Management of Oracle SOA Suite and Oracle Service Bus with Oracle Enterprise Manager 12c

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Program Agenda

1. Introduction
2. Managing Oracle SOA Suite with EM Cloud Control 12c
3. Managing Oracle Service Bus with Oracle BTM 12c
4. Questions & Answers
SOA Management Pack Enterprise Edition

Industrial strength operational backplane

- Performance & Diagnostics
  - Enterprise scale management with alerting, reporting, and long term metric history
  - Specific framework/metadata knowledge
    - SOA 11g (BPEL/Mediator/Rules/Workflow/Spring/BPM)
    - OSB (Business/Proxy Svc, Pipelines)

- Transaction Management
  - Discovery of transaction flows
  - Leverage transaction payload for business visibility
  - Synthetic testing

- Lifecycle Management
  - Configuration management (OSB & SOA)
  - Server and application provisioning (OSB & SOA)
  - Patching (SOA)
Management of Oracle SOA Suite with OEM 12c

Richard Schaller, Principal Architect
San Francisco, 10/01/2014
[ipt] Innovation Process Technology AG

Swiss consulting firm

~ 100 Consultants

Focus: Integration, Security, API Management, Simulations
Swiss Health Insurance Provider

Leading health insurance provider in Switzerland

Premiums earned CHF 5.7 billion

1.86 million customers
Swiss Health Insurance Provider

Number of monitored targets
In production since February 2012
Facts

> 30 WebLogic Domains (SOA, WebCenter Content, ADF, JEE)
> 150 WebLogic Instances
> 40 JEE & 300 SOA Applications
> 7’000 Number of Targets

4 Major Releases each year
Expanding use of Middleware Management Packs

Phase I (2012)
Monitoring
Lifecycle Management

Phase II (2013)
Lifecycle Management
Patching

Phase III (2014)
BTM
Compliance
Expanding use of Middleware Management Packs

Phase I (2012)
# Targets: ~ 1’500

Phase II (2013)
# Targets: ~ 4’800

Phase III (2014)
# Targets: ~ 7’100
OEM Users Pre Phase I

Database Team
OEM Users  Phase I

Development Teams

Database Team

Middleware Team
OEM Users Phase II

Service Owner OEM

Development Teams

Operating Team

Database Team

Middleware Team
Provisioning JEE & SOA Artefacts

artifact repository

WebLogic environments

Operator
4-Step Custom SOA Suite Deployment

Procedure Interview: SOA Composite Deployment: Set Variables

Set the values for the Variables required by the Procedure and its Steps.

**SOA Composite Deployment Custom Variables**

- **CSV File Name**: SPF-DeploymentBundleDefinition-cim
- **Target Host Name**: 
- **User**: 
- **Password**: 
- **Configplans Archiva URL**: plans-12.3.0.1-SNAPSHOT-install.zip
- **MDS Archiva URL**: mds/mds/12.3.0.2/mds-12.3.0.2.jar
Metrics

Lifecycle Management

- Effort reduction Operations
  20% Deployment time
  10% Managing defects

- Effort reduction Development
  50% Deployment time
  15% Managing defects

- Cost savings
  - 0.7 FTE Middleware Engineer + 0.25 FTE Operator
  Solution scales
Metrics

Patching

- 10% Effort reduction by Operations
Soft Values

One tool monitors all Middleware & DB installations

All Teams (Development, Engineering, Operating) uses one console

Oracle Support information visible in OEM
What to take home

Focus on what you need, instead of what you want

Longterm investment

Step by step approach

…. it does pay out in the long run
Management of Oracle SOA Suite with OEM 12c

Richard Schaller, Principal Architect
San Francisco, 10/01/2014
MANAGEMENT OF ORACLE SERVICE BUS WITH OBTM 12C

Ashish Agarwal
Lead SOA Architect
Farmers Insurance Group
FARMERS INSURANCE GROUP – COMPANY INTRODUCTION

• Founded in 1928
• HQ in Los Angeles
• $16B+ in sales
• 25,000 employees (approx)
• 14,000+ exclusive agents (Farmers)
• 25,000+ independent agents (Foremost, Bristol West)
• Services more than 15 million customers
THE SOLUTION: ORACLE BUSINESS TRANSACTION MONITOR

**Oracle BTM**

**Transaction Visibility**

**Performance & SLA Management**

**Exception Management**

**Capability**

Tracking individual transactions and visibility into the business context of each transaction, including the consumer context and the business payload.

