

Managing and Monitoring BPEL

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25

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Agenda

- BPEL and its infrastructure
- Challenges faced by IT administrators
- BPEL runtime governance
- Managing service levels
- Best practices
- Q/A

Many initiatives lack Business/IT collaboration

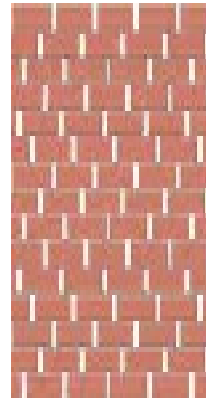
Business - Strategic modeling



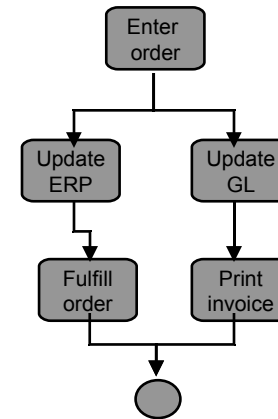
- No visibility into IT ?
- Disconnect between conceptual model and implemented process
- Not sure how to improve process and reduce costs ?
- Change in business rules and processes



Requirements, powerpoint, visio model, Export files



IT – Executable modeling

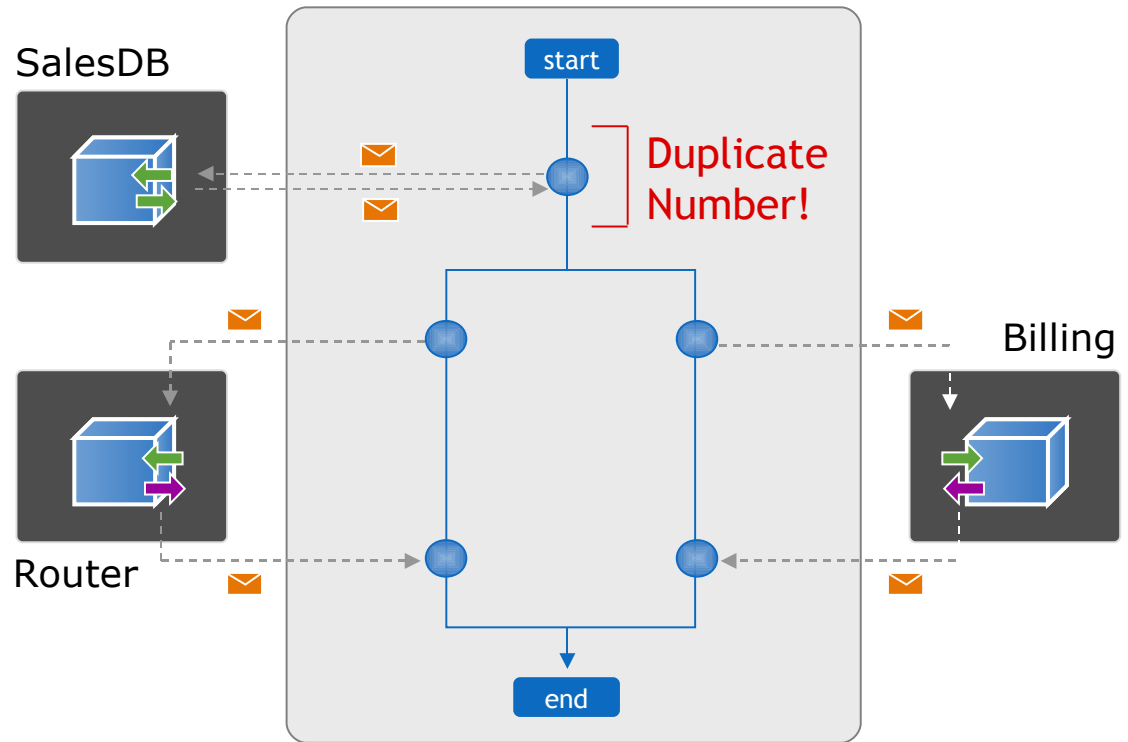


- Requirements not clear ?
- Business is constantly asking for changes
- No visibility to process execution
- Change in partners and technology

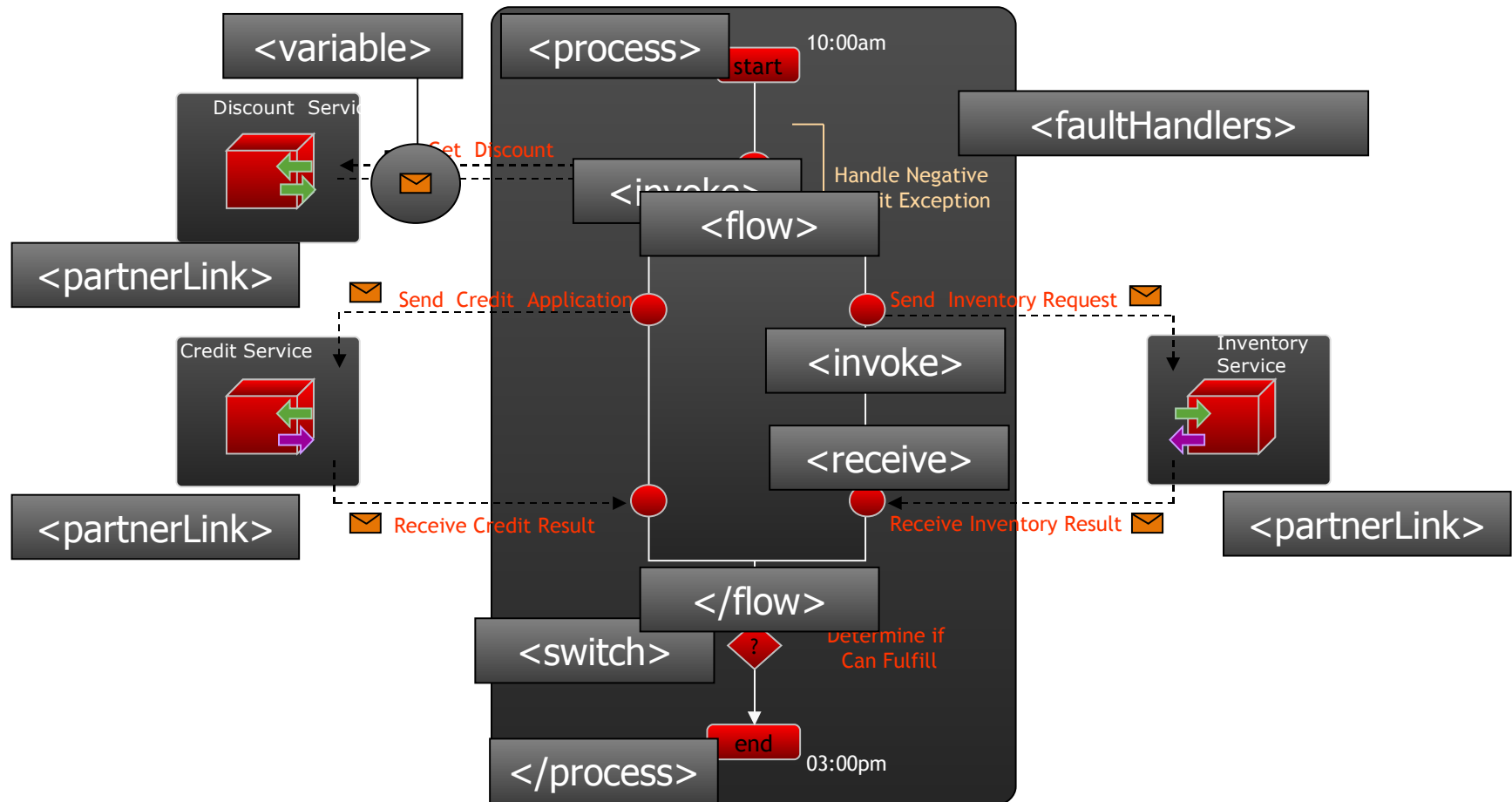
BPEL and Process Orchestration

Standard markup language for composing a set of discrete services into an end-to-end process flow

