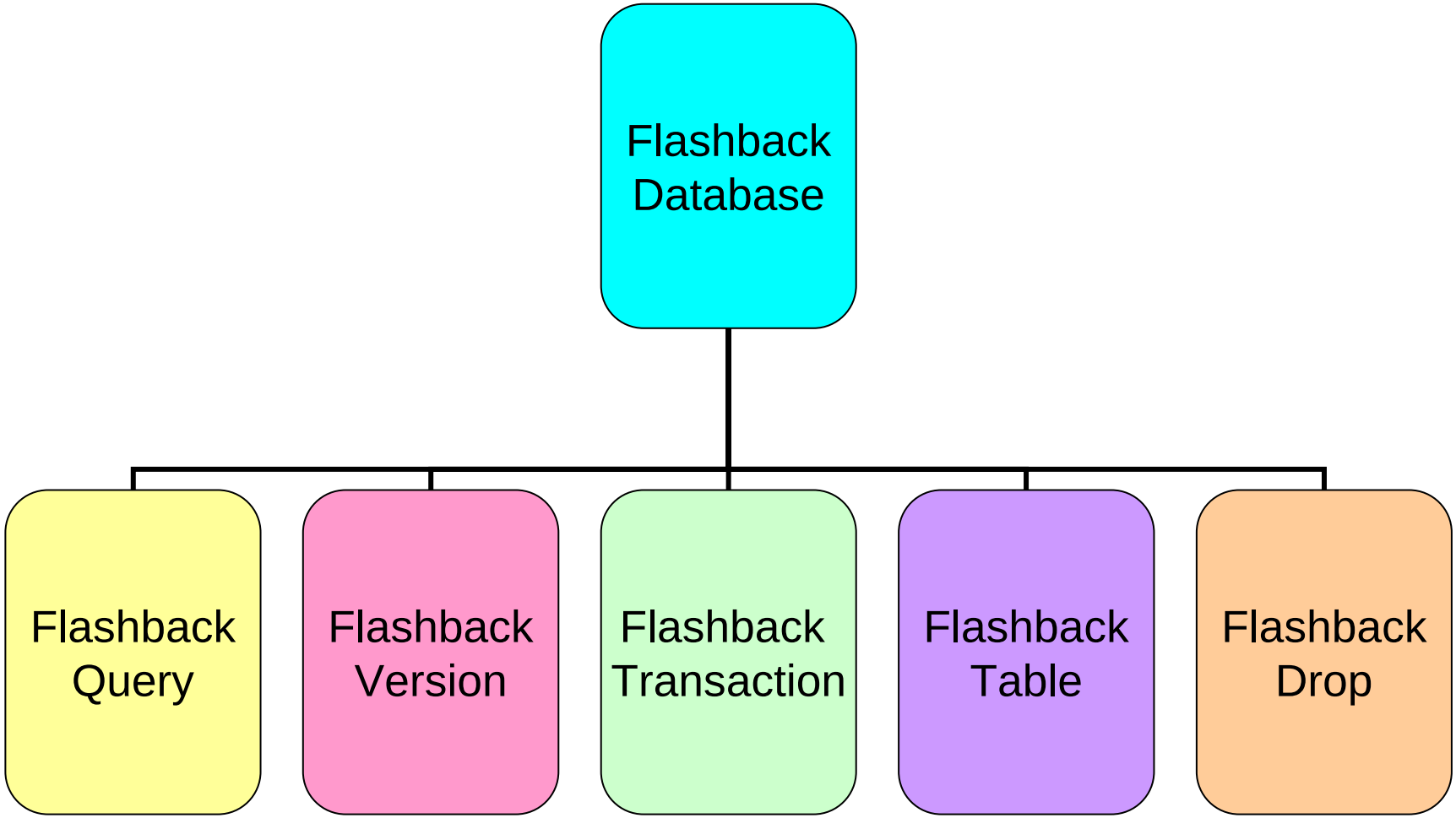
- FLASHBACK DATABASE recovery options:
  - FLASHBACK DATABASE to TIMESTAMP <date>
  - FLASHBACK DATABASE to BEFORE SCN <scn>
  - FLASHBACK DATABASE to BEFORE TIMESTAMP <date>

Set the Flashback Database retention target:

- DB_FLASHBACK_RETENTION_TARGET

The default value for flashback retention time is 1400 minutes.

Summary


Flashback Database
Flashback Query
Flashback Version
Flashback Transaction
Flashback Table
Flashback Drop

Summary

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- Flashback Query – allows a user to view previous versions of a table.
- Flashback Version – allows changes of individual rows to be tracked.
- Flashback Transaction – allows tracking of specific transaction changes.
- Flashback Table – put the table back as it was, undoing corruption
- Flashback Drop – retrieve a dropped table from the recyclebin
- Flashback Database – perform an incomplete recovery without the aid of a backup

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Thank you for your time

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Stand 4