Tuning plan for Oracle Database System

# Quick check for database

## Read alert log (db – asm – cluster )

##Log DB

/u01/app/oracle/diag/rdbms/sgn/SGN1/trace/alert\_SGN1.log'

##Log DB

/u01/app/grid/diag/asm/+asm/+ASM1/trace/alert\_+ASM1.log'

##Log CRS

/u01/app/grid/diag/crs/exax7-01-adm/crs/trace/alert.log'

## I/O - RAM – CPU (server)

Using monitor tool (em13c, am …. )

##CPU

[oracle@exax7-01-adm ~]$ top

##Memory

[oracle@exax7-01-adm ~]$ free -m

##OSwatcher + ExaWatcher

[oracle@exax7-01-adm ~]$ cd /opt/oracle.ExaWatcher/archive

Get AWR ( each node)

Using EM13c

Get ASH ( each node)

Get 360 edb SQL

Check Overview for database

Database Response Time

**How to check**

**Test results**

**Comment**

Connection Balance

**How to check**

**Test results**

**Comment**

Average Active Session

**How to check**

**Test results**

**Comment**

CPU Utilization

**How to check**

**Test results**

**Comment**

Disk IO Activity

**How to check**

**Test results**

**Comment**

Logical IO

**How to check**

**Test results**

**Comment**

Transactions Rate and User Calls

**How to check**

**Test results**

**Comment**

Oracle database Memory check

Memory summary

**How to check**

**Test results**

**Comment**

PGA Memory Statistics

**How to check**

**Test results**

**Comment**

Redo Transaction Activity

**How to check**

**Test results**

**Comment**

DBA Maintain job

Gather job

Check Gathering Statistics Job

Check:

SQL> SELECT CLIENT\_NAME,STATUS FROM DBA\_AUTOTASK\_CLIENT;

SQL> SELECT CLIENT\_NAME,STATUS FROM DBA\_AUTOTASK\_TASK;

SQL> SELECT \* FROM dba\_autotask\_client\_history;

SQL> select \* from DBA\_SCHEDULER\_WINDOWS;

SQL> select \* from DBA\_AUTOTASK\_JOB\_HISTORY;

SQL> select client\_name,status from Dba\_Autotask\_Client;

CLIENT\_NAME STATUS

---------------------------------------------------------------- --------

auto optimizer stats collection ENABLED

auto space advisor ENABLED

sql tuning advisor ENABLED

SQL> select client\_name,status from DBA\_AUTOTASK\_TASK;

no rows selected

Fix:

SQL> @?/rdbms/admin/catmwin.sql

exec dbms\_scheduler.set\_attribute('MONDAY\_WINDOW','DURATION','+000 04:00:00');  
exec dbms\_scheduler.set\_attribute('TUESDAY\_WINDOW','DURATION','+000 04:00:00');  
exec dbms\_scheduler.set\_attribute('WEDNESDAY\_WINDOW','DURATION','+000 04:00:00');  
exec dbms\_scheduler.set\_attribute('THURSDAY\_WINDOW','DURATION','+000 04:00:00');  
exec dbms\_scheduler.set\_attribute('FRIDAY\_WINDOW','DURATION','+000 04:00:00');  
exec dbms\_scheduler.set\_attribute('SATURDAY\_WINDOW','DURATION','+000 20:00:00');  
exec dbms\_scheduler.set\_attribute('SUNDAY\_WINDOW','DURATION','+000 20:00:00');

Gather manual auto sample database

Gather manual full database

Gather manual full schema

Gather manual schema tables

House keeping job

DBA system tuning job

HugePages Configuration optimization

Move frequently data to good disk partitions

Change basic lob to secure file lob

Exadata Cell nodes FlashCaches mode ( only for exadata)

DBA application tuning job

Invalid Objects

Disable constraint

**Purpose**: Constraints are used for data integrity and consistency. Disabled constraints can lead to inconsistent data.

**Action:** Enable validate or drop these constraints.

Optimize data transfer through DB Links

**Purpose: Check the effectiveness of DB Links**

**Action: ???**

Large segments

**Cause**: These segments contribute most to database size. Large table is slow to access if full scan is required.

**Recommendation**: Archive old data or re-organize these segment to optimize size/DML access on tables/indexes.

Team DBA thống nhất quy tắc tạo partition mới cho DWH :

Những bảng lớn (dung lượng >10G) nên đánh partition (nếu được)

Chỉ đánh partition theo range hoặc list ( **không nên** đánh theo hash)

Chỉ đánh partition theo 1 ngày  hoặc 1 tháng hoặc 1 năm ( **không** đánh theo 3 ngày, 7 ngày… )

**Example (DWH)**

|  |  |  |  |
| --- | --- | --- | --- |
| **OWNER** | **SEGMENT\_NAME** | **SEGMENT\_TYPE** | **GB** |
| **TCB\_DWH\_VAS** | R312\_TAB11F | TABLE PARTITION | 660 |
| **EDW\_SOR** | AR\_TVR\_SMY | TABLE PARTITION | 510 |
| **EDW\_DMT** | AR\_BHVR\_ANL\_FCT | TABLE PARTITION | 476 |
| **T24REP** | F\_PROTOCOL | TABLE | 388 |
| **T24REP** | FBNK\_STMT\_ENTRY | TABLE PARTITION | 377 |
| **DWH** | RE\_CRF\_SBVGL | TABLE PARTITION | 345 |
| **DWH** | PD\_BALANCES | TABLE PARTITION | 303 |
| **DWH** | ACCOUNT | TABLE PARTITION | 281 |
| **DWH** | ESB\_MESSAGES\_OSBV1\_QUERY | TABLE PARTITION | 263 |
| **TCB\_DWH\_VAS** | R310\_TAB\_2 | TABLE | 260 |
| **EDW\_DMT** | AR\_BHVR\_ANL\_FCT\_TXN | TABLE PARTITION | 249 |
| **EDW\_DMT** | CST\_INSIGHT\_ANL\_FCT | TABLE PARTITION | 248 |
| **EDW\_SOR** | AU\_SMY | TABLE PARTITION | 236 |
| **EDW\_SOR** | PST\_ENTR | TABLE PARTITION | 212 |
| **DWH** | LMM\_ACCOUNT\_BALANCES | TABLE PARTITION | 196 |

Index

Rebuild unusable index

Rebuild all ununsable index

Tables with more than 5 Indexes

Index with low distinct keys

**Cause**: Following index has low distinct key which may be ineffective for index scan.

**Recommendation**: Consider invisible & drop indexes with low distinct keys.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **OWNER** | **TABLE\_NAME** | **INDEX\_NAME** | **NUM**  **ROWS** | **DISTINCT**  **KEYS** | **LAST\_ANALYZED** |
| **EDW\_DMT** | AR\_DIM | IDX\_AR\_DIM\_END\_DT | 8,526,813 | 5 | 08/18/2014 08:36:01 |
| **DWH\_QUERY** | TCB\_LOY\_ACCOU  NT\_KBL\_1 | TCB\_LOY\_ACCOUNT\_  KBL\_1\_IND\_1 | 4,573,617 | 2 | 01/20/2014 10:21:04 |
| **EDW\_DMT** | CST\_DIM | IDX\_CST\_DIM\_ID\_END  \_DT | 3,536,487 | 2 | 07/20/2014 18:40:20 |
| **TCB\_DWH\_VAS** | MCO\_TCB\_NEW\_  DAILY | IDX\_MCO\_NEW\_DAILY  \_YM | 3,272,688 | 1 | 01/15/2014 18:40:42 |
| **DWH\_QUERY** | TBL\_MCO\_2014072  4\_CHITIET | IDX\_MCO\_20140724\_CT  \_YNGAYBC | 3,135,118 | 1 | 07/28/2014 16:15:22 |
| **EDW\_SOR** | ACS\_FCY\_AR | IDX\_ACS\_FCY\_AR\_ID | 2,983,640 | 4 | 08/01/2014 23:58:05 |
| **KRM\_ETL** | SBV\_CONSOL\_KE  Y | SBV\_CONSOL\_KEY\_PR  OC\_DATE\_IDX | 2,890,211 | 1 | 01/02/2013 00:41:18 |
| **KRM\_RPT** | KRM\_SYN\_PORT\_  ALM | PORT\_ALM\_U\_DATA\_  DATE | 2,780,365 | 1 | 01/16/2014 17:17:52 |
| **KRM\_RPT** | KRM\_SYN\_PORT\_  ALM\_0409 | PORT\_ALM\_U\_D\_DATE  \_0409 | 2,776,433 | 1 | 01/16/2014 17:17:55 |
| **TCB\_DWH\_CEB2** | ACCOUNTING\_TR  ANSACTION | IDX\_ACCOUNTING\_ST  ATUS | 2,182,286 | 4 | 01/15/2014 17:16:43 |
| **KRM\_RPT** | KRM\_SYN\_R01\_AL  M | TEMP\_R01\_UDATE | 1,250,862 | 1 | 09/16/2013 22:37:55 |
| **KRM\_APP** | PORT\_TODAY\_TM  P1 | PT\_TMP1\_A01\_IDX | 295,779 | 2 | 09/20/2013 23:08:37 |

Table owner & index owner is different

**Cause**: Following indexes have owner other than table owner:

**Recommendation**: Table owner & index owner should be the same. Recreate indexes with correct owner.

|  |  |  |  |
| --- | --- | --- | --- |
| **TABLE OWNER** | **TABLE NAME** | **INDEX OWNER** | **INDEX NAME** |
| **DWH\_BK** | PD\_20160719 | T24REP | IDX\_PD\_20160719 |
| **DWH\_QUERY** | CDR\_DT\_DIM | DWH | IDX\_CDR\_DI |
| **DWH\_QUERY** | TMP\_STMT\_SESS | T24REP | IDX\_TMP\_STMT\_SESS |
| **EDW\_STG** | T\_DMT\_PD\_AR\_BSN\_MTH | DWH | IDX\_T\_DMT\_PD\_AR\_MTH\_AR\_ID |
| **KRM\_APP** | KRM\_SYN\_CAR\_BDS | KRM\_ETL | CAR\_BDS\_SO\_HDONG\_IDX |
| **KRM\_APP** | PORT\_SOLVENCY | KRM\_ETL | PORT\_SOL\_U\_SECTOR\_IDX |
| **KRM\_APP** | PORT\_SOLVENCY | KRM\_ETL | SOL\_A\_LEAD\_SYN\_IDX |
| **T24REP** | TBL\_HBK\_ACCOUNT\_REGISTER | TCB\_LIVE | IDX\_HBK\_ACCOUNT\_REGIS\_ACC\_MOBI |
| **TCB\_DWH\_VAS** | MCO\_TCB\_MM\_DETAILS | DWH | MCO\_TCB\_MM\_DETAILS\_ALL |

Redundant index (optional)

**Cause**: These indexes has other superset index which means Oracle can use the superset index for the query. More index will make DML on a table slower.

**Recommendation**: Drop redundant index to reduce overhead on DML & release storage space.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **#** | **TABLE**  **OWNER** | **TABLE NAME** | **REDUNDANT INDEX** | **SUPERSET INDEX** |
| **1** | DWH | FUNDS\_TRANSFER | IDX\_FT\_PROCESSING\_DATE  (PROCESSING\_DATE) | IDX\_FT\_PROCESSDATE\_CREDITACC  (PROCESSING\_DATE:CREDIT\_ACCT\_NO) |
|  |  |  |  |  |
| **3** | DWH2013 | CATEG\_ENTRY | CATEG\_BOOKINGDATE  (BOOKING\_DATE) | IDX\_FACT\_CATEG\_ENTRY  (BOOKING\_DATE:CUSTOMER\_NO) |
| **4** | DWH2013 | FUNDS\_TRANSFER | IDX\_FT\_PROCESSING\_DATE  (PROCESSING\_DATE) | IDX\_FT\_PROCESSDATE\_CREDITACC  (PROCESSING\_DATE:CREDIT\_ACCT\_NO) |
| **5** | DWH2013 | FUNDS\_TRANS  FER | IDX\_FT\_PROCESSING\_DATE  (PROCESSING\_DATE) | IDX\_FT\_PROCESSDATE\_DEBITACC  (PROCESSING\_DATE:DEBIT\_ACCT\_NO) |
| **6** | DWH2013 | LMM\_ACCOUNT\_BALANCES | LMM\_ACCOUNT\_BALANCES\_CONT  (BANK\_ID:CONTRACT\_NUMBER) | PK\_LMM  (BANK\_ID:CONTRACT\_NUMBER:PROCESS\_DATE) |
| **7** | DWH2013 | RE\_CONSOL\_SP  EC\_ENTRY | IDX\_RCSE\_BOOKING\_DATE  (BOOKING\_DATE) | IDX\_RCSE\_BKDATE\_CUS  (BOOKING\_DATE:CUSTOMER\_ID) |
| **8** | DWH2013 | STMT\_ENTRY | STMT\_ENTRY\_BOOKING\_DATE  (BOOKING\_DATE) | IDX\_STMT\_ENTRY\_BD\_ACC  (BOOKING\_DATE:ACCOUNT\_NUMBER) |
| **9** | DWH2013 | STMT\_ENTRY | STMT\_ENTRY\_BOOKING\_DATE  (BOOKING\_DATE) | IDX\_STMT\_ENTRY\_BD\_CUS  (BOOKING\_DATE:CUSTOMER\_ID) |
| **10** | DWH2014 | CATEG\_ENTRY | CATEG\_BOOKINGDATE  (BOOKING\_DATE) | IDX\_FACT\_CATEG\_ENTRY  (BOOKING\_DATE:CUSTOMER\_NO) |

Table partitioned but index non-partitioned

**Cause**: Tables below are partitioned but some of its index is not partition. This is ineffective as index cannot utilize benefit of smaller tree in case index is also partition. Index tree is bigger & when there is maintaining operation, index will be invalid if UPDATE GLOBAL INDEX option is not used.

**Recommendation**: Recreate index with LOCAL option.

Tuning Top SQL

**Cause**: Any effort of improving performance must involve reviewing the actual SQL code that is submitted in transactions to determine if it can be optimized. The largest performance improvements usually come from tuning the actual code, not from adjusting database parameters. It is important to periodically extract the most resource intensive SQL and examine it for improvement opportunities.

Following SQL statements should be tuned to gain maximum benefits.

