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CON7809 - Expert Insights for Accelerating Java CAPS Migrations to Oracle SOA Suite

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OPEN
WORLD

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Safe Harbor Statement

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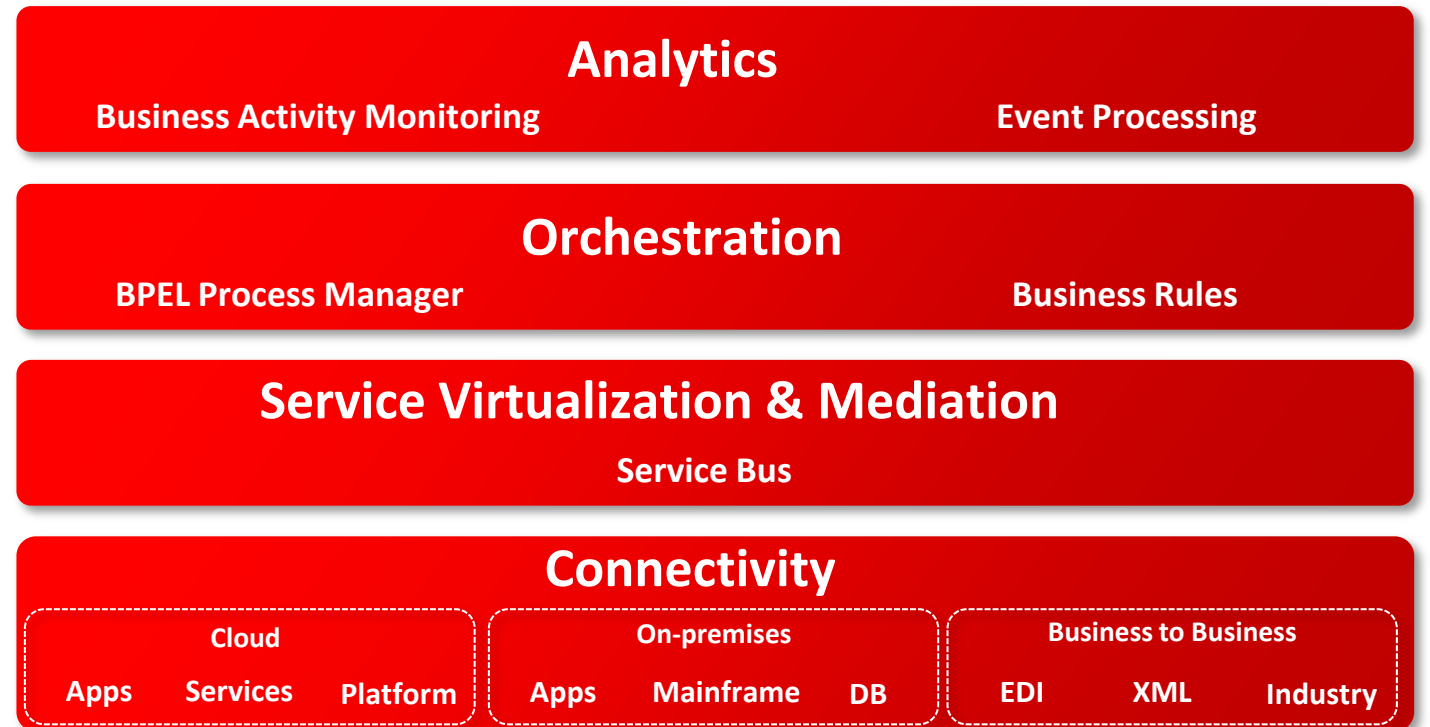
Program Agenda

- Oracle SOA Suite 12c Overview
- Java CAPS to SOA Suite Migration Updates
- Customer Case Studies
 - Centerpoint Energy
 - Los Angeles Dept of Health Services
 - ITIJ , Portugal Ministry of Justice
- Summary

Oracle SOA Suite

Unified Integration Across Cloud, Mobile, and On-premise

- Simplifies development and management
- **Standards-based**, open infrastructure interoperates with your existing IT
- Consistent tooling - Single development, deployment and management platform



SOA Suite 12c: Drivers

- SOA is a critical requirement for mobile & cloud
- Shift from departmental solutions to **shared services**
- **Constant increase in volumes**
- SOA supporting increasingly critical business functions
- Customers looking for **increased performance**
- Expectations for **greater development productivity and ease of use**

Steady increase in volume & criticality of workloads

Pole Emploi

- Website to mainframe
- **100+ million** msg/day

Capital One

- Shared services platform
- **150 million** msg/day

Dell

- \$50bn annual revenue
- **Every single product order** goes through Oracle SOA

Schnieder

- 5TB dehydration database
- **60 million** BPEL inst/day

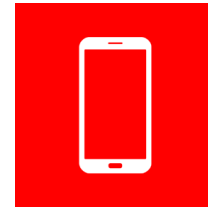
SOA Suite 12c

Key Features



Web Scale

- 30 % memory footprint reduction
- Startup acceleration
- Pre-tuned database profiles
-



Mobile

- First class support for mobile-friendly standards (REST, JSON, ...)
- Automated conversions REST/SOAP



Developer
Productivity

- One-click install
- Everything in JDeveloper
- Debugger & tester
- **Templates**



Cloud

- Cloud adapters to simplify on-prem to cloud integration
- **Managed File Transfer (MFT) for file-based integration**
- Certifications on Oracle Public Cloud

Java CAPS Migrations Updates

- Sun's SOA active product lines will continue to be supported and maintained for extended time periods

Release	Premier Support	Extended Support	Sustaining Support
Java CAPS Suite 6.3	Apr 2016	Apr 2017	Indefinite
Java CAPS Suite 6.2	Jan 2014	Jan 2017	Indefinite
Java CAPS 5.1.3	Jan 2014	Jan 2017	Indefinite
GlassFish ESB 2.2	Jan 2014	Jan 2017	Indefinite
e*Gate 4.5.3	Jan 2014	Jan 2017	Indefinite
SRE 5.0.5	Jan 2014	Jan 2017	Indefinite

- Oracle developed **Migration Methodology** and an **Engagement Model**
- Migration Tool in **Controlled Availability** through Oracle Support
- Interoperability certification for Java CAPS And SOA Suite
 - Web-services interoperability
 - JMS interoperability

Full support details published at: <http://www.oracle.com/support/lifetime-support-policy.html>

Java CAPS to SOA Suite Migration Aspects

- License Migration

- Conversion of Java CAPS licenses to SOA Suite
- Java CAPS Perpetual Licenses may be turned in for credit toward SOA Suite licenses. License migration will allow old and new licenses to run concurrently

- Functional Migration

- Replacement of Java CAPS Infrastructure with Fusion Middleware
- Java CAPS Functionality is **rewritten** in FMW using best practices or a **hybrid interoperability** solution is employed

- Code Migration

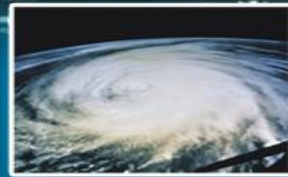
- Java CAPS artifacts are migrate to run within the SOA Suite framework
- Promises huge advantages include minimized implementation costs and risks

A successful migration solution resulting in a happy customer requires all three.