- 10+ years of R&D from MSFT and IBM
- Rich Flow Semantics
- Optimized Bindings (not just Web services)
- Transformation
- WS-Security
- Transactions
- A Process is a Service

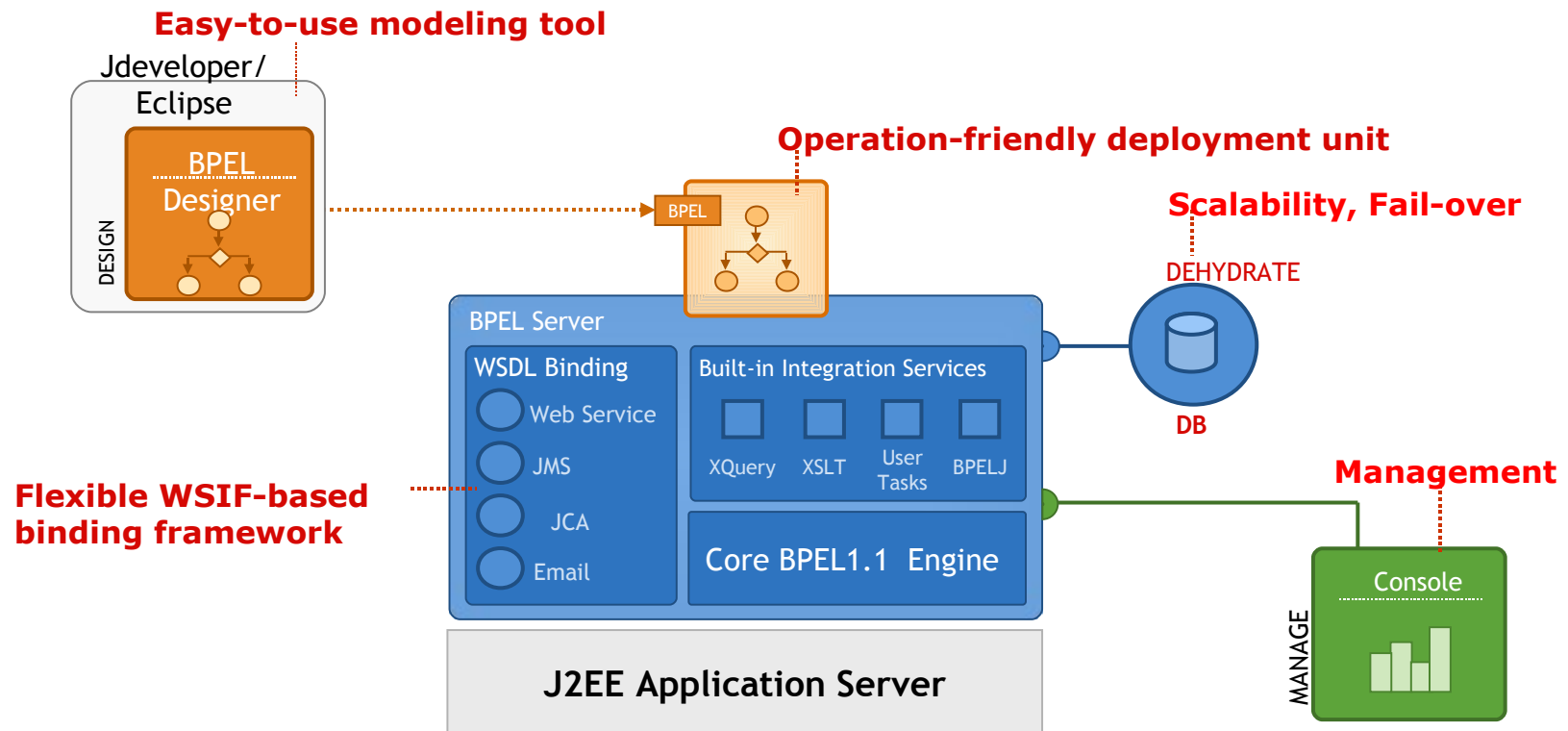


BPEL in Action



Runtime Framework for BPEL

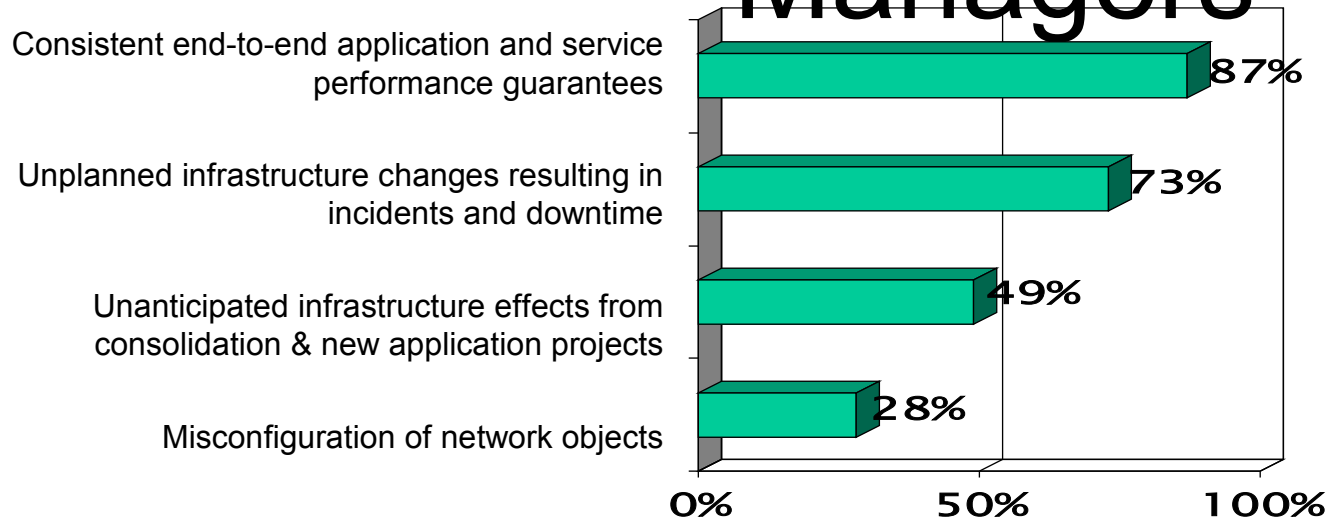
- Enterprise-strength infrastructure for designing, deploying and managing BPEL business processes



BPEL Ecosystem

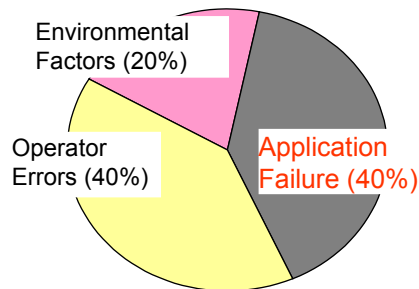
- BPEL Processes and Partner Links
- BPEL Engine
- Dehydration store
- Gateway to BPEL Engine
- Application server and adapters
- JVM
- Host Machines
 - DB/dehydration store
 - App server

