



Association
of International
Certified Professional
Accountants®

Using Oracle DBIM to Accelerate Analytics in the Cloud

About Me

- Kiran Tailor, Senior Enterprise Data Architect
 - Oracle Ace , Specialising in Cloud/Oracle BI/DW & Data
 - Over 18 years Experience Oracle Technology.
 - Articles for Oracle Scene Magazine.
 - Speaker (UK,US,Germany,Poland,Ireland)
 - Videos (YouTube OTNArchBeat Channel)
- Blog : <https://puredba.co.uk>
- Twitter : @iamkirantailor



ORACLE
ACE Director



Business Analytics: Kiran Tailor

What does "Call MyAgentCache()" do? It clears all the cache. There are many permutations that can be used here such as SQLAgentCacheQuery, CallMyAgentCacheTable and CallMyAgentCacheDatabase.

Timeseries (MDS) and Caching in action
Let's do a comparison of 6 dashboards against data in an Oracle BI and data in a Timeseries (MDS) with CallMyAgentCache and CallMyAgentCacheDatabase. The results are as follows. The number of records returned is the same for all dashboards. The only difference is whether someone has previously run the exact same query or not.

	Dashboard 1	Dashboard 2	Dashboard 3	Dashboard 4	Dashboard 5
BI with Oracle DB - No Cache	1300	950	750	1350	950
BI with Oracle DB - BI Data Cache	300	200	300	200	300
BI with TT - BI Data Cache	400	300	400	300	400
TT implemented - Oracle DB	4.5s	3.5s	3.4s	3.5s	6.5s
BI with TT - BI Data Cache	1.0s	1.0s	1.0s	1.0s	1.0s

Summary
The result set cache was introduced in Oracle Database 11g that allows complete result sets to be stored in memory. If a result set can be reused then almost all the overhead of SQL execution can be avoided. For this to be used in ODI we have to place the filter in the query that is used for SQL being generated for that object being placed into the BI/TT_CACHE, which may not be the optimal cache connection.

So using the steps from the previous article and placing our data into a Timeseries (MDS), and thereafter enabling BI Application Server caching with BI Data Cache explained in this article, we can see performance gains of up to 9s, instant responses. Everybody likes things to be instant and this is a big driver for user adoption, so if we have to implement BI Server cache it's not a bad idea, you just have to manage it. ☺

ABOUT THE AUTHOR

Kiran Tailor is a Senior Oracle BI Solutions Architect, ODI DBA, BI Architect, BI Analyst, Data Warehousing, Analytics, BI, BI Performance and Oracle BI user. 13 years of experience at Oracle from Oracle BI, Oracle BI Performance and Analytics. He is a regular contributor to the Oracle community including blogs to helping with performance and performance tips.

Blog: www.puredba.co.uk
www.linkedin.com/in/kiran-tailor
 @iamkirantailor

500+ Technical Experts Helping Peers Globally

ORACLE[®]
ACE Program



ORACLE[®]
ACE Director



ORACLE[®]
ACE



ORACLE[®]
ACE Associate

3 Membership Tiers


- Oracle ACE Director
- Oracle ACE
- Oracle ACE Associate

bit.ly/OracleACEProgram

Connect:

✉ oracle-ace_ww@oracle.com

 Facebook.com/oracleaces

 @oracleace



Nominate yourself or someone you know: acenomination.oracle.com

THE ASSOCIATION



600,000 members and students worldwide.

Offices and Staff across the world.

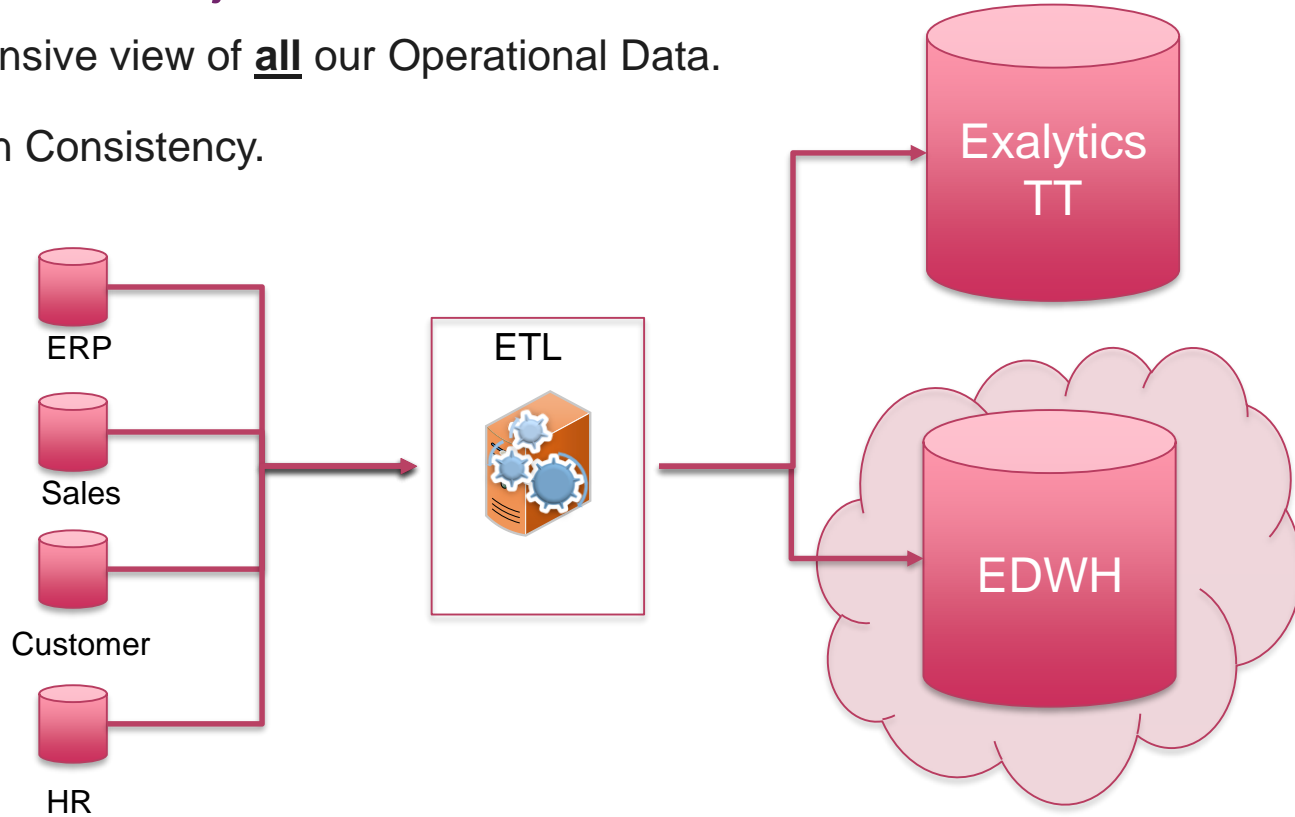
Key Points

- What was our objective?
- Oracle Cloud Infrastructure
- Provisioning
- Security
- Enabling In-Memory
- Performance



What was our Objective ?

- Comprehensive view of **all** our Operational Data.
- Information Consistency.