Migration Value Proposition

- Adoption of Oracle's strategic middleware platform
 - Low Risk – Single point of contact, Single support platform and procedures
 - Low Cost -- License Credits, Single Support Contract
 - Leverage FMW Advance Features – Clustering , Coherence, Cloud, Mobile
- Preserve Existing Investment
 - Preserve business logic while moving to new strategic platform
 - Retain as much of the customer's investment as possible: code, mappings, message flow and IP
- License migration program including ability to run both products concurrently

Houston's Smart Grid: Transforming the Future of Electric Distribution & Energy Consumption



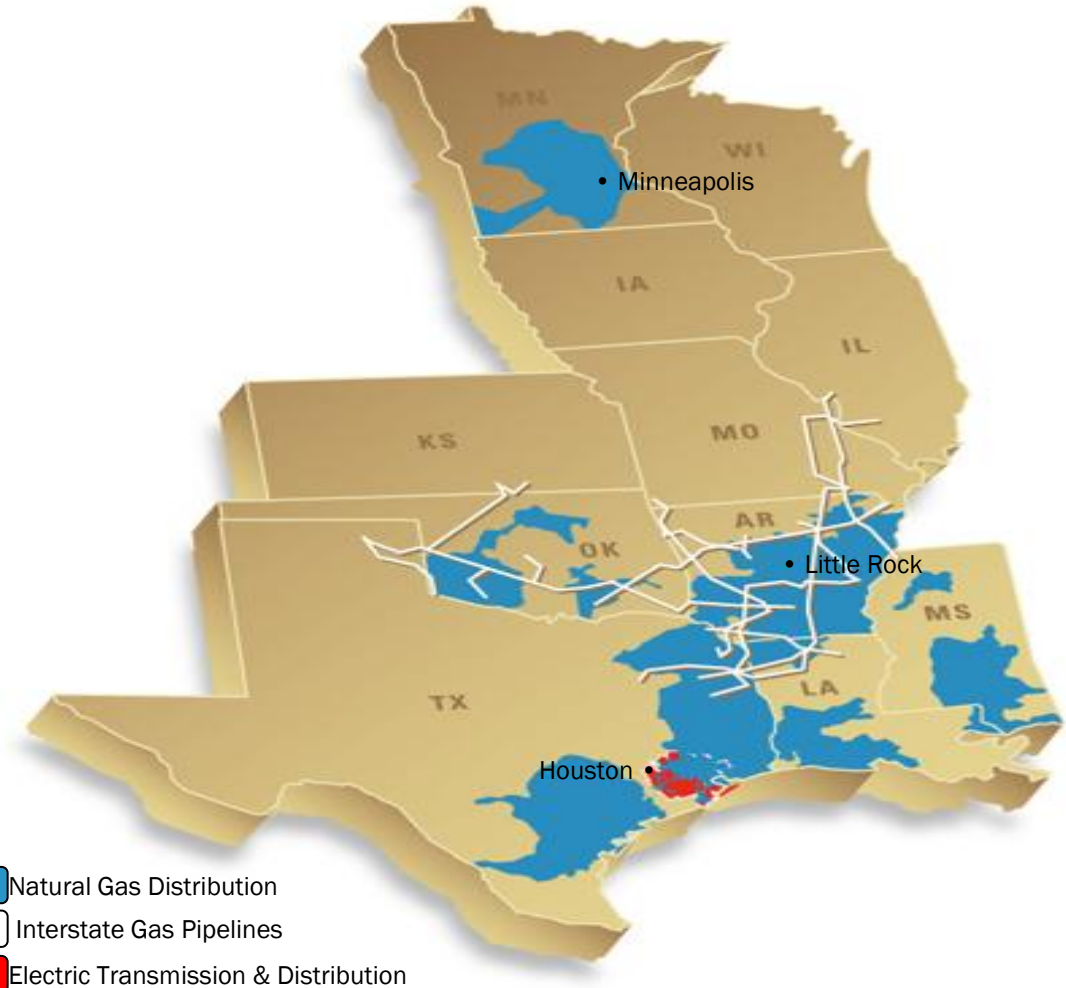
WHO IS CENTERPOINT ENERGY?



- Public company traded on the New York Stock Exchange (CNP)
- Headquartered in Houston, TX
- Operating 6 business segments in six states
 - Electric transmission and distribution
 - Natural gas distribution
 - Interstate pipelines and natural gas gathering
- Serving 5.4 million electric & gas customers
- \$22 billion in assets
- \$8.5 billion in revenue
- 8,827 employees
- Over 130 years of service to our communities

Vision

“To be recognized as America’s Leading Energy Delivery Company... and more”



Who is CenterPoint Energy – Electric?



Houston Electric Division (CEHE)
Houston (4th largest city in the US)
Houston Metro Area (6th largest in US)

- 5,000 square mile service area
- Approximately 2.5 million electric meters
- Houston Electric
- Delivers 77 Gigawatt hours yearly for about 300 certified Retail Electric Providers

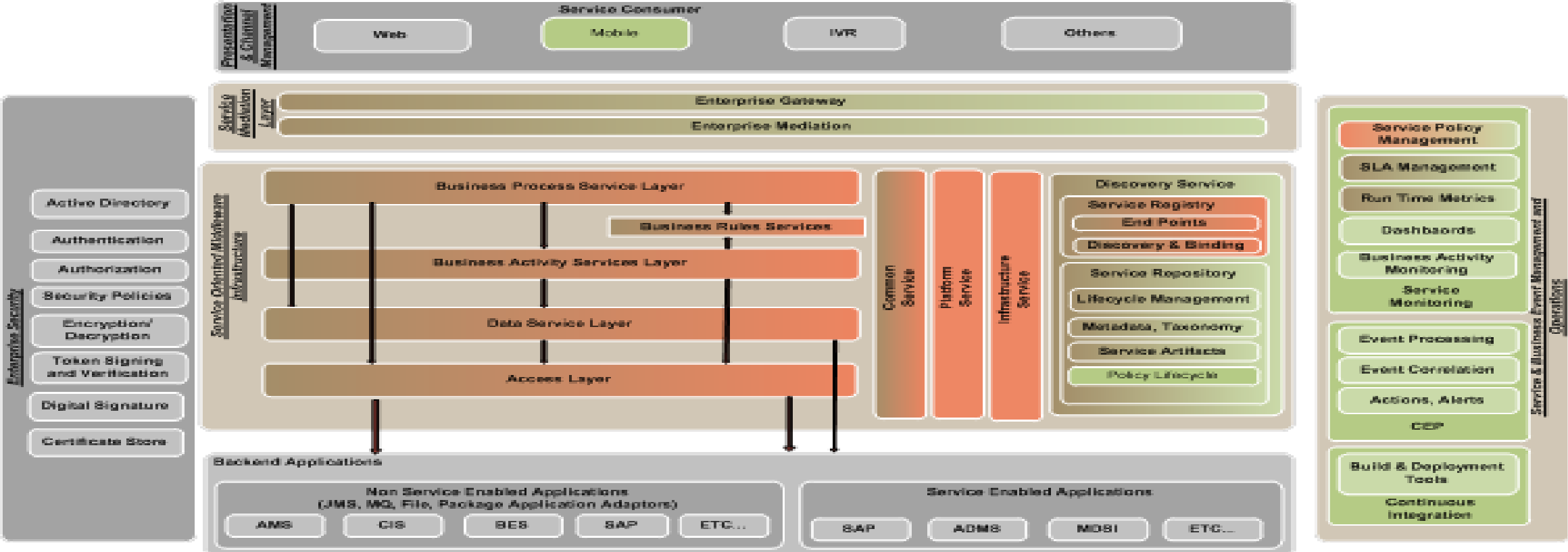
- Transmission and Distribution System
 - ◆ 3,742 miles of transmission lines
 - ◆ 48,733 miles of distribution lines
 - ◆ 232 substations



Electric Challenge:

Effectively monitor and control millions of meters, line devices and miles of delivery wire which, if laid end to end, almost circle the earth twice around the equator

