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# Top Performance Tuning Tips for OBIEE Part II

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ShipConsole
The Premier Shipping Solution for Oracle Applications

Value Delivery – Core to Our Mission

- E-Business Suite Implementation & Managed Services
- *OBIEE, Pre-Built BI Analytics
- Hyperion EPM
- Middleware, Integration
- Infrastructure Services

ValueIT
We offer and deliver value based IT services
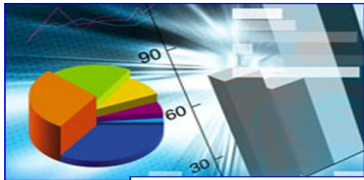
- Subject Matter Experts
- Best Practice Methodology
- High Value ROI
- Local / Global Service Delivery
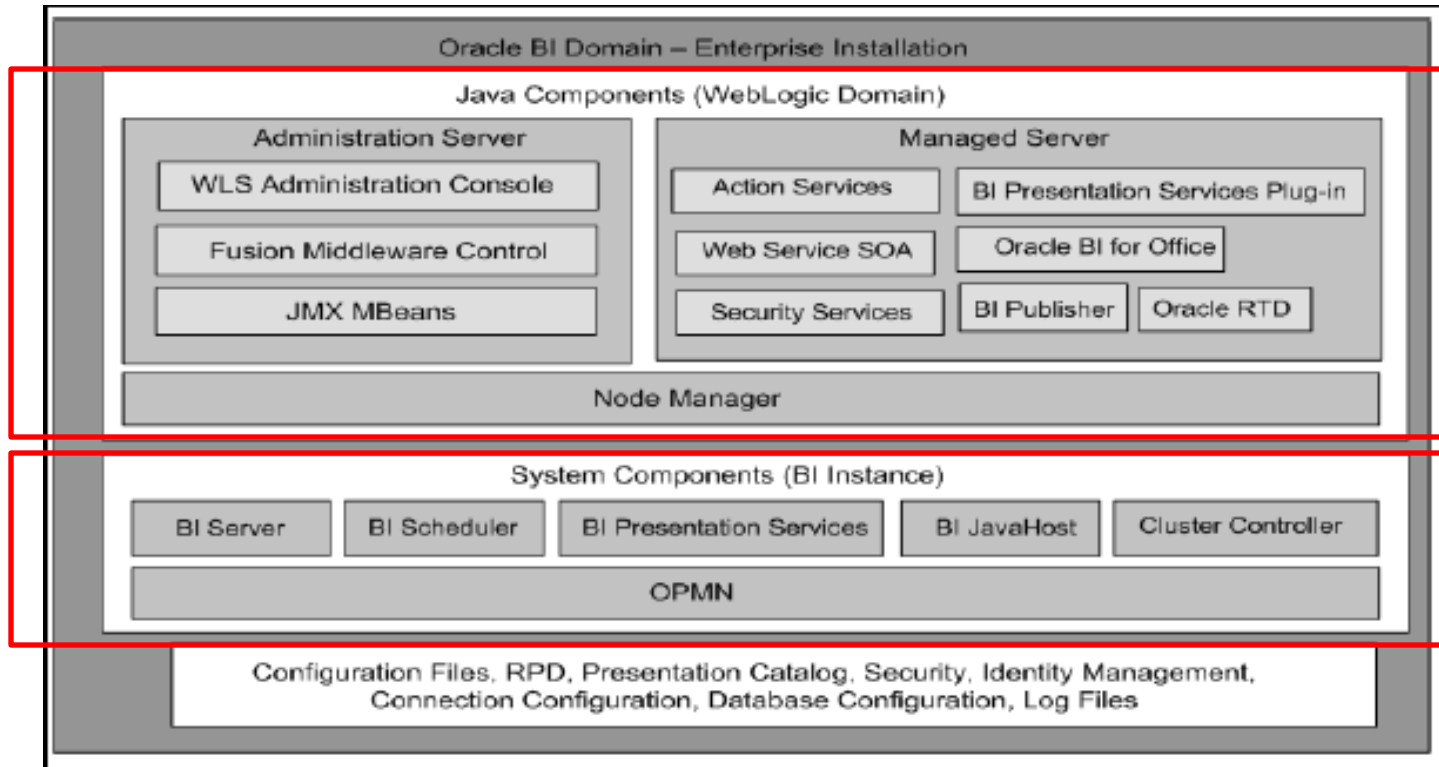
* Selected by Oracle as BI Pillar Partner