Why? Data Warehouse in the Cloud

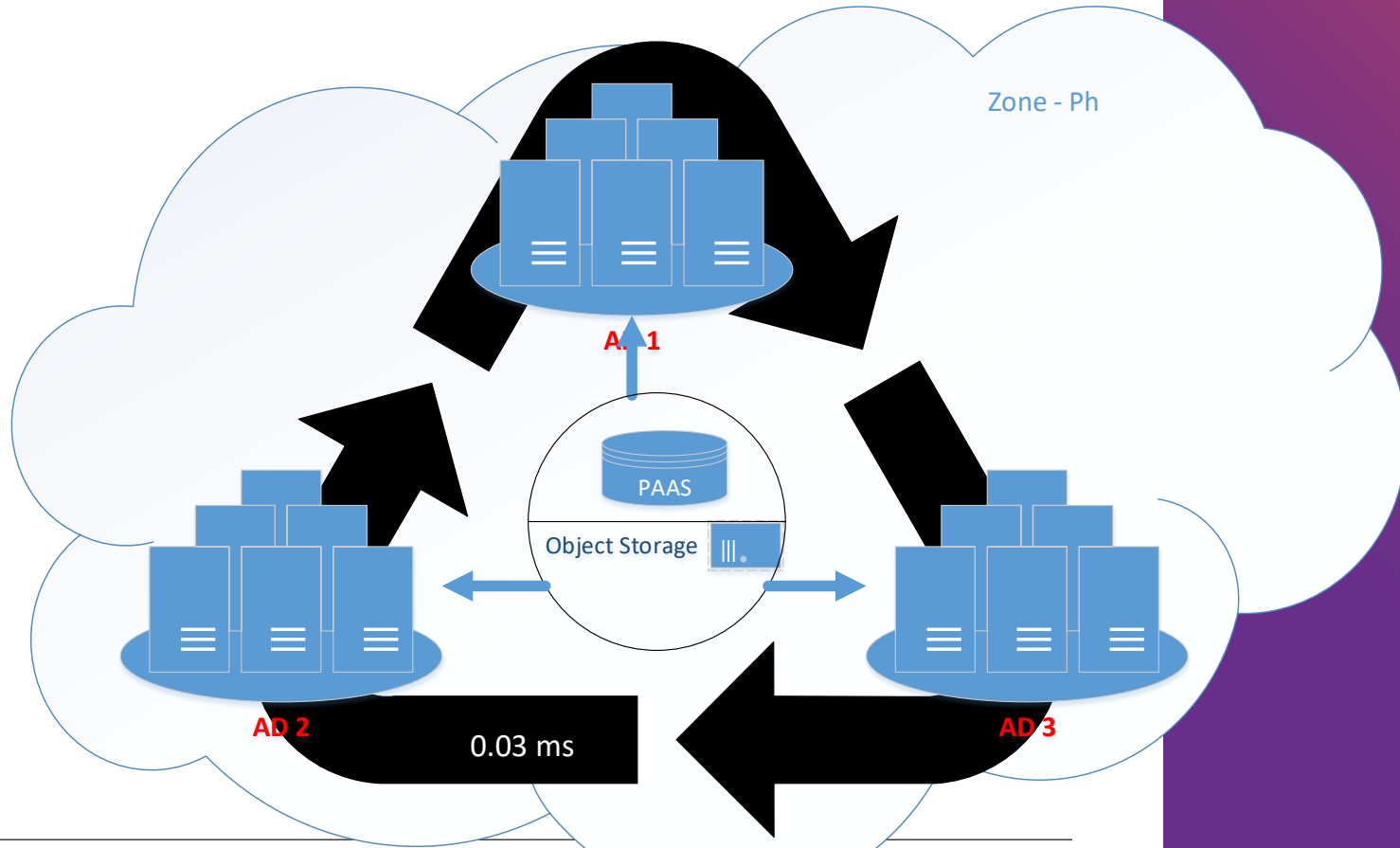
	Oracle (Bare Metal)	Azure	AWS
BI Server (IAAS)	36 CPU, 256GB Ram \$1,950	64 CPU, 432 GB Ram, \$5,553	Linux on i3.16xlarge Dedicated (64 CPU x 488GB Mem)
Database Server	4 CPU 512GB Ram \$6,060	32 CPU, 256 GB Ram, \$2,946	Linux on i2.8xlarge Dedicated (32 CPU x 244GB Mem)
Per Month	\$8,175	\$8,500	\$22,300
Oracle Database License	N/A	\$71,183	\$71,183
Total Per Month	\$8,175	\$79,683	\$93,483
Total 1 Year	\$98,103	\$956,199	\$1,121,801