SQL ID bur7zzjmnth3j – Module ODI:1382949750338/7/8487007

INSERT INTO DWH.ACCOUNT\_IPL

(BANK\_ID, ACCOUNT\_NUMBER, CUSTOMER, PRODCAT, ACCOUNT\_TITLE\_1, ACCOUNT\_TITLE\_2,

SHORT\_TITLE, MNEMONIC, POSITION\_TYPE, CURRENCY, CURRENCY\_MARKET, LIMIT\_REF,

ACCOUNT\_OFFICER, OTHER\_OFFICER, POSTING\_RESTRICT, RECONCILE\_ACCT,

INTEREST\_LIQU\_ACCT, INTEREST\_COMP\_ACCT, INT\_NO\_BOOKING, REFERAL\_CODE,

WAIVE\_LEDGER\_FEE, LOCAL\_REF, CONDITION\_GROUP, INACTIV\_MARKER,

OPEN\_ACTUAL\_BAL, OPEN\_CLEARED\_BAL, ONLINE\_ACTUAL\_BAL, ONLINE\_CLEARED\_BAL,

WORKING\_BALANCE, DATE\_LAST\_CR\_CUST, AMNT\_LAST\_CR\_CUST, TRAN\_LAST\_CR\_CUST,

DATE\_LAST\_CR\_AUTO, AMNT\_LAST\_CR\_AUTO, TRAN\_LAST\_CR\_AUTO, DATE\_LAST\_CR\_BANK,

AMNT\_LAST\_CR\_BANK, TRAN\_LAST\_CR\_BANK, DATE\_LAST\_DR\_CUST, AMNT\_LAST\_DR\_CUST,

TRAN\_LAST\_DR\_CUST, DATE\_LAST\_DR\_AUTO, AMNT\_LAST\_DR\_AUTO, TRAN\_LAST\_DR\_AUTO,

DATE\_LAST\_DR\_BANK, AMNT\_LAST\_DR\_BANK, TRAN\_LAST\_DR\_BANK, CAP\_DATE\_CHARGE,

CAP\_DATE\_CR\_INT, CAP\_DATE\_C2\_INT, CAP\_DATE\_DR\_INT, CAP\_DATE\_D2\_INT,

CAP\_BACK\_VALUE, ACCR\_CHG\_CATEG, ACCR\_CHG\_TRANS, ACCR\_CHG\_AMOUNT,

ACCR\_CHG\_SUSP, ACCR\_CR\_CATEG, ACCR\_CR\_TRANS, ACCR\_CR\_AMOUNT, ACCR\_CR\_SUSP,

ACCR\_CR2\_CATEG, ACCR\_CR2\_TRANS, ACCR\_CR2\_AMOUNT, ACCR\_CR2\_SUSP,

ACCR\_DR\_CATEG, ACCR\_DR\_TRANS, ACCR\_DR\_AMOUNT, ACCR\_DR\_SUSP, ACCR\_DR2\_CATEG,

ACCR\_DR2\_TRANS, ACCR\_DR2\_AMOUNT, ACCR\_DR2\_SUSP, CONSOL\_KEY, INT\_LIQU\_TYPE,

INT\_LIQU\_ACCT, INT\_LIQ\_CCY, PASSBOOK, START\_YEAR\_BAL, OPENING\_DATE,

VALUE\_DATE, CREDIT\_MOVEMENT, DEBIT\_MOVEMENT, VALUE\_DATED\_BAL,

CONTINGENT\_BAL\_CR, CONTINGENT\_BAL\_DR, OPEN\_CATEGORY, OPEN\_VAL\_DATED\_BAL,

ACCT\_CREDIT\_INT, ACCT\_DEBIT\_INT, LINK\_TO\_LIMIT, CLOSURE\_DATE,

LOCKED\_WITH\_LIMIT, CHARGE\_ACCOUNT, CHARGE\_CCY, CHARGE\_MKT, INTEREST\_CCY,

INTEREST\_MKT, CON\_CHARGE\_ACCR, CON\_INTEREST\_ACCR, ALT\_ACCT\_TYPE,

ALT\_ACCT\_ID, PREMIUM\_TYPE, CAP\_DATE\_PRM, PREMIUM\_FREQ, APR, JOINT\_HOLDER,

RELATION\_CODE, JOINT\_NOTES, ALLOW\_NETTING, LEDG\_RECO\_WITH, STMT\_RECO\_WITH,

OUR\_EXT\_ACCT\_NO, RECO\_TOLERANCE, PENDING\_ID, TOTAL\_PENDING,

STOCK\_CONTROL\_TYPE, SERIAL\_NO\_FORMAT, AUTO\_PAY\_ACCT, ORIG\_CCY\_PAYMENT,

AUTO\_REC\_CCY, ORIGINAL\_ACCT, FROM\_DATE, LOCKED\_AMOUNT, DISPO\_OFFICER,

DISPO\_EXEMPT, TAX\_SUSPEND, TAX\_AT\_SETTLE, ICA\_MAIN\_ACCOUNT,

ICA\_DISTRIB\_RATIO, ICA\_MAIN\_ACCT\_IND, ICA\_DISTRIB\_TYPE, ICA\_POST\_INTEREST,

ICA\_MAIN\_RATIO, ICA\_NEW\_MAIN\_ACC, ICA\_START\_DATE, ICA\_ADD\_REMOVE,

ICA\_BACK\_VALUE, ICA\_MAIN\_ACCT, ICA\_MAIN\_DATE, LIQUIDATION\_MODE,

OVERDUE\_STATUS, HVT\_FLAG, SINGLE\_LIMIT, CONTINGENT\_INT, ALL\_IN\_ONE\_PRODUCT,

ER\_VALUE\_DATE, ER\_BALANCE, EP\_BALANCE, SB\_GROUP\_ID, OPEN\_AVAILABLE\_BAL,

AVAILABLE\_DATE, AV\_AUTH\_DB\_MVMT, AV\_NAU\_DB\_MVMT, AV\_AUTH\_CR\_MVMT,

AV\_NAU\_CR\_MVMT, AVAILABLE\_BAL, FORWARD\_MVMTS, CREDIT\_CHECK,

AVAILABLE\_BAL\_UPD, CONSOLIDATE\_ENT, MAX\_SUB\_ACCOUNT, MASTER\_ACCOUNT,

LOCK\_INC\_THIS\_MVMT, CLOSED\_ONLINE, NEXT\_AF\_DATE, NEXT\_ACCT\_CAP,

NEXT\_EXP\_DATE, DATE\_LAST\_UPDATE, NEXT\_STMT\_DATE, EXPOSURE\_DATES,

PORTFOLIO\_NO, SHADOW\_ACCOUNT, FWD\_ENTRY\_HOLD, FIRST\_AF\_DATE,

CASH\_POOL\_GROUP, OPEN\_ASSET\_TYPE, LAST\_COM\_CHG\_DATE, IC\_CHARGE\_ID,

IC\_NEXT\_CAP\_DATE, IC\_PRODUCT, IC\_LST\_PROD\_CAP, ARRANGEMENT\_ID,

ACC\_DEB\_LIMIT, MANDATE\_APPL, MANDATE\_REG, MANDATE\_RECORD, DR\_ADJ\_AMOUNT,

DR2\_ADJ\_AMOUNT, CR\_ADJ\_AMOUNT, CR2\_ADJ\_AMOUNT, EVENT, FIELD, OPERAND,

VALUE, MV\_ALERT\_RES6, MV\_ALERT\_RES5, MV\_ALERT\_RES4, MV\_ALERT\_RES3,

MV\_ALERT\_RES2, MV\_ALERT\_RES1, REQUEST\_ID, OVERRIDE, RECORD\_STATUS, CURR\_NO,

INPUTTER, DATE\_TIME, AUTHORISER, CO\_CODE, DEPT\_CODE, AUDITOR\_CODE, AUDIT\_DATE\_TIME, PROCESS\_DATE)

VALUES

(:B1, :B2, :B3, :B4, :B5, :B6, :B7, :B8, :B9, :B10, :B11, :B12, :B13, :B14, :B15,

:B16, :B17, :B18, :B19, :B20, :B21, :B22, :B23, :B24, :B25, :B26, :B27,

:B28, :B29, :B30, :B31, :B32, :B33, :B34, :B35, :B36, :B37, :B38, :B39,

:B40, :B41, :B42, :B43, :B44, :B45, :B46, :B47, :B48, :B49, :B50, :B51,

:B52, :B53, :B54, :B55, :B56, :B57, :B58, :B59, :B60, :B61, :B62, :B63,

:B64, :B65, :B66, :B67, :B68, :B69, :B70, :B71, :B72, :B73, :B74, :B75,

:B76, :B77, :B78, :B79, :B80, :B81, :B82, :B83, :B84, :B85, :B86, :B87,

:B88, :B89, :B90, :B91, :B92, :B93, :B94, :B95, :B96, :B97, :B98, :B99,

:B100, :B101, :B102, :B103, :B104, :B105, :B106, :B107, :B108, :B109,

:B110, :B111, :B112, :B113, :B114, :B115, :B116, :B117, :B118, :B119,

:B120, :B121, :B122, :B123, :B124, :B125, :B126, :B127, :B128, :B129,

:B130, :B131, :B132, :B133, :B134, :B135, :B136, :B137, :B138, :B139,

:B140, :B141, :B142, :B143, :B144, :B145, :B146, :B147, :B148, :B149,

:B150, :B151, :B152, :B153, :B154, :B155, :B156, :B157, :B158, :B159,

:B160, :B161, :B162, :B163, :B164, :B165, :B166, :B167, :B168, :B169,

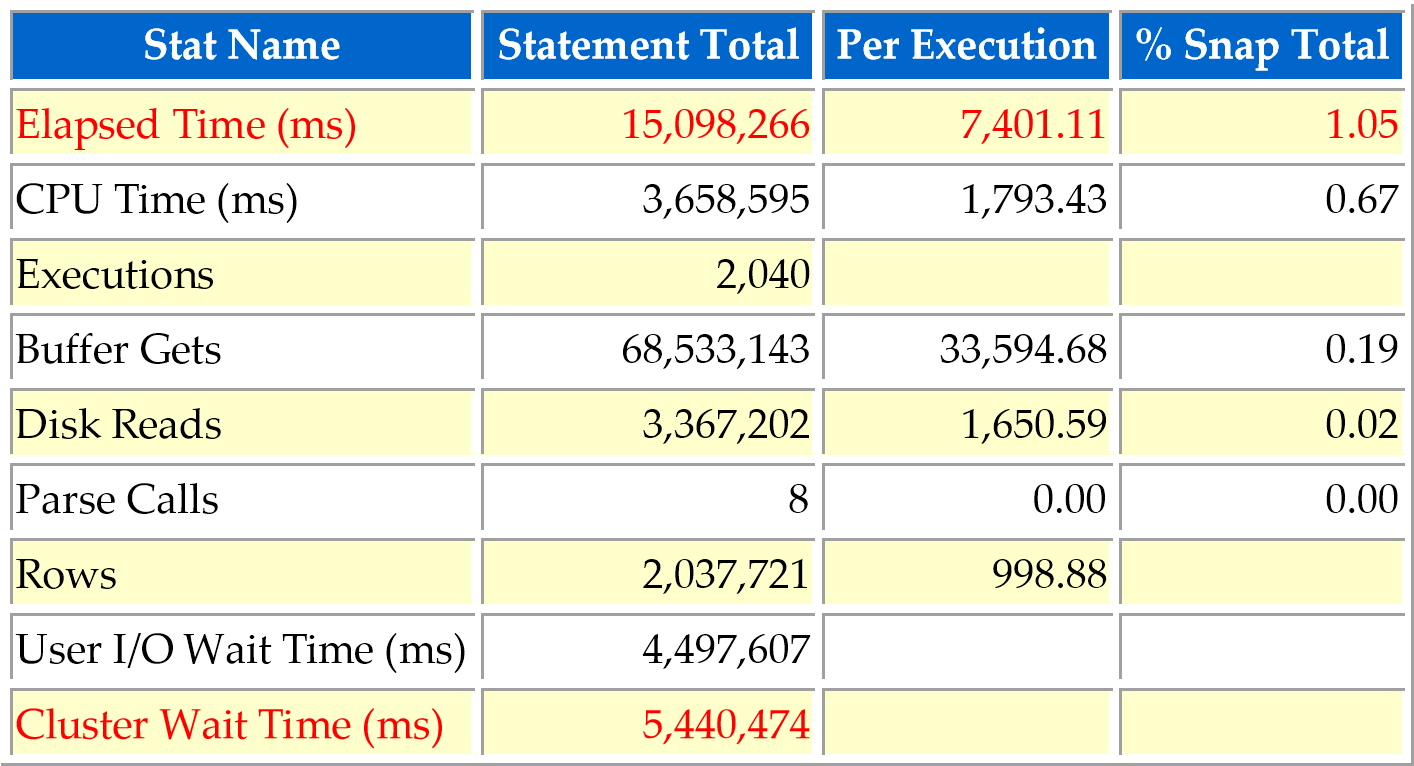
:B170, :B171, :B172, :B173, :B174, :B175, :B176, :B177, :B178, :B179,

:B180, :B181, :B182, :B183, :B184, :B185, :B186, :B187, :B188, :B189,

:B190, :B191, :B192, :B193, :B194, :B195, :B196, :B197, :B198, :B199,

:B200, :B201, :B202, :B203, :B204, :B205, :B206, :B207, :B208, :B209, :B210, :B211, :B212, :B213)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| EXECUTIONS | ELAPSED  TIME PER  EXEC (S) | %TOTAL | SQL ID | SQL MODULE | SQL TEXT |
| 2,040 | 7.40 | 5.49 | bur7zzjmnth3j | ODI:1382949750338/7/8487007 | INSERT INTO DWH.ACCOUNT\_IPL( B... |
| 0 |  | 3.93 | 0j26p05h38btv | ODI:1382949750338/7/7458007 | insert /\*+ append \*/ into DWH\_... |
| 0 |  | 3.35 | bfznkpy3atxm1 | ODI:1382949750338/7/7346007 | SELECT /\*+DRIVING\_SITE(v24)\*/ ... |
| 0 |  | 3.25 | 0k66jnv1ymupu | ODI:1382949750338/7/2155002 | update DWH.ECM\_MONEYTRANSFER T... |
| 1 | 8,695.30 | 3.16 | fty8ttr7ahz7p | ODI:1382949750338/7/2161002 | update DWH.ECM\_SWIFTTRANSACTIO... |



Cluster wait takes large portion of wait time. This is because different session/node insert to the same block which causes waits to modify same block.

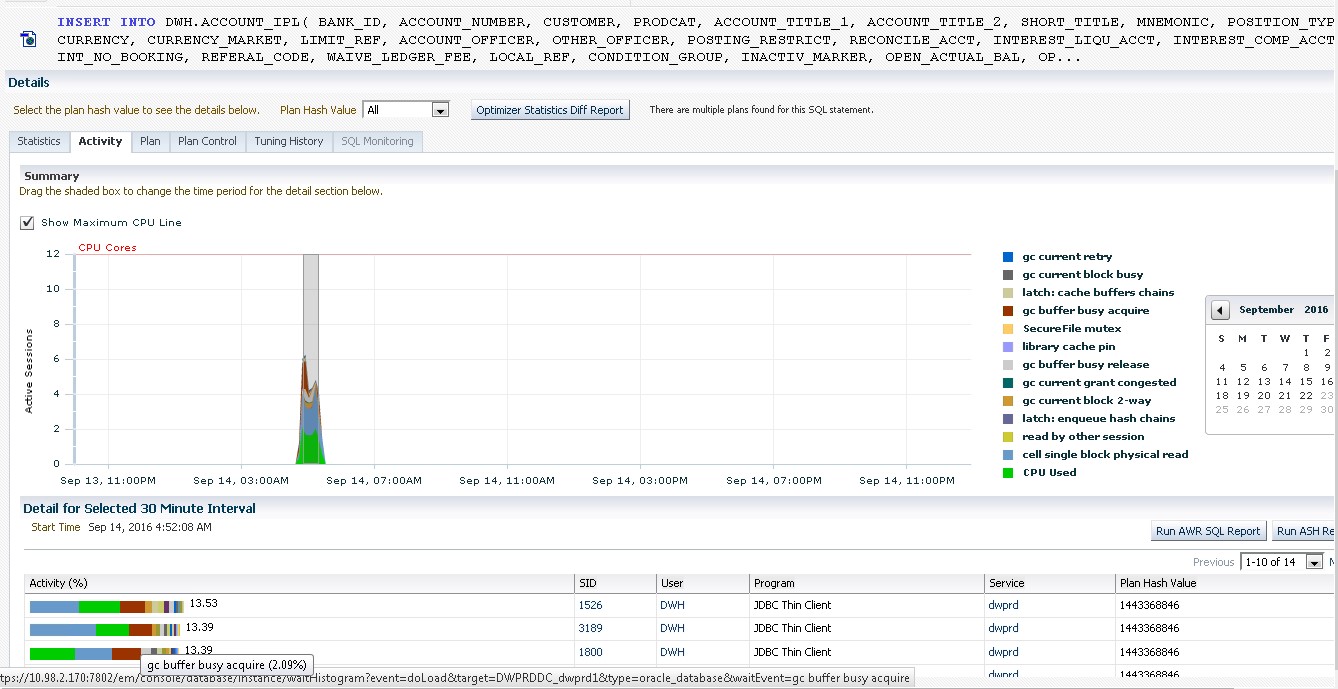


Table DWH.ACCOUNT\_IPL: size 20.8 GB, 4,105,838 rows, non-partition.

Table also use COMPRESS FOR QUERY HIGH which affects DML performance. Compression is useful for table/partition with small changes only.

**Recommendation**: Partition table by HASH on column that can divide table effectively. Do not use COMPRESS on table/partition with high DML activity.

