Best Practices For Large Oracle Apps R12 Implementations

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Who Am I?

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Why do we need to implement best practices?

Application Tier

1. R12 Tech Stack
2. Forms
3. Response Time/CPU Issues
4. Web Applications
5. Concurrent Manager
6. Workflow Engine
7. Taking Diagnostics Help
8. CBO Statistics
9. Application Patching Best practices
10. Network & Latency Check
**Agenda**

**Database Tier**

1. CPU Utilization Observations and analysis
2. High DB_IO observation and correlation with CPU usage.
3. Taking Diagnostics Help
4. Identify Top SQLs
5. Effective usage of AWR, ADDM Reports
6. Fragmented Interface tables
7. Object to be pinned – (Frequently used database objects)
8. RAC Check (From Oracle RAC assurance team)
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Why do we need to implement best practices?

- Oracle Applications R12 project with 8 Node middle tiers and 16 Node RAC database tiers. Database Size 40+ TB size and with a yearly database growth approximately 2 TB
- Makes our environment proactive & simple in terms of manageability.
- Helps in support cost reduction.
- Time & effort saving.
Application Tier

**R12 Tech Stack:** Make sure to upgrade to the latest certified technology stack

- **OC4J:** Oracle AS 10g 10.1.3.3.0
- **Forms:** Oracle AS 10.1.2.2
- **Useful Articles for the Oracle E-Business Suite Technology Stack for Technical Consultant / DBA** (MOS Note - 828157.1)
- **Oracle E-Business Suite Technology Stack Release Notes for Release 12.1.3** (MOS Note - 1098650.1)
✓ **Forms:** Few checks for improved performance are
  - *Socket Mode for Internal users* (R12: Refer to Note 384241.1.)
  - *Servlet mode is default in R12 and recommended for external access.*
  - *Forms dead client detection (DCD) and Abnormal termination handler.*
    - Value specified in minutes: `FORMS_TIMEOUT=10`
    - Terminates fwebmx processes for dead clients.
    - Do not set `FORMS_CATCHTERM`
  - **Disable Cancel Query**
    - Cancel Query increases middle-tier CPU as well as DB CPU
    - Refer to MetaLink Note 138159.1 on how to enable and tune Cancel query related parameters
    - To Disable Cancel Query
    - Set the Profile “FND: Enable Cancel Query” to ‘No’
✓ **Response Time/CPU Issues:** - When users complain about response time, configure Apache to log the time it takes to service a request. Access logs monitoring should be a good way to keep a tab on the response times of user requests.

- Configure Apache to log the time it takes to service a request
- Edit: $ORA_CONFIG_HOME/10.1.3/Apache/Apache/conf/httpd.conf
  - LogFormat "%h %T
  - Logs: $LOG_HOME/ora/10.1.3/Apache/access_log*
Web Applications:-

- Ensure the users are trained to use the Logout or Home global buttons when completing their transactions.

- Do not train them to use the browser close (“x”) link.

- Logging out gracefully releases the memory and corresponding resources (i.e. connections, etc.) Releases process resources sooner.

- First, rule out any SQL issues:- Note 357597.1 on how to enable SQL trace for OA Framework applications, If there are no database related issues, then you need to analyze the JVM (GC logs: Configure JVM sizing).

- **Pool Monitor** can be used to monitor the Framework Applications as well as the JVM utilization.

- **Navigation**: Application Module Pool -> Memory Utilization -> JVM Properties -> Invoke with -> Login -> Diagnostics -> Show Pool Monitor
✓ **Concurrent Manager – (EBS Concurrent Processing Analyzer)**

The EBS Concurrent Processing Analyzer is a self-service health-check script that reviews the overall Concurrent Processing footprint and analyzes the current configurations and settings for the environment, providing feedback and recommendations on best practices.