**Functional Area**

Transactional Monitoring

Business Activity Monitoring

**Performance & SLA Management**

Monitoring, alerting and reporting on performance characteristics of end-to-end transactions in real-time.

**Exception Management**

Monitoring failures, and root-case analysis to rapidly locate performance bottlenecks, errors, and incomplete transactions.
FARMERS OBTM 12C IMPLEMENTATION JOURNEY

- Farmers SOA Strategy established in 2007
- Farmers Shared Services Competency Center established in 2007
- Today, Farmers Shared Services houses and manages SOA Infrastructure- ESB (Oracle Service Bus 11g) for the enterprise.
- Oracle Business Transaction Management (OBTM 12c) - first implemented in Nov 2013 with Phase 1 features
- OBTM 12c rolled out to all data centers by Mar 2014
- OBTM 12c Phase 2 features planned for implementation in Q4, 2014
OBTM 12C PHYSICAL ARCHITECTURE - PRODUCTION

ESB Prod

ESB Servers with OBTM Observer Agents. Observers run inside the OSB JVM

Observers collect information about the transactions, and forward it to “Monitor” instances, which in turn logs data in database

Central servers manages the Business Transaction Management environment.

OBTM Prod

Farmers DC – CORE Network

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IMPLEMENTED FEATURES – PHASE 1

- Capabilities implemented at Farmers in Phase 1 and 2:

  - Track the message payloads (Request and Response XMLs)
  - Provide Comprehensive options to search messages by various attributes. Search capability on the request / response XMLs based on service name, key business fields (e.g. Quote Id, Message Reference Id, policy number, claim number, etc) from payload
  - View the Service Metrics (Response time (average & max), Throughput, Fault rate, Availability) by Hour / Day / Week / Month
  - Views of Real-time Dashboards using BTM Console
# 1- MESSAGE PAYLOAD LOGGING

- Request and response message payloads logged for 48 hours
- Request and response messages for critical services retained for 7 days.
- Total message logged ~ 1 million per day
- Message Size ~ 20 to 60 KB
- Message Log db size- 50 GB
# 2 - MESSAGE LOG SEARCH

- For all the Services the payload logs can be searched using Transactions → Message Log

- Comprehensive search options can be performed based on:
  - Service Name
  - Date/Time or time period
  - SLA e.g. Messages exceeding certain response time
  - Messages where faults/exceptions have been reported
  - Custom search that inspects request/response XMLs against key attributes from payload e.g. Quote Id, Message Reference Id, Policy number, Claim number
# 3 - SERVICE METRICS

- OBTM12C Collect and Display Service metrics which Shows Summary of Message Counts (Throughput), Average Response Time and Max Response Time over a period of time (since 10 minutes, 1 hour, 1 day, 7 days)
# 4 - BTM DASHBOARD VIEWS

## Service Summary Dashboard

**Logical Operations to Physical Operations**

<table>
<thead>
<tr>
<th>Name</th>
<th>Status</th>
<th>Violation Alerts</th>
<th>Avg Response Time</th>
<th>Max Response Time</th>
<th>Throughput</th>
<th>Faults</th>
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<tr>
<td>@determineProspectReferralEligibility</td>
<td>✔️</td>
<td>0</td>
<td>-</td>
<td>-</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>@preFillProspectDataForAutoQuote</td>
<td>✔️</td>
<td>0</td>
<td>-</td>
<td>-</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>@recordQuote</td>
<td>✔️</td>
<td>0</td>
<td>7.8 ms</td>
<td>14 sec</td>
<td>139</td>
<td>0</td>
</tr>
<tr>
<td>@resolveQuoteReference</td>
<td>✔️</td>
<td>0</td>
<td>-</td>
<td>-</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

**Measurements & Baselines**

- **Compliance**: ✔️
- **Uptime**: 100%
- **Throughput**: 139
- **Traffic**: 139
- **Faults**: 0
- **Avg Response**: 7.8 ms
- **Max Response**: 14 sec

**Performance**

- **Messages**
- **Response Time**

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IMPROVEMENTS WITH PHASE1 IMPLEMENTATION