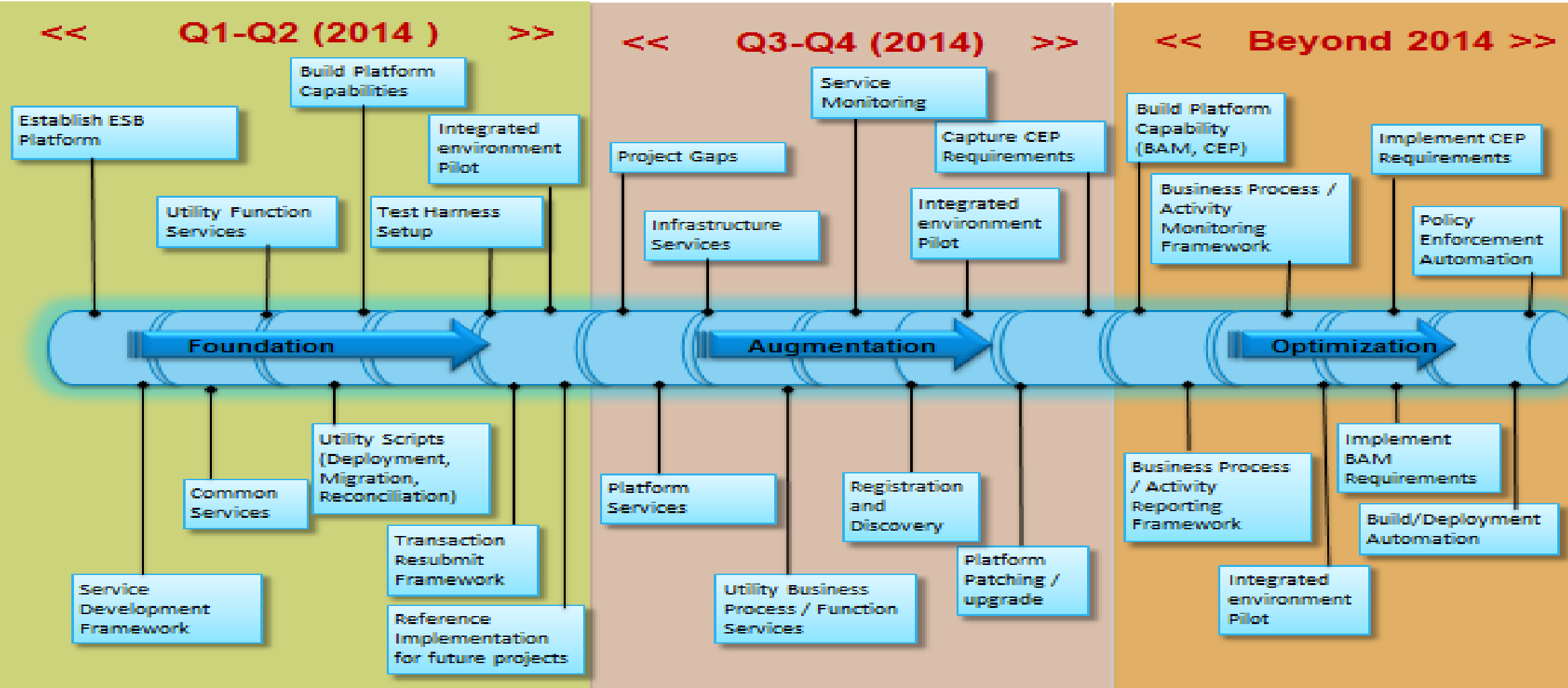
EAI Architecture



Keys

- Short Term Goal
- Mid Term Goal
- Long Term Goal
- Scope
- Current

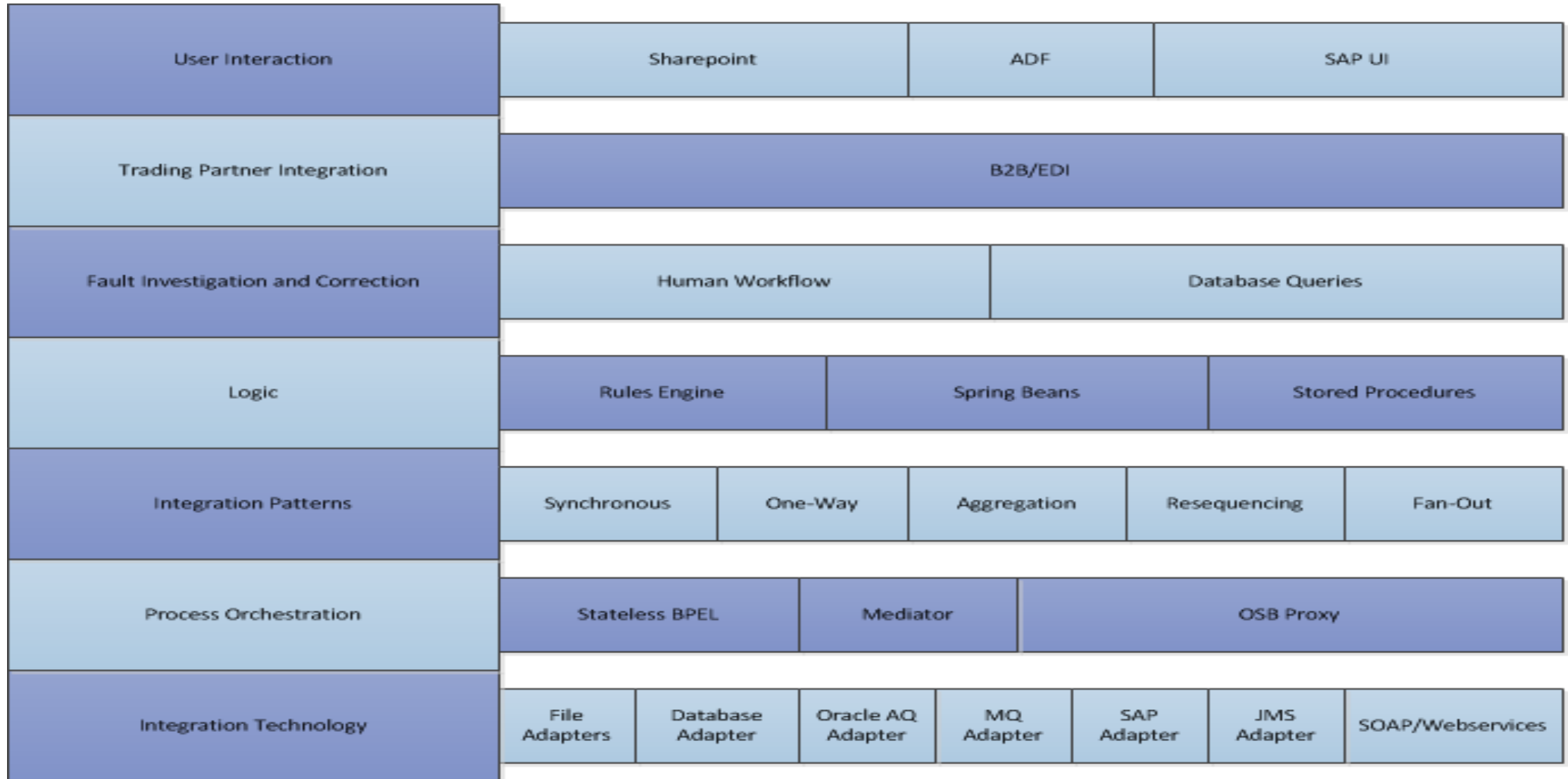
USB Implementation Roadmap



Products Used

- SOA Suites
 - Spring Bean
 - BPEL solutions
 - Mediator
 - Extensive Usage of SAP Adapters
 - HA File Adapter implementation
- OSB
- Coherence
- B2B
- Business Rules Engine
- ADF Framework
- Worklist applications