Boston   New York   Chicago   Atlanta   Germany   Netherlands   India   Middle East

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- **OBIEE Architecture**
  - Single Host
  - Multiple Host
  - Recommended Patches

- **Performance Tuning Components**
  - Oracle Weblogic Server
  - Oracle BI Server
  - Oracle BI Presentation Server
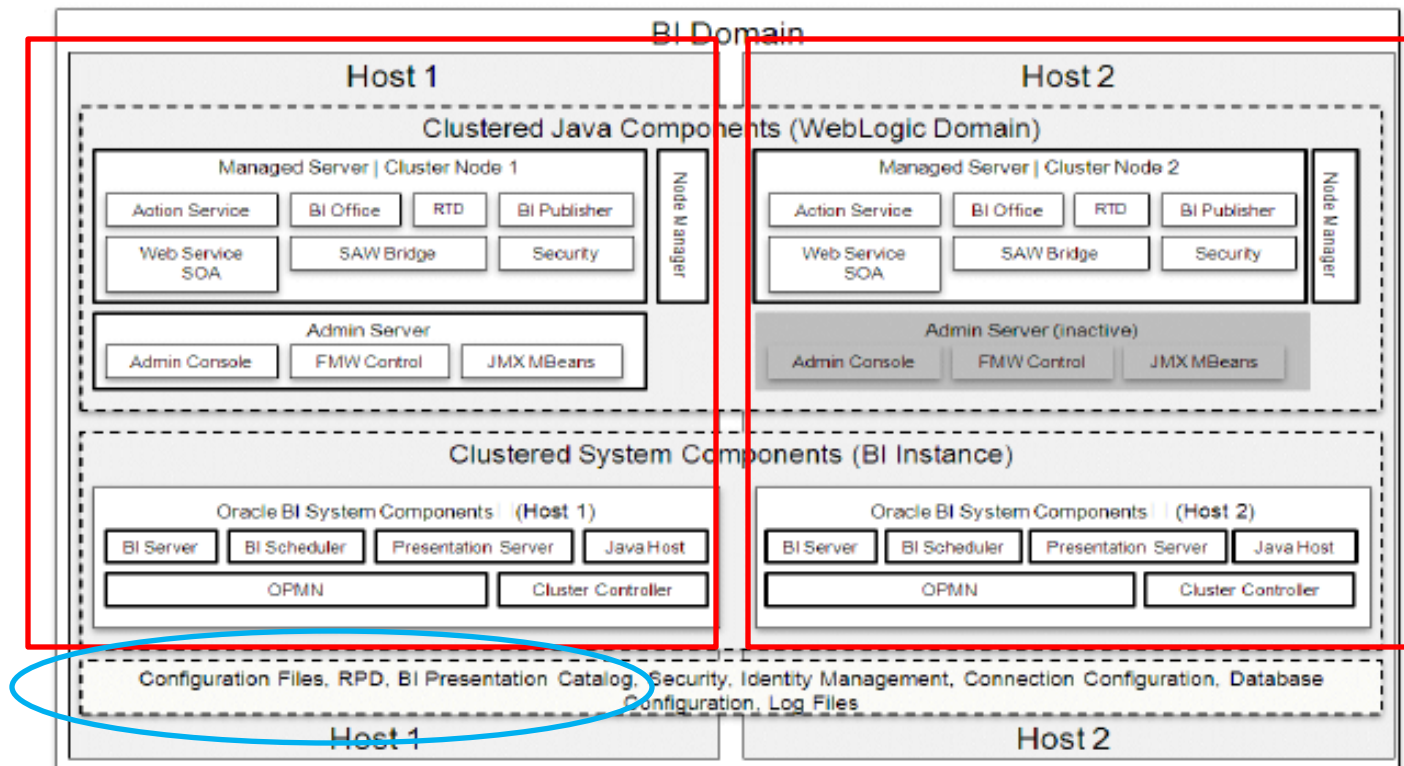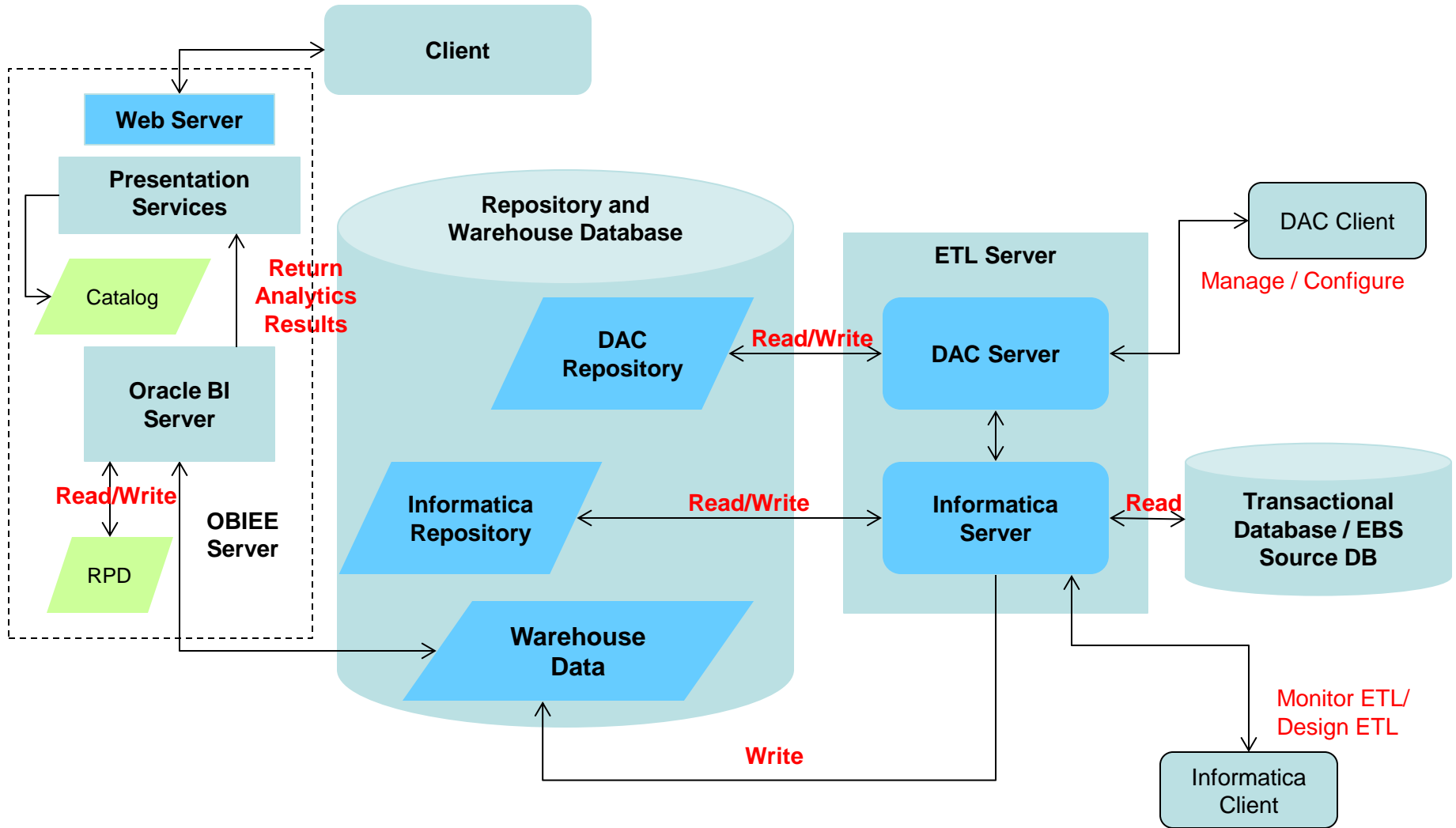 - Data warehouse