- *APPS Workload (Concurrent, FORM, ICX) observations.*

- *Mandatory Concurrent Programs.*


- *Concurrent Processing - CP Analyzer for E-Business Suite (Doc ID 1411723.1)*
Workflow Engine (EBS Workflow Analyzer)

The EBS Workflow Analyzer is a script that reviews the current Workflow Footprint, analyzes the configurations environment, provides feedback and makes recommendations on best practices and areas of concern. It provides immediate analysis and output of the EBS Workflow environment.

- **Workflow Process Stuck & Work Flow Checks**

- **How to run EBS Workflow Analyzer Tool as a Concurrent Request** *(Doc ID 1425053.1)*

- **11i-12 Workflow Analyzer script for E-Business Suite Workflow Monitoring and Maintenance [Video]** *(Doc ID 1369938.1)*

- **How To Use Concurrent Program "Purge Order Management Workflow"** *(Doc ID 878032.1)*
Taking Diagnostics Help


CBO Statistics

- Best Practices for Gathering Statistics with Oracle E-Business Suite (Doc ID - 1586374.1)
- bde_last_analyzed.sql - Verifies CBO Statistics (Doc ID - 163208.1)
✓ **Application Patching Best practices**

- *Through patch analysis with timing reports on sand box & non-prods environments before proceeding with the Prod patching.*

- *Patching Best Practices And Reducing Downtime* *(Doc ID 225165.1)*


- *See Note 9766881 "My server does not have internet connection Can I Still use Patch Wizard?“*

✓ **Network & Latency Check**

CPU Utilization Observations and analysis

- For more than 30 minutes continuously is a candidate for RCA.

High DB_IO observation and correlation with CPU usage.

- I/O Thresholds: Logical RDS > 300K/sec, Physical RDS> 3000/Sec are candidate for RCA.

LIO is Expensive?

How many of you think RAM access is 10,000 times faster than Physical disk access?
In real world, LIO is only 25-100 times cheaper than PIO
- ...not 1,000s or 10,000s
  Reason – Internal locks & latch serialization mechanisms involved.

Targeting only PIO counts(or high cache hit ratios) during SQL optimization is an important pitfall to avoid.Even with no PIOs, a query can still be outrageously inefficient
- LIO are a critical component of query cost
Database Tier

✓ **Taking Diagnostics Help**


✓ **Effective usage of AWR, ADDM Reports**

- Identify Top SQL, Latch Spin Counts etc., Memory Advisors
- Identify top wait events (System, User IO, Cluster, Concurrency, Configuration, Applications, Network)

✓ **Fragmented Interface tables**

✓ **Object to be pinned – (Frequently used database objects)**

✓ **RAC Check (From Oracle RAC assurance team)** RACcheck - RAC Configuration Audit Tool *(Doc ID 1268927.1)*
**Database Tier**

- **Cluster Callout scripts to capture cluster events and notification through e-mail.**

- **ADR Command Interpreter (ADRCI)**
  - ADRCI has multiple features such as
    - Analyze diagnostic data within the Automatic Diagnostic Repository (ADR).
    - Create a package with incident / problem information for Oracle Support
    - Run the Health Checks
    - Helps in purging old diagnostics trace & dump files

- **ADG for offloading reporting workload**
Oracle Configuration Manager helps us with lesser headaches. Since the details of our configuration changes, accurate planning & upgrade are proactively foreseen by Oracle support. Also, by pairing My oracle support with OCM, we can leverage our Oracle support, with latest support information, Online communities, Security recommendations & Product alerts.

**Information Center: Configuration Management (Doc ID 1457157.2)**
- OCM (Oracle Configuration Management)
- RDA (Remote Diagnostic Agent)
- EM (Enterprise Manager Cloud Control 12c)
- DA (Diagnostic Assistant)
- ADR (Automatic Diagnostic Repository)
- MOS (My Oracle Support)
Looking At Issues Proactively & From Greater Heights

Define the problem

Browser → Application (in MT or in DB) → Database

Sequence Diagram

Time spent in database
Executing task

Time spent in middleware processing
References

1. My Oracle Support
2. Steven Chan’s blog (https://blogs.oracle.com/stevenChan)
Q&A
Thank You