BTM 12c implementation has greatly helped Administrator, and Production Support staff productivity in following ways:

- Ability to view and analyze end to end characteristics of transaction using “Transactions” feature of BTM.
- Service discovery and registration in BTM12c is automated.
- BTM 12c automatically maps business transactions and service dependencies. BTM console provides details of both individual and aggregate transaction execution.
- Improved CLI (Command Line interface) capabilities in BTM 12c to bulk export messages, to import policies, etc.
PLANNED FEATURE IMPLEMENTATION – FUTURE

- These are Future-Phase 2 requirements for OBTM 12c implementation
- Setting up Thresholds
  - a. Service Exception threshold - number of runtime exceptions that are tolerated
  - b. Service Throughput threshold - number of service calls permitted during a specified duration
  - c. Service Max Response Time threshold - number of service calls exceeding max response time during a specified duration
  - d. Service Unavailability threshold - when Service Uptime goes below a certain percentage

- Notifications to Stakeholders/Administrators when there are violations to established policies corresponding to implemented thresholds.

- Custom error interpretation will be introduced in OSB & OBTM to set up threshold against number of custom exceptions that are tolerated
MEASURING SERVICE LEVEL AGREEMENTS (SLAS)

• With Oracle BTM 12C, users can establish SLAs for different performance targets, for each business transaction type, and each end-user, to help IT measure the quality-of-service delivered to the end-users.

• OBTM 12C allows to apply operational Policies(SLA) to deliver the best quality-of-service to the highest priority customers by providing
  • Early warnings and alerts to prevent SLA violations
  • Customizable alert sensitivity and suppression
  • SLA assignment based on business criteria (such as IP addresses, Customer IDs, SKU etc)
REAL-TIME DETECTION AND ALERTING

- Oracle BTM12C is used to detect exceptions across all tiers of composite applications:
  - Application Level: Including data errors such as missing values, invalid parameters and anomalies
  - Business Level: Including missing elements and non-compliance with regulations or business policies
  - System Level: Including various application faults, transports and network-level errors
- Oracle BTM12C watches transactions at every step in real-time, thereby detecting exceptions as they occur, and alerts appropriate personnel with the appropriate business context:
  - Inspect transactions for exception conditions in real-time
  - Leverage user-defined detection criteria for exceptional conditions
CONCLUSIONS

• OBTM 12C implementation as a SOA Monitoring and Management Solution has led to
  • Increased visibility in to transactions flowing through SOA environment
  • Reduced unplanned SOA Outages time by almost 100%
    • There were instances of Amberpoint agents being down causing unplanned outages.
      These have practically disappeared with OBTM 12c’s AOP architecture pattern.
  • Reduced User Reported Incidents by Over 25%
  • Reduced Problem Resolution Times by Over 30%
  • Increase Administrator Productivity by over 20%
  • Better transaction reporting for weekly and monthly usage report.
  • We aim to achieve better management of SLAs and QoS with the implementation of future
    phase 2 features.
THANK YOU
Questions and Answers
Oracle Enterprise Manager One-Hour Hands-On Labs

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<th>Title</th>
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<th>Time</th>
<th>Location</th>
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<td>HOL9528</td>
<td>Private Cloud Self-Service, Oracle Fusion Middleware PaaS with Oracle Enterprise Manager 12c</td>
<td>Tuesday</td>
<td>3:45 PM – 4:45 PM</td>
<td>Hotel Nikko Ballroom I</td>
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<td>HOL9509</td>
<td>Oracle Enterprise Manager 12c: Oracle WebLogic Server and SOA Diagnostics and Administration</td>
<td>Tuesday</td>
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<td>Oracle Enterprise Manager 12c: Oracle WebLogic Server and SOA Diagnostics and Administration</td>
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# Oracle Enterprise Manager Demos