Top Challenges for Enterprise IT Managers

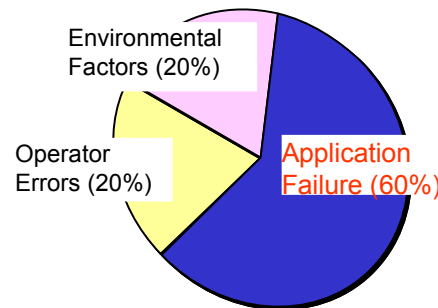


Source:
Forrester Research,
Survey of Enterprise
IT Infrastructure Managers

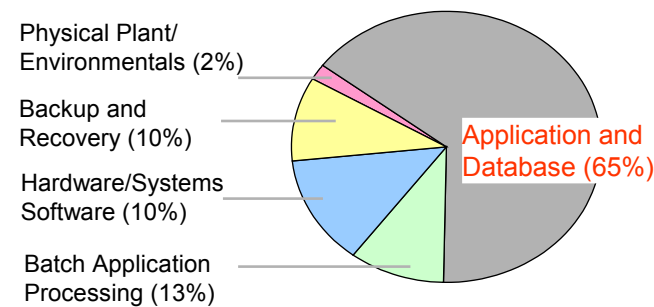
Unplanned Downtime(Non-SOA)



Unplanned Downtime (SOA)



Planned Downtime

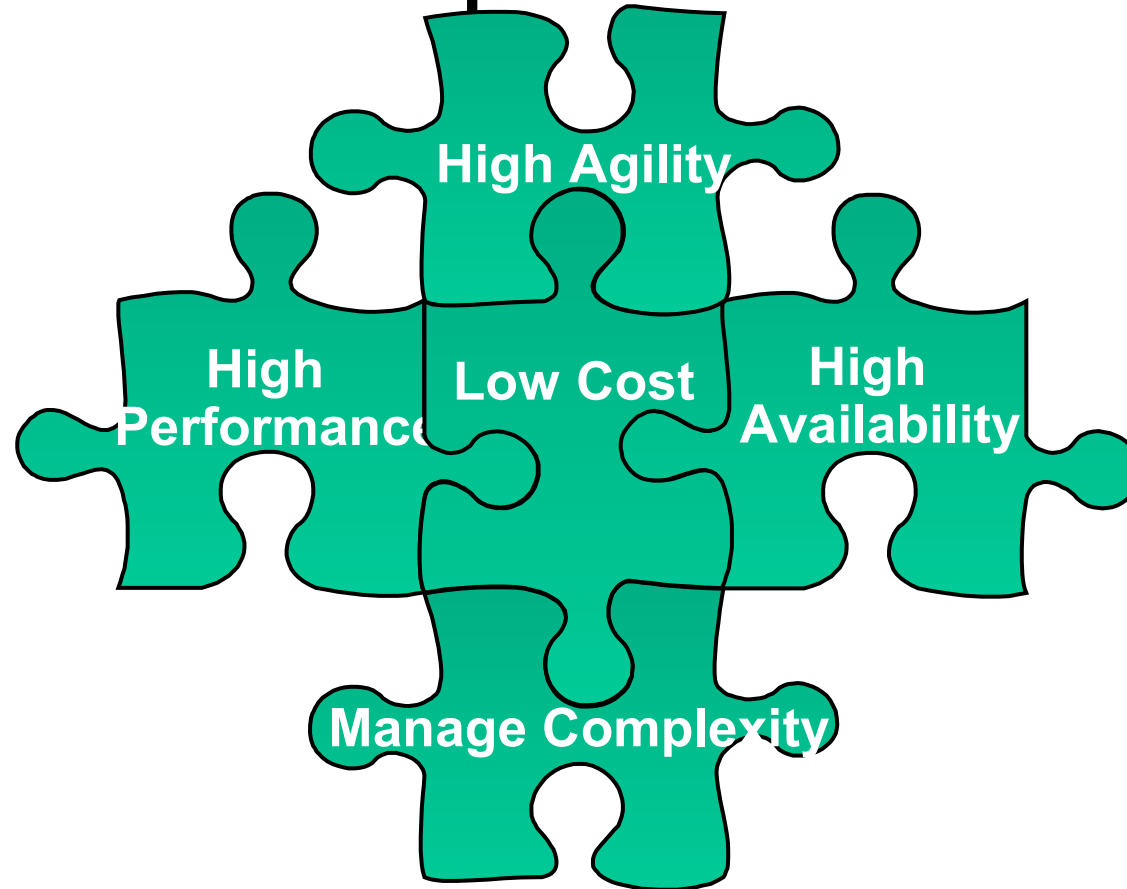


Source:
Gartner 2006

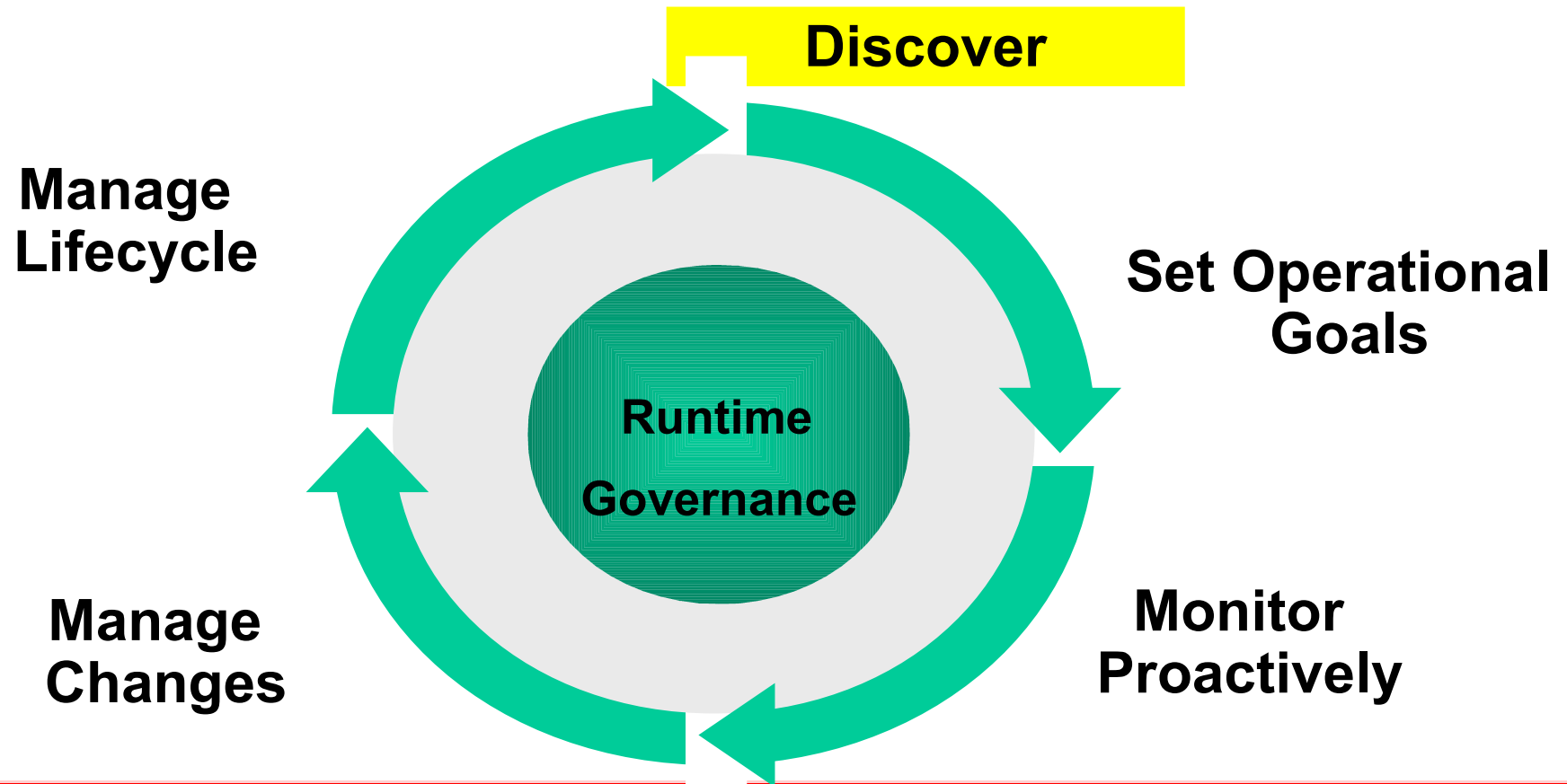
Key Management Challenges

Profile	Pain Point
Application Admin	<ul style="list-style-type: none">- How can I detect problems in process execution quickly?- How do I monitor and ensure service quality, predictability and performance of business processes?- How can I implement a business processes to work in accordance to corporate policies and consumer/provider agreements?
System Admin	<ul style="list-style-type: none">- Can I monitor my BPEL ecosystem as easily as a single server instance?- Can I isolate problem instances in my SOA Suite deployment?
LOB Owner	<ul style="list-style-type: none">- How can I set and monitor service levels promised to my customers?- How can I trend and analyze services?
CIO	<ul style="list-style-type: none">· What is the impact of IT on business?· How do I translate business trends into IT requirements?· Are we complying with standards such as ITIL, SOX, etc?