SQL ID fty8ttr7ahz7p - Module ODI:1382949750338/7/2161002

UPDATE DWH.ECM\_SWIFTTRANSACTION T

SET T.CURRENT\_RECORD = 0, T.END\_DATE = TO\_DATE ('20160913', 'YYYYMMDD') WHERE ( (T.CASEID) IN (SELECT X.CASEID

FROM DWH\_STAGING.I$\_ECM\_SWIFTTRANSACTION X

WHERE X.IND\_UPDATE = 'U')

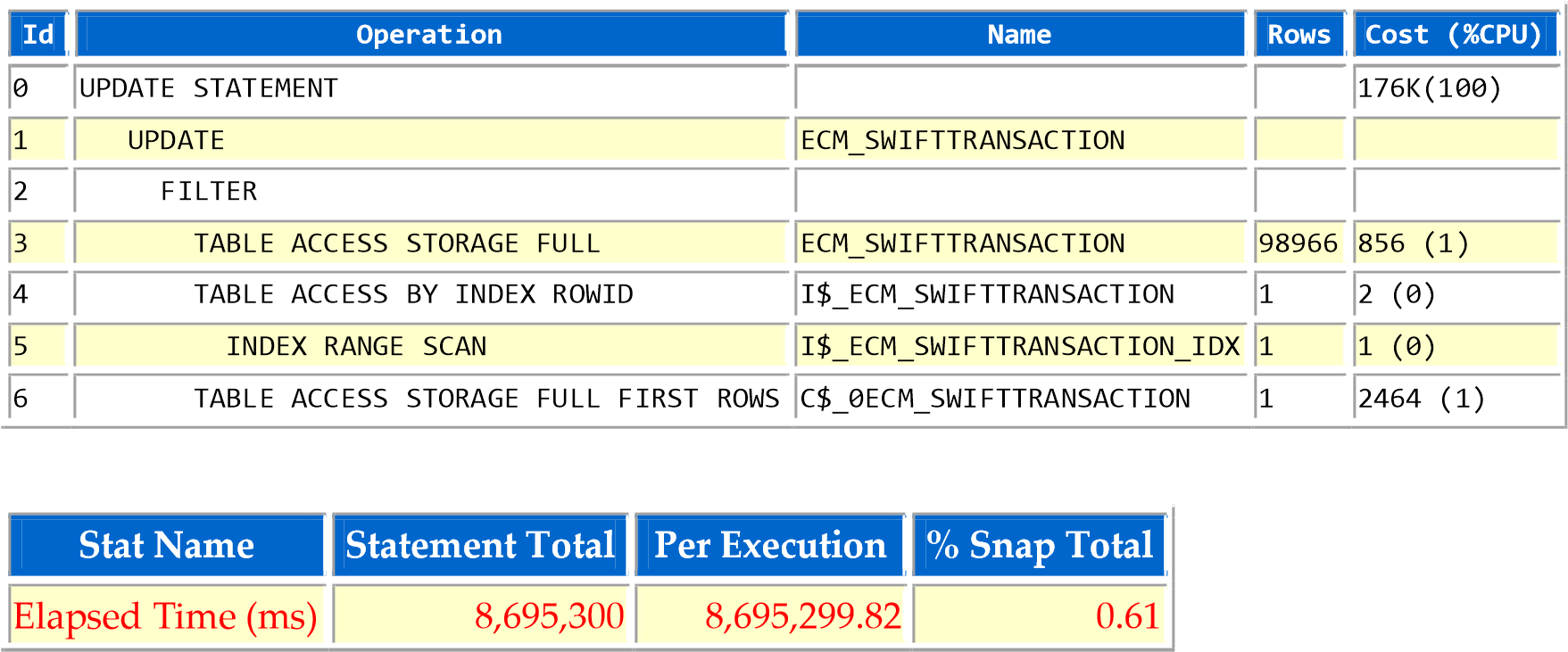
OR (T.CASEID) NOT IN (SELECT C1\_CASEID CASEID

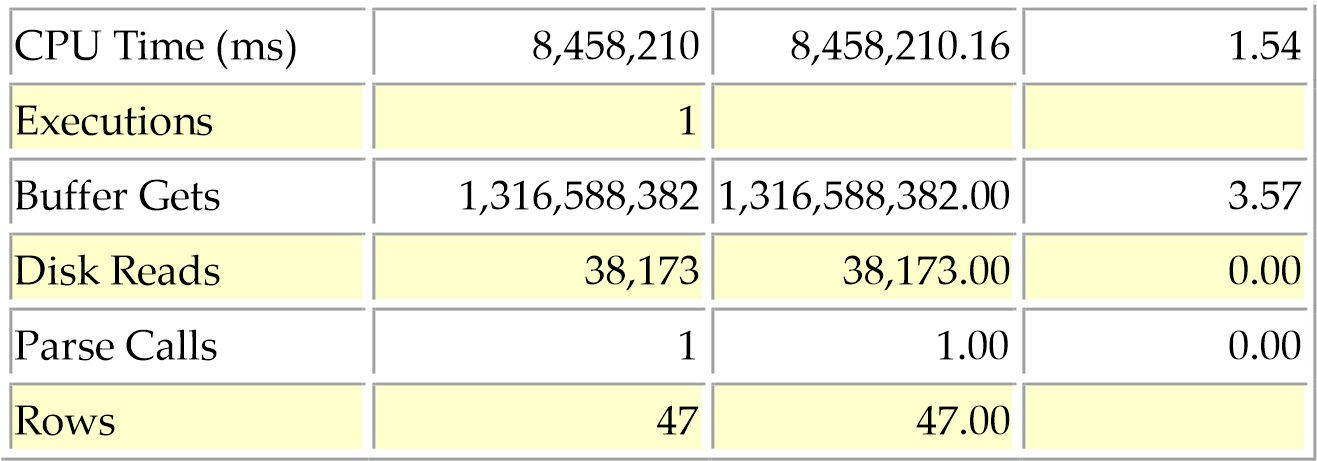
FROM DWH\_STAGING.C$\_0ECM\_SWIFTTRANSACTION

WHERE (1 = 1)))

AND T.CURRENT\_RECORD = 1

AND END\_DATE = TO\_DATE ('01-01-2400', 'mm-dd-yyyy')





Each execution takes 144 minutes, process 9.8 TB.

Table DWH.ECM\_SWIFTTRANSACTION size: 88MB, 100.169 rows, last analyze 2014/07/16, actual row count 303.626.

Table I$\_ECM\_SWIFTTRANSACTION is not found at data collection time.

**Recommendation**: Use hint to force FULL SCAN on I$\_ECM\_SWIFTTRANSACTION to reduce Buffer Gets.

SQL ID 3f2t30tn75u8f - Module ODI:1382949750338/7/3751007

INSERT INTO DWH\_STAGING.T\_QUANLYTHE

(IDSEQ, BANK\_ID, CARD\_KEY, CUSTOMER\_XL, ACCOUNT\_XL, NAME\_XL, LOAI\_THE\_XL,

LOAI\_YEU\_CAU, SO\_THE\_XL, NGUOI\_XU\_LY, NGAY\_UPDATE, NGAY\_XAC\_NHAN,

NGAY\_TRA\_LAI\_CN, NGAN\_HANG\_TRA, TEN\_NH\_TRA, DIA\_CHI\_ATM, NH\_QLY\_ATM,

LIMIT\_CU, LIMIT\_MOI, DESCRIPTION, COMPANY\_WRITE, NGAY\_YEU\_CAU\_XL,

SO\_DIEN\_THOAI, NGAY\_XU\_LY, GIO\_XU\_LY, TRANG\_THAI\_XL, ID\_INFO\_CARD,

CN\_XU\_LY, SO\_MAY\_ATM, LOAI\_HINH\_GD, AMOUNT\_GD, SO\_TIEN\_GD, REMARK,

NGAY\_GIAO\_DICH, BALANCE\_GD, SEQUENCE\_XULY, BUOC\_XU\_LY, SO\_TRACE,

TTHAI\_JOUNAL, KT\_XAC\_NHAN, DIEN\_GIAI, KE\_TOAN\_XN, VAN\_HANH\_XN,

KE\_TOAN\_HTRA, INPUT\_NAME, AUTH\_NAME, CURRENCY, SO\_LAN\_TRA\_SOAT,

KT\_CHU\_KY\_MAU, DIA\_CHI\_NHAN\_SK, EMAIL, ACCOUNT\_TT, DEBIT\_AMOUNT, FREE\_TXT,

NG\_NHAN\_KHOA\_THE, RESERVED\_12, RESERVED\_13, RESERVED\_14, RESERVED\_15,

RESERVED\_16, RESERVED\_17, RESERVED\_18, RESERVED\_19, RESERVED\_20,

TRANSACTION\_TYPE, TRANSACTION\_AMOUNT, RESERVED\_23, RESERVED\_24,

RESERVED\_25, OVERRIDE, STMT\_NOS, DELIVERY\_REF, RECORD\_STATUS, CURR\_NO,

INPUTTER, DATE\_TIME, AUTHORISER, CO\_CODE, DEPT\_CODE, AUDITOR\_CODE, AUDIT\_DATE\_TIME)

SELECT SRC.IDSEQ IDSEQ, SRC.BANK\_ID BANK\_ID, SRC.CARD\_KEY CARD\_KEY,

SRC.CUSTOMER\_XL CUSTOMER\_XL, SRC.ACCOUNT\_XL ACCOUNT\_XL, SRC.NAME\_XL NAME\_XL,

SRC.LOAI\_THE\_XL LOAI\_THE\_XL, SRC.LOAI\_YEU\_CAU LOAI\_YEU\_CAU,

SRC.SO\_THE\_XL SO\_THE\_XL, SRC.NGUOI\_XU\_LY NGUOI\_XU\_LY,

SRC.NGAY\_UPDATE NGAY\_UPDATE, SRC.NGAY\_XAC\_NHAN NGAY\_XAC\_NHAN,

SRC.NGAY\_TRA\_LAI\_CN NGAY\_TRA\_LAI\_CN, SRC.NGAN\_HANG\_TRA NGAN\_HANG\_TRA,

SRC.TEN\_NH\_TRA TEN\_NH\_TRA, SRC.DIA\_CHI\_ATM DIA\_CHI\_ATM,

SRC.NH\_QLY\_ATM NH\_QLY\_ATM, SRC.LIMIT\_CU LIMIT\_CU, SRC.LIMIT\_MOI LIMIT\_MOI,

SRC.DESCRIPTION DESCRIPTION, SRC.COMPANY\_WRITE COMPANY\_WRITE,

SRC.NGAY\_YEU\_CAU\_XL NGAY\_YEU\_CAU\_XL, SRC.SO\_DIEN\_THOAI SO\_DIEN\_THOAI,

SRC.NGAY\_XU\_LY NGAY\_XU\_LY, SRC.GIO\_XU\_LY GIO\_XU\_LY,

SRC.TRANG\_THAI\_XL TRANG\_THAI\_XL, SRC.ID\_INFO\_CARD ID\_INFO\_CARD,

SRC.CN\_XU\_LY CN\_XU\_LY, SRC.SO\_MAY\_ATM SO\_MAY\_ATM,

SRC.LOAI\_HINH\_GD LOAI\_HINH\_GD, SRC.AMOUNT\_GD AMOUNT\_GD,

SRC.SO\_TIEN\_GD SO\_TIEN\_GD, SRC.REMARK REMARK,

SRC.NGAY\_GIAO\_DICH NGAY\_GIAO\_DICH, SRC.BALANCE\_GD BALANCE\_GD,

SRC.SEQUENCE\_XULY SEQUENCE\_XULY, SRC.BUOC\_XU\_LY BUOC\_XU\_LY,

SRC.SO\_TRACE SO\_TRACE, SRC.TTHAI\_JOUNAL TTHAI\_JOUNAL,

SRC.KT\_XAC\_NHAN KT\_XAC\_NHAN, SRC.DIEN\_GIAI DIEN\_GIAI,

SRC.KE\_TOAN\_XN KE\_TOAN\_XN, SRC.VAN\_HANH\_XN VAN\_HANH\_XN,

SRC.KE\_TOAN\_HTRA KE\_TOAN\_HTRA, SRC.INPUT\_NAME INPUT\_NAME,

SRC.AUTH\_NAME AUTH\_NAME, SRC.CURRENCY CURRENCY,

SRC.SO\_LAN\_TRA\_SOAT SO\_LAN\_TRA\_SOAT, SRC.KT\_CHU\_KY\_MAU KT\_CHU\_KY\_MAU,

SRC.DIA\_CHI\_NHAN\_SK DIA\_CHI\_NHAN\_SK, SRC.EMAIL EMAIL,

SRC.ACCOUNT\_TT ACCOUNT\_TT, SRC.DEBIT\_AMOUNT DEBIT\_AMOUNT,

SRC.FREE\_TXT FREE\_TXT, SRC.NG\_NHAN\_KHOA\_THE NG\_NHAN\_KHOA\_THE,

SRC.RESERVED\_12 RESERVED\_12, SRC.RESERVED\_13 RESERVED\_13,

SRC.RESERVED\_14 RESERVED\_14, SRC.RESERVED\_15 RESERVED\_15,

SRC.RESERVED\_16 RESERVED\_16, SRC.RESERVED\_17 RESERVED\_17,

SRC.RESERVED\_18 RESERVED\_18, SRC.RESERVED\_19 RESERVED\_19,

SRC.RESERVED\_20 RESERVED\_20, SRC.TRANSACTION\_TYPE TRANSACTION\_TYPE,

SRC.TRANSACTION\_AMOUNT TRANSACTION\_AMOUNT, SRC.RESERVED\_23 RESERVED\_23,

SRC.RESERVED\_24 RESERVED\_24, SRC.RESERVED\_25 RESERVED\_25,

SRC.OVERRIDE OVERRIDE, SRC.STMT\_NOS STMT\_NOS, SRC.DELIVERY\_REF DELIVERY\_REF,

SRC.RECORD\_STATUS RECORD\_STATUS, SRC.CURR\_NO CURR\_NO, SRC.INPUTTER INPUTTER,

SRC.DATE\_TIME DATE\_TIME, SRC.AUTHORISER AUTHORISER, SRC.CO\_CODE CO\_CODE,

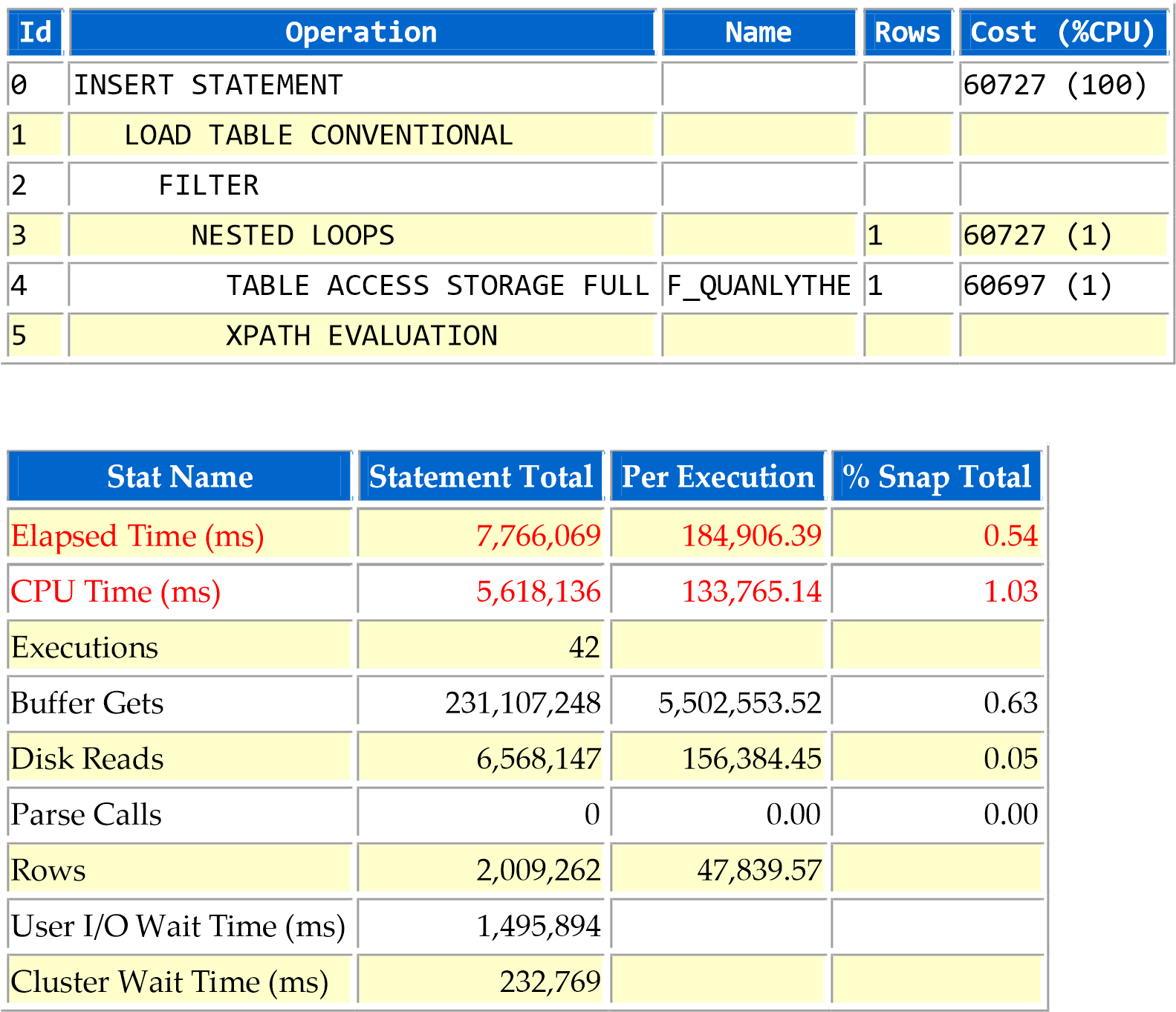
SRC.DEPT\_CODE DEPT\_CODE, SRC.AUDITOR\_CODE AUDITOR\_CODE,

SRC.AUDIT\_DATE\_TIME AUDIT\_DATE\_TIME

FROM DWH.V\_T24QUANLYTHE SRC

WHERE

IDSEQ BETWEEN :B2 AND :B1 LOG ERRORS REJECT LIMIT UNLIMITED



CPU takes 72% of execution time. This is mostly because XPATH EVALUATION step. To reduce CPU usage, we will limit rows to process by use index on IDSEQ column.