- 91%

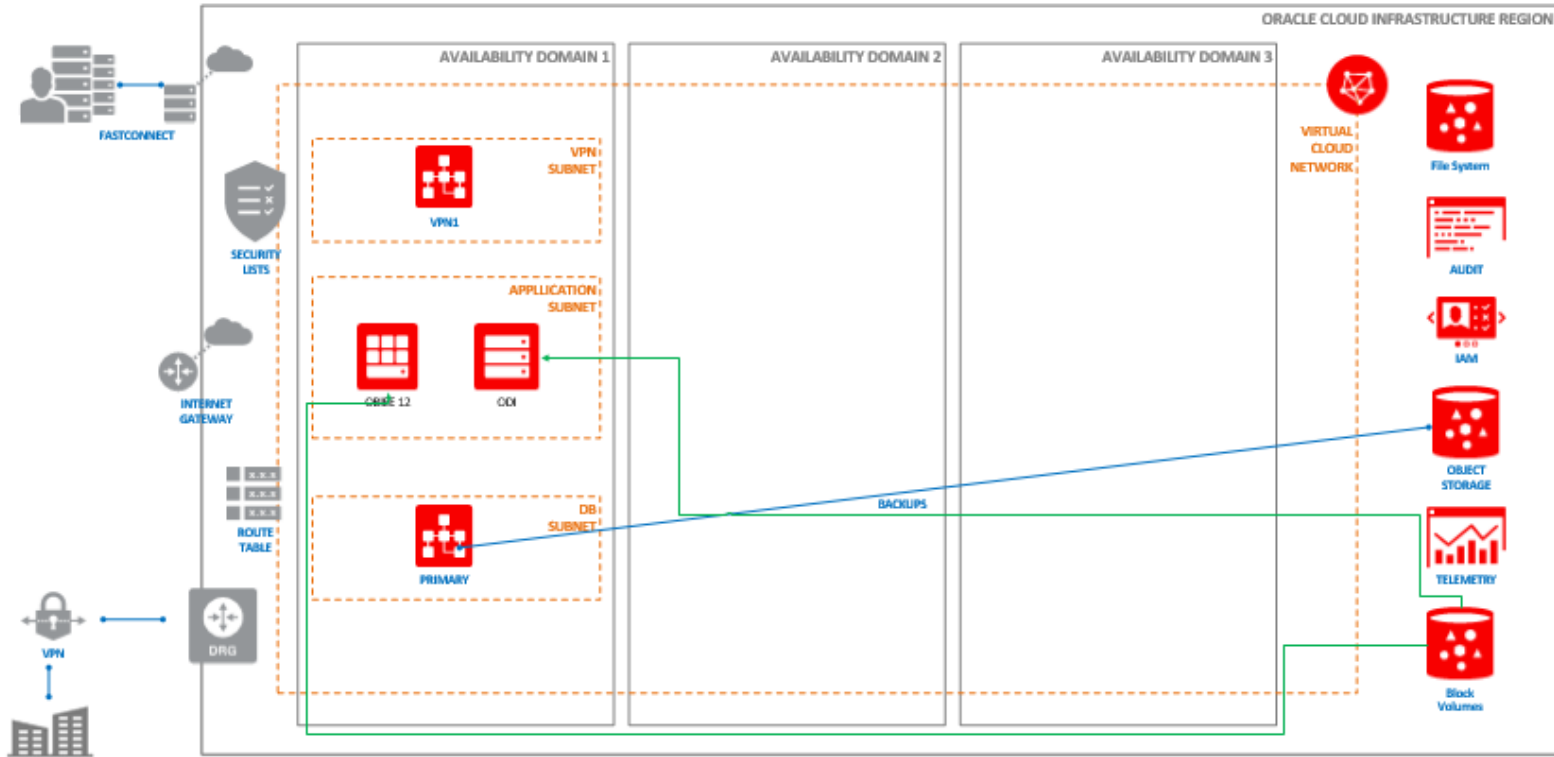


* Figures - September 2017

Oracle Cloud Infrastructure (F.K.A Bare Metal)



What have we built?



Database Enterprise Edition Extreme Performance

- 2 enabled OCPUs.
- 2 OCPU DB License.
- Up to 34 additional OCPU's (purchased separately).
- Database instance(s) with 512 GB RAM, 28.8 TB NVMe SSD raw, ~9.4 TB with two-way mirroring, ~5.4 TB with three-way mirroring.

Provisioning

Database

DB Systems in Production

DB Systems

Standalone Backups

Launch DB System

List Scope

COMPARTMENT

Production

Launch DB System [help](#) [cancel](#)

If the Virtual Cloud Network or Subnet is in a different Compartment than the DB System, [click here](#) to enable Compartment selection for those resources.

DB System Information

DISPLAY NAME

EDWH

AVAILABILITY DOMAIN

RIWS US-ASHBURN-AD-1

SHAPE

BM.HighIO1.36

TOTAL NODE COUNT

1

ORACLE DATABASE SOFTWARE EDITION

Enterprise Edition Extreme Performance

CPU CORE COUNT

2

The number of CPU cores to enable on the DB System. Specify a multiple of 2, up to 36.

LICENSE TYPE

LICENSE INCLUDED
The cost of the cloud service includes the Oracle licensing.

BRING YOUR OWN LICENSE (BYOL)
You have bought the Oracle licenses directly from Oracle. The cloud provider is not responsible for charging your licenses.

SSH PUBLIC KEY

CHOOSE SSH KEY FILES

Network Information

VIRTUAL CLOUD NETWORK

PROD_VCN

CLIENT SUBNET

DATA_TIER

HOSTNAME PREFIX

EDWH

HOST DOMAIN NAME

dataTier.prodvcn.oraclevcn.com

Each part must contain only letters and numbers, starting with a letter. 63 characters max.

HOST AND DOMAIN URL

EDWH.dataTier.prodvcn.oraclevcn.com

Provisioning

Database Information

DATABASE NAME
EDWH

DATABASE VERSION
12.2.0.1

PDB NAME (Optional)

DATABASE ADMIN PASSWORD

Password must be 9 to 30 characters and contain at least 2 uppercase, 2 lowercase, 2 special, and 2 numeric characters. The special characters must be _ #, or -.

CONFIRM DATABASE ADMIN PASSWORD

Confirmation must match password above.

AUTOMATIC BACKUP
Configure the service to automatically back up this database to Oracle Cloud Infrastructure Object Storage.
If you previously used RMAN or dbcli to configure backups and then you switch to using the Console or the API for backups, a new backup configuration is created and associated with your database. This means that you can no longer rely on your previously configured unmanaged backups to work.

DATABASE WORKLOAD

ON-LINE TRANSACTION PROCESSING (OLTP)
Configure the database for a transactional workload, with bias towards high volumes of random data access.

DECISION SUPPORT SYSTEM (DSS)
Configure the database for a decision support or data warehouse workload, with bias towards large data scanning operations.

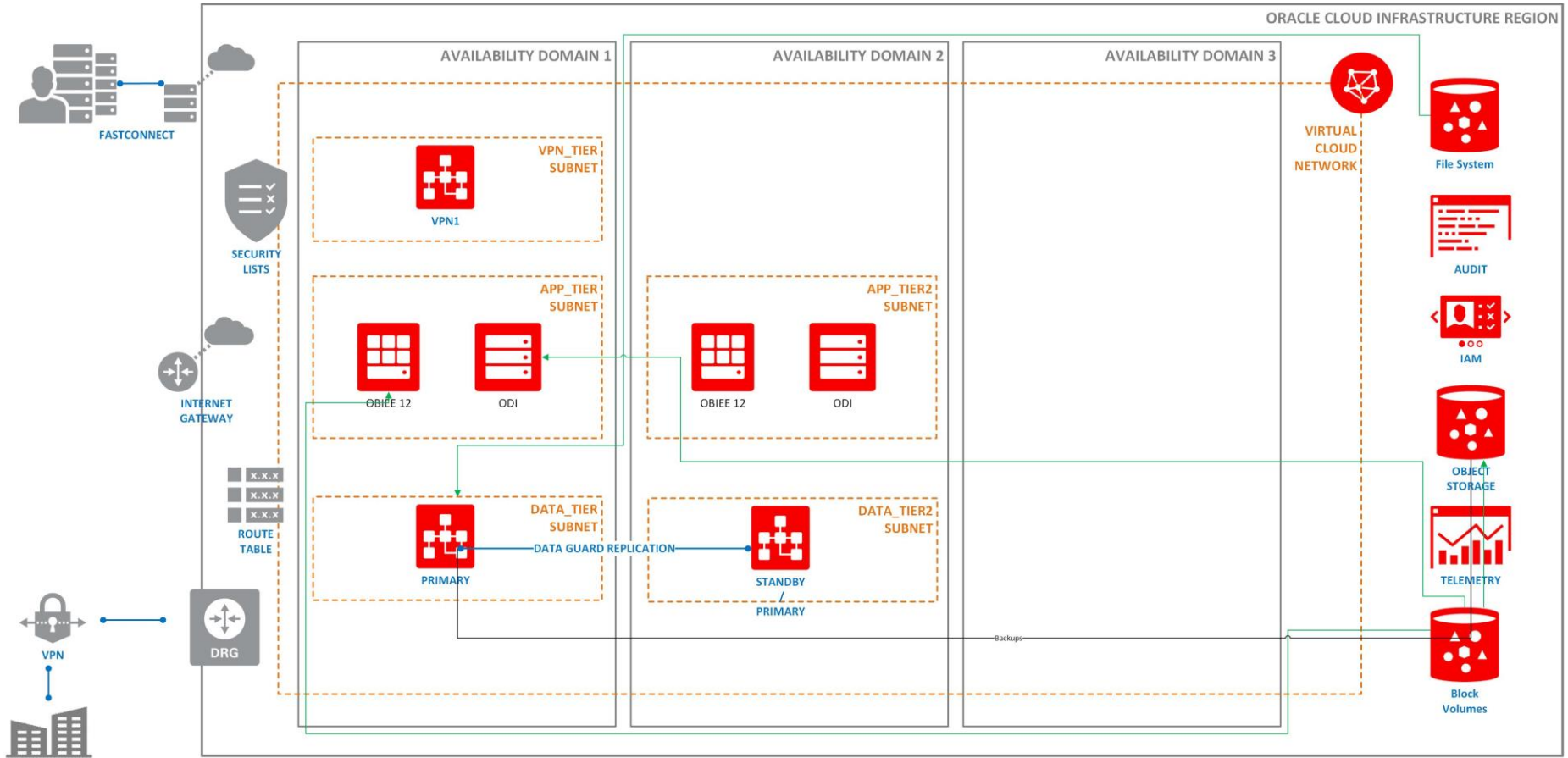
[Hide Advanced Options](#)