Technology Stack

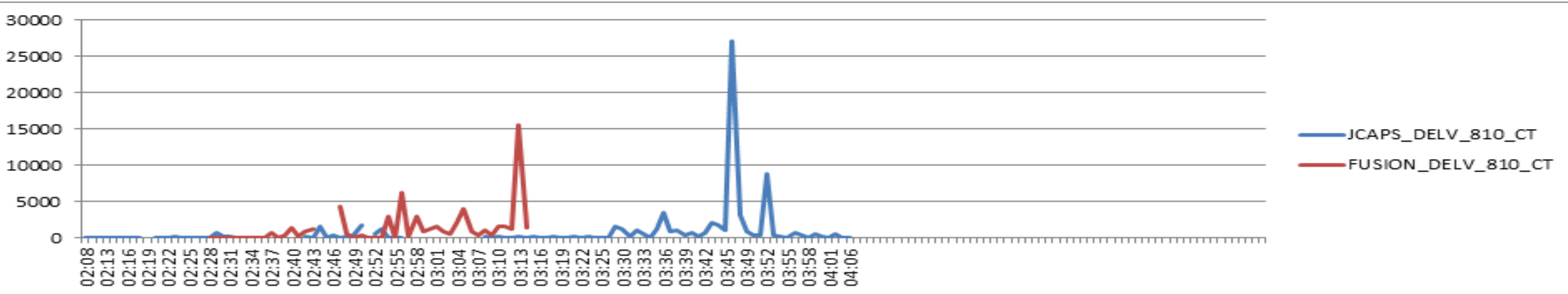
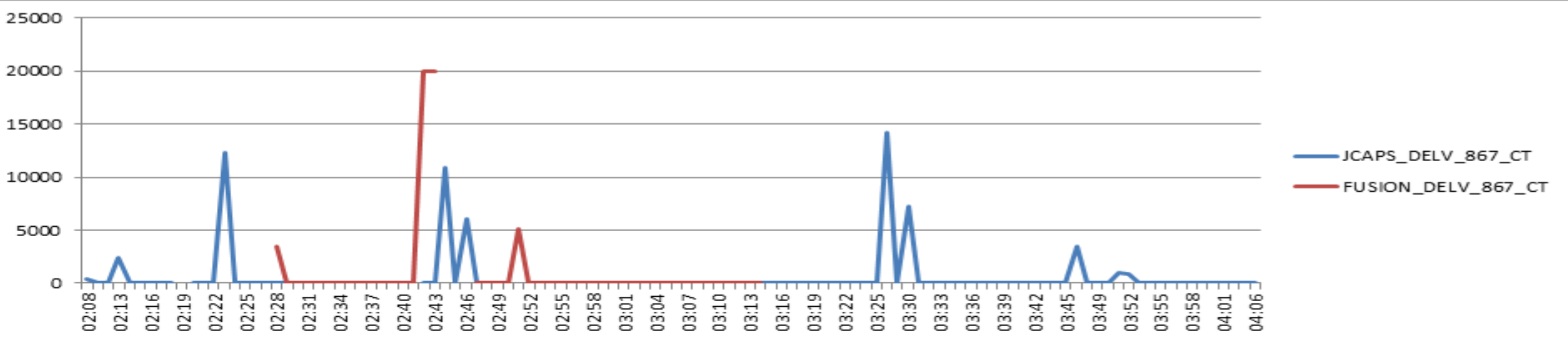


Migration Strategy - JCAPS to FMW

- Proof Of Concept
 - Jumpstart Approach
 - Technical Evaluation for the JCAPS objects to FMW Spring Beans
- Consulting
 - Engaged Oracle Consulting Services
 - Oracle Assessments
 - Leverage Oracle Customer Product Management Advisory Board
- Conversion
 - Utilized the migration tool
 - Preserved Business Logic
- Implementation
 - No Big Bank approach
 - Multiple GO Lives to eliminate the risks
 - Dynamic Configuration Implementation to switch the process to run on JCAPS Middleware or Fusion Middleware in the case of back out

Performance and Benefits

➤ Billing and Invoice Transactions Performance



Technical Challenges and Solution

- Spring Bean Implementation
 - Changed spring bean scope configuration (singleton to prototype)
 - Redesigned LSE application to use Spring Bean with Java EE message-driven beans and HA File Adapter implementation
- JMS
 - Switched from foreign server to Store and Forward (SAF) message delivery due to circular dependency
 - Changed Java Message Server (JMS) Adapter configurations to eliminate high CPU utilization
- B2B
 - EDI Batching with the combinations of Number of transactions + Time + Size
 - Not able to use the Out of Box outputs due to the canonical XML translation. Implemented B2B Utility Java API for EDIFECs to EDI.
- File Adapter
 - Switched from non-HA to HA adapters due to clustering and the file rotations

Best Practices and Lessons Learned

❖ SOA Suites

- Built-in Audit is helpful during development, as non-technical users can see payload and debug issues.
- Set CompositeName as the Transaction Id, to link custom auditing with built-in auditing
- Turning off instance logging produces a big gain in performance for batch oriented and compute intensive processes

❖ OSB

- Best solution if the need is only Transformation and Routing
- Built in throttling helps when integrating with slower systems

❖ Coherence

- Payloads are kept in Coherence layer for better performance and eliminating the load on the JMS hops

❖ JMS Store

- File Based JMS store with local storage

❖ SAP Adapter

- Database based configuration for clustering environment

Expert Insights for Accelerating Java CAPS Migrations to Oracle SOA Suite

October 2, 2014

Shant Gharibi
Information Technology Specialist
Los Angeles County Department of Health Services





Los Angeles County Department of Health Services (LA DHS)



- 2nd largest public health care system in the United States
- Provides care to more than 10 million residents through 6 primary hospital-based facilities and several offsite clinics
- Annual budget of \$3.5 billion
- Workforce of 22,000 people



LA DHS Challenges



- Implementing new EHR across all county hospitals with Cerner Millennium
- Implementing new data warehouse with Oracle Healthcare Data Warehouse Foundation (HDWF)
- Implementing new MDM solution with IBM InfoSphere MDM
- Implementing new middleware platform integrating above solutions with Oracle Fusion Middleware and Oracle SOA Suite for Healthcare, including migration of existing middleware projects (focus of this presentation)



LA DHS Middleware Platform

- Los Angeles County Department of Health Services (DHS) is in process of replacing its mature production solution for hospital systems integration, **Sun/SeeBeyond e*Gate 4.5.3** product suite, to **Oracle Fusion Middleware**.
- Due to the various projects DHS has to implement, Oracle e*Gate to SOA Suite Migration tooling looked highly beneficial to retain decades old IP while moving to SOA Suite for Healthcare in a timely fashion.



e*Gate



Oracle Fusion Middleware



Business Drivers



- Cost reductions via migration from older, unsupported hardware/software due to requirements from e*Gate 4.5.3
- Move to service oriented infrastructure and methodologies, reducing overall software development costs, and becoming more agile to quickly respond to new business requirements
- Move to a more scalable and reliable platform, allowing the ability to more easily scale operations to meet different business needs
- Reduced support for eGate



Products Used In Migration



- Oracle Fusion Middleware 11.1.1.7 PS6
 - SOA Bundle Patch 4, 11.1.1.7.4
 - Spring, JMS, DB, File/FTP, Mediator, BPEL
- Oracle SOA Suite for Healthcare
- Oracle e*Gate to SOA Suite Migration Tools
- Oracle 11g R2 RAC database



Project Details



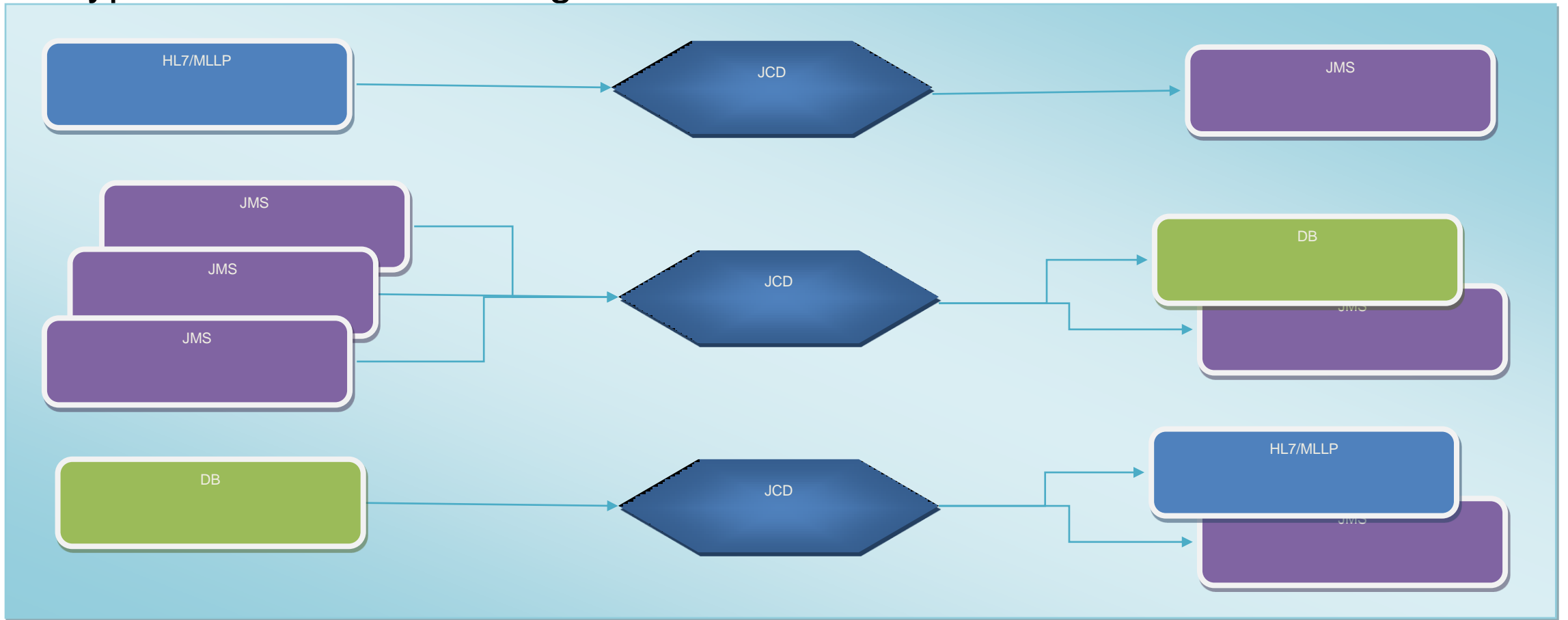
- LA County DHS's e*Gate projects implement MLLP interfaces via the HL7 e*Way and all business logic is implemented in the integration layer.
- Components:
 - HL7 e*Way – for connecting to end systems via MLLP
 - JMS – used in the integration layer to decouple components
 - Java Collaboration Definitions (JCDs) - for validation, mapping and routing
 - Event Type Definitions (ETDs) - for managing data objects (such as HL7 messages) at runtime