Table DWH\_BK.F\_QUANLYTHE: 2.23 GB, 3171879 rows, no statistics.

Create index on IDSEG:

CREATE UNIQUE INDEX DWH\_BK.F\_QUANLYTHE\_IDSEQ\_I

ON DWH\_BK.F\_QUANLYTHE (IDSEQ)

TABLESPACE DWH\_BK ONLINE;

New execution plan:

Plan hash value: 4228470407

------------------------------------------------------------------------------------------------------

| Id | Operation | Name | Rows | Bytes | Cost (%CPU)| Time |

------------------------------------------------------------------------------------------------------

| 0 | INSERT STATEMENT | | 4284K| 9405M| 290K (1)| 00:00:08 |

| 1 | LOAD TABLE CONVENTIONAL | T\_QUANLYTHE | | | | |

|\* 2 | FILTER | | | | | |

| 3 | NESTED LOOPS | | 4284K| 9405M| 290K (1)| 00:00:08 |

| 4 | TABLE ACCESS BY INDEX ROWID| F\_QUANLYTHE | 10490 | 21M| 4716 (1)| 00:00:01 |

|\* 5 | INDEX RANGE SCAN | F\_QUANLYTHE\_IDSEQ\_I | 18882 | | 36 (0)| 00:00:01 |

|\* 6 | XPATH EVALUATION | | | | | | -------------------------------------------------------------------------------------------------

Predicate Information (identified by operation id):

---------------------------------------------------

2 - filter(TO\_NUMBER(:B1)>=TO\_NUMBER(:B2))

5 - access("X"."IDSEQ">=TO\_NUMBER(:B2) AND "X"."IDSEQ"<=TO\_NUMBER(:B1)) 6 - filter("P"."C\_01$" IS NOT NULL)

Less rows will process with XPATH EVALUATION & CPU usage will be lower.

**Recommendation**: Create unique index on F\_QUANLYTHE (IDSEQ).

SQL ID bfznkpy3atxm1 - Module ODI:1382949750338/7/7346007

SELECT */\*+DRIVING\_SITE(v24)\*/*

SEQ,

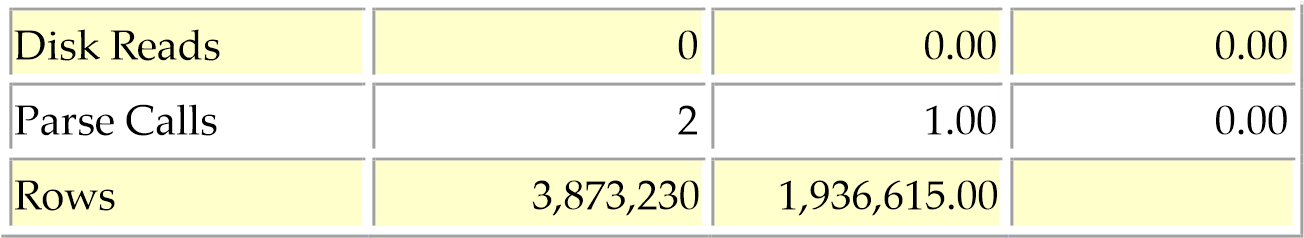
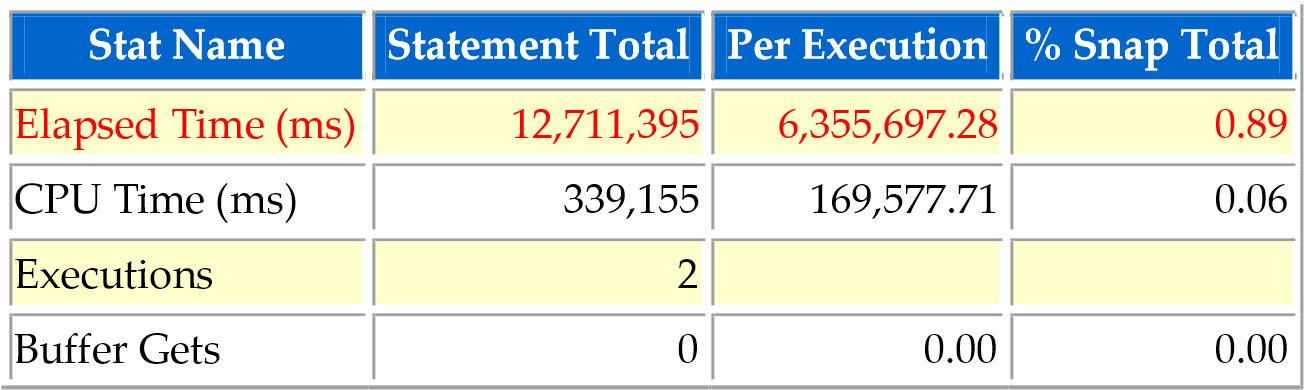
RECID,

XMLRECORD,

TO\_DATE ('20160913', 'YYYYMMDD')

FROM V24\_QUANLY\_INFO\_UPDATE\_LKGD@T24DWH V24

WHERE SEQ BETWEEN :B2 AND :B1



Each execution takes 100 minutes.

The query actually runs on T24DWH database link which is COBR14DR instance.

Execution plan at remote site:

-------------------------------------------------------------------------------------------------------------

| Id | Operation | Name | Rows | Bytes | Cost (%CPU)| Time |

-------------------------------------------------------------------------------------------------------------

| 0 | SELECT STATEMENT | | 23750 | 15M| 16070 (3)| 00:03:13 |

|\* 1 | FILTER | | | | | |

| 2 | NESTED LOOPS | | 23750 | 15M| 16070 (3)| 00:03:13 |

| 3 | NESTED LOOPS | | 23750 | 15M| 16070 (3)| 00:03:13 |

|\* 4 | TABLE ACCESS FULL | F24\_QUANLY\_INFO\_UPDATE\_LKGD | 23750 | 3293K| 15833 (3)| 00:03:10 |

|\* 5 | INDEX UNIQUE SCAN | PK\_FBNK\_QUAN014 | 1 | | 1 (0)| 00:00:01 |

| 6 | TABLE ACCESS BY INDEX ROWID| FBNK\_QUAN014 | 1 | 547 | 1 (0)| 00:00:01 | -------------------------------------------------------------------------------------------------------------

Predicate Information (identified by operation id):

---------------------------------------------------

1 - filter(TO\_NUMBER(:B1)>=TO\_NUMBER(:B2))

4 - filter("B"."SEQ">=TO\_NUMBER(:B2) AND "B"."SEQ"<=TO\_NUMBER(:B1)) 5 - access("A"."RECID"="B"."RECID")

Table T24\_LIVE\_DWH.F24\_QUANLY\_INFO\_UPDATE\_LKGD: no statistic, 448MB, 9.773.049 rows. Min SEQ: 1, Max SEQ: 9.773.049.

If :B2 and :B1 is a small range compare to above range, consider create index on F24\_QUANLY\_INFO\_UPDATE\_LKGD(SEQ) in COBR14DR to filter rows.

**Recommendation**: Consider create index on FF24\_QUANLY\_INFO\_UPDATE\_LKGD(SEQ). Similar SQL with high execution time:

SELECT */\*+DRIVING\_SITE(v24)\*/*

SEQ,

RECID,

XMLRECORD,

TO\_DATE ('20160912', 'YYYYMMDD')

FROM V24\_PD\_BALANCES@T24DWH V24

WHERE SEQ BETWEEN :B2 AND :B1

SQL ID ca0vc3cbhjn0t - Module ODI:1382949750338/7/7425007

INSERT INTO DWH\_STAGING.T\_IC\_HOME\_BANKING\_TCB

(IDSEQ, RECID, TERM, CHARGE\_AMOUNT, DEBIT\_ACCOUNT, PROCESSING\_DATE, STMT\_NO,

CHARGE\_CODE, RESERVED\_2, RESERVED\_3, RESERVED\_4, NOMINATED\_ACCT, STATUS,

RESERVED\_6, RESERVED\_7, RESERVED\_8, RESERVED\_9, RESERVED\_10, PENDING,

OVERRIDE, RECORD\_STATUS, CURR\_NO, INPUTTER, DATE\_TIME, AUTHORISER, CO\_CODE,

DEPT\_CODE, AUDITOR\_CODE, AUDIT\_DATE\_TIME)

SELECT SRC.IDSEQ IDSEQ, SRC.RECID RECID, SRC.TERM TERM,

SRC.CHARGE\_AMOUNT CHARGE\_AMOUNT, SRC.DEBIT\_ACCOUNT DEBIT\_ACCOUNT,

SRC.PROCESSING\_DATE PROCESSING\_DATE, SRC.STMT\_NO STMT\_NO,

SRC.CHARGE\_CODE CHARGE\_CODE, SRC.RESERVED\_2 RESERVED\_2, SRC.RESERVED\_3 RESERVED\_3, SRC.RESERVED\_4 RESERVED\_4,

SRC.NOMINATED\_ACCT NOMINATED\_ACCT, SRC.STATUS STATUS,

SRC.RESERVED\_6 RESERVED\_6, SRC.RESERVED\_7 RESERVED\_7,

SRC.RESERVED\_8 RESERVED\_8, SRC.RESERVED\_9 RESERVED\_9,

SRC.RESERVED\_10 RESERVED\_10, SRC.PENDING PENDING, SRC.OVERRIDE OVERRIDE,

SRC.RECORD\_STATUS RECORD\_STATUS, SRC.CURR\_NO CURR\_NO, SRC.INPUTTER INPUTTER,

SRC.DATE\_TIME DATE\_TIME, SRC.AUTHORISER AUTHORISER, SRC.CO\_CODE CO\_CODE,

SRC.DEPT\_CODE DEPT\_CODE, SRC.AUDITOR\_CODE AUDITOR\_CODE,

SRC.AUDIT\_DATE\_TIME AUDIT\_DATE\_TIME

FROM DWH.V\_T24IC\_HOME\_BANKING\_TCB SRC

WHERE

IDSEQ BETWEEN :B2 AND :B1 LOG ERRORS REJECT LIMIT UNLIMITED

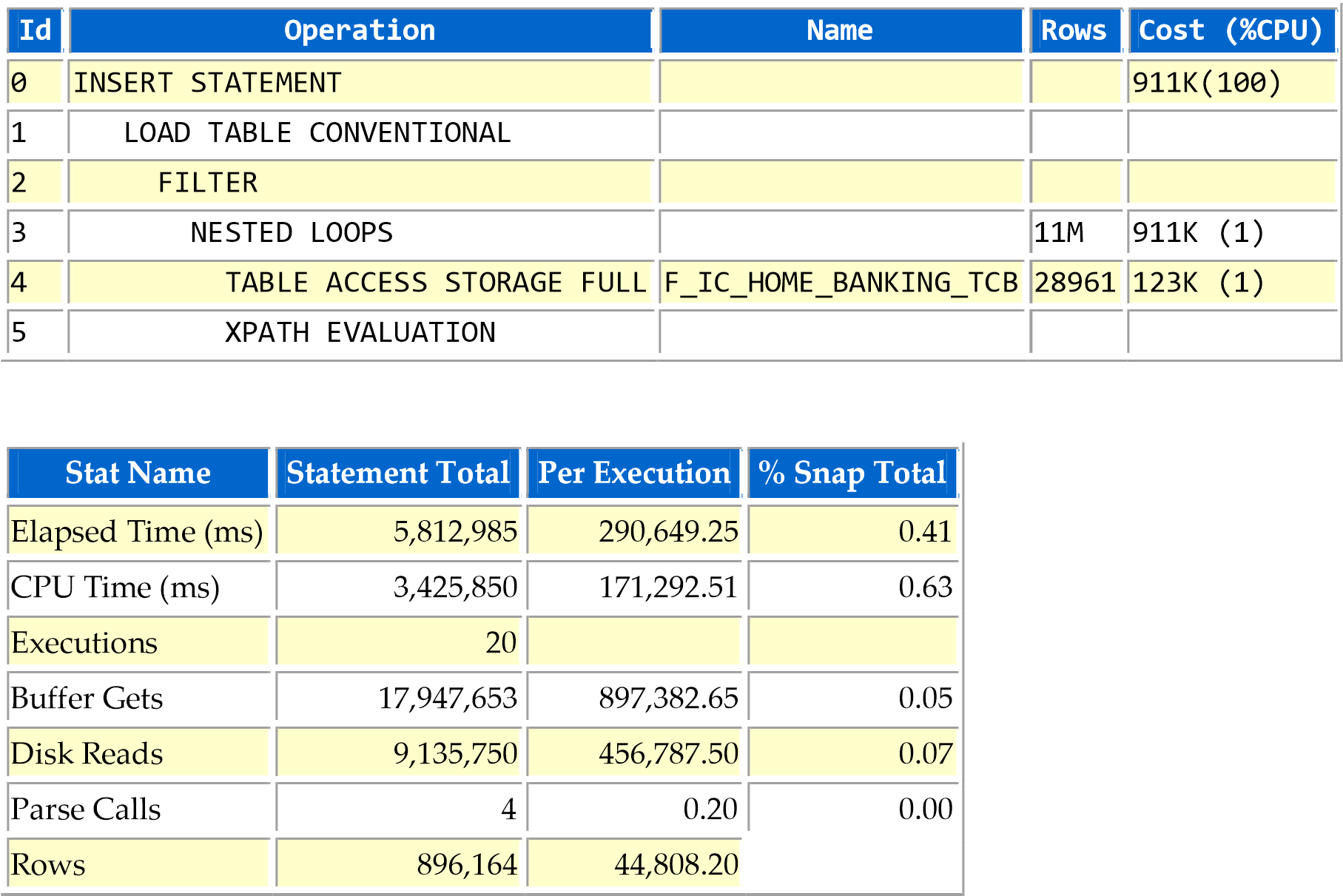


TABLE DWH\_BK.F\_IC\_HOME\_BANKING\_TCB: Size 4.24 GB, 2240413 rows, no statistics.