- **Summary**

Architecture Review

- Logical Architecture of Enterprise Install on Single Host

Oracle BI Domain – Enterprise Installation

Java Components (WebLogic Domain)

Administration Server
- WLS Administration Console
- Fusion Middleware Control
- JMX MBeans

Managed Server
- Action Services
- Web Service SOA
- Security Services
- BI Presentation Services Plug-in
- Oracle BI for Office
- BI Publisher
- Oracle RTD

Node Manager

System Components (BI Instance)
- BI Server
- BI Scheduler
- BI Presentation Services
- BI JavaHost
- Cluster Controller

OPMN

Configuration Files, RPD, Presentation Catalog, Security, Identity Management, Connection Configuration, Database Configuration, Log Files

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OBIEE Architecture II

- Logical Architecture of Enterprise Install on Multiple Hosts

OBIEE with BIAPPS

Client

Web Server

Presentation Services

Catalog

Return Analytics Results

Oracle BI Server

Read/Write

RPD

OBIEE Server

Repository and Warehouse Database

DAC Repository

Read/Write

Informatica Repository

Read/Write

Warehouse Data

Write

ETL Server

DAC Server

Informatica Server

DAC Client

Manage / Configure

Read

Transactional Database / EBS Source DB

Monitor ETL/ Design ETL

Informatica Client

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OBIEE 11.1.1.5

- Patch 13611078: TRACKING BUG FOR 11.1.1.5.0 BP2 PATCHSET (BP1 BUG 13562882 + NEW BUG FIXES)

  - 12821662:SEVERE PERFORMANCE DEGRADATION WITH PIVOT TABLE PROMPT OVER OLAP SOURCE

  - 12800814:PSR:PERF:BI THERE ARE SOME MEMORY LEAKS IN SAS(OBIS)

  - 12739309:PSR:PERF:BI OBIS RESPONSE TIME GOES UP TO 500SECONDS+ WHEN RUNNING SCOTIA RPD

  - 12717149:PERFORMANCE ISSUE IN VALUE HIERARCHY DRILL ISSUE - WITH ESSBASE ALIAS COLUMNS

  - 12701483:BAD PERFORMANCE IN A PIVOT TABLE WITH ESSBASE AND UNCHECKUSE UNQUALIFIED MEMBER

  - 12399899:PERFORMANCE IMPROVEMENT - REMOVE CENTER QUERIES FOR PAGE SLICES NOT DISPLAYED

  - 11924932:PERFORMANCE ISSUES IN 11G

  - 11823765:SIGNIFCANT PERFORMANCE DIFFERENCE BETWEEN PIVOT AND TABULAR VIEWS

OBIEE 11.1.1.6

- Patch 13932572: Patch 11.1.1.6.2 Oracle Business Intelligence Installer

  - No direct performance fixes

  - About 20 high priority bugs are fixed

  - This patch is highly recommended for all the customers (except Exalytics customers) who are using Oracle Business Intelligence Enterprise Edition 11.1.1.6.0 and 11.1.1.6.1

Performance Tuning

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- ## Components Involved

  - Weblogic Server

  - BI Server

  - Presentation Server

  - Data warehouse

- ## Monitoring Tools

  - Enterprise Manager Metric Palette

  - Performance Monitor - *http://<server:port>/analytics/saw.dll?Perfmon*

  - Server

    - mpstat - Report processors related statistics

    - vmstat - vmstat reports virtual memory statistics of process virtual memory, disk, trap, and CPU activity

    - iostat: Reports terminal and disk I/O activity and CPU utilization

Tune connection backlog buffering

- Connections are dropped or refused at the client, and no other error messages are on the server, the **Accept Backlog** value might be set too low.