Project Details



■ Typical e*Gate 4.5.3 design

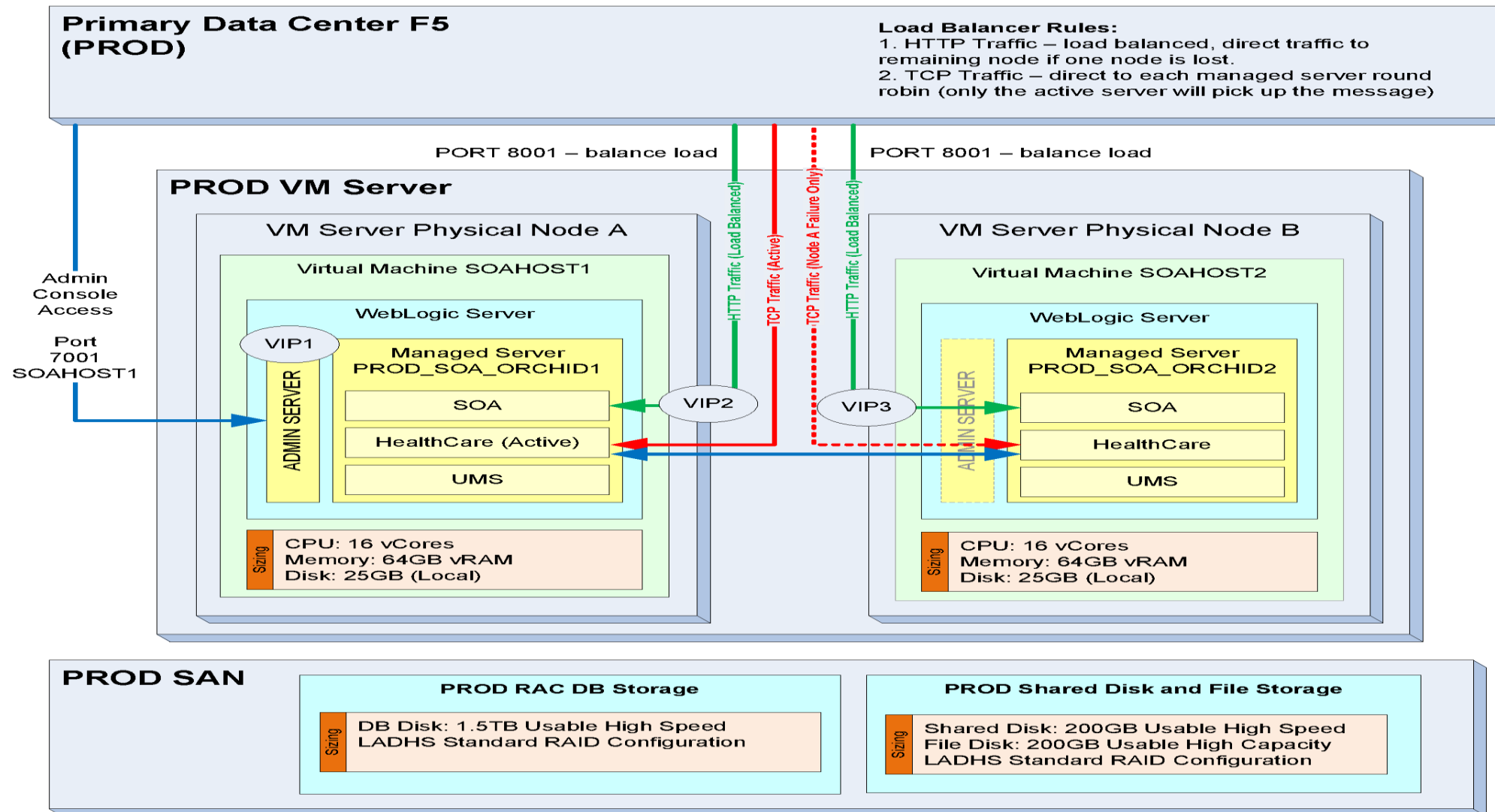




SOA Suite System Architecture



LA DHS SOA Middleware Production v10

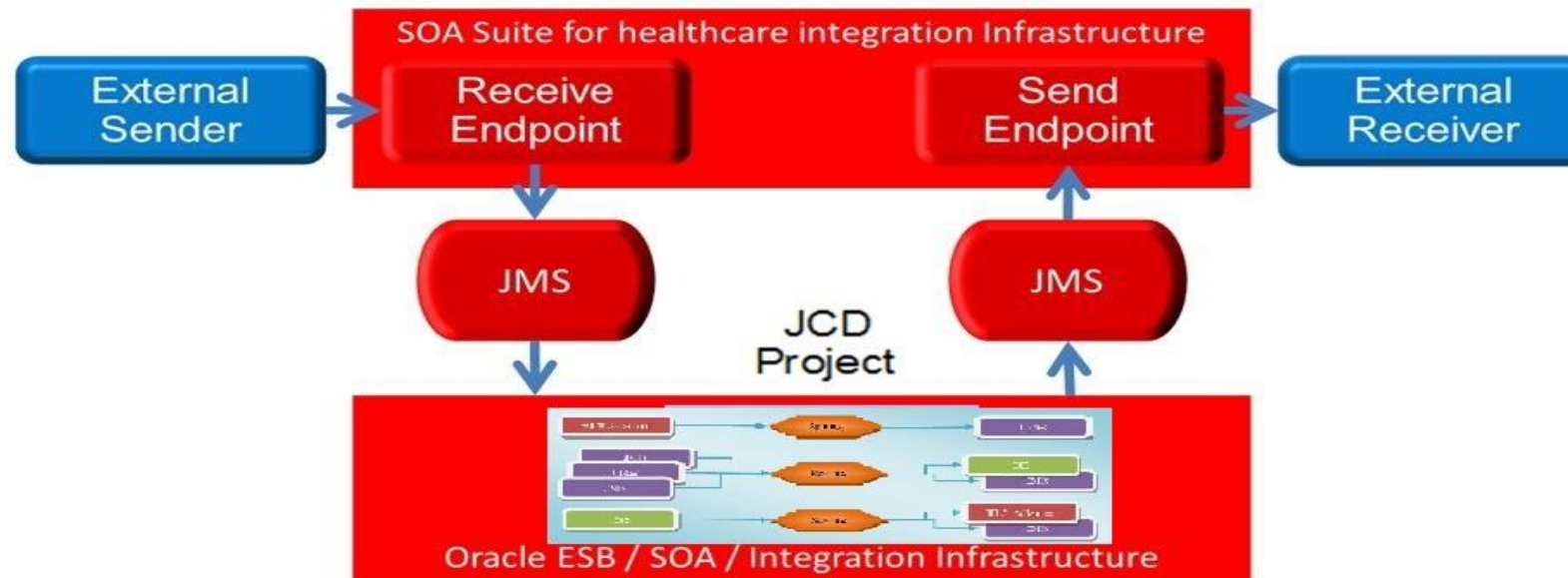




Migration Strategies



- Oracle supports 3 options:
 - Functional migration to Oracle SOA Suite (rewrite)
 - Code migration to Oracle SOA Suite
 - Combined approach of functional and code migration
- DHS chose combined approach, combining best of both worlds