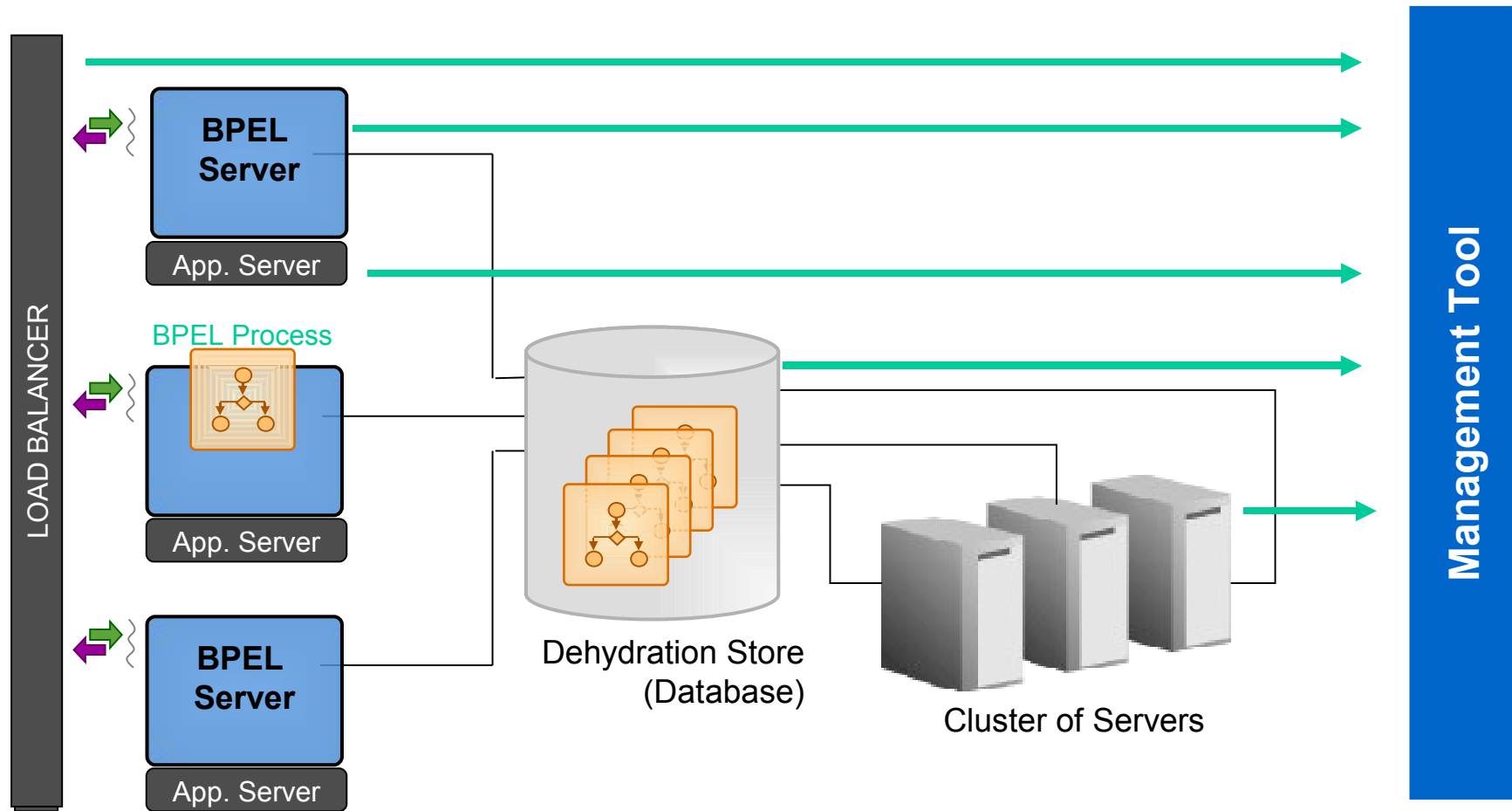
Runtime Governance Requirements



BPEL Management - Runtime Governance



BPEL Infrastructure Management



Discover Infrastructure and Processes

- Discover topology
 - BPEL PM
 - Dehydration store
 - Hosts
 - Application Servers
- Update topology
- Processes and Partner links

Partner Links

Provides details about the partner links associated with the selected process. Add SOAP Test allows you to add SOA

Select	Name	Part Type	Operation	WSDL URL
<input checked="" type="radio"/>	client	SOAOrderInquiryCallback SOAOrderBooking	onResult initiate	http://stapp0
<input type="radio"/>	CreditValidatingService	ValidatesCreditCard	VerifyCC	http://stapp0
<input type="radio"/>	CustomerService	CustomerService	findCustomerById	http://stapp0
<input type="radio"/>	DecisionPersonalM	DecisionService	executePersonalMValidation	http://stapp0 WSDL
<input type="radio"/>	NotificationService	NotificationService	sendEmailNotification	http://stapp0
<input type="radio"/>	Order	Order_pt	write	http://stapp0
<input type="radio"/>	OrderFulfillment	execute_pt	execute	http://stapp0
<input type="radio"/>	OrderSequence	OrderSequence_pt	OrderSequence	http://stapp0
<input type="radio"/>	OrderStatus	OrderStatus_pt OrderStatus_pt	update update	http://stapp0
<input type="radio"/>	RequestQuote	RequestQuote	ProcessRequestQuote	http://stapp0
<input type="radio"/>	SelectService	SelectService SelectServiceCallback	processRequestQuote processRequestQuoteResponse	http://stapp0
<input type="radio"/>	TaskService	TaskService TaskServiceCallback	initiateTask onTaskCompleted	http://stapp0