CHARACTER SET
AL32UTF8

NATIONAL CHARACTER SET
AL16UTF16

[Launch DB System](#)

Oracle DataGuard



DataGuard

Database » DB Systems » DB System Details » Database » Data Guard Associations

EDWH

Restore Apply Tag(s)

Database Information

Database Home: dbhome2
Launched: Fri, 19 Jan 2018 16:50:04 GMT
Database Workload: DSS
Character Set: AL32UTF8
National Character Set: AL16UTF16

AVAILABLE

Data Guard

Enable Data Guard

Enable Data Guard

help cancel

PROTECTION MODE

Maximum Performance

PEER DB SYSTEM

Database » DB Systems » DB System Details » Database » Data Guard Associations

EDWH

Restore Apply Tag(s) Terminate

Database Information Tags

Availability Domain: RIWS-US-ASHBURN-AD-1
Database Home: dbhome20180119165004
Launched: Fri, 19 Jan 2018 16:50:04 GMT
Database Workload: DSS
Character Set: AL32UTF8
Automatic Backup: Enabled

DB System: [EDWH](#)
OCID: ...ccav7a Show Copy
Database Version: 12.2.0.1.0
Database Unique Name: EDWH_1ad1b8
Database Role: Primary
National Character Set: AL16UTF16

Resources

Backups (34)
Patches (4)
Patch History (0)
Data Guard Associations (0)

PEER DATABASE AVAILABILITY DOMAIN

RIWS:US-ASHBURN-AD-2

Primary Database is in Availability Domain

TRANSPORT TYPE

Async

DATABASE ADMIN PASSWORD

.....

Password must be 9 to 30 characters and

Enable

Data Guard Associations

Displaying 1 Data Guard Associations

Enable Data Guard

AVAILABLE	Peer Database: EDWH Peer Role: Standby Peer DB System: EDWHDRTS	Launched: Wed, 06 Jun 2018 10:06:07 GMT Protection Mode: Maximum Performance Availability Domain: RIWS-US-ASHBURN-AD-1	Apply Lag: 0 seconds Apply Rate: 1.00 KByte/s Transport Type: Async
-----------	----------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------

Backups

Backups

Displaying 32 Backups

Create Backup

Disable Automatic Backup



ACTIVE

Automatic Backup

OCID: ...2rea3q [Show](#) [Copy](#)

Type: Incremental

Started: Sat, 20 Oct 2018 06:27:04 GMT

Ended: Sat, 20 Oct 2018 06:33:42 GMT



Automatic Backup

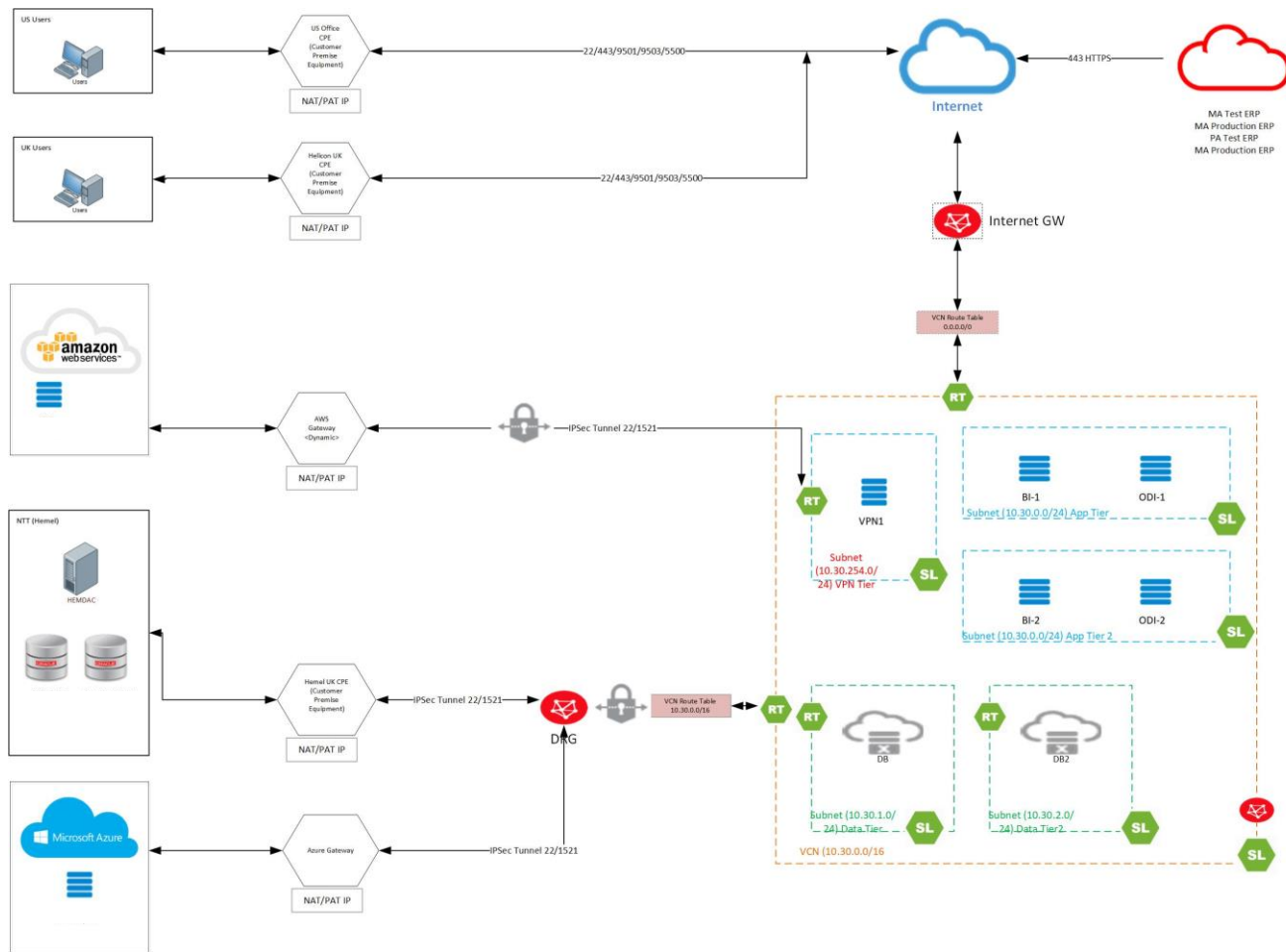
OCID: ...upjg2q [Show](#) [Copy](#)