Technical Challenges and Solutions



- e*Gate multiple outbound JMS adapters per pathway

Collaboration - coliAffHUCLAHL7AffinityIn Properties

General Advanced

coliAffHUCLAHL7AffinityIn

Collaboration Rules:
crAffHUCLAAffinityInMsgFilter [v] [New] [Edit]

Subscriptions:

Instance Name	Event Type	Source
etAffinity_In	GenericInEvent	<EXTERNAL>

[Add] [Delete]

Publications:

Instance Name	Event Type	Destination
etAffinity_Out	etAffHUCLAAffToPyxis	iqAffHUCLAPyxis
etAffinity_Out	etAffHUCLAAffToPSCAS	iqAffHUCLAPSCA
etAffinity_Out	etAffHUCLAAffInToHsa	iqAffHUCLAHsa
etAffinity_Out	etAffHUCLAAffToMedQuist	iqAffHUCLAMed...

[Add] [Delete] [Advanced]

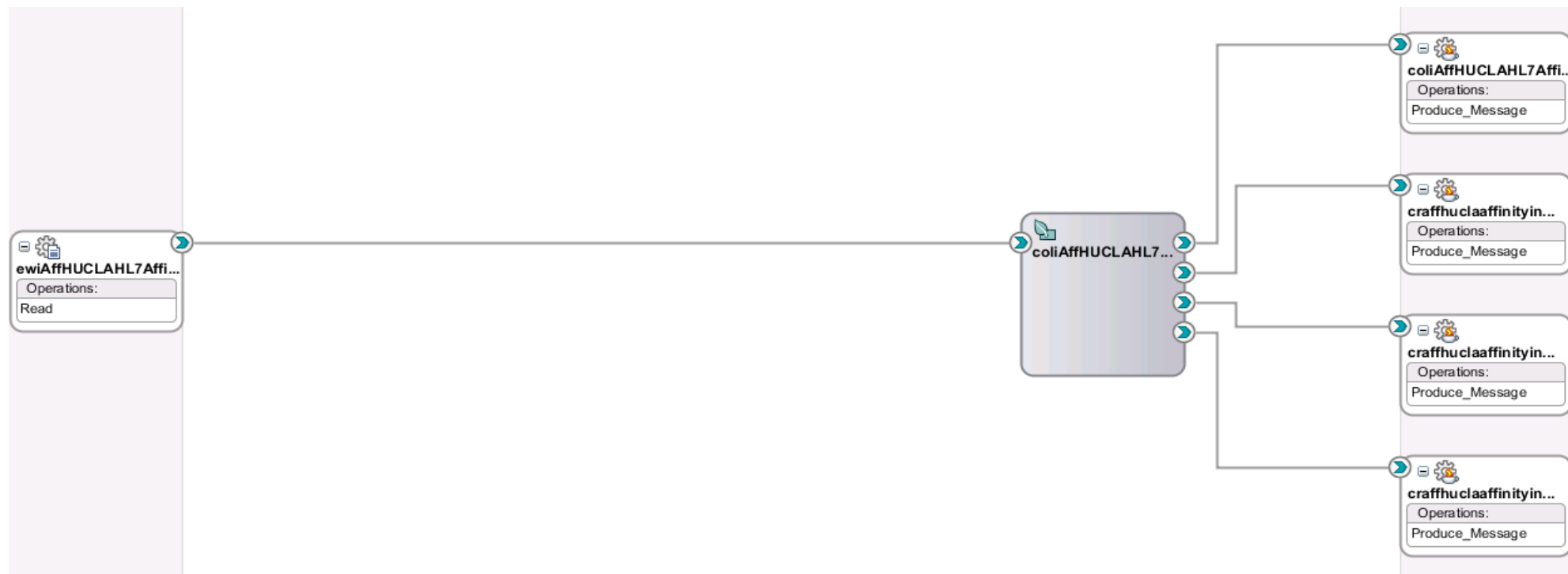
[OK] [Cancel] [Apply] [Help]



Technical Challenges and Solutions



■ SOA Suite flow





Technical Challenges and Solutions



- e*Gate multiple inbound/outbound JMS adapters per pathway

Collaboration - colAffToMultiSystem Properties

General | **Advanced**

colAffToMultiSystem

Collaboration Rules:
crAffToMultiSystem [v] [New] [Edit]

Subscriptions:

Instance Name	Event Type	Source
etAffinityResultsOrderIn	etAffinityRes...	coliAffMLKTcpHI7ElisResults...
etAffinityORUIn	etAffinityORUIn	coliAffMLKTcpHI7Affinity_A...
etAffinityORMIN	etAffinityOR...	coliAffMLKTcpHI7Affinity_A...
etAffinityAdtIn	etAffinityAdtIn	coliAffMLKTcpHI7Affinity_A...

[Add] [Delete]

Publications:

Instance Name	Event Type	Destination
etStartel	etStartel	iqAffinity_ADT
etAffinityResultsOrderOut	etAffinityResults...	iqAffinityResults...
etPharTcp	etPharTcp	iqPH
etAffMLKtcpipToSynapse	etAffinityAdtIn	iqSynapse
etAFFMFNPHY23	etAFFMFNPHY23	iqElis

[Add] [Delete] [Advanced]

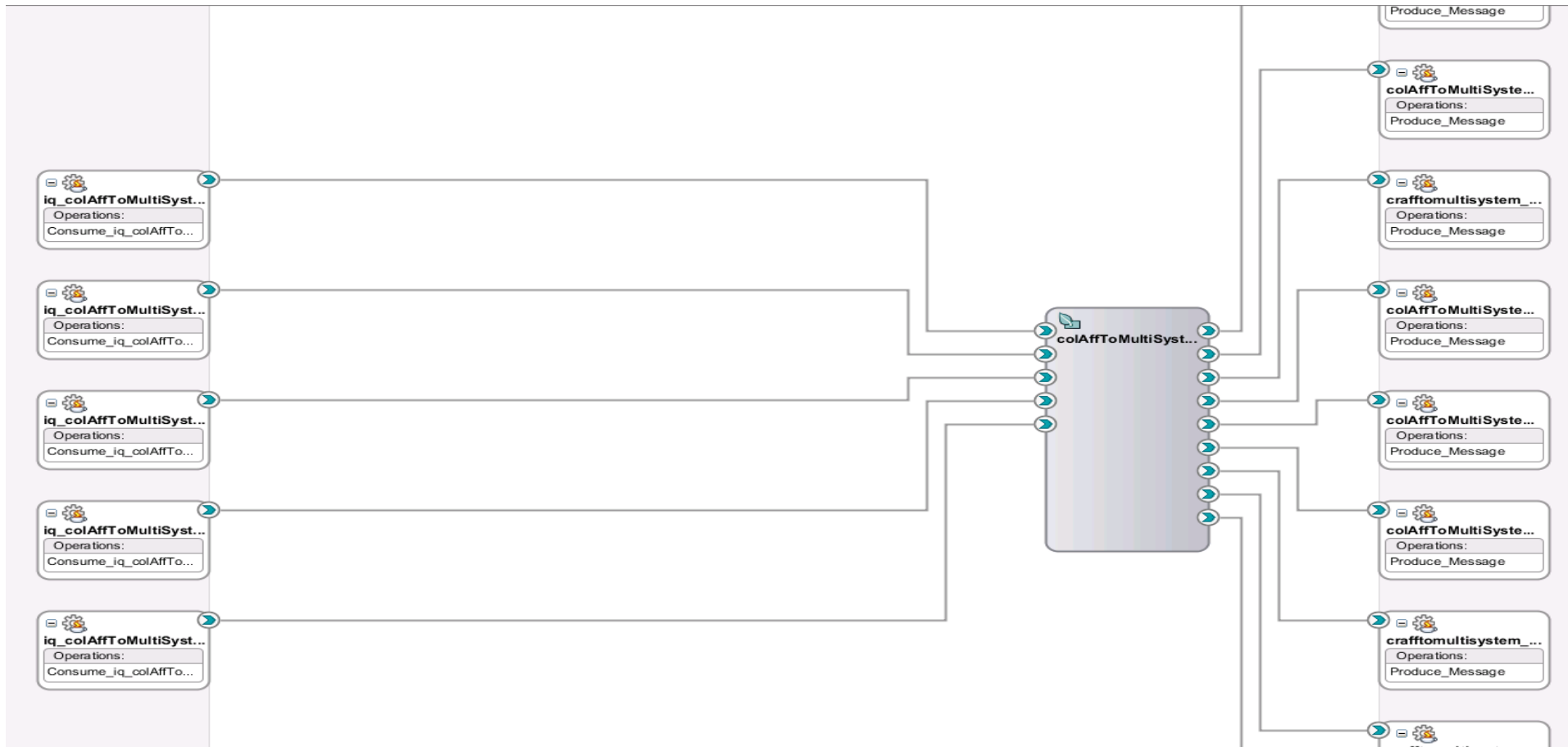
[OK] [Cancel] [Apply] [Help]



