

## Session 19 FLASHBACK VERSIONS / TABLE in SQL\*PLUS

The Oracle base remains unchanged with value /opt/oracle

```
[oracle@oracloud12c ~]$ sqlplus / as sysdba
```

SQL\*Plus: Release 12.1.0.2.0 Production on Thu Apr 12 15:24:09 2018

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Connected to:

Oracle Database 12c Enterprise Edition Release 12.1.0.2.0 - 64bit

Production

With the Partitioning, OLAP, Advanced Analytics and Real Application  
Testing options

```
SQL> set pagesize 200
```

```
SQL> SELECT * FROM V$LOG;
```

GROUP#	THREAD#	SEQUENCE#	BYTES	BLOCKSIZE	MEMBERS	ARC
1	1	1612	52428800	512	1	NO
CURRENT		31957373	12-APR-18	2.8147E+14		
2	1	1610	52428800	512	1	YES
INACTIVE		31924039	12-APR-18	31937897	12-APR-18	
3	1	1611	52428800	512	1	YES
INACTIVE		31937897	12-APR-18	31957373	12-APR-18	

← We will create a table for Tom, add more rows, and then by error will delete some of these rows, so that we would need to FLASHBACK (REVERT) this table to time in the past

```
SQL> CREATE TABLE tom.dept AS SELECT * FROM scott.dept;
```

Table created.

```
SQL> SELECT * FROM tom.dept;
```

DEPTNO	DNAME	LOC
10	ACCOUNTING	NEW YORK
20	RESEARCH	DALLAS
30	SALES	CHICAGO
40	OPERATIONS	BOSTON

```
SQL> INSERT INTO tom.dept VALUES (71,'HR','TORONTO');
```

```
1 row created.
```

```
SQL> INSERT INTO tom.dept VALUES (81,'TRAINING','OTTAWA');
```

```
1 row created.
```

```
SQL> INSERT INTO tom.dept VALUES (91,'IT','BRAMPTON');
```

```
1 row created.
```

```
SQL> COMMIT;
```

```
Commit complete.
```

```
SQL> host date
```

```
Thu Apr 12 15:28:54 EDT 2018
```

```
SQL> select current_scn FROM V$DATABASE;
```

```
CURRENT_SCN
```

```
-----
```

← we can always get the CURRENT SCN

```
31964603
```

```
SQL> REM WAIT A MINUTE OR TWO
```

```
SQL> DELETE FROM tom.dept WHERE deptno > 50;
```

```
3 rows deleted.
```

```
SQL> commit;
```

```
Commit complete.
```

```
SQL> SELECT * FROM tom.dept;
```

DEPTNO	DNAME	LOC
10	ACCOUNTING	NEW YORK
20	RESEARCH	DALLAS
30	SALES	CHICAGO
40	OPERATIONS	BOSTON

```
SQL> host date
```

```
Thu Apr 12 15:31:22 EDT 2018
```

```
SQL> select current_scn FROM V$DATABASE;
```

```
CURRENT_SCN
```

```
-----
```

```
31965591
```

← In order to see what happened with certain columns of certain table in the specified time range, we should use **VERSIONS BETWEEN TIMESTAMP** syntax. Then we can see the exact time and SCN when the item changed the value and the operation (I,U,D) that caused it

```
SQL> SELECT versions_xid, versions_starttime, versions_startscn,
           versions_operation, deptno, dname
FROM tom.dept
VERSIONS BETWEEN TIMESTAMP MINVALUE AND MAXVALUE
WHERE deptno > 50
ORDER BY 2, 5;
```

```
VERSIONS_XID
-----
VERSIONS_STARTTIME
-----
VERSIONS_STARTSCN V      DEPTNO DNAME
-----
0C001200AE130000
12-APR-18 03.28.35 PM
      31964577 I          71 HR

0C001200AE130000
12-APR-18 03.28.35 PM
      31964577 I          81 TRAINING

0C001200AE130000
12-APR-18 03.28.35 PM
      31964577 I          91 IT

07001C002F770000
12-APR-18 03.31.05 PM
      31965572 D          71 HR

07001C002F770000
12-APR-18 03.31.05 PM
      31965572 D          81 TRAINING

07001C002F770000
12-APR-18 03.31.05 PM
      31965572 D          91 IT

6 rows selected.
```

← In order to **REVERT** our Table, we need to enable row movement for it

```
SQL> ALTER TABLE tom.dept ENABLE ROW MOVEMENT;
```

Table altered.

## METHOD 1 – FLASHBACK TO TIMESTAMP

← Since the WRONG operation (delete of 3 departments) happened around 3:31pm, we will revert OUR TABLE to just before that time – 3:30 pm

```
SQL> FLASHBACK TABLE tom.dept TO TIMESTAMP  
      TO_TIMESTAMP('2018-04-12 15:30','YYYY-MM-DD HH24:MI');
```

Flashback complete.

```
SQL> SELECT * FROM tom.dept;
```

DEPTNO	DNAME	LOC
10	ACCOUNTING	NEW YORK
20	RESEARCH	DALLAS
30	SALES	CHICAGO
40	OPERATIONS	BOSTON
81	TRAINING	OTTAWA
91	IT	BRAMPTON
71	HR	TORONTO

7 rows selected.

← Great, we have our 3 departments back

## METHOD 2 – FLASHBACK TO SCN

```
SQL> FLASHBACK TABLE tom.dept TO SCN 31965591;
```

Flashback complete.

```
SQL> SELECT * FROM tom.dept;
```

DEPTNO	DNAME	LOC
10	ACCOUNTING	NEW YORK
20	RESEARCH	DALLAS
30	SALES	CHICAGO
40	OPERATIONS	BOSTON

← Oops, that was wrong SCN, but we will repeat the process with an earlier one

```
SQL> FLASHBACK TABLE tom.dept TO SCN 31964603;
```

Flashback complete.

```
SQL> select * from tom.dept;
```

DEPTNO	DNAME	LOC
10	ACCOUNTING	NEW YORK
20	RESEARCH	DALLAS
30	SALES	CHICAGO
40	OPERATIONS	BOSTON
81	TRAINING	OTTAWA
91	IT	BRAMPTON
71	HR	TORONTO

7 rows selected.

← Great, we have our 3 departments back