Type: Incremental

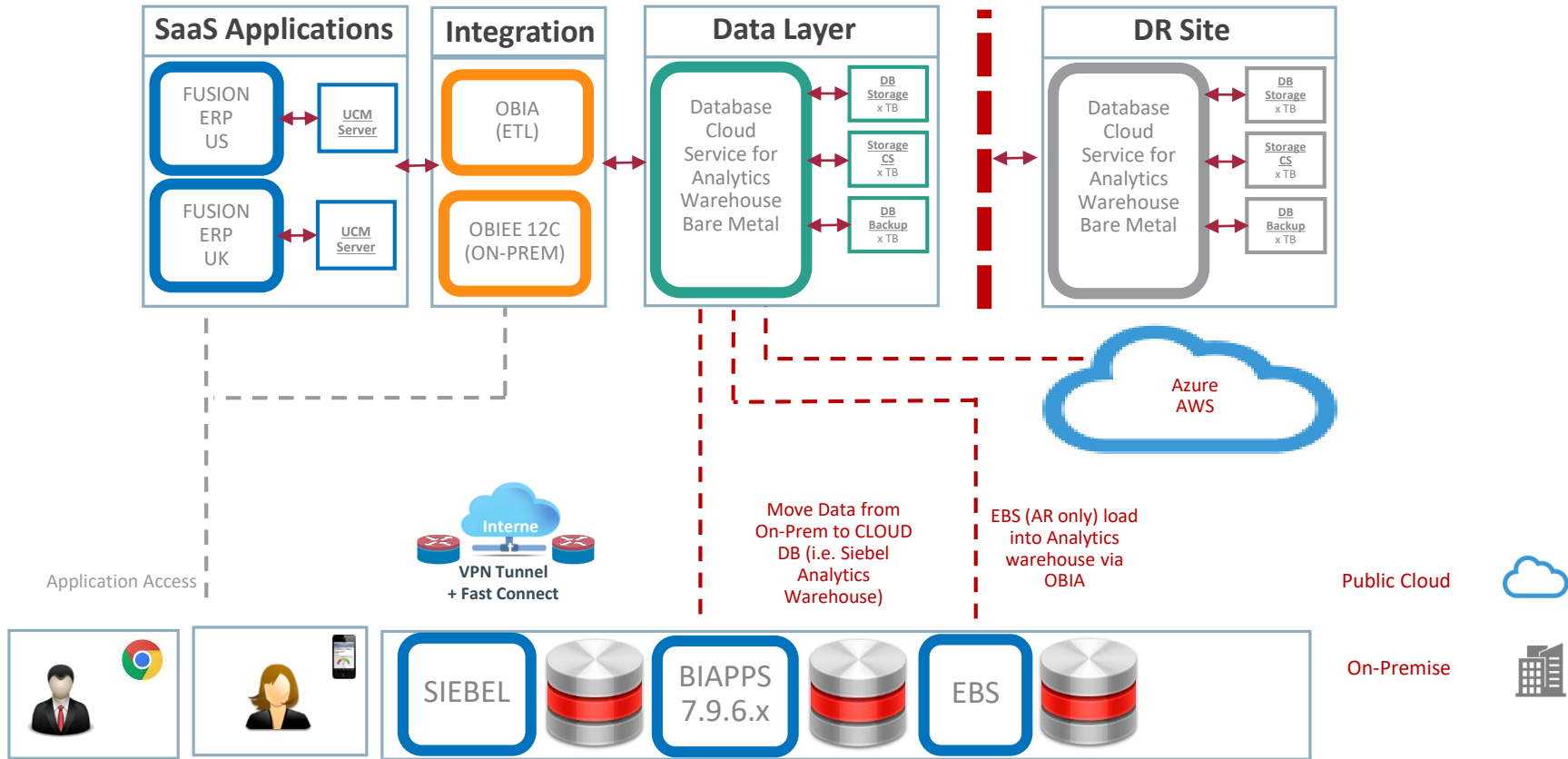
Started: Fri, 19 Oct 2018 06:28:26 GMT

Ended: Fri, 19 Oct 2018 06:35:10 GMT





How it all works



Security | Data Redaction

SSO + Data Redaction



Data Redaction

```
BEGIN
```

```
  DBMS_REDACT.ADD_POLICY (OBJECT_SCHEMA => 'SIEBEL',  
object_name => 'W_PERSON_D', policy_name =>'PII', expression =>  
'SYS_CONTEXT("SYS_SESSION_ROLES", "PII") = "FALSE"');
```

```
  END;
```

```
 /
```

```
BEGIN
```

```
  DBMS_REDACT.ALTER_POLICY (OBJECT_SCHEMA => 'SIEBEL', object_name =>  
'W_PERSON_D', policy_name =>'PII', action => DBMS_REDACT.ADD_COLUMN,  
column_name => "'BIRTH_DT '",function_type => DBMS_REDACT.FULL );
```

```
  END;
```

```
 /
```

What is Data Redaction?

Policy : PPI

OBJECT_NAME	COLUMN_NAME
W_PERSON_D	LAST_NAME
W_PERSON_D	LOGIN
W_PERSON_D	MID_NAME
W_PERSON_D	SPOUSE_NAME
W_PERSON_D	STATE
W_PERSON_D	ST_ADDRESS
W_PERSON_D	WORK_PHONE
W_PERSON_D	X_CITY
W_PERSON_D	X_COUNTRY
W_PERSON_D	X_FST_NAME
W_PERSON_D	X_LAST_NAME
W_PERSON_D	X_STATE
W_PERSON_D	X_ST_ADDRESS
W_PERSON_D	X_WORK_PHONE
W_PERSON_D	X_ZIPCODE
W_PERSON_D	ZIPCODE
W_PERSON_D	INTEGRATION_ID
W_PERSON_D	BIRTH_DT
W_PERSON_D	CALL_LST_NAME
W_PERSON_D	CITY
W_PERSON_D	CON_BU_NAME
W_PERSON_D	COUNTRY
W_PERSON_D	EMAIL_ADDR
W_PERSON_D	EMP_ACCNT_BU_NAME
W_PERSON_D	EMP_ACCNT_NAME
W_PERSON_D	FAX_PH_NUM
W_PERSON_D	FST_NAME
W_PERSON_D	FULL_NAME
W_PERSON_D	JOB_TITLE

Role : PPI

User with No Role : PPI

```
SQL> select full_name from SIEBEL.W_PERSON_D where rownum < 10;

FULL_NAME
-----
9 rows selected.

SQL>
```


Enabling In-Memory

What is In-Memory?



```
SQL> select pool, alloc_bytes,used_bytes,populate_status from v$inmemory_area;
POOL                ALLOC_BYTES USED_BYTES POPULATE_STATUS
-----
1MB POOL             8.5815E+10 1.3780E+10 DONE
64KB POOL            2.1446E+10  90177536 DONE
SQL>
```