Technical Challenges and Solutions



■ Migrated SOA Suite project





Technical Challenges and Solutions



- Migration to SOA Suite for Healthcare using the SOA Suite flow

The screenshot shows the configuration window for the endpoint `ewiAffMLKtcpHI7Affinity_ADT`. The endpoint is enabled. The configuration includes the following details:

- Name:** `ewiAffMLKtcpHI7Affinity_ADT`
- Status:** Enabled
- Transport Protocol:** MLLP10
- Transport Callout:** (empty dropdown)
- Connection Mode:** Server
- Host Name:** localhost
- Port:** 7710
- Acknowledgement Mode:** None
- Retry Interval:** 0
- Reattempt Count:** 0

Below the configuration are two tables for document definitions:

Document To Send

Document definitions with icons indicate some of their parameters have been overridden.

Document	Functional ACK	Validation	Translation	Retry Interval	Reattempt Count	Document Callout	Mapset
----------	----------------	------------	-------------	----------------	-----------------	------------------	--------

Document To Receive

Document definitions with icons indicate some of their parameters have been overridden.

Document	Functional ACK	Validation	Translation	FA handled automatically	Internal Channel	Docu Callo	M
HL7-2.3-ORM-ORM_def	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	NONE	iq_colAffToMultiSystem_AffinityORMIN		
HL7-2.3-ADT-ADT_def	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	NONE	iq_colAffToMultiSystem_AffinityAdt		



Best Practices and Lessons Learned



- Test data object ETD's/OTD's extensively
- JMS based projects are perfect candidates for migration, others are still good candidates
- Raise SR's as quickly as possible and follow through
- Test error handling as different products behave differently than SOA Suite
- Transition from previous generation product methodology "mindset" to SOA mindset
- Direct contact with Oracle engineering team streamlined and was critical to migration effort under the engagement model



GOVERNO DE
PORTUGAL



IGFEJ

Portugal Justice Department

JAVA CAPS Migration

Oracle Open World 2014

Agenda

- **Company Summary**
- **Business Requirements and Challenges**
- **Product Selection, effort and estimation**
- **Target architecture & infrastructure**
- **Migration benefits**
- **Technical challenges**
- **Conclusions, tips & lessons learned**

Instituto de Gestão Financeira e Equipamentos da Justiça I.P.

Company Summary

IGFEJ is responsible for the management of the financial resources of the **Portuguese Ministry of Justice**

- Management of its technological infrastructures
- Responsible for proposing new technology
- Executing IT projects

All this is accomplished interacting with several internal and external entities to the Ministry of Justice.

The Challenge

- Migrating JCAPS
- Project budgets
- Incorporating new features whenever possible

The Solution

- SOA = BPEL + Java
- OSB
- Weblogic (for HA)
- Oracle Databases

The Future

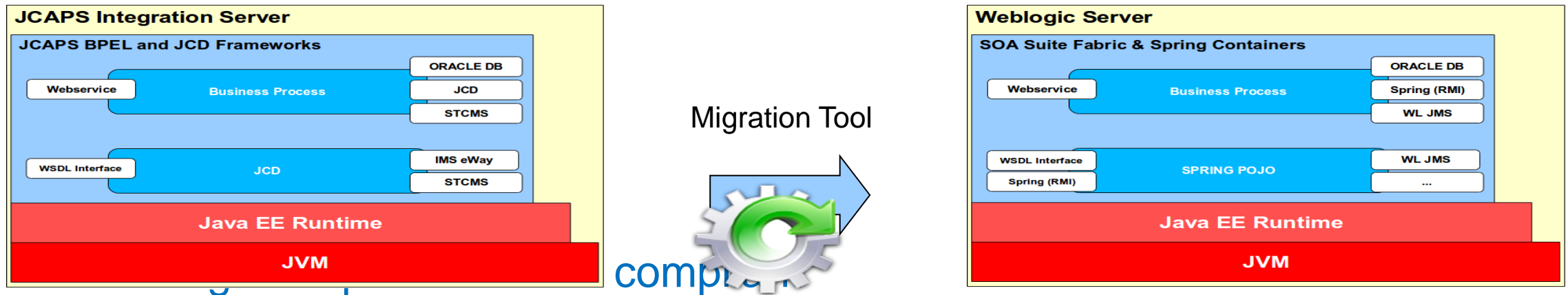
- Use **BAM**, to build real-time **dashboards** in order to monitor relevant information in real time.
- By using an **established security standards** (WSS), weblogic is able to **connect to several security providers**. When the time comes, seamlessly switch to the Ministry of Justice unified system without any impact to our clients.

Business Requirements and Challenges

- Due to EOL of JCAPS – required to move to another platform
- Maintain 100% functional compatibility
- Retain as much intellectual property where possible
 - Design patterns (as well as code)
 - Common services (reuse of components)
- Technical requirements:
 - Consolidate integration endpoints (service virtualization)
 - Support new WS-* standard features not supported by JCAPS
 - Introduce HA
 - Employ new SOA products & features where it makes sense
- Timeline: Migration of core processes by end of 2014

Product Selection Criteria

- ✓ Technology Viability and Clear Evolution Roadmap (with Best In Class Technology)
- ✓ Migration Tool that automate most of the effort



- ✓ Clear Assessment on the Effort Involved
- ✓ Migration Strategy Proved and Documented

Effort and Estimation

Project Area	Complexity
CC	Complex
IC Ws	Medium
IC (Assync)	Medium
IES	Complex
STS WS	Simple
Ent Externas WS	Medium
Gest Doc WS	Simple
Reclusos WS	Medium
SICRIM WS	Medium
SIRMCOM WS	Medium
SIRP WS	Medium
Automovel WS	Medium
DUA	Medium