**Recommendation**: Create index on F\_IC\_HOME\_BANKING\_TCB(IDSEQ).

SQL ID 105jxp6m8chwv - Module ODI:1382949750338/7/3776007

INSERT INTO DWH\_STAGING.T\_STMT\_ENTRY

(IDSEQ, STMT\_ENTRY\_ID, ACCOUNT\_NUMBER, COMPANY\_CODE, AMT\_LCY, TRANSACTION\_CODE,

THEIR\_REFERENCE, NARRATIVE, PL\_CATEGORY, CUSTOMER\_ID, ACCOUNT\_OFFICER,

PRODUCT\_CATEGORY, VALUE\_DATE, CURRENCY, AMOUNT\_FCY, EXCHANGE\_RATE,

NEGOTIATED\_REF\_NUM, POSITION\_TYPE, OUR\_REFERENCE, REVERSAL\_MARKER,

EXPOSURE\_DATE, CURRENCY\_MARKET, LOCAL\_REF, DEPARTMENT\_CODE,

TRANS\_REFERENCE, SYSTEM\_ID, BOOKING\_DATE, STMT\_NO, OVERRIDE, RECORD\_STATUS,

CURR\_NO, ADJ, ADJ\_DATE, INPUTTER, DATE\_TIME, AUTHORISER, SUSPENSE\_CATEGORY,

SUSPNSE\_VALUE\_DATE, SUPPRESS\_POSITION, CRF\_TYPE, CRF\_TXN\_CODE,

CRF\_CURRENCY, CONSOL\_KEY, CRF\_MAT\_DATE, CRF\_PROD\_CAT, PM\_TYPE, DEALER\_DESK,

COUNTERPARTY, LIQUIDATION\_MODE, REPAYMENT\_DATE, REPAYMENT\_TYPE,

REPAYMENT\_AMT, OUTSTANDING\_BAL, CONTRACT\_INT\_RATE, CONTRACT\_INT\_KEY,

CYCLE\_FORWARD, ORIG\_LOCAL\_EQUIV, ORIGINAL\_AMOUNT, ORIGINAL\_CCY,

ORIGINAL\_ACCT, ORIGINAL\_EXCH\_RATE, EXP\_SPLIT\_DATE, EXP\_SPLIT\_AMT,

ORIG\_AMOUNT\_LCY, BANK\_SORT\_CDE, CHEQUE\_NUMBER, CHQ\_COLL\_ID, DRAWN\_ACCOUNT,

ACCOUNTING\_DATE, PC\_PERIOD\_END, PC\_APPLIED, PROCESS\_FORWARD,

AA\_SUSPENSE\_REF, POS\_EXP\_DATE, RC\_DETAIL\_ID, TAX\_DATA, CUS\_PL\_ACCOUNT,

RESERVED\_9, RESERVED\_10, AMOUNT\_DEAL\_CCY, DEAL\_CCY, DEAL\_EXCH\_RATE,

MASK\_PRINT, MASK\_NARRATIVE, STMT1\_DATE, STMT2\_DATE, CHQ\_TYPE,

TAX\_EXCH\_RATE, NET\_PARAM, MASTER\_ACCOUNT, ADDL\_TRANS\_REF, INTEREST\_RATE,

DD\_MANDATE\_REF, DD\_ITEM\_REF, DD\_MANDATE\_DATE, CONTRACT\_BAL\_ID, TRADE\_DATE,

PROCESSING\_DATE, BALANCE\_TYPE, AA\_ITEM\_REF, ACCRUAL\_DATA, ORIG\_CCY\_MARKET,

CARD\_NUMBER, CARD\_TXN\_DETAIL, DRAFT\_PAYEE\_NAME, BANK\_ID)

SELECT SRC.IDSEQ IDSEQ, SRC.STMT\_ENTRY\_ID STMT\_ENTRY\_ID,

NVL (SRC.ACCOUNT\_NUMBER, '\*\*\*') ACCOUNT\_NUMBER,

NVL (SRC.COMPANY\_CODE, '\*\*\*') COMPANY\_CODE, SRC.AMT\_LCY AMT\_LCY,

NVL (SRC.TRANSACTION\_CODE, -1) TRANSACTION\_CODE,

SRC.THEIR\_REFERENCE THEIR\_REFERENCE, SRC.NARRATIVE NARRATIVE,

SRC.PL\_CATEGORY PL\_CATEGORY, NVL (SRC.CUSTOMER\_ID, -1) CUSTOMER\_ID,

NVL (SRC.ACCOUNT\_OFFICER, -1) ACCOUNT\_OFFICER,

NVL (SRC.PRODUCT\_CATEGORY, -1) PRODUCT\_CATEGORY, SRC.VALUE\_DATE VALUE\_DATE,

NVL (SRC.CURRENCY, '\*\*\*') CURRENCY, SRC.AMOUNT\_FCY AMOUNT\_FCY,

SRC.EXCHANGE\_RATE EXCHANGE\_RATE, SRC.NEGOTIATED\_REF\_NUM NEGOTIATED\_REF\_NUM,

SRC.POSITION\_TYPE POSITION\_TYPE, SRC.OUR\_REFERENCE OUR\_REFERENCE,

SRC.REVERSAL\_MARKER REVERSAL\_MARKER, SRC.EXPOSURE\_DATE EXPOSURE\_DATE,

SRC.CURRENCY\_MARKET CURRENCY\_MARKET, SRC.LOCAL\_REF LOCAL\_REF,

NVL (SRC.DEPARTMENT\_CODE, -1) DEPARTMENT\_CODE,

NVL (SRC.TRANS\_REFERENCE, '\*\*\*') TRANS\_REFERENCE, SRC.SYSTEM\_ID SYSTEM\_ID,

SRC.BOOKING\_DATE BOOKING\_DATE, SRC.STMT\_NO STMT\_NO, SRC.OVERRIDE OVERRIDE,

SRC.RECORD\_STATUS RECORD\_STATUS, SRC.CURR\_NO CURR\_NO, 'S' ADJ,

NULL ADJ\_DATE, SRC.INPUTTER INPUTTER, SRC.DATE\_TIME DATE\_TIME,

SRC.AUTHORISER AUTHORISER, SRC.SUSPENSE\_CATEGORY SUSPENSE\_CATEGORY,

SRC.SUSPNSE\_VALUE\_DATE SUSPNSE\_VALUE\_DATE,

SRC.SUPPRESS\_POSITION SUPPRESS\_POSITION, SRC.CRF\_TYPE CRF\_TYPE,

SRC.CRF\_TXN\_CODE CRF\_TXN\_CODE, SRC.CRF\_CURRENCY CRF\_CURRENCY,

SRC.CONSOL\_KEY CONSOL\_KEY, SRC.CRF\_MAT\_DATE CRF\_MAT\_DATE,

SRC.CRF\_PROD\_CAT CRF\_PROD\_CAT, SRC.PM\_TYPE PM\_TYPE,

SRC.DEALER\_DESK DEALER\_DESK, SRC.COUNTERPARTY COUNTERPARTY,

SRC.LIQUIDATION\_MODE LIQUIDATION\_MODE, SRC.REPAYMENT\_DATE REPAYMENT\_DATE,

SRC.REPAYMENT\_TYPE REPAYMENT\_TYPE, SRC.REPAYMENT\_AMT REPAYMENT\_AMT,

SRC.OUTSTANDING\_BAL OUTSTANDING\_BAL,

SRC.CONTRACT\_INT\_RATE CONTRACT\_INT\_RATE,

SRC.CONTRACT\_INT\_KEY CONTRACT\_INT\_KEY, SRC.CYCLE\_FORWARD CYCLE\_FORWARD,

SRC.ORIG\_LOCAL\_EQUIV ORIG\_LOCAL\_EQUIV, SRC.ORIGINAL\_AMOUNT ORIGINAL\_AMOUNT,

SRC.ORIGINAL\_CCY ORIGINAL\_CCY, SRC.ORIGINAL\_ACCT ORIGINAL\_ACCT,

SRC.ORIGINAL\_EXCH\_RATE ORIGINAL\_EXCH\_RATE,

SRC.EXP\_SPLIT\_DATE EXP\_SPLIT\_DATE, SRC.EXP\_SPLIT\_AMT EXP\_SPLIT\_AMT,

SRC.ORIG\_AMOUNT\_LCY ORIG\_AMOUNT\_LCY, SRC.BANK\_SORT\_CDE BANK\_SORT\_CDE, SRC.CHEQUE\_NUMBER CHEQUE\_NUMBER, SRC.CHQ\_COLL\_ID CHQ\_COLL\_ID,

SRC.DRAWN\_ACCOUNT DRAWN\_ACCOUNT, SRC.ACCOUNTING\_DATE ACCOUNTING\_DATE,

SRC.PC\_PERIOD\_END PC\_PERIOD\_END, SRC.PC\_APPLIED PC\_APPLIED,

SRC.PROCESS\_FORWARD PROCESS\_FORWARD, SRC.AA\_SUSPENSE\_REF AA\_SUSPENSE\_REF,

SRC.POS\_EXP\_DATE POS\_EXP\_DATE, SRC.RC\_DETAIL\_ID RC\_DETAIL\_ID,

SRC.TAX\_DATA TAX\_DATA, SRC.CUS\_PL\_ACCOUNT CUS\_PL\_ACCOUNT,

SRC.RESERVED\_9 RESERVED\_9, SRC.RESERVED\_10 RESERVED\_10,

SRC.AMOUNT\_DEAL\_CCY AMOUNT\_DEAL\_CCY, SRC.DEAL\_CCY DEAL\_CCY,

SRC.DEAL\_EXCH\_RATE DEAL\_EXCH\_RATE, SRC.MASK\_PRINT MASK\_PRINT,

SRC.MASK\_NARRATIVE MASK\_NARRATIVE, SRC.STMT1\_DATE STMT1\_DATE,

SRC.STMT2\_DATE STMT2\_DATE, SRC.CHQ\_TYPE CHQ\_TYPE,

SRC.TAX\_EXCH\_RATE TAX\_EXCH\_RATE, SRC.NET\_PARAM NET\_PARAM,

SRC.MASTER\_ACCOUNT MASTER\_ACCOUNT, SRC.ADDL\_TRANS\_REF ADDL\_TRANS\_REF,

SRC.INTEREST\_RATE INTEREST\_RATE, SRC.DD\_MANDATE\_REF DD\_MANDATE\_REF,

SRC.DD\_ITEM\_REF DD\_ITEM\_REF, SRC.DD\_MANDATE\_DATE DD\_MANDATE\_DATE,

SRC.CONTRACT\_BAL\_ID CONTRACT\_BAL\_ID, SRC.TRADE\_DATE TRADE\_DATE,

SRC.PROCESSING\_DATE PROCESSING\_DATE, SRC.BALANCE\_TYPE BALANCE\_TYPE,

SRC.AA\_ITEM\_REF AA\_ITEM\_REF, SRC.ACCRUAL\_DATA ACCRUAL\_DATA, SRC.ORIG\_CCY\_MARKET ORIG\_CCY\_MARKET, SRC.CARD\_NUMBER CARD\_NUMBER,

SRC.CARD\_TXN\_DETAIL CARD\_TXN\_DETAIL, SRC.DRAFT\_PAYEE\_NAME DRAFT\_PAYEE\_NAME,

SRC.BANK\_ID BANK\_ID

FROM DWH.V\_T24STMT\_ENTRY SRC

WHERE

IDSEQ BETWEEN :B2 AND :B1 LOG ERRORS REJECT LIMIT UNLIMITED

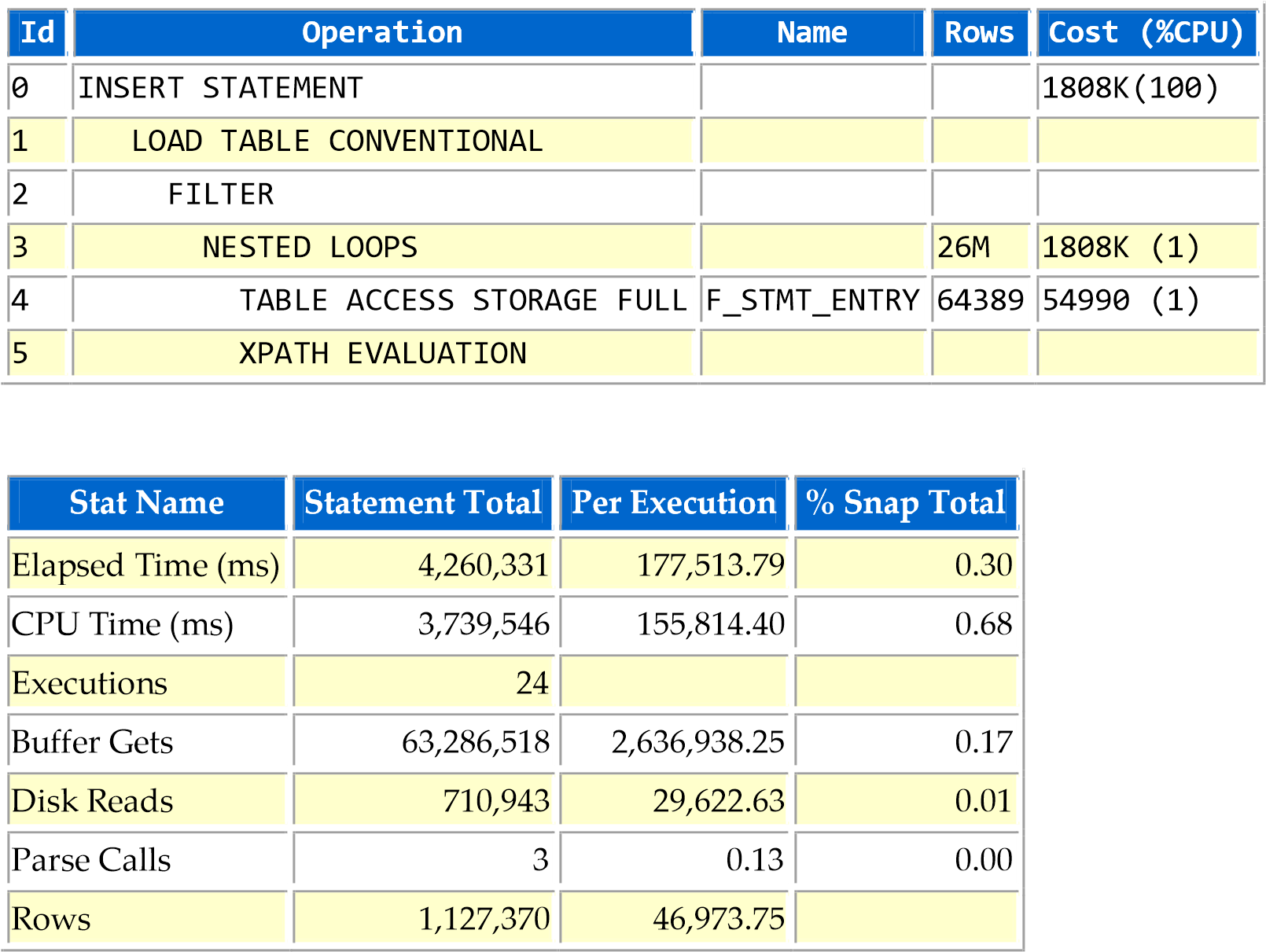


TABLE DWH\_BK.F\_STMT\_ENTRY: Size 839 MB, 1.110.225 rows, no statistics.