Modeling Systems and Service

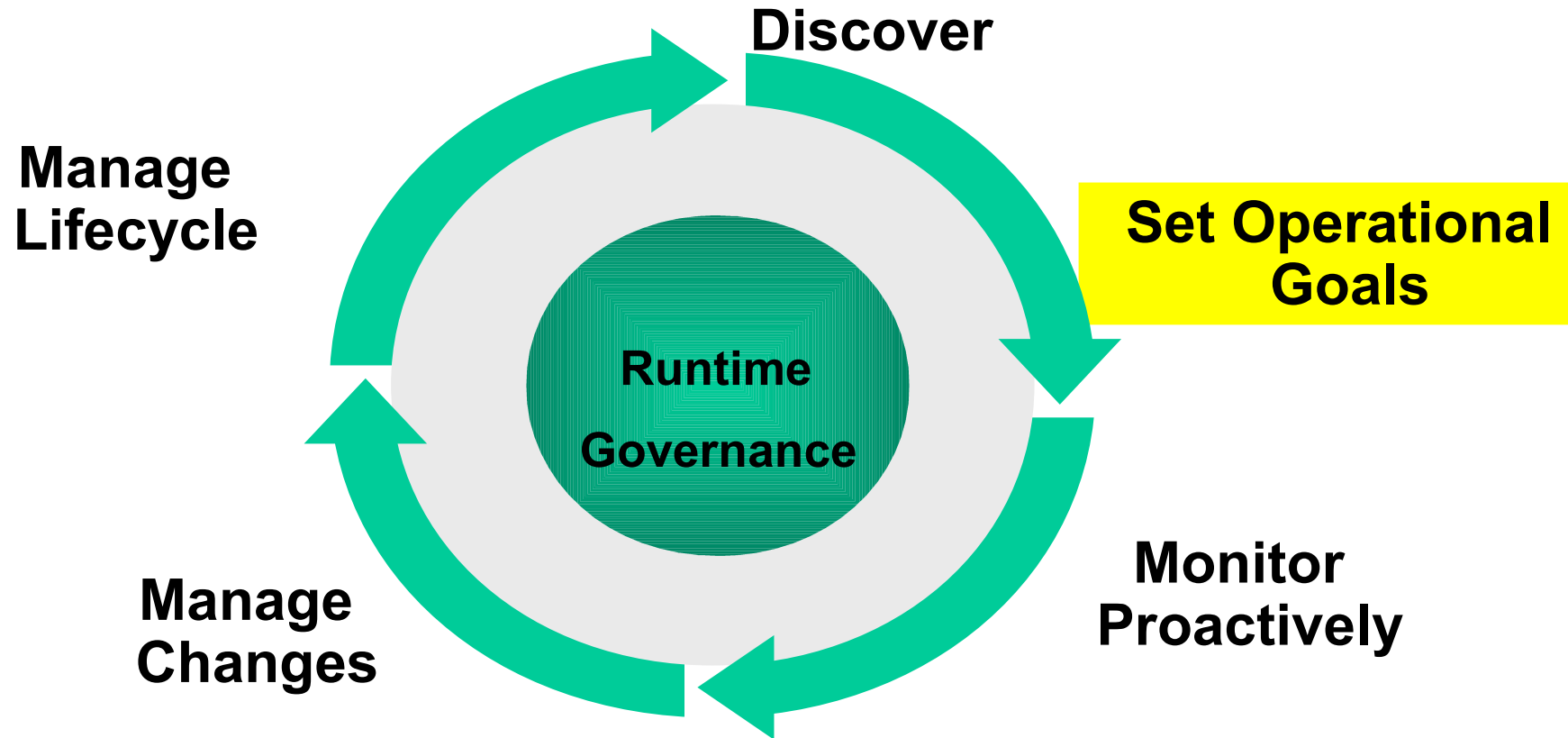
- System and Service
 - SOA Infrastructure System and Service
 - BPEL Process Availability
 - BPEL Process Aggregate Service
 - Partner Link Service

Services

Provides details about the services that have been created for this Oracle B2B Process.

Name	Service Type	Status
default: SOAOrderBookmarks100	Aggregate Service	↓
SOAOrderBookmarks100_availability	Generic Service	↑
CreditValidationService_test	SOAP	↑
client_test	SOAP	↑
SOA_Instance	Generic Service	↓

BPEL Management - Runtime Governance



Set Operational Targets

- Service Level Target
 - Business Calendar
 - Maintenance Window
 - Capacity Target
 - Availability Criteria
 - Performance Criteria
- 99.99% Service Level
 - Monday to Friday
9 a.m. to 5 p.m.
 - Includes planned downtime
 - Capacity to handle 5000 users
 - Key Business Operations
 - Credit Check
 - Access Customer Profile
 - Fulfill Customer Order
 - Key Locations
 - Redwood Shores
 - New York

Business-IT alignment

- Visibility of top IT metrics in BAM
- Get key business metrics (e.g. Number of orders) for a service
- Dashboard for top level picture of consolidated performance and load

Services Dashboard

Status: 4 Up - Microsoft Internet Explorer

File Edit View Favorites Tools Help

ORACLE Enterprise Manager Grid Control

Services Dashboard

Service	Status	Performance	Usage and Business Indicators	L	Service Level		
					Last 24 Hours	Last 7 Days	Last 30 Days
SOAOrderBooking (v.1.0)	↑	 117.40 Average Asynchronous... 21.37 CPU Utilization (%) 297.00 CreditValidationReqPer...	 1000 Number of Closed Instanc... 0.00 Number of Open Instanc... 1.00 OOAD Instance - /%	2 up	76.87%	70.64%	
AGROW	↑	 1707.48 Average Asynchronous... 317.00 Average CPU waits... 24.17 CPU Utilization (%)	 3.00 Number of... 1000 Number of... 1.00 OOAD Instance - /%	1 up	89.29%	80.07%	
SUAUnderBooking (v.1.0) availability	↑	 59.00 Credit Service Resp... 106.00 Order Fulfillment Fe... 40.00 client Response Time...	 1000000 OrderBookReqOrderFul... 115000 OrderBookReqOrderFul... 550000 OrderBookReqSupplie...	5 up	76.40%	72.51%	
Credit Check Service	↑	 No Data CreditRatingWebServ... No Data CreditRatingWebServ... No Data Service - Fail...	 No Data Cred.Rat... No Data Cred.Rat... No Data WebService - Start...	5 up	89.23%	88.08%	

Legend

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OrderBooking Composite service

SOA Infrastructure service

Business KPIs (eg from BAM)