HugePages

```
SQL> show parameter use_large_pages
```

NAME	TYPE	VALUE
use_large_pages	string	only

```
SQL>
```

```
[oracle@edwh ~]$ cat /proc/meminfo | grep -i pages
AnonPages:          10030528 kB
AnonHugePages:      8069120 kB
HugePages_Total:    135349
HugePages_Free:     82214
HugePages_Rsvd:     115
HugePages_Surp:     0
Hugepagesize:       2048 kB
[oracle@edwh ~]$
```

Enabling In-Memory (1,2,3)

```
SQL> show parameter INMEMORY
```

NAME	TYPE	VALUE
inmemory_adg_enabled	boolean	TRUE
inmemory_clause_default	string	
inmemory_expressions_usage	string	ENABLE
inmemory_force	string	DEFAULT
inmemory_max_populate_servers	integer	0
inmemory_query	string	ENABLE
inmemory_size ←	big integer	0
inmemory_trickle_repopulate_servers_percent	integer	1
inmemory_virtual_columns	string	MANUAL
optimizer_inmemory_aware	boolean	TRUE

```
SQL>
```

```
SQL> select name, value from v$sga;
```

NAME	VALUE
Fixed Size	8801008
Variable Size	2634024208
Database Buffers	1627389952
Redo Buffers	24752128

alter system set inmemory_size=100G scope=spfile;
alter system set sga_target=104G scope=spfile;

Restart the database and check the values.

Types of Compression and Priority

	Compression	Priority	
No Compression	NO MEMCOMPRESS	PRIORITY CRITICAL	When Database Opened When First Scanned – and available Space
	MEMCOMPRESS FOR DML	PRIORITY HIGH	
	MEMCOMPRESS FOR QUERY LOW	PRIOTIY MEDIUM	
	MEMCOMPRESS FOR QUERY HIGH	PRIORITY LOW	
	MEMCOMPRESS for CAPACITY LOW	PRIORITY NONE	
Space Saving	MEMCOMPRESS for CAPACITY HIGH		

Priority Critical : Fact Tables

Priority High : Dimension Tables

Oracle Compression Advisor

```
DECLARE
l_blkcnt_cmp      PLS_INTEGER;
l_blkcnt_uncmp   PLS_INTEGER;
l_row_cmp        PLS_INTEGER;
l_row_uncmp      PLS_INTEGER;
cmp_ratio        PLS_INTEGER;
comptype_str     VARCHAR2(100);
comp_ratio_allrows NUMBER := -1;
BEGIN
DBMS_COMPRESSION.GET_COMPRESSION_RATIO(
scratchtbsname => 'SCRATCH',
ownname        => 'NF_EBS',
objname        => 'PA_EMAIL',
subobjname     => NULL,
comptype       => dbms_compression.comp_inmemory_query_low,
blkcnt_cmp     => l_blkcnt_cmp,
blkcnt_uncmp   => l_blkcnt_uncmp,
row_cmp        => l_row_cmp,
row_uncmp      => l_row_uncmp,
cmp_ratio      => cmp_ratio,
comptype_str   => comp_type_str,
subset_numrows => dbms_compression.comp_ratio_allrows);
dbms_output.Put_line('The compression ratio : '|| cmp_ratio);
dbms_output.Put_line('The compression Type : '|| comp_type_str);
END;
/
```

```
SQL> /
The compression ratio : 2
The compression Type : "In-memory Memcompress Query Low"
```

```
SQL> /
The compression ratio : 3
The compression Type : "In-memory Memcompress Capacity High"
```

Loading and Validating

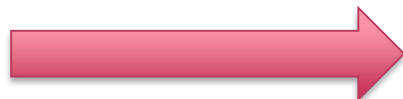
alter table W_EXPENSE_VIOLATION_F inmemory priority critical;

Select v.segment_name name, v.populate_status populate_status, v.bytes_not_populated missing_bytes from v\$im_segments v order by 1;

```
NAME                                POPULATE_STAT MISSING_BYTES
-----
W_AP_XACT_F                          COMPLETED          0
W_EXPENSE_CC_F                       COMPLETED          0
W_EXPENSE_F                          COMPLETED      23674880
W_FA_BALANCE_F                       COMPLETED          0
W_FA_XACT_F                          COMPLETED          0
W_GL_OTHER_F                         STARTED      4326653952
W_SLA_BALANCE_F                     COMPLETED      2809856

7 rows selected.
```

Every 2m the daemon runs, so after a few minutes



```
NAME                                POPULATE_STAT MISSING_BYTES
-----
W_AP_BALANCE_F                      COMPLETED          0
W_AP_XACT_F                          COMPLETED          0
W_AR_BALANCE_F                      COMPLETED          0
W_AR_XACT_F                          COMPLETED          0
W_CUSTOMER_FIN_PROFL_F              COMPLETED          0
W_EXPENSE_CC_F                      COMPLETED          0
W_EXPENSE_F                          COMPLETED          0
W_EXPENSE_VIOLATION_F              COMPLETED          0
W_FA_BALANCE_F                      COMPLETED          0
W_FA_XACT_F                          COMPLETED          0
W_GL_BALANCE_F                      COMPLETED          0
W_GL_OTHER_F                        COMPLETED          0
W_GL_REVN_F                          COMPLETED          0
W_SLA_BALANCE_F                    COMPLETED          0
W_SLA_XACT_F                        COMPLETED          0

15 rows selected.
```

Columnar Compression

```
select sum(v.bytes/1024/1024/1024) originalGB, sum(v.inmemory_size/1024/1024/1024) memsizeGB from v$sim_segments v
```

```
SQL> /  
  
ORIGINALGB  MEMSIZEGB  
-----  
19.4790955  4.98284912  
  
SQL>
```

Select v.segment_name name, v.bytes original, v.inmemory_size mem_size, v.bytes / v.inmemory_size ratio from v\$sim_segments v order by 1;

```
NAME                                ORIGINAL      MEM_SIZE      RATIO  
-----  
W_AP_BALANCE_F                      21610496     10747904     2.01067073  
W_AP_XACT_F                          433659904    88539136     4.89794597  
W_AR_BALANCE_F                      1786281984   1158807552   1.54148286  
W_AR_XACT_F                          3116654592   518324224    6.01294411  
W_CUSTOMER_FIN_PROFL_F              1998848      1310720      1.525  
W_EXPENSE_CC_F                     1998848      1310720      1.525  
W_EXPENSE_F                         23674880     6553600      3.6125  
W_EXPENSE_VIOLATION_F              598016       1310720      .45625  
W_FA_BALANCE_F                      6127616     3407872     1.79807692  
W_FA_XACT_F                          12320768     5505024     2.23809524  
W_GL_BALANCE_F                      291610624    104267776   2.79674733  
W_GL_OTHER_F                        6619635712   1007419392   6.57088375  
W_GL_REVN_F                          538107904    114950144   4.68122862  
W_SLA_BALANCE_F                     2809856      1310720     2.14375  
W_SLA_XACT_F                        3328294912   1102577664   3.01864895  
  
15 rows selected.
```


What is In-Memory?

```
select table_name, inmemory, inmemory_compression, inmemory_priority from all_tables where owner='OBIA_DW' and inmemory='ENABLED'
```