**Recommendation**: Create index on F\_STMT\_ENTRY(IDSEQ).

SQL ID 3s69um4a8x1ap - Module ODI:1382949750338/7/2777007

INSERT INTO DWH\_STAGING.T\_VISA\_OFFUS\_TCB(IDSEQ, REF\_NO, CARD\_NO, MERCHANT\_ID, CURRENCY,

AMOUNT\_LCY, AMOUNT\_FCY, DEBIT\_ACCT\_NO, DEBIT\_CURRENCY, CREDIT\_ACCT\_NO, CREDIT\_CURRENCY,

TRANS\_VALUE\_DATE, POSTING\_DATE, RESERVED\_1, USE\_VND, TRANS\_CANCEL, NOTES, MGS\_IN,

CREATE\_DATE, MSG\_DESCRIPTION, EXCHANGE\_RATE, APP\_CODE, USER\_, COMPANY\_CREDIT, CATEG\_CR,

DEPT\_OFFICER\_CR, HACH\_TOAN, MERCHANT\_AMT, PL\_AMT, VAT\_AMT, TRANS\_REF, TCB\_MERCHANT, STMT\_NO,

REVERSAL\_MARKER, REFERENCE, LOCAL\_REF, OVERRIDE, RECORD\_STATUS, CURR\_NO, INPUTTER,

DATE\_TIME, AUTHORISER, CO\_CODE, DEPT\_CODE, AUDITOR\_CODE, AUDIT\_DATE\_TIME)

SELECT SRC.IDSEQ IDSEQ, SRC.REF\_NO REF\_NO, SRC.CARD\_NO CARD\_NO,

SRC.MERCHANT\_ID MERCHANT\_ID, SRC.CURRENCY CURRENCY,

SRC.AMOUNT\_LCY AMOUNT\_LCY, SRC.AMOUNT\_FCY AMOUNT\_FCY,

SRC.DEBIT\_ACCT\_NO DEBIT\_ACCT\_NO, SRC.DEBIT\_CURRENCY DEBIT\_CURRENCY,

SRC.CREDIT\_ACCT\_NO CREDIT\_ACCT\_NO, SRC.CREDIT\_CURRENCY CREDIT\_CURRENCY,

SRC.TRANS\_VALUE\_DATE TRANS\_VALUE\_DATE, SRC.POSTING\_DATE POSTING\_DATE,

SRC.RESERVED\_1 RESERVED\_1, SRC.USE\_VND USE\_VND,

SRC.TRANS\_CANCEL TRANS\_CANCEL, SRC.NOTES NOTES, SRC.MGS\_IN MGS\_IN,

SRC.CREATE\_DATE CREATE\_DATE, SRC.MSG\_DESCRIPTION MSG\_DESCRIPTION,

SRC.EXCHANGE\_RATE EXCHANGE\_RATE, SRC.APP\_CODE APP\_CODE, SRC.USER\_ USER\_,

SRC.COMPANY\_CREDIT COMPANY\_CREDIT, SRC.CATEG\_CR CATEG\_CR,

SRC.DEPT\_OFFICER\_CR DEPT\_OFFICER\_CR, SRC.HACH\_TOAN HACH\_TOAN,

SRC.MERCHANT\_AMT MERCHANT\_AMT, SRC.PL\_AMT PL\_AMT, SRC.VAT\_AMT VAT\_AMT,

SRC.TRANS\_REF TRANS\_REF, SRC.TCB\_MERCHANT TCB\_MERCHANT, SRC.STMT\_NO STMT\_NO,

SRC.REVERSAL\_MARKER REVERSAL\_MARKER, SRC.REFERENCE REFERENCE,

SRC.LOCAL\_REF LOCAL\_REF, SRC.OVERRIDE OVERRIDE,

SRC.RECORD\_STATUS RECORD\_STATUS, SRC.CURR\_NO CURR\_NO, SRC.INPUTTER INPUTTER,

SRC.DATE\_TIME DATE\_TIME, SRC.AUTHORISER AUTHORISER, SRC.CO\_CODE CO\_CODE,

SRC.DEPT\_CODE DEPT\_CODE, SRC.AUDITOR\_CODE AUDITOR\_CODE,

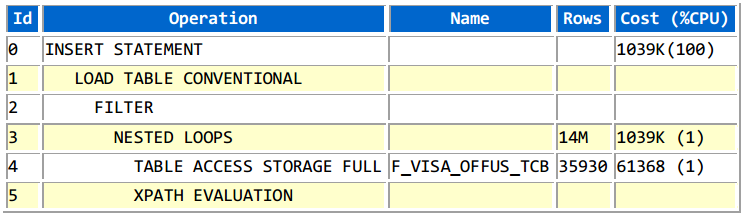
SRC.AUDIT\_DATE\_TIME AUDIT\_DATE\_TIME

FROM DWH.V\_T24VISA\_OFFUS\_TCB SRC

WHERE

IDSEQ BETWEEN :B2 AND :B1 LOG ERRORS REJECT LIMIT UNLIMITED

IDSEQ BETWEEN :B2 AND :B1 LOG ERRORS REJECT LIMIT UNLIMITED



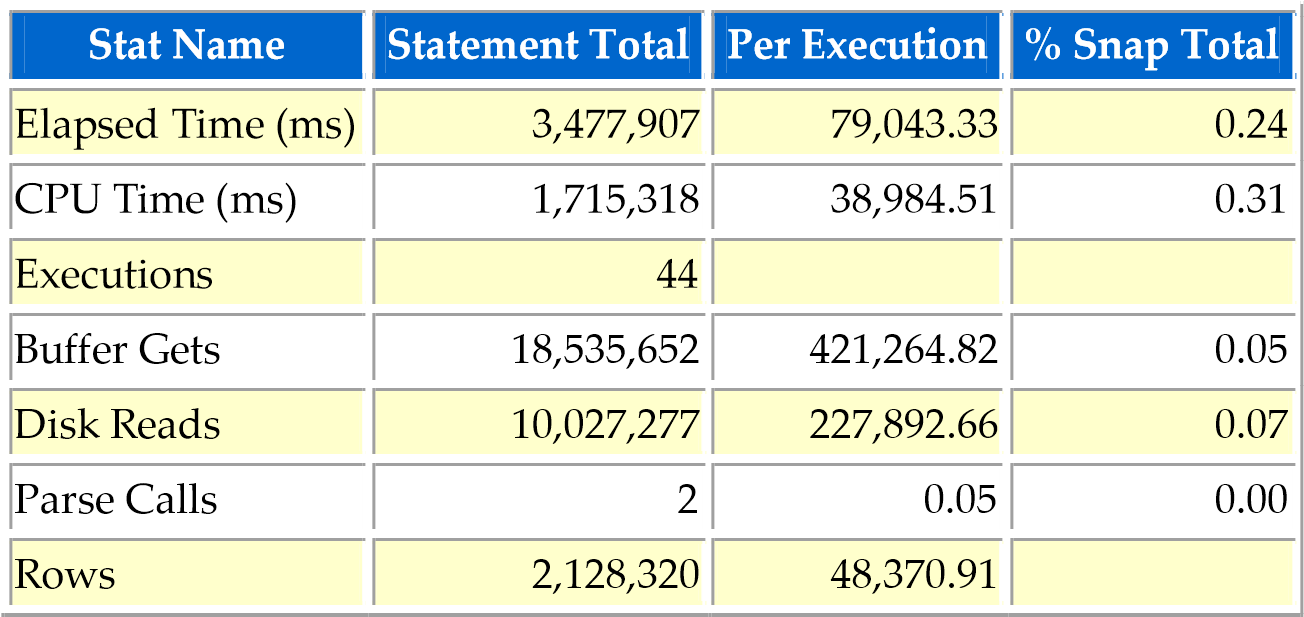


TABLE DWH\_BK.F\_VISA\_OFFUS\_TCB: Size 2.58 GB, 3.210.251 rows, no statistics.

**Recommendation**: Create index on F\_VISA\_OFFUS\_TCB(IDSEQ).

SQL ID dntcqtwbvpvv4 - Module ODI:1382949750338/7/7347007

INSERT INTO DWH\_STAGING.T\_VISA\_OFFUS\_TCB(IDSEQ, REF\_NO, CARD\_NO, MERCHANT\_ID, CURRENCY,

AMOUNT\_LCY, AMOUNT\_FCY, DEBIT\_ACCT\_NO, DEBIT\_CURRENCY, CREDIT\_ACCT\_NO, CREDIT\_CURRENCY,

TRANS\_VALUE\_DATE, POSTING\_DATE, RESERVED\_1, USE\_VND, TRANS\_CANCEL, NOTES, MGS\_IN,

CREATE\_DATE, MSG\_DESCRIPTION, EXCHANGE\_RATE, APP\_CODE, USER\_, COMPANY\_CREDIT, CATEG\_CR,

DEPT\_OFFICER\_CR, HACH\_TOAN, MERCHANT\_AMT, PL\_AMT, VAT\_AMT, TRANS\_REF, TCB\_MERCHANT, STMT\_NO,

REVERSAL\_MARKER, REFERENCE, LOCAL\_REF, OVERRIDE, RECORD\_STATUS, CURR\_NO, INPUTTER,

DATE\_TIME, AUTHORISER, CO\_CODE, DEPT\_CODE, AUDITOR\_CODE, AUDIT\_DATE\_TIME)

SELECT SRC.IDSEQ IDSEQ, SRC.REF\_NO REF\_NO, SRC.CARD\_NO CARD\_NO,

SRC.MERCHANT\_ID MERCHANT\_ID, SRC.CURRENCY CURRENCY,

SRC.AMOUNT\_LCY AMOUNT\_LCY, SRC.AMOUNT\_FCY AMOUNT\_FCY,

SRC.DEBIT\_ACCT\_NO DEBIT\_ACCT\_NO, SRC.DEBIT\_CURRENCY DEBIT\_CURRENCY,

SRC.CREDIT\_ACCT\_NO CREDIT\_ACCT\_NO, SRC.CREDIT\_CURRENCY CREDIT\_CURRENCY,

SRC.TRANS\_VALUE\_DATE TRANS\_VALUE\_DATE, SRC.POSTING\_DATE POSTING\_DATE,

SRC.RESERVED\_1 RESERVED\_1, SRC.USE\_VND USE\_VND,

SRC.TRANS\_CANCEL TRANS\_CANCEL, SRC.NOTES NOTES, SRC.MGS\_IN MGS\_IN,

SRC.CREATE\_DATE CREATE\_DATE, SRC.MSG\_DESCRIPTION MSG\_DESCRIPTION,

SRC.EXCHANGE\_RATE EXCHANGE\_RATE, SRC.APP\_CODE APP\_CODE, SRC.USER\_ USER\_,

SRC.COMPANY\_CREDIT COMPANY\_CREDIT, SRC.CATEG\_CR CATEG\_CR,

SRC.DEPT\_OFFICER\_CR DEPT\_OFFICER\_CR, SRC.HACH\_TOAN HACH\_TOAN,

SRC.MERCHANT\_AMT MERCHANT\_AMT, SRC.PL\_AMT PL\_AMT, SRC.VAT\_AMT VAT\_AMT,

SRC.TRANS\_REF TRANS\_REF, SRC.TCB\_MERCHANT TCB\_MERCHANT, SRC.STMT\_NO STMT\_NO,

SRC.REVERSAL\_MARKER REVERSAL\_MARKER, SRC.REFERENCE REFERENCE,

SRC.LOCAL\_REF LOCAL\_REF, SRC.OVERRIDE OVERRIDE,

SRC.RECORD\_STATUS RECORD\_STATUS, SRC.CURR\_NO CURR\_NO, SRC.INPUTTER INPUTTER,

SRC.DATE\_TIME DATE\_TIME, SRC.AUTHORISER AUTHORISER, SRC.CO\_CODE CO\_CODE,

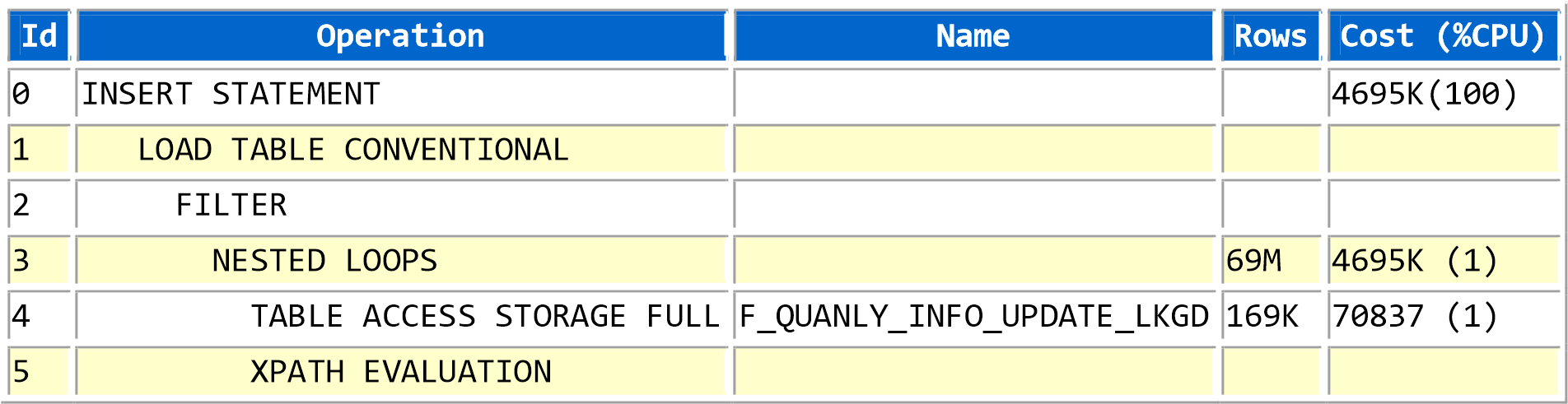
SRC.DEPT\_CODE DEPT\_CODE, SRC.AUDITOR\_CODE AUDITOR\_CODE,

SRC.AUDIT\_DATE\_TIME AUDIT\_DATE\_TIME

FROM DWH.V\_T24VISA\_OFFUS\_TCB SRC

WHERE

IDSEQ BETWEEN :B2 AND :B1 LOG ERRORS REJECT LIMIT UNLIMITED



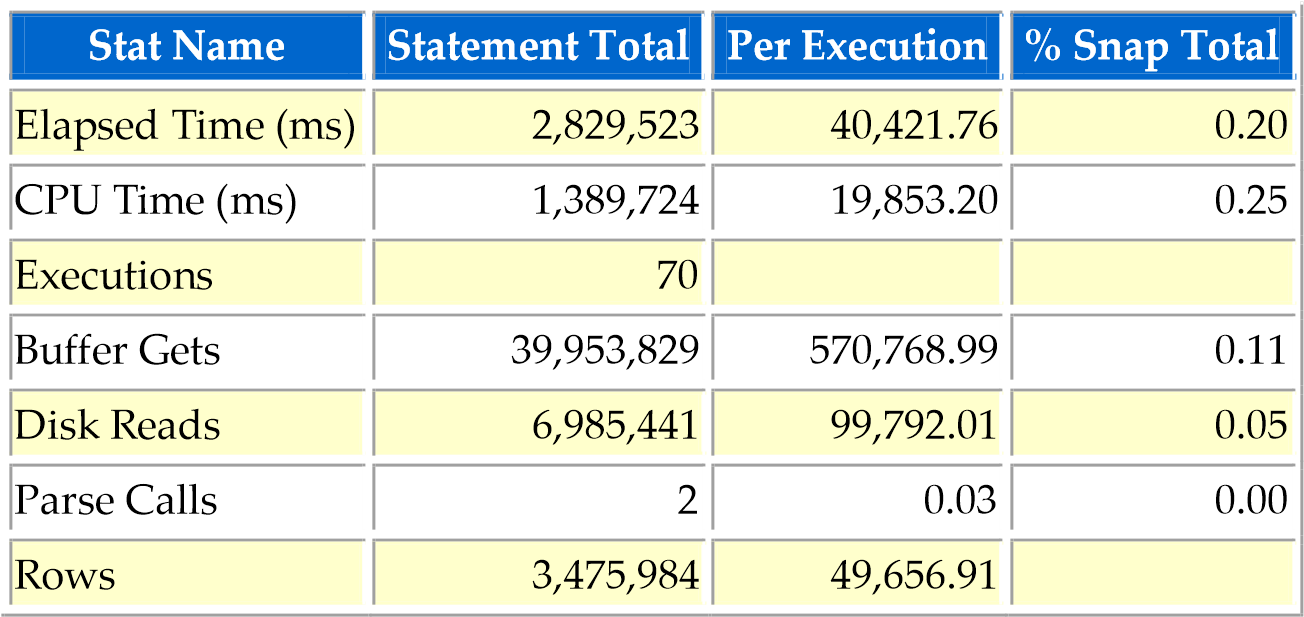


TABLE DWH\_BK.F\_QUANLY\_INFO\_UPDATE\_LKGD: Size 2.64GB, 9.761.544 rows, no statistics.