Credit Check Service

BPEL Process availability service

Business-IT alignment

BAM Dashboard

Performance Metrics correlation with Business Orders



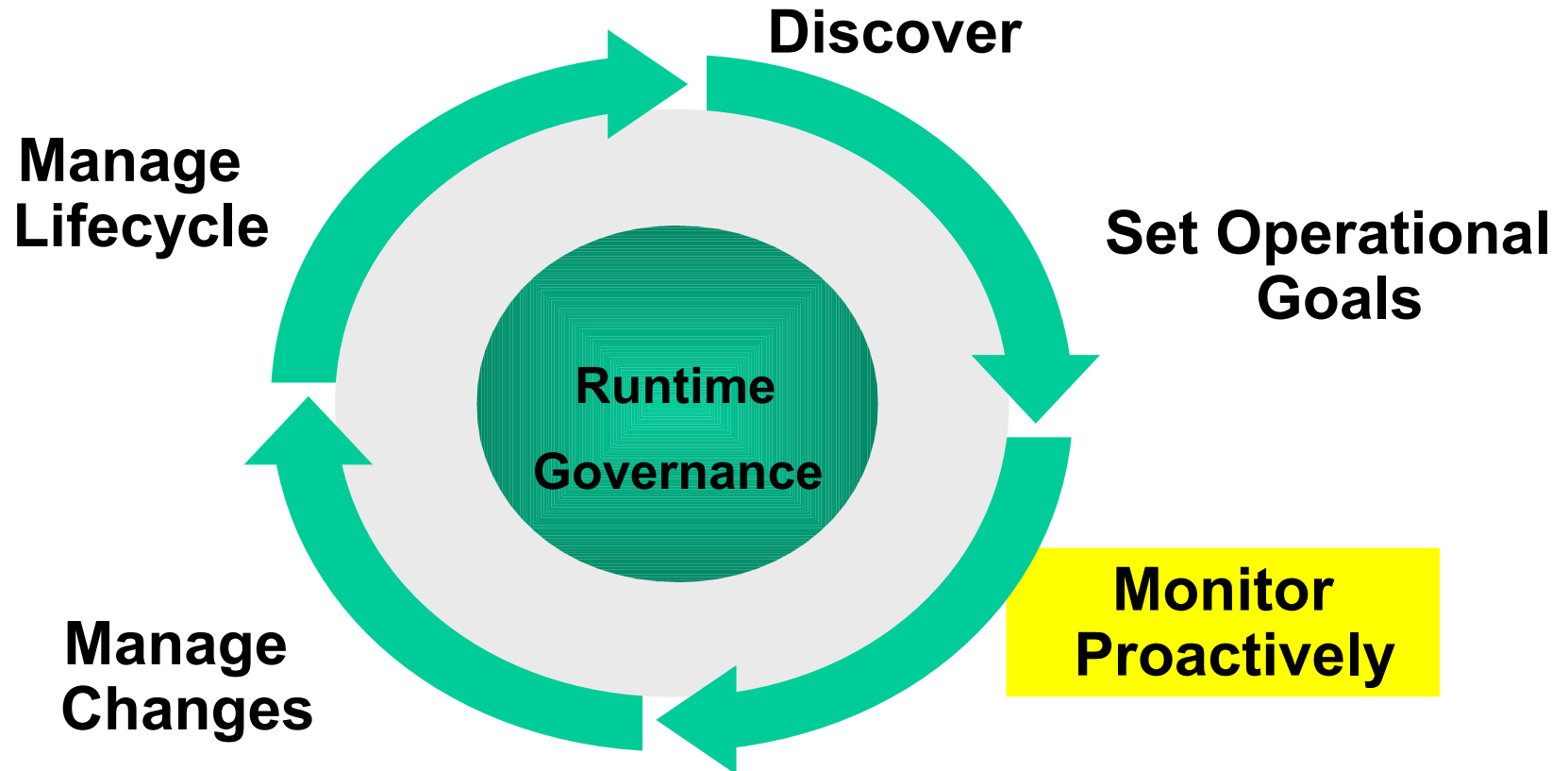
Usage Metrics with Business Orders

Pune, India

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ava Technology 2008

BPEL Management - Runtime Governance



BPEL Process Monitoring

- Process meta information
 - Lifecycle Stage
 - State
- Process instance throughput
 - PM Server
 - Domain
 - Process
- Closed and Open instances
- Process latency
 - Sync
 - Async

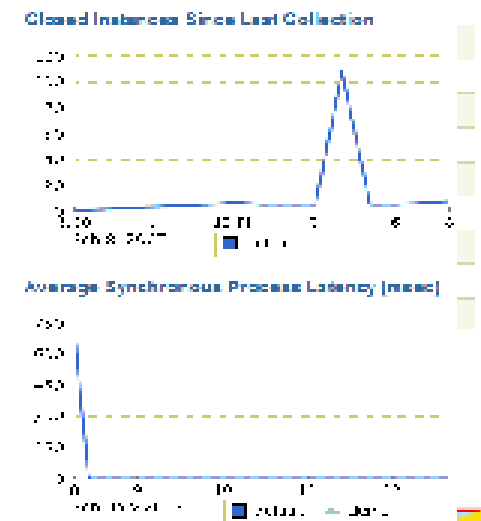
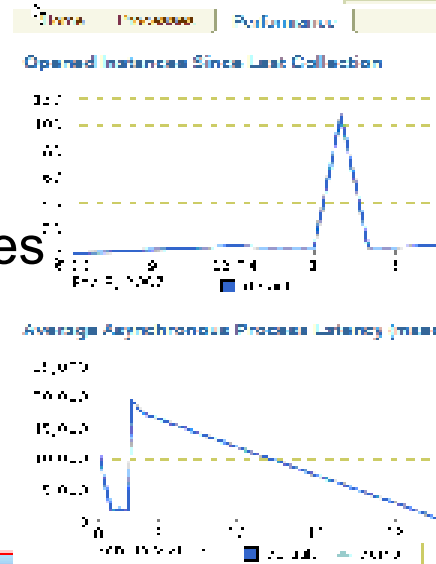
Home Processes Performance

Process List

List of processes for the BPEL PM instance. The partner link associated to a process can be viewed in BPEL Console, select the process and click 'Launch BPEL Console'.

[View](#) | [Launch BPEL Console](#)

Select Name	Lifecycle Stage	State
<input type="radio"/> All BPEL Domains		
<input checked="" type="radio"/> default		
<input type="radio"/> BPM1Process3(v.1.0)	Active	On
<input type="radio"/> BPM2Process3(v.1.1)	Active	On
<input type="radio"/> DHLShipments(v.1.0)	Active	On
<input type="radio"/> HelloWorld(v.1.0)	Active	On

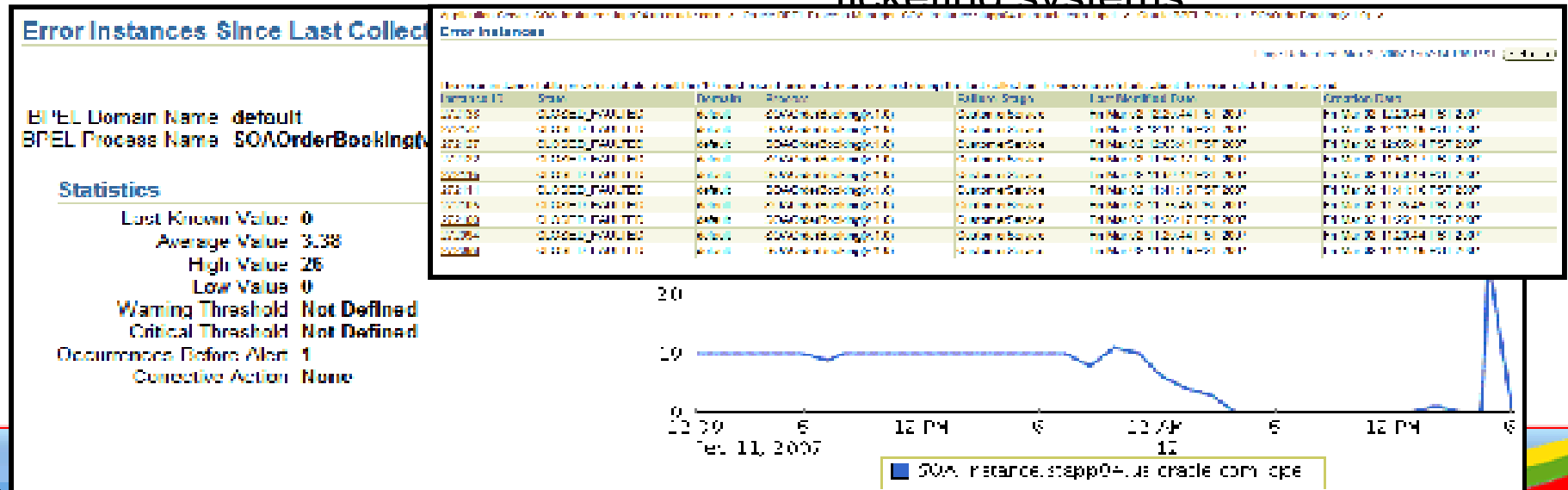


Manage BPEL Engine

- BPEL Process related operations
 - Archive completed process
 - Remove messages delivered and resolved
 - Purge stale instances
 - Re-execute stale instances
- Monitor dehydration store
- Monitor adapters

Error Hospital Integration

- Process Instance error management
- In-context drilldown into BPEL console
- Time series chart of error instance count
- Top ten error instances with timestamp, activity and instance_id
- Compare different domains over error metrics
- Annotate errors, integrate with ticketing systems