- Increase value by 25% of default value each time to evaluate

Tune Statement Cache

- When using Oracle Database "Oracle JDBC Driver"

Data Source Name	Default Value	Suggested Value*
bip_datasource	10	0
mds-owsm	10	0
EPMSystemRegistry	10	0

JVM - BI Server

Tune Heap Size

Disallow RPD Updates

- Improve Oracle BI Server performance, because in this mode, the Oracle BI Server does not need to handle lock control

- Set the User Session Log-Off Period

- You can override the time to elapse, in minutes, before a user is automatically logged off by setting the User Session Expiry

Configuration Options for Data in Tables and Pivot Tables

- Maximum Number of Rows to Download to Excel option

- Maximum Number of Rows Per Page to Include in Email option

- Maximum Number of Rows Processed to Render A Table View

- ## Set the Maximum Number of Rows Processed to Render a Table

  - Override the maximum number of rows that can be fetched and processed from the Oracle BI Server for rendering a table.

  - Reducing the number of rows in a table can significantly improve performance by reducing the system resources that can be consumed by a given user session.

- ## Query Cache

  - Significant Performance benefit improving the query response time.

  - Important consideration to purge the cache

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Catalog resides on a NFS Share in a cluster

- Proper guidelines necessary for file system

  - Read-to-write ratio is typically at least 100 to 1.

  - Use care when considering storing arbitrary "Properties" in ".atr" files.

  - Presentation Services additionally caches all ".atr" files internally.

  - Tune "MaxAgeMinutes" element in the instanceconfig.xml – default for cluster 5 minutes

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Handling Catalog File

- UNIX Platforms:

    - UNIX kernels must commonly be configured to allow more than 4000 subdirectories per directory

- Windows Platforms:

    - FAT is not supported, and NTFS is required.

    - Performance on Windows platforms degrades noticeably when more than 8000 files exist in a single directory

    - Strongly recommended that you not store more than 4000 catalog objects in a single directory

    - Set HashUserHomeDirectories element to 2 from its default value of 0

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- ## Union requests

  - ### Generates more temp files, more memory

  - ### Faster disks for temp files along with model changes

- ## #Columns in Criteria vs. Pivot View

  - ### Additional grouping based on dimensions in criteria

- ## Guided Navigations

  - ### Additional load on BI Resources

- ## RANK / Filters

  - ### Performed on Temp files, network traffic between OBIPS, OBIS, Data warehouse, Top N analysis

- ## Object Permissions By Groups/Roles

- ## Designing better federated requests.

  - ### More temp files, better synchronizing confirmed dimensions in each data source to reduce data federation.

Slow or delayed

- Log in

- Navigation – my dashboard / dropdown list

- Catalog Search time

- Slow or delayed

Clean Invalid Permissions in the Catalog

- runcat -cmd forgetAccounts -username xxxxx -cleanup -offline "Catalog PATH"

- Zero Bytes, corresponding .atr files;

- 7-zip, refresh GUIDs, same security store in each env

- Schedule Cleanup as repetitive job.

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Query Result Cache

- DATA_STORAGE_PATHS

    - Multiple directories on different drives with I/O Control

    - Multiple paths for value great than 4 GB

- MAX_ROWS_PER_CACHE_ENTRY, MAX_CACHE_ENTRY_SIZE

- MAX_CACHE_ENTRIES, POPULATE_AGGREGATE_ROLLUPS

- USE_ADVANCED_HIT_DETECTION

- DISABLE_SUBREQUEST_CACHING

- CACHE_POLL_SECONDS

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Other NQSConfig.INI Parameters

- CASE_SENSITIVE_CHARACTER_COMPARISON

  - ORDER BY, GROUP BY, DISTINCT, JOIN, COMPARISIONS (USER GROUP,USER, user group,user)

- WORK_DIRECTORY_PATHS

- VIRTUAL_TABLE_SIZE = 128KB – 256 KB (Windows 64KB)