**Recommendation**: Create index on F\_QUANLY\_INFO\_UPDATE\_LKGD(IDSEQ).

SQL ID 4qjdnsbrp7xs2 - Module ODI:1382949750338/7/7373007

INSERT INTO DWH\_STAGING.T\_PD\_BALANCES\_HIST

(IDSEQ, BANK\_ID, KEY, RECORD\_START\_DATE, CURRENCY, PAYMENT\_STATUS,

PREVIOUS\_STATUS, NO\_DAYS\_OVERDUE, BASE\_EFF\_DATE, BASE\_AMOUNT,

RATE\_EFF\_DATE, RATE, POST\_START\_DATE, POST\_END\_DATE, BASE2\_EFF\_DATE,

BASE2\_AMOUNT, RATE2\_EFF\_DATE, RATE2, POST2\_START\_DATE, POST2\_END\_DATE,

PEN\_CALC\_DATE, PEN\_INT\_CALC\_AMT, PEN\_INT\_ACCR\_AMT, PEN\_INT\_NAB\_AMT,

PEN\_INT2\_CALC\_AMT, PEN\_INT2\_ACCR\_AMT, PEN\_INT2\_NAB\_AMT, FROM\_DATE\_1,

TO\_DATE\_1, NO\_DAYS\_1, BASE\_AMT\_1, RATE\_1, ACCR\_AMT\_1, ACCR\_ACT\_AMT\_1,

POSTED\_IND\_1, FROM\_DATE\_2, TO\_DATE\_2, NO\_DAYS\_2, BASE\_AMT\_2, RATE\_2,

ACCR\_AMT\_2, ACCR\_ACT\_AMT\_2, POSTED\_IND\_2, AMT\_TYPE, ORIGINAL\_AMT,

CURR\_OS\_AMT, CURR\_OS\_TAX, CURR\_OS\_ACCR, CURR\_OS\_NAB, REPAY\_DATE, REPAY\_AMT,

ADJ\_AMT, INT\_REPAY\_DATE, INT\_REPAY\_AMT, INT2\_REPAY\_DATE, INT2\_REPAY\_AMT,

CALC\_START\_DATE, RESERVED\_6, RESERVED\_5, RESERVED\_4, RESERVED\_3,

RESERVED\_2, RESERVED\_1)

SELECT SRC.IDSEQ IDSEQ, SRC.BANK\_ID BANK\_ID, SRC.KEY KEY,

SRC.RECORD\_START\_DATE RECORD\_START\_DATE, SRC.CURRENCY CURRENCY,

SRC.PAYMENT\_STATUS PAYMENT\_STATUS, SRC.PREVIOUS\_STATUS PREVIOUS\_STATUS,

SRC.NO\_DAYS\_OVERDUE NO\_DAYS\_OVERDUE, SRC.BASE\_EFF\_DATE BASE\_EFF\_DATE,

SRC.BASE\_AMOUNT BASE\_AMOUNT, SRC.RATE\_EFF\_DATE RATE\_EFF\_DATE, SRC.RATE RATE,

SRC.POST\_START\_DATE POST\_START\_DATE, SRC.POST\_END\_DATE POST\_END\_DATE,

SRC.BASE2\_EFF\_DATE BASE2\_EFF\_DATE, SRC.BASE2\_AMOUNT BASE2\_AMOUNT,

SRC.RATE2\_EFF\_DATE RATE2\_EFF\_DATE, SRC.RATE2 RATE2,

SRC.POST2\_START\_DATE POST2\_START\_DATE, SRC.POST2\_END\_DATE POST2\_END\_DATE,

SRC.PEN\_CALC\_DATE PEN\_CALC\_DATE, SRC.PEN\_INT\_CALC\_AMT PEN\_INT\_CALC\_AMT,

SRC.PEN\_INT\_ACCR\_AMT PEN\_INT\_ACCR\_AMT, SRC.PEN\_INT\_NAB\_AMT PEN\_INT\_NAB\_AMT,

SRC.PEN\_INT2\_CALC\_AMT PEN\_INT2\_CALC\_AMT,

SRC.PEN\_INT2\_ACCR\_AMT PEN\_INT2\_ACCR\_AMT,

SRC.PEN\_INT2\_NAB\_AMT PEN\_INT2\_NAB\_AMT, SRC.FROM\_DATE\_1 FROM\_DATE\_1,

SRC.TO\_DATE\_1 TO\_DATE\_1, SRC.NO\_DAYS\_1 NO\_DAYS\_1, SRC.BASE\_AMT\_1 BASE\_AMT\_1,

SRC.RATE\_1 RATE\_1, SRC.ACCR\_AMT\_1 ACCR\_AMT\_1,

SRC.ACCR\_ACT\_AMT\_1 ACCR\_ACT\_AMT\_1, SRC.POSTED\_IND\_1 POSTED\_IND\_1,

SRC.FROM\_DATE\_2 FROM\_DATE\_2, SRC.TO\_DATE\_2 TO\_DATE\_2,

SRC.NO\_DAYS\_2 NO\_DAYS\_2, SRC.BASE\_AMT\_2 BASE\_AMT\_2, SRC.RATE\_2 RATE\_2,

SRC.ACCR\_AMT\_2 ACCR\_AMT\_2, SRC.ACCR\_ACT\_AMT\_2 ACCR\_ACT\_AMT\_2,

SRC.POSTED\_IND\_2 POSTED\_IND\_2, SRC.AMT\_TYPE AMT\_TYPE,

SRC.ORIGINAL\_AMT ORIGINAL\_AMT, SRC.CURR\_OS\_AMT CURR\_OS\_AMT,

SRC.CURR\_OS\_TAX CURR\_OS\_TAX, SRC.CURR\_OS\_ACCR CURR\_OS\_ACCR,

SRC.CURR\_OS\_NAB CURR\_OS\_NAB, SRC.REPAY\_DATE REPAY\_DATE,

SRC.REPAY\_AMT REPAY\_AMT, SRC.ADJ\_AMT ADJ\_AMT,

SRC.INT\_REPAY\_DATE INT\_REPAY\_DATE, SRC.INT\_REPAY\_AMT INT\_REPAY\_AMT,

SRC.INT2\_REPAY\_DATE INT2\_REPAY\_DATE, SRC.INT2\_REPAY\_AMT INT2\_REPAY\_AMT,

SRC.CALC\_START\_DATE CALC\_START\_DATE, SRC.RESERVED\_6 RESERVED\_6,

SRC.RESERVED\_5 RESERVED\_5, SRC.RESERVED\_4 RESERVED\_4,

SRC.RESERVED\_3 RESERVED\_3, SRC.RESERVED\_2 RESERVED\_2,

SRC.RESERVED\_1 RESERVED\_1

FROM DWH.V\_T24PD\_BALANCES\_HIST SRC

WHERE

IDSEQ BETWEEN :B2 AND :B1 LOG ERRORS REJECT LIMIT UNLIMITED

**Id**

**Operation**

**Name**

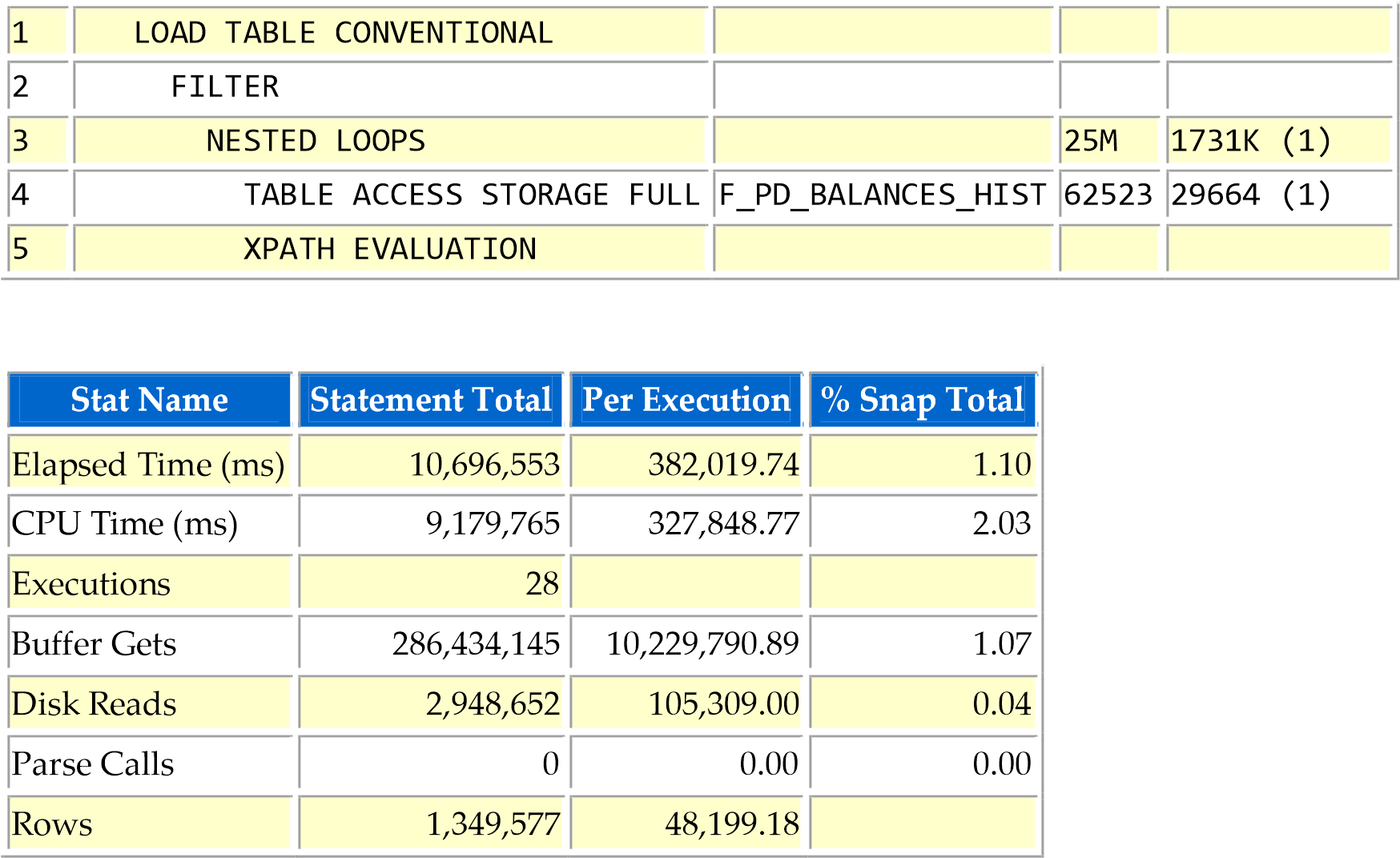
**Rows**

**Cost (%CPU)**

0

INSERT STATEMENT

1731K(100)



**Recommendation**: Create index on F\_PD\_BALANCES\_HIST(IDSEQ).

SQL ID d5dadbhtugtfq - Module ODI:1382949750338/7/8488007

INSERT INTO DWH.ACCOUNT

(BANK\_ID, ACCOUNT\_NUMBER, CUSTOMER, PRODCAT, ACCOUNT\_TITLE\_1, ACCOUNT\_TITLE\_2,

SHORT\_TITLE, MNEMONIC, POSITION\_TYPE, CURRENCY, CURRENCY\_MARKET, LIMIT\_REF,

ACCOUNT\_OFFICER, OTHER\_OFFICER, POSTING\_RESTRICT, RECONCILE\_ACCT,

INTEREST\_LIQU\_ACCT, INTEREST\_COMP\_ACCT, INT\_NO\_BOOKING, REFERAL\_CODE,

WAIVE\_LEDGER\_FEE, LOCAL\_REF, CONDITION\_GROUP, INACTIV\_MARKER,

OPEN\_ACTUAL\_BAL, OPEN\_CLEARED\_BAL, ONLINE\_ACTUAL\_BAL, ONLINE\_CLEARED\_BAL,

WORKING\_BALANCE, DATE\_LAST\_CR\_CUST, AMNT\_LAST\_CR\_CUST, TRAN\_LAST\_CR\_CUST,

DATE\_LAST\_CR\_AUTO, AMNT\_LAST\_CR\_AUTO, TRAN\_LAST\_CR\_AUTO, DATE\_LAST\_CR\_BANK,

AMNT\_LAST\_CR\_BANK, TRAN\_LAST\_CR\_BANK, DATE\_LAST\_DR\_CUST, AMNT\_LAST\_DR\_CUST,

TRAN\_LAST\_DR\_CUST, DATE\_LAST\_DR\_AUTO, AMNT\_LAST\_DR\_AUTO, TRAN\_LAST\_DR\_AUTO,

DATE\_LAST\_DR\_BANK, AMNT\_LAST\_DR\_BANK, TRAN\_LAST\_DR\_BANK, CAP\_DATE\_CHARGE,

CAP\_DATE\_CR\_INT, CAP\_DATE\_C2\_INT, CAP\_DATE\_DR\_INT, CAP\_DATE\_D2\_INT,

CAP\_BACK\_VALUE, ACCR\_CHG\_CATEG, ACCR\_CHG\_TRANS, ACCR\_CHG\_AMOUNT,

ACCR\_CHG\_SUSP, ACCR\_CR\_CATEG, ACCR\_CR\_TRANS, ACCR\_CR\_AMOUNT, ACCR\_CR\_SUSP,

ACCR\_CR2\_CATEG, ACCR\_CR2\_TRANS, ACCR\_CR2\_AMOUNT, ACCR\_CR2\_SUSP,

ACCR\_DR\_CATEG, ACCR\_DR\_TRANS, ACCR\_DR\_AMOUNT, ACCR\_DR\_SUSP, ACCR\_DR2\_CATEG,

ACCR\_DR2\_TRANS, ACCR\_DR2\_AMOUNT, ACCR\_DR2\_SUSP, CONSOL\_KEY, INT\_LIQU\_TYPE,

INT\_LIQU\_ACCT, INT\_LIQ\_CCY, PASSBOOK, START\_YEAR\_BAL, OPENING\_DATE,

VALUE\_DATE, CREDIT\_MOVEMENT, DEBIT\_MOVEMENT, VALUE\_DATED\_BAL,

CONTINGENT\_BAL\_CR, CONTINGENT\_BAL\_DR, OPEN\_CATEGORY, OPEN\_VAL\_DATED\_BAL,

ACCT\_CREDIT\_INT, ACCT\_DEBIT\_INT, LINK\_TO\_LIMIT, CLOSURE\_DATE,

LOCKED\_WITH\_LIMIT, CHARGE\_ACCOUNT, CHARGE\_CCY, CHARGE\_MKT, INTEREST\_CCY,

INTEREST\_MKT, CON\_CHARGE\_ACCR, CON\_INTEREST\_ACCR, ALT\_ACCT\_TYPE,

ALT\_ACCT\_ID, PREMIUM\_TYPE, CAP\_DATE\_PRM, PREMIUM\_FREQ, APR, JOINT\_HOLDER,

RELATION\_CODE, JOINT\_NOTES, ALLOW\_NETTING, LEDG\_RECO\_WITH, STMT\_RECO\_WITH,

OUR\_EXT\_ACCT\_NO, RECO\_TOLERANCE, PENDING\_ID, TOTAL\_PENDING,

STOCK\_CONTROL\_TYPE, SERIAL\_NO\_FORMAT, AUTO\_PAY\_ACCT, ORIG\_CCY\_PAYMENT,

AUTO\_REC\_CCY, ORIGINAL\_ACCT, FROM\_DATE, LOCKED\_AMOUNT, DISPO\_OFFICER,

DISPO\_EXEMPT, TAX\_SUSPEND, TAX\_AT\_SETTLE, ICA\_MAIN\_ACCOUNT,

ICA\_DISTRIB\_RATIO, ICA\_MAIN\_ACCT\_IND, ICA\_DISTRIB\_TYPE, ICA\_POST\_INTEREST,

ICA\_MAIN\_RATIO, ICA\_NEW\_MAIN\_ACC, ICA\_START\_DATE, ICA\_ADD\_REMOVE,

ICA\_BACK\_VALUE, ICA\_MAIN\_ACCT, ICA\_MAIN\_DATE, LIQUIDATION\_MODE,

OVERDUE\_STATUS, HVT\_FLAG, SINGLE\_LIMIT, CONTINGENT\_INT, ALL\_IN\_ONE\_PRODUCT,

ER\_VALUE\_DATE, ER\_BALANCE, EP\_BALANCE, SB\_GROUP\_ID, OPEN\_AVAILABLE\_BAL,

AVAILABLE\_DATE, AV\_AUTH\_DB\_MVMT, AV\_NAU\_DB\_MVMT, AV\_AUTH\_CR\_MVMT,

AV\_NAU\_CR\_MVMT, AVAILABLE\_BAL, FORWARD\_MVMTS, CREDIT\_CHECK,

AVAILABLE\_BAL\_UPD, CONSOLIDATE\_ENT, MAX\_SUB\_ACCOUNT, MASTER\_ACCOUNT,

LOCK\_INC\_THIS\_MVMT, CLOSED\_ONLINE, NEXT\_AF\_DATE, NEXT\_ACCT\_CAP,

NEXT\_EXP\_DATE, DATE\_LAST\_UPDATE, NEXT\_STMT\_DATE, EXPOSURE\_DATES,

PORTFOLIO\_NO, SHADOW\_ACCOUNT, FWD\_ENTRY\_HOLD, FIRST\_AF\_DATE,

CASH\_POOL\_GROUP, OPEN\_ASSET\_TYPE, LAST\_COM\_CHG\_DATE, IC\_CHARGE\_ID,

IC\_NEXT\_CAP\_DATE, IC\_PRODUCT, IC\_LST\_PROD\_CAP, ARRANGEMENT\_ID,

ACC\_DEB\_LIMIT, MANDATE\_APPL, MANDATE\_REG, MANDATE\_RECORD, DR\_ADJ\_AMOUNT,

DR2\_ADJ\_AMOUNT, CR\_ADJ\_AMOUNT, CR2\_ADJ\_AMOUNT, EVENT, FIELD, OPERAND,

VALUE, MV\_ALERT\_RES6, MV\_ALERT\_RES5, MV\_ALERT\_RES4, MV\_ALERT\_RES3,

MV\_ALERT\_RES2, MV\_ALERT\_RES1, REQUEST\_ID, OVERRIDE, RECORD\_STATUS, CURR\_NO,

INPUTTER, DATE\_TIME, AUTHORISER, CO\_CODE, DEPT\_CODE, AUDITOR\_CODE, AUDIT\_DATE\_TIME, PROCESS\_DATE)