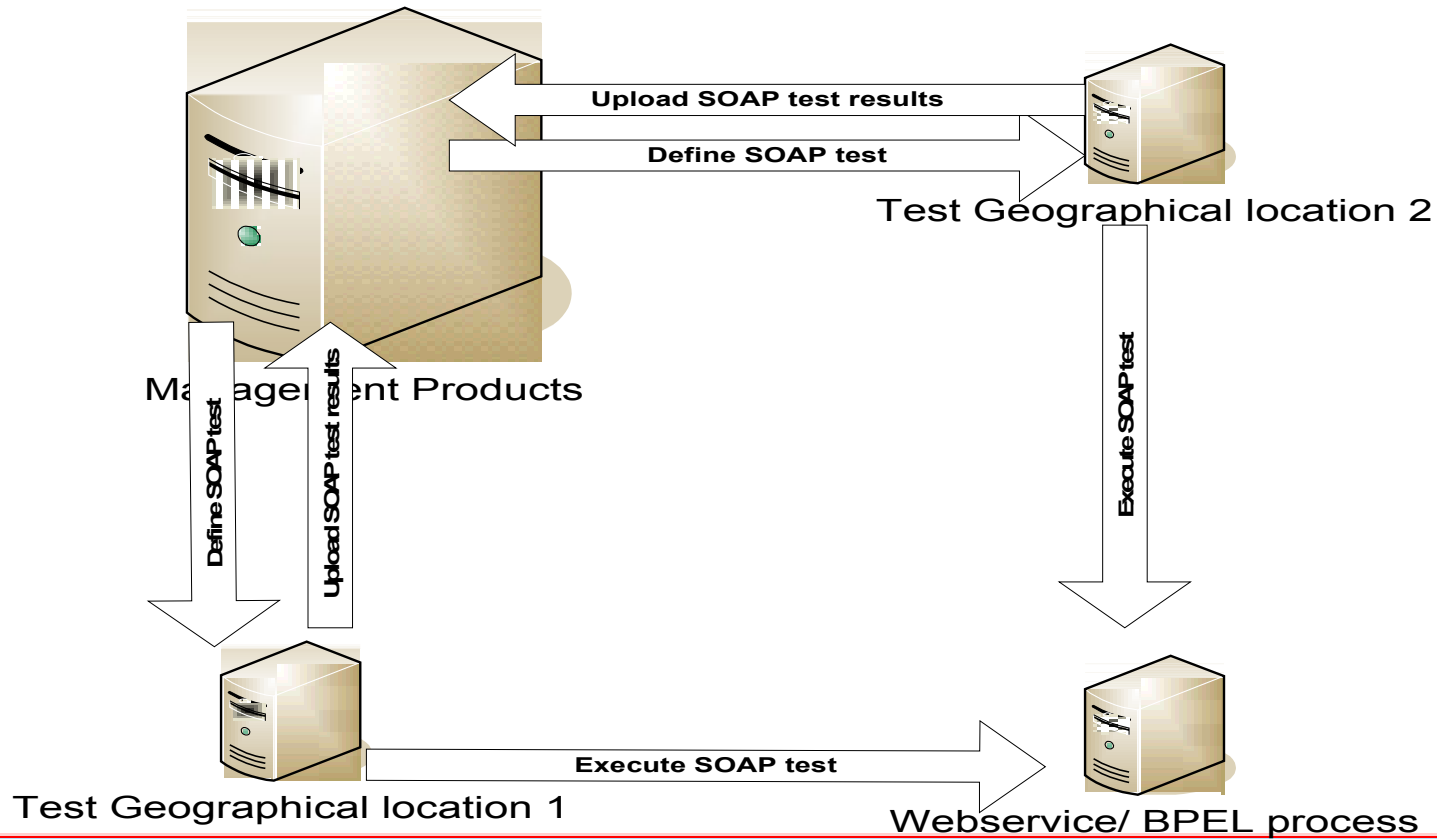
Manage Application Server

- BPEL engines run on application servers
 - Performance directly impact BPEL engine
 - May be clustered to provide high availability
- Use resources in application server
 - Data Sources and JMS Resources

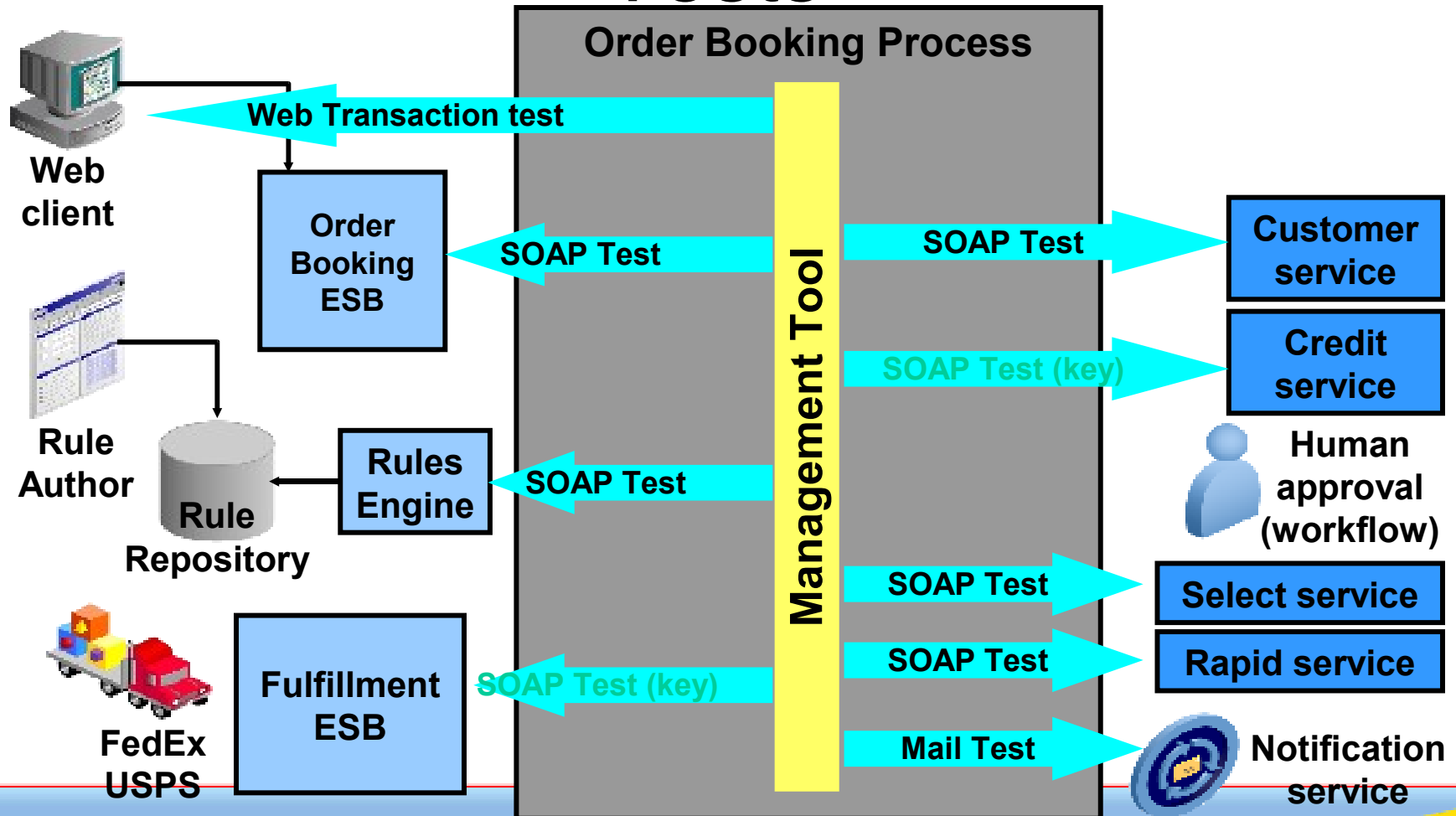
Manage Hosts

- BPEL Engines, DB, etc run on Hosts
- Any problems in hosts may cause disruption service