TABLE_NAME	INMEMORY	INMEMORY_COMPRESS	INMEMORY
W_GL_BALANCE_F	ENABLED	FOR QUERY LOW	CRITICAL
W_GL_OTHER_F	ENABLED	FOR QUERY LOW	CRITICAL
W_AR_XACT_F	ENABLED	FOR QUERY LOW	CRITICAL
W_EXPENSE_F	ENABLED	FOR QUERY LOW	CRITICAL
W_AP_XACT_F	ENABLED	FOR QUERY LOW	CRITICAL
W_SLA_XACT_F	ENABLED	FOR QUERY LOW	CRITICAL
W_FA_XACT_F	ENABLED	FOR QUERY LOW	CRITICAL
W_GL_REVN_F	ENABLED	FOR QUERY LOW	CRITICAL
W_EXPENSE_CC_F	ENABLED	FOR QUERY LOW	CRITICAL
W_AP_BALANCE_F	ENABLED	FOR QUERY LOW	CRITICAL
W_FA_BALANCE_F	ENABLED	FOR QUERY LOW	CRITICAL
W_AR_BALANCE_F	ENABLED	FOR QUERY LOW	CRITICAL
W_EXPENSE_VIOLATION_F	ENABLED	FOR QUERY LOW	CRITICAL
W_CUSTOMER_FIN_PROFL_F	ENABLED	FOR QUERY LOW	CRITICAL
W_SLA_BALANCE_F	ENABLED	FOR QUERY LOW	CRITICAL

15 rows selected.

What is Current State

```
SQL> select count (*) from all_tables where inmemory='ENABLED';

COUNT (*)
-----
        243

SQL> █
```

```
SQL> select sum(v.bytes/1024/1024/1024) original, sum(v.inmemory_size/1024/1024/1024) memsize from v$im_segments v;

ORIGINAL      MEMSIZE
-----
48.0913849 12.9179688
```


WITH

SAWITHO AS (select sum(case when T2636036.OTHER_LOC_AMT is null then 0 else T2636036.OTHER_LOC_AMT * T2636036.GLOBAL1_EXCHANGE_RATE end) as c1,
T2636036.JOURNAL_LINE_DESCR as c2,
T2635833.CONCATENATED_SEGMENT_VALUE as c3,
T2635833.GL_ACCOUNT_CAT_CODE as c4,
T2635833.GROUP_ACCOUNT_NUM as c5,
T2635833.NATURAL_ACCOUNT_NUM as c6,
T2518265.LEDGER_NAME as c7,
T2534573.MCAL_DAY_DT as c8,
T2534573.MCAL_PERIOD_NAME as c9,
case when T2635833.CONCATENATED_SEGMENT_VALUE like '%.307.%' then 'Dues and Fees Revenue' when T2635833.CONCATENATED_SEGMENT_VALUE like '%.308.%'
then 'Dues and Fees Revenue' when T2635833.CONCATENATED_SEGMENT_VALUE like '%.320.%' then 'Dues and Fees Revenue' when
T2635833.CONCATENATED_SEGMENT_VALUE like '%.321.%' then 'Dues and Fees Revenue' when T2635833.CONCATENATED_SEGMENT_VALUE like '%.234.%' then 'Dues and
Fees Revenue' when T2635833.CONCATENATED_SEGMENT_VALUE like '%.309.%' then 'Dues and Fees Revenue' when T2635833.CONCATENATED_SEGMENT_VALUE like
'%.310.%' then 'Dues and Fees Revenue' when T2635833.CONCATENATED_SEGMENT_VALUE like '%.300.%' then 'Dues and Fees Revenue' when
T2635833.CONCATENATED_SEGMENT_VALUE like '%.301.%' then 'Dues and Fees Revenue' when T2635833.CONCATENATED_SEGMENT_VALUE like '%.311.%' then 'Dues and
Fees Revenue' when T2635833.CONCATENATED_SEGMENT_VALUE like '%.312.%' then 'Dues and Fees Revenue' when T2635833.CONCATENATED_SEGMENT_VALUE like
'%.302.%' then 'Dues and Fees Revenue' when T2635833.CONCATENATED_SEGMENT_VALUE like '%.313.%' then 'Dues and Fees Revenue' when
T2635833.CONCATENATED_SEGMENT_VALUE like '%.305.%' then 'Dues and Fees Revenue' when T2635833.CONCATENATED_SEGMENT_VALUE like '%.316.%' then 'Dues and
Fees Revenue' when T2635833.CONCATENATED_SEGMENT_VALUE like '%.303.%' then 'Dues and Fees Revenue' when T2635833.CONCATENATED_SEGMENT_VALUE like
'%.314.%' then 'Dues and Fees Revenue' when T2635833.CONCATENATED_SEGMENT_VALUE like '%.304.%' then 'Dues and Fees Revenue' when
T2635833.CONCATENATED_SEGMENT_VALUE like '%.315.%' then 'Dues and Fees Revenue' when T2635833.CONCATENATED_SEGMENT_VALUE like '%.230.%' then 'Dues and
Fees Revenue' when T2635833.CONCATENATED_SEGMENT_VALUE like '%.231.%' then 'Dues and Fees Revenue' when T2635833.CONCATENATED_SEGMENT_VALUE like
'%.232.%' then 'Dues and Fees Revenue' when T2635833.CONCATENATED_SEGMENT_VALUE like '%.233.%' then 'Dues and Fees Revenue' when
T2635833.CONCATENATED_SEGMENT_VALUE like '%.235.%' then 'Dues and Fees Revenue' when T2635833.CONCATENATED_SEGMENT_VALUE like '%.236.%' then 'Dues and
Fees Revenue' when T2635833.CONCATENATED_SEGMENT_VALUE like '%.250.%' then 'Dues and Fees Revenue' when T2635833.CONCATENATED_SEGMENT_VALUE like
'%.251.%' then 'Dues and Fees Revenue' when T2635833.CONCATENATED_SEGMENT_VALUE like '%.252.%' then 'Dues and Fees Revenue' when
T2635833.CONCATENATED_SEGMENT_VALUE like '%.253.%' then 'Dues and Fees Revenue' when T2635833.CONCATENATED_SEGMENT_VALUE like '%.254.%' then 'Dues and
Fees Revenue' when T2635833.CONCATENATED_SEGMENT_VALUE like '%.255.%' then 'Dues and Fees Revenue' when T2635833.CONCATENATED_SEGMENT_VALUE like
'%.270.%' then 'Dues and Fees Revenue' when T2635833.CONCATENATED_SEGMENT_VALUE like '%.271.%' then 'Dues and Fees Revenue' when
T2635833.CONCATENATED_SEGMENT_VALUE like '%.272.%' then 'Dues and Fees Revenue' when T2635833.CONCATENATED_SEGMENT_VALUE like '%.273.%' then 'Dues and
Fees Revenue' when T2635833.CONCATENATED_SEGMENT_VALUE like '%.274.%' then 'Dues and Fees Revenue' when T2635833.CONCATENATED_SEGMENT_VALUE like
'%.275.%' then 'Dues and Fees Revenue' when T2635833.CONCATENATED_SEGMENT_VALUE like '%.290.%' then 'Dues and Fees Revenue' when
T2635833.CONCATENATED_SEGMENT_VALUE like '%.291.%' then 'Dues and Fees Revenue' when T2635833.CONCATENATED_SEGMENT_VALUE like '%.100.%' then 'Revenue
Producing Activities' when T2635833.CONCATENATED_SEGMENT_VALUE like '%.101.%' then 'Revenue Producing Activities' when T2635833.CONCATENATED_SEGMENT_VALUE
like '%.102.%' then 'Revenue Producing Activities' when T2635833.CONCATENATED_SEGMENT_VALUE like '%.103.%' then 'Revenue Producing Activities' when
T2635833.CONCATENATED_SEGMENT_VALUE like '%.104.%' then 'Revenue Producing Activities' when T2635833.CONCATENATED_SEGMENT_VALUE like '%.105.%' then
'Revenue Producing Activities' when T2635833.CONCATENATED_SEGMENT_VALUE like '%.106.%' then 'Revenue Producing Activities' when
T2635833.CONCATENATED_SEGMENT_VALUE like '%.107.%' then 'Revenue Producing Activities' when T2635833.CONCATENATED_SEGMENT_VALUE like '%.108.%' then
'Revenue Producing Activities' when T2635833.CONCATENATED_SEGMENT_VALUE like '%.109.%' then 'Revenue Producing Activities' when