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<td>SOA and Service Bus Management with Oracle Enterprise Manager 12c</td>
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<td>End User Monitoring and Diagnostics with Oracle Enterprise Manager 12c</td>
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<td>Identity Management Monitoring with Enterprise Manager 12c</td>
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<td>Middleware PaaS in Private Cloud with Oracle Enterprise Manager 12c</td>
<td>Moscone South SLM-111</td>
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<td>Oracle Applications and Business Intelligence Management with Oracle Enterprise Manager 12c</td>
<td>Moscone West WLL-023</td>
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<td>Application and Infrastructure Testing</td>
<td>Moscone West WLL-020</td>
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<td>CON3111</td>
<td>Set Up Oracle Real User Experience Insight 12c to Monitor Oracle WebLogic Applications’ UX</td>
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<td>CON8212</td>
<td>Oracle Management Pack Plus for Identity Management Best Practices and Lessons Learned</td>
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<td>CON5983</td>
<td>Full Visibility into Oracle WebLogic/Java Diagnostics with Oracle Enterprise Manager 12c</td>
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<td>Maximizing Reliability of Oracle Business Intelligence Enterprise Edition and Oracle Exalytics</td>
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<td>CON4045</td>
<td>Provision Oracle Fusion Middleware Faster with Oracle Enterprise Manager 12c</td>
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<td>CON8173</td>
<td>Management of Oracle SOA Suite and Oracle Service Bus with Oracle Enterprise Manager 12c</td>
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<td>CON2927</td>
<td>Oracle Enterprise Manager 12c: Maximize ROI via a Single Pane of Glass Across a Data Center</td>
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<tr>
<td>CON5489</td>
<td>Deploy Oracle Fusion Middleware as a Service (MWaaS) on a Shared-Services Cloud</td>
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<tr>
<td>CON8130</td>
<td>Deployment Best Practices for Private Cloud: Fast Track to DBaaS and MWaaS</td>
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## Oracle Enterprise Manager Technical Sessions

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<td>Building an On-Premises Java Cloud: Oracle WebLogic Server and Oracle Enterprise Manager</td>
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<td>CON8045</td>
<td>Shake, Rattle, and Roll: Managing Large-Scale Identity Management Deployments</td>
<td>Thursday</td>
<td>2:30 PM – 3:15 PM</td>
<td>Moscone West - 3020</td>
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Hardware and Software
Engineered to Work Together
APPENDIX
ORACLE BUSINESS TRANSACTION MANAGEMENT

- Oracle Business Transaction Management (OBTM) provides administrators with a consolidated browser-based view of the entire SOA environment, enabling them to monitor and manage all its components from a central location.
- OBTM 12c provides runtime governance, comprehensive service and infrastructure management.
- Oracle BTM (OBTM) functionality is a part of the following Oracle Enterprise Manager Management pack - **SOA Management Pack Enterprise Edition**.
- Oracle BTM provides the following key features
  - Always On, Real-time tracking of each transaction
    - Process Engine, Service Bus
    - End-to-End, Application Level View
  - Follows transactions across all SOA infrastructure and applications
    - App Servers, Applications, ESB's, BPM's, Etc.
  - Collects payload content – the business value flowing through the application
  - Provides this without modifying or tagging the messages
    - Message Fingerprinting
    - Non-invasive; doesn’t break applications
• Each App Server containing a service bus will have an “observer” deployed.

• Observers collect information about the transactions, and forward it to “Monitor” instances, which in turn logs data in database

• BTM Central Servers contain **Main Server** - manage the Business Transaction Management environment, **Performance Server** (btmPerformanceServer.ear) – contain the service-level management components and **Transaction Server** (btmTransactionServer.ear) – contain the transaction management components.
Oracle Business Transaction Management (OBTM) Components

<table>
<thead>
<tr>
<th>Component Name</th>
<th>Component Description</th>
</tr>
</thead>
</table>
| Central Servers | The central servers are application EAR files that you deploy to an application server. There are three central servers. The central servers are:  
1. Main Server (btmMain.ear) – Contains all the central Business Transaction Management system services and user interface applications, including the sphere. The sphere is the Business Transaction Management component that manages the Business Transaction Management environment.  
2. Performance Server (btmPerformanceServer.ear) – Contains the service-level management components.  
3. Transaction Server (btmTransactionServer.ear) – Contains the transaction management components. |
| Observers       | Observers are sets of libraries that you install into the application server that hosts the business applications you want to monitor. The observers monitor messages and calls between the components of your applications. |
| Monitors        | Monitors collect application performance and usage measurements from observers. The monitor is an application EAR file that you deploy to an application server. For large systems, you can deploy multiple monitors, either as singletons or replicates. For performance reasons, you should not deploy the monitor on an application server where the central servers are deployed. |