End User Monitoring



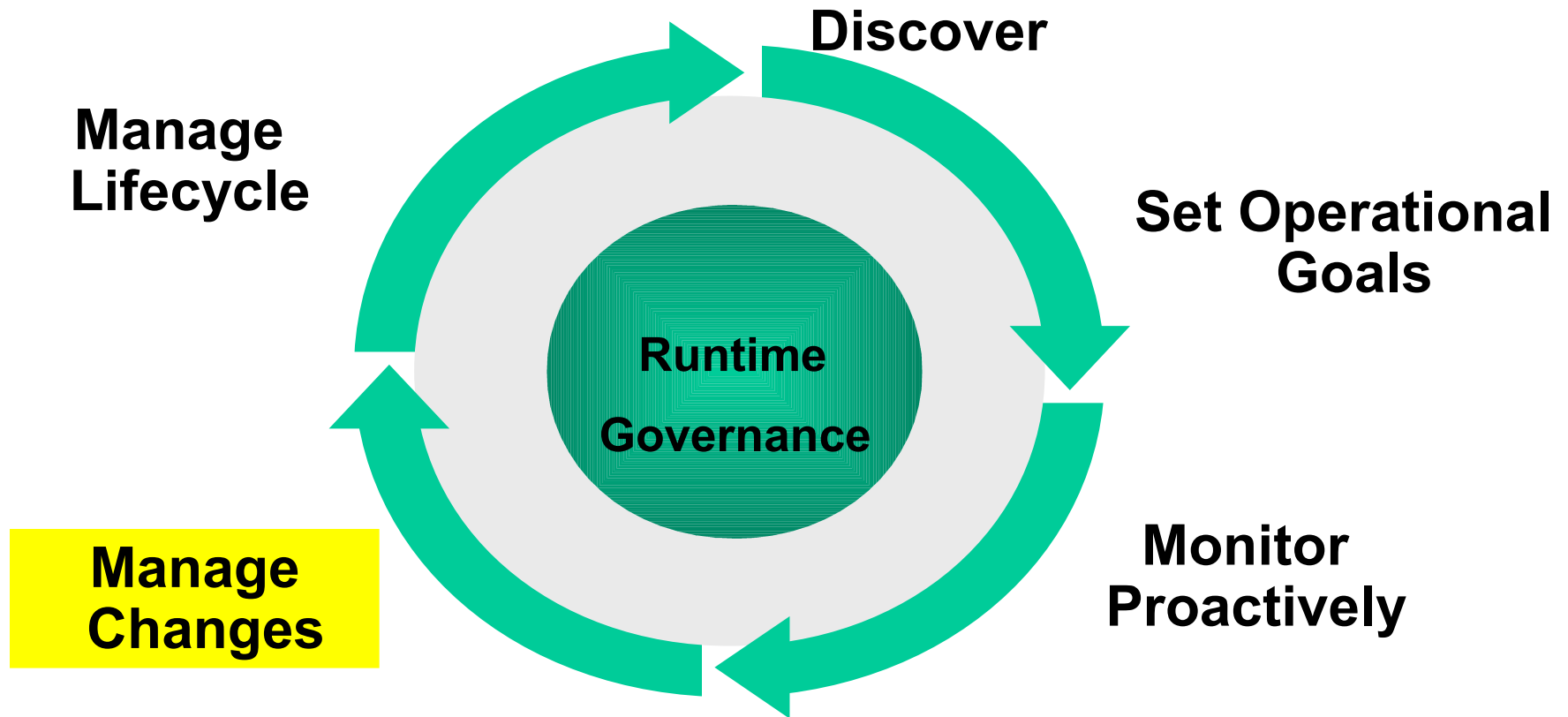
SOA Order Booking Process – SOAP Tests



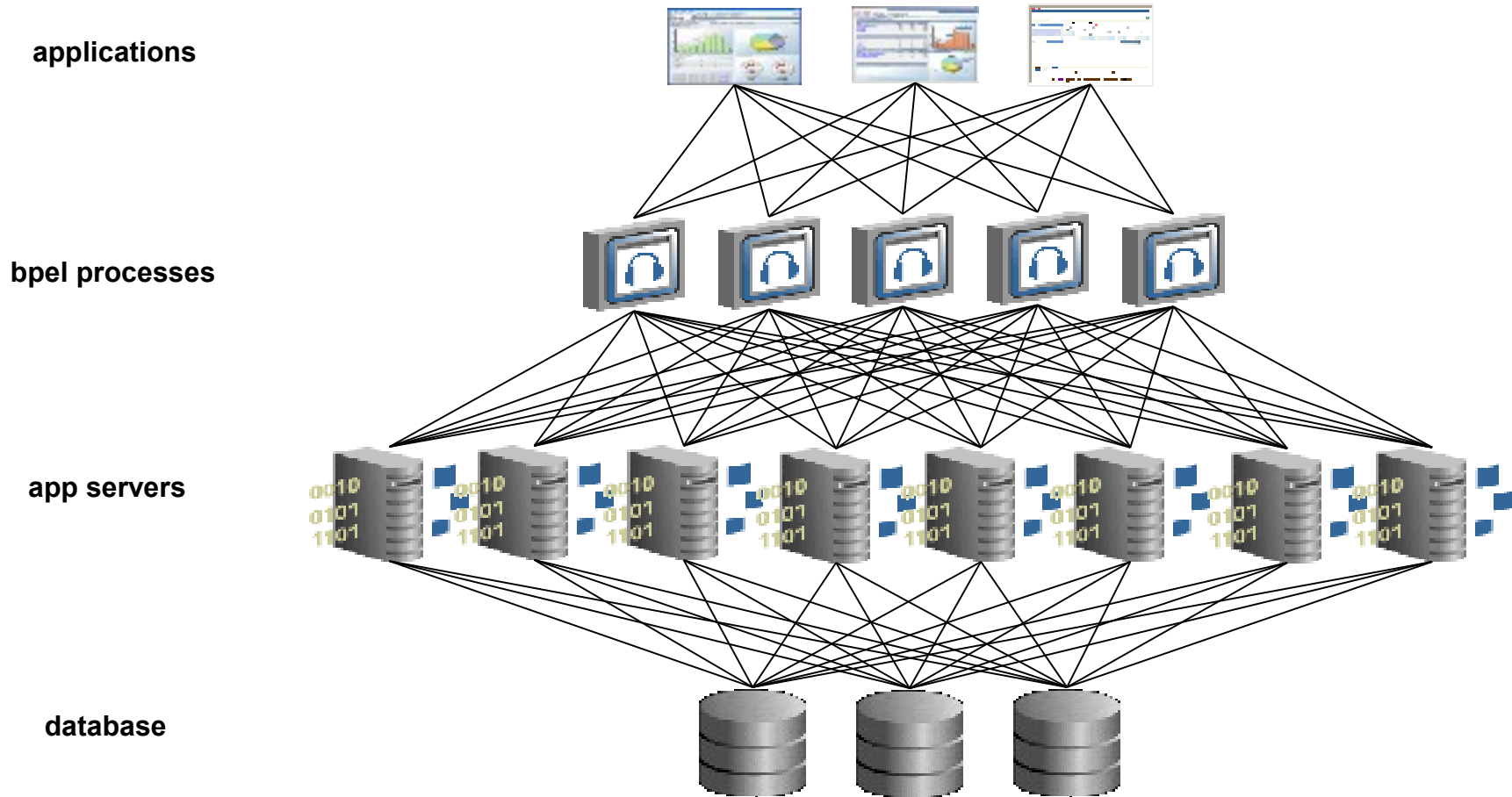
SLA Management

- SLAs for BPEL process
- SLAs for IT resources
- SLAs for Partner links