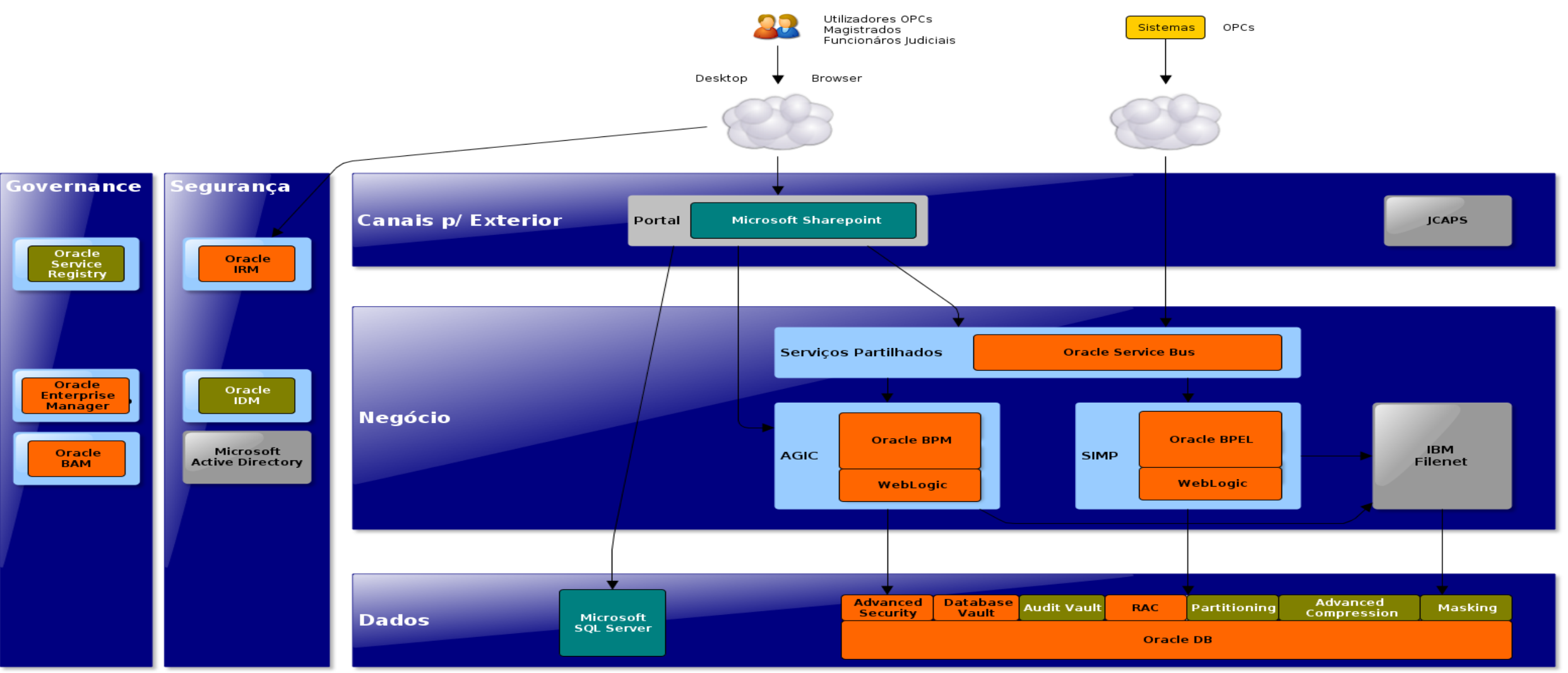
Factors for Complexity:

- eWay Use
- Business functionality
- Pattern suitability

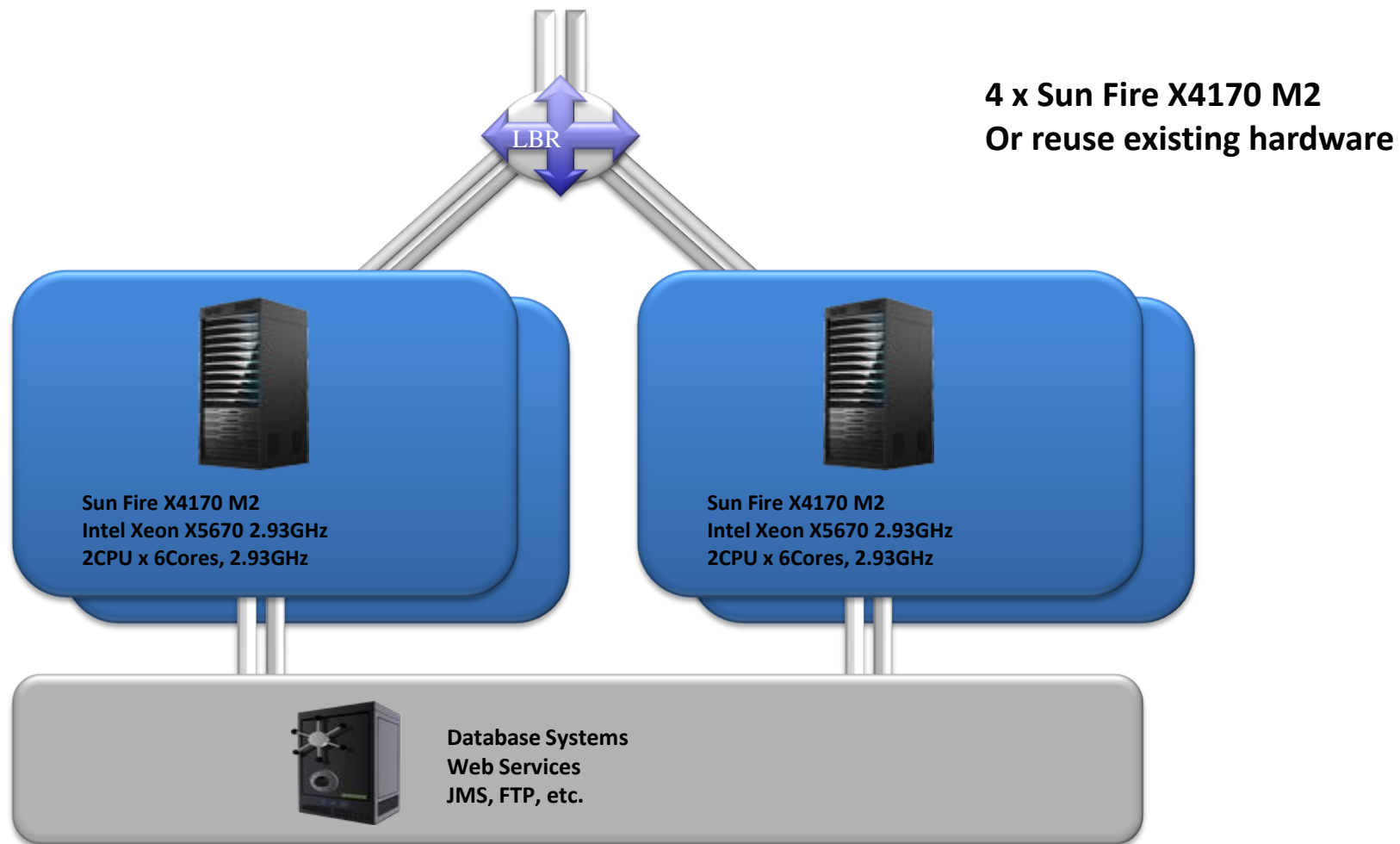
Effort and Estimation

- Evaluation phase: **two and half months in duration** (includes risk mitigation) with most of team assigned full time
- Migrated projects for each complexity level/pattern
- Measures (eg: project with **medium** complexity)
 - ~ 8 man hours for install/configure environment
 - ~ 4 man hours to migrate the project (using the tool)
 - ~ 4 man hours to do end-to-end testing (quality assurance)
 - = 16 man hours in total
- Estimation then scaled for 100 projects

Target Architecture



Target Infrastructure



Migration Benefits

- ✓ Fastest time-to-value
 - High Code Reuse
 - Best Practices, Methodology and Assistance
 - Tooling Support
- ✓ Lower TCO
 - License migration program
 - Lower overall project cost
- ✓ Control Risk
 - Single point of Support (Oracle)
- ✓ Target OSB/SOA Platform
 - Up-to-date Standards
 - Monitoring
 - Development Environment

Technical Challenges

- BPEL migration
 - Dealt with sequence nodes vs choice nodes
 - Handle BPEL 1.1 -> 2.0 mapping of empty nodes
- Migration tool – initially using the first “beta” versions
- Handling of JMS – not so natural in SOA Suite

Conclusions, Tips & Lessons Learned

- ❖ Teams must be **trained** in SOA Suite
- ❖ **Java and BPEL skills** still relevant in Oracle
- ❖ Do not underestimate the architecture and design phase! Investment in **evaluation period** very important. Try different things!
- ❖ Do not change the project team after the PoC and before starting the migration!
- ❖ Choose a **first migration scenario** for hands-on training
- ❖ Introduce the **optimizations** related with capabilities that exist in SOA Suite and that had been coded in JCAPS

Summary

- Oracle has proven Migration Methodology to help migrate Java CAPS artifacts to FMW (SOA Suite)
- Reach out to your Oracle account team to discuss if you qualify for a free assessment workshop
- Send email to SoaMigrationExperts_us@oracle.com for your migration queries

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