- MAX_SESSION_LIMIT - #sessions to BI Server

- SERVER_THREAD_RANGE - #queries active in BI Server

- CONNECTION POOL - #threads to process physical SQL

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- ## Minimize Session Variables

- ## Usage Tracking (S_NQ_ACCT)

  - Row Count vs. Cumulative Database Rows

  - Cache Entries Trend

  - Peak Usage Trend

- ## Aggregation Strategy

  - Aggregation Persistence Wizard

  - Aggregate Facts / Snapshots

  - Summary Advisor (For Exalytics)

Exalytics:

OBIEE 11.1.1.6
Times Ten
Essbase

Memory
1 TB RAM, 1033 MHz
Compute
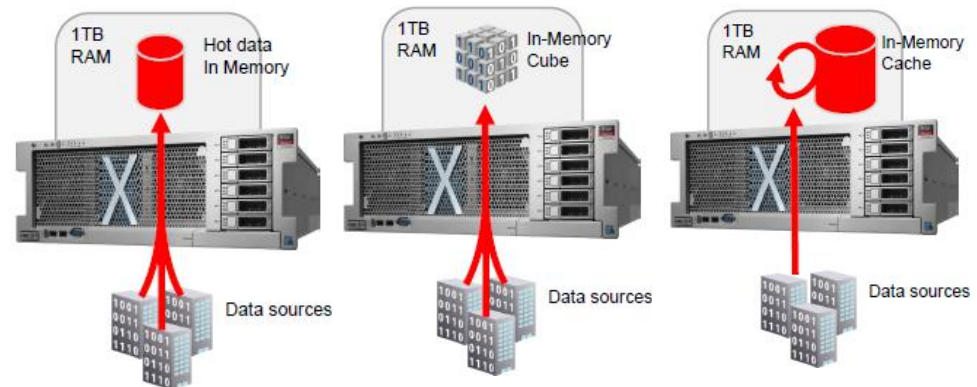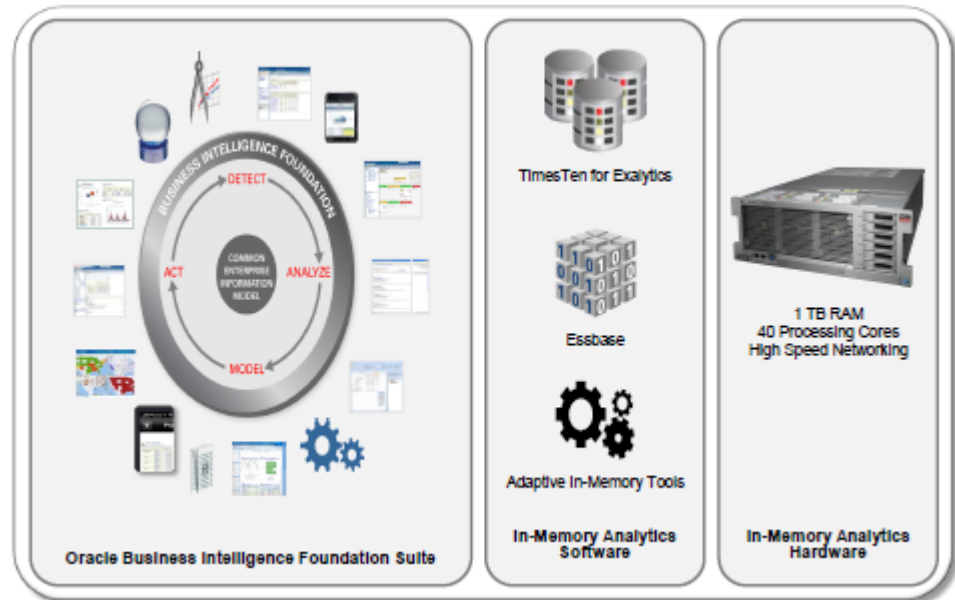4 Intel® Xeon® E7-4870, 40 cores total
Networking
40 Gbps InfiniBand – 2 ports
10 Gbps Ethernet – 2 ports
1 Gbps Ethernet – 4 ports
Storage
3.6 TB HDD Capacity

Summary Advisor:

- Slow data sources, facts, grains
- Workload distribution with optimal data mart
- Any size DW
- Stats Collector based on Usage Tracking

Gather Statistics

- You should consider switching to 'FOR ALL COLUMNS SIZE AUTO' syntax in DBMS_STATS.GATHER_TABLE_STATS call in DAC:

    - Navigate to your <DAC_HOME>/CustomSQLs and open customsql.xml file for editing.