VALUES

(:B1, :B2, :B3, :B4, :B5, :B6, :B7, :B8, :B9, :B10, :B11, :B12, :B13, :B14, :B15,

:B16, :B17, :B18, :B19, :B20, :B21, :B22, :B23, :B24, :B25, :B26, :B27,

:B28, :B29, :B30, :B31, :B32, :B33, :B34, :B35, :B36, :B37, :B38, :B39,

:B40, :B41, :B42, :B43, :B44, :B45, :B46, :B47, :B48, :B49, :B50, :B51,

:B52, :B53, :B54, :B55, :B56, :B57, :B58, :B59, :B60, :B61, :B62, :B63,

:B64, :B65, :B66, :B67, :B68, :B69, :B70, :B71, :B72, :B73, :B74, :B75,

:B76, :B77, :B78, :B79, :B80, :B81, :B82, :B83, :B84, :B85, :B86, :B87,

:B88, :B89, :B90, :B91, :B92, :B93, :B94, :B95, :B96, :B97, :B98, :B99,

:B100, :B101, :B102, :B103, :B104, :B105, :B106, :B107, :B108, :B109,

:B110, :B111, :B112, :B113, :B114, :B115, :B116, :B117, :B118, :B119,

:B120, :B121, :B122, :B123, :B124, :B125, :B126, :B127, :B128, :B129,

:B130, :B131, :B132, :B133, :B134, :B135, :B136, :B137, :B138, :B139,

:B140, :B141, :B142, :B143, :B144, :B145, :B146, :B147, :B148, :B149,

:B150, :B151, :B152, :B153, :B154, :B155, :B156, :B157, :B158, :B159,

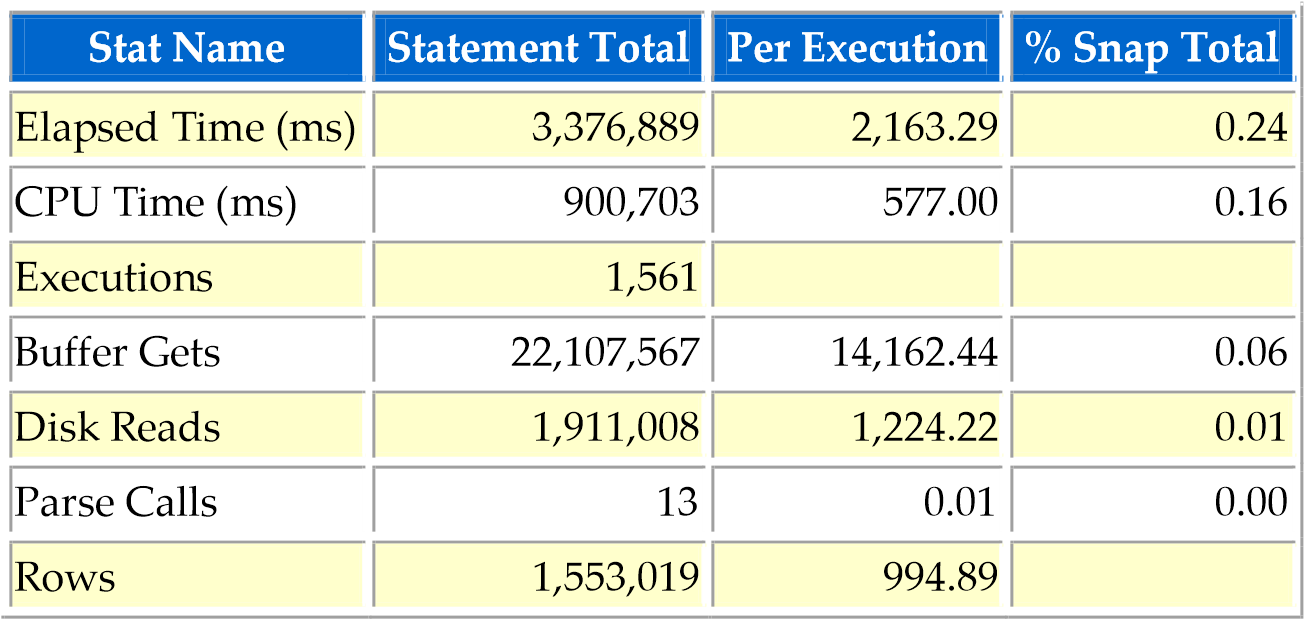
:B160, :B161, :B162, :B163, :B164, :B165, :B166, :B167, :B168, :B169,

:B170, :B171, :B172, :B173, :B174, :B175, :B176, :B177, :B178, :B179,

:B180, :B181, :B182, :B183, :B184, :B185, :B186, :B187, :B188, :B189,

:B190, :B191, :B192, :B193, :B194, :B195, :B196, :B197, :B198, :B199,

:B200, :B201, :B202, :B203, :B204, :B205, :B206, :B207, :B208, :B209, :B210, :B211, :B212, :B213)



It takes 2 second for an INSERT which is quite slow.

TABLE DWH.ACCOUNT: Size 321 GB, 733.011.491 rows, partition by interval 1 day on PROCESS\_DATE. Table use COMPRESS FOR QUERY HIGH for all partition that will affect DML performance.

**Recommendation**: Do not COMPRESS partition with high number of DML activity

SQL ID 6a2ay1m4fzkzu - Module ODI:1382949750338/7/2483007

INSERT */\*+append nologging \*/*

INTO R\_TBL\_AC\_0009

SELECT ACC.ACCOUNT\_NUMBER ACCOUNT\_NUMBER, ACC.ACCOUNT\_TITLE\_1 ACCOUNT\_TITLE,

(SELECT COM.MNEMONIC

FROM DWH.COMPANY COM

WHERE

COM.COMPANY\_CODE = ACC.CO\_CODE) COMPANY\_MNE,

(SELECT DWH.SPLIT\_COL (COM.COMPANY\_NAME, 1)

FROM DWH.COMPANY COM

WHERE

COM.COMPANY\_CODE = ACC.CO\_CODE) COMPANY\_NAME, ACC.MNEMONIC,

ACC.CUSTOMER, DWH.SPLIT\_COL (ACC.ALT\_ACCT\_ID, 1) ALT\_ACCT\_ID,

DWH.SPLIT\_COL (CUS.NAME\_1, 1) CUS\_NAME, ACC.CURRENCY, ACC.PRODCAT CATEGORY,

CONCAT (CONCAT (ACC.CUSTOMER, '.0000'), ACC.LIMIT\_REF) LIMIT\_ID,

LIM.ONLINE\_LIMIT\_DATE, LIM.EXPIRY\_DATE,

NVL (DWH.SPLIT\_COL (LIM.ONLINE\_LIMIT, 1), 0) ONLINE\_LIMIT,

ACC.WORKING\_BALANCE, ACC.ONLINE\_ACTUAL\_BAL, ACC.OPEN\_ACTUAL\_BAL,

(CASE

WHEN (SPLIT\_COL (ACC.POSTING\_RESTRICT) <> '80') THEN TO\_CHAR ( NVL

(TCB\_DWH\_VAS.FNC\_GET\_MAX (ACC.LOCKED\_AMOUNT), 0))

ELSE 'TOAN BO SO DU'

END) AS SO\_TIEN\_PHONG\_TOA,

(CASE

WHEN (ACC.FROM\_DATE LIKE '%99990909%') THEN TO\_NUMBER ( DWH.SPLIT\_COL (

ACC.LOCKED\_AMOUNT, TCB\_DWH\_VAS.GET\_POS\_MV (ACC.FROM\_DATE, '99990909')))

WHEN (ACC.FROM\_DATE LIKE '%10000101%') THEN TO\_NUMBER ( DWH.SPLIT\_COL ( ACC.LOCKED\_AMOUNT, TCB\_DWH\_VAS.GET\_POS\_MV (ACC.FROM\_DATE, '10000101')))

ELSE 0

END) AS PHONG\_TOA\_THE,

CASE

WHEN (NVL (DWH.SPLIT\_COL (LIM.ONLINE\_LIMIT, 1), 0) = 0) THEN 0

ELSE (

CASE

WHEN (NVL (ACC.WORKING\_BALANCE, 0) >= 0) THEN TO\_NUMBER ( NVL (DWH.SPLIT\_COL (LIM.ONLINE\_LIMIT, 1), 0))

ELSE TO\_NUMBER ( NVL (DWH.SPLIT\_COL (LIM.ONLINE\_LIMIT, 1), 0)) + NVL

(ACC.WORKING\_BALANCE, 0)

END)

END AS HM\_CON\_LAI, CUS.SECTOR SECTOR,

(SELECT DWH.SPLIT\_COL (SEC.LOCAL\_REF, 1)

FROM DWH.SECTOR SEC

WHERE

SEC.SECTOR\_CODE = CUS.SECTOR) BIZLINE,

DWH.SPLIT\_COL (CUS.LOCAL\_REF, 20) CITY\_REGID,

DWH.SPLIT\_COL (CUS.LOCAL\_REF, 34) DKKD, ACC.ACCOUNT\_OFFICER,

DWH.SPLIT\_COL (ACC.LOCAL\_REF, 14) TCB\_DEPARTMENT, ACC.CONSOL\_KEY,

DWH.SPLIT\_COL (ACC.LOCAL\_REF, 26) LAI\_SUAT\_KH,

(SELECT DWH.SPLIT\_COL (IND.DESCRIPTION, 1)

FROM DWH.INDUSTRY IND

WHERE

IND.INDUSTRY\_CODE = CUS.INDUSTRY) INDUSTRY,

DWH.SPLIT\_COL (ACC.LOCAL\_REF, 23) ATM,

DWH.SPLIT\_COL (ACC.LOCAL\_REF, 48) ID\_CONG\_TY,

(SELECT DWH.SPLIT\_COL (CUS.SHORT\_NAME, 2)

FROM DWH.CUSTOMER CUS

WHERE

DWH.SPLIT\_COL (ACC.LOCAL\_REF, 48) = CUS.CUSTOMER\_CODE) TEN\_CONG\_TY,

DWH.SPLIT\_COL (ACC.LOCAL\_REF, 44) TK\_SALE,

DWH.SPLIT\_COL (ACC.LOCAL\_REF, 41) TCB\_PRODUCT, ACC.DATE\_LAST\_DR\_CUST,

ACC.DATE\_LAST\_CR\_CUST, ACC.CONDITION\_GROUP,

DWH.SPLIT\_COL (ACC.LOCAL\_REF, 2) TERM\_START\_DATE,

DWH.SPLIT\_COL (ACC.JOINT\_HOLDER, 1) JOINT\_HOLDER,

REPLACE (CONVERT\_MV\_CLOB (FROM\_DATE), '|', ', ') FROM\_DATE, ACC.CO\_CODE FROM DWH.ACCOUNT ACC, DWH.CUSTOMER CUS, DWH.LIMIT LIM

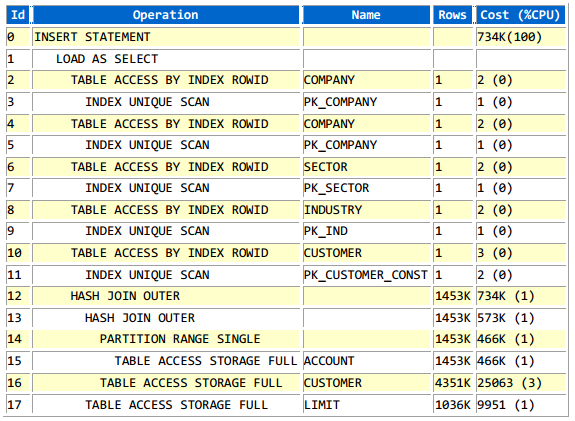
WHERE

ACC.PROCESS\_DATE = :B1

AND ACC.PRODCAT <> 1006

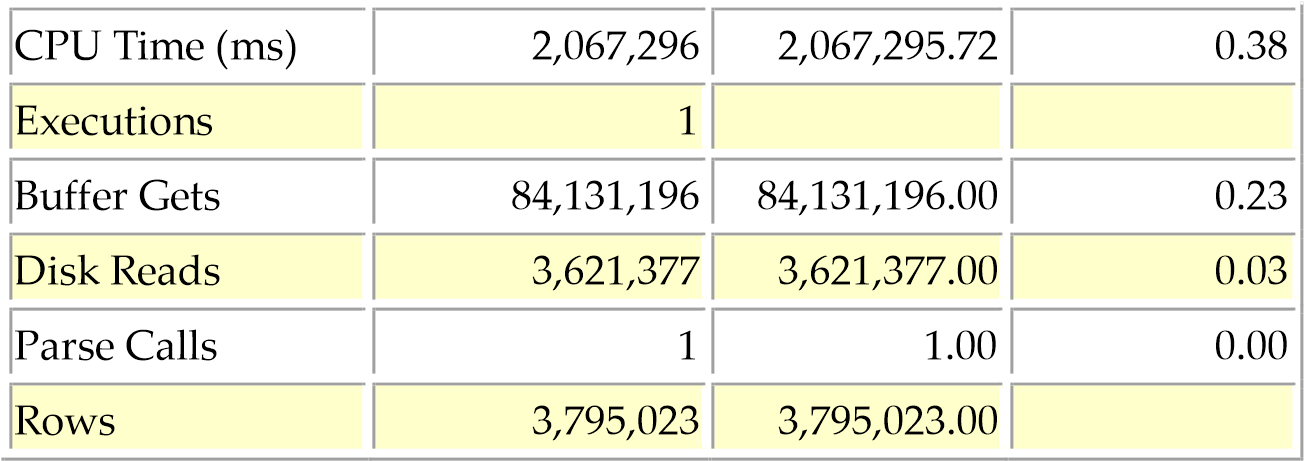
AND ACC.CUSTOMER = CUS.CUSTOMER\_CODE(+)

AND CONCAT (CONCAT (ACC.CUSTOMER, '.0000'), ACC.LIMIT\_REF) = LIM.LIMIT\_ID(+)



**Stat Name Snap Total**

Elapsed Time (ms) 2,991,443 2,991,443.07 0.21



The SQL takes 50 minutes to finish.

We can use parallel feature to decrease execution time with hint as below:

INSERT */\*+ append nologging \*/* INTO R\_TBL\_AC\_0009

SELECT */\*+ PARALLEL(32) \*/* ACC.ACCOUNT\_NUMBER ACCOUNT\_NUMBER, ACC.ACCOUNT\_TITLE\_1 ACCOUNT\_TITLE,

(SELECT COM.MNEMONIC

FROM DWH.COMPANY COM

WHERE COM.COMPANY\_CODE = ACC.CO\_CODE) COMPANY\_MNE,

**Recommendation**: Test SQL with PARALLEL hint & apply to source code.