In-Memory Disabled



In-Memory Enabled



Performance Test

Q1

```
select count(T32152.ROW_WID) as c1,
       T44991.AREA as c2,
       T44991.BRANCH as c3,
       T32152.COUNTRY as c4,
       T44991.COUNTRY as c5
from
  SIEBEL.W_PERSON_D T32152,
  SIEBEL.W_GEO_D T32359,
  SIEBEL.WC_GEO_DX T44991
where ( T32152.GEO_WID =
T32359.ROW_WID
and T32359.ROW_WID =
T44991.ROW_WID )
group by T32152.COUNTRY,
T44991.BRANCH,
T44991.AREA, T44991.COUNTRY
```

Q2

```
select sum(case when T32781.END_DT_WID
= 20501231 then 1.0 end ) as c1,
       T32533.NAME as c2,
       T32533.ACCNT_STATUS as c3,
       T32412.X_CIMA_COMPANY_RANK as c4,
       T32412.X_CIMA_CMPNY_SIZE as c5
from
  SIEBEL.WC_ORG_DX T32412,
  SIEBEL.W_ORG_D T32533,
  SIEBEL.WC_PERSON_F T32781
where ( T32412.ROW_WID =
T32533.ROW_WID and T32533.ROW_WID =
T32781.ACCNT_WID )
group by T32412.X_CIMA_COMPANY_RANK,
T32412.X_CIMA_CMPNY_SIZE,
T32533.ACCNT_STATUS, T32533.NAME
```

Q3

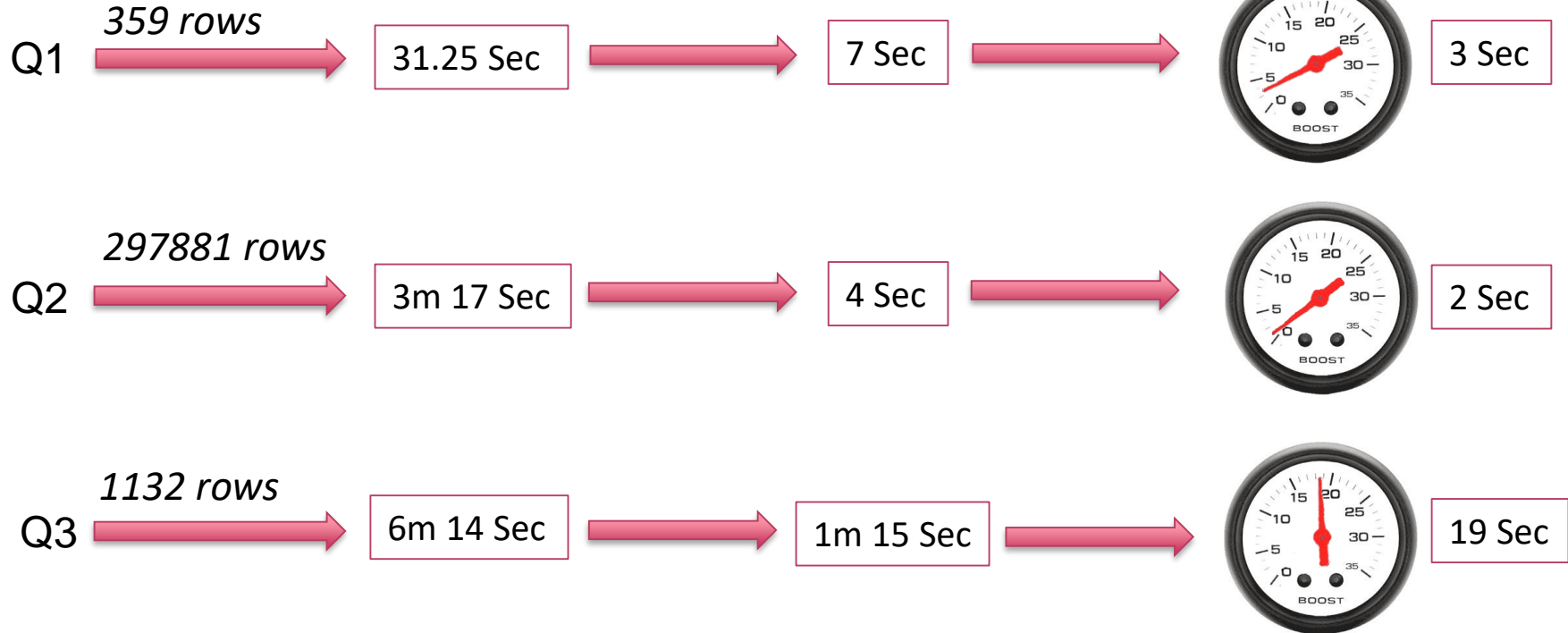
```
select count(T132637.ROW_WID) as c1,
       T32348.CUST_STAT_CD as c2,
       case when T32348.CON_CD = 'Student TOC' then
'Student' else T32348.CON_CD end as c3,
       T132819.STATUS_CD as c4,
       T132991.X_CIMA_ORDER_TYPE as c5
from
  SIEBEL.WC_ORDER_DX T132991,
  SIEBEL.W_ORDER_D T132819,
  SIEBEL.WC_PERSON_DX T32348,
  SIEBEL.W_PERSON_D T32152,
  SIEBEL.WC_ORDER_F T132637
where ( T32152.ROW_WID = T32348.ROW_WID and
T32152.ROW_WID = T132637.CONTACT_WID and
T132637.ORDER_WID = T132819.ROW_WID and
T132819.ROW_WID = T132991.ROW_WID )
group by T32348.CUST_STAT_CD,
T132819.STATUS_CD, T132991.X_CIMA_ORDER_TYPE,
case when T32348.CON_CD = 'Student TOC' then
'Student' else T32348.CON_CD end
```

Performance Test Results

Oracle DB

Exalytics
(Times Ten)

DBIM



Summary

- All Tables approx. (150) loaded into memory
- 1 Database to manage
- Up to 85% columnar compression
- Achieved huge performance uplift with zero application code changes
- 10x + performance improvement, in some cases much higher
- Enabled unachievable analysis, leading to greater knowledge of customers and challenges across the company
- It just works





Association
of International
Certified Professional
Accountants®

Questions?

Thank you