    - Replace 'FOR INDEXED COLUMNS' with 'FOR ALL COLUMNS SIZE AUTO' in DBMS_STATS.GATHER_TABLE_STATS call in <SqlQuery name = "ORACLE_ANALYZE_TABLE" STORED_PROCEDURE = "TRUE" > section.

    - Save the changes.

Tune Init.ora Parameters

- MEMORY_TARGET
- PGA_AGGREGATE_TARGET
- PARALLEL_MAX_SERVERS

Refer and Set BIAPPS Initialization Parameters

Partitioning

- Partitioning allows a table, index or index-organized table to be subdivided into smaller pieces.
  - Partitioning for manageability
  - Partitioning for easier data access
  - Partitioning for join performance
  - Reduce the Initial and Incremental ETL Time
  - Optimizer Partition Elimination Logic

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Materialized Views

- QUERY_REWRITE

- Pre-Aggregate summary views improves significantly end user query performance
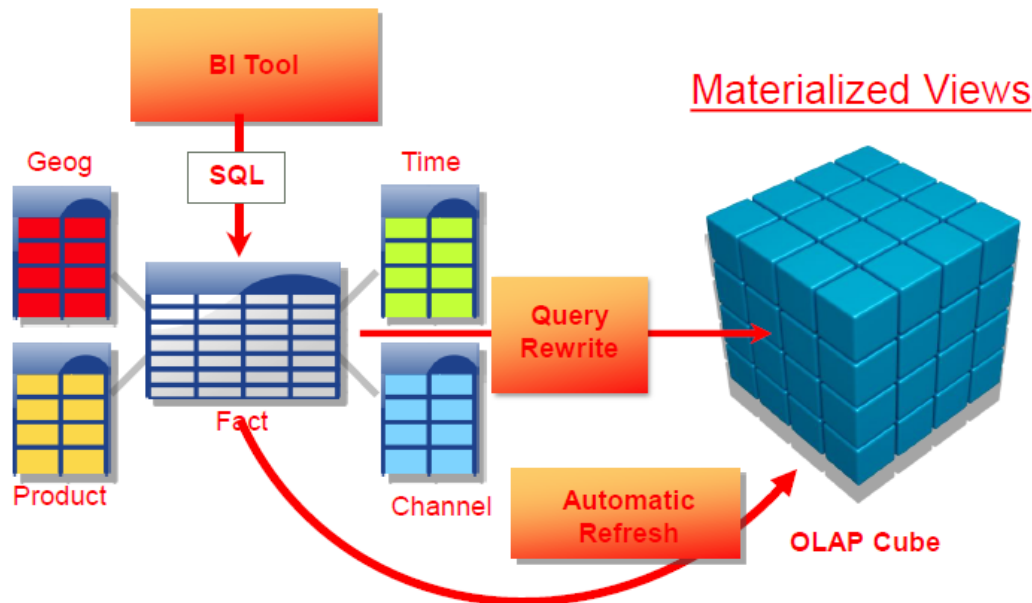
Questions & Suggestions
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Time	Topic	Room	Speaker
09:00 AM	Implementing Oracle BI Apps for Multiple ERP systems	A	Satish Rapolu
09:00 AM	Publishing Financial Reports Using R12 Report Manager	E	Ben Berlangieri
10:00 AM	Top Performance Tuning Tips for OBIEE Part II	A	Bharath Terala
11:00 AM	Lessons Learned During Oracle Business Intelligence 11g Upgrade	A	Santhosh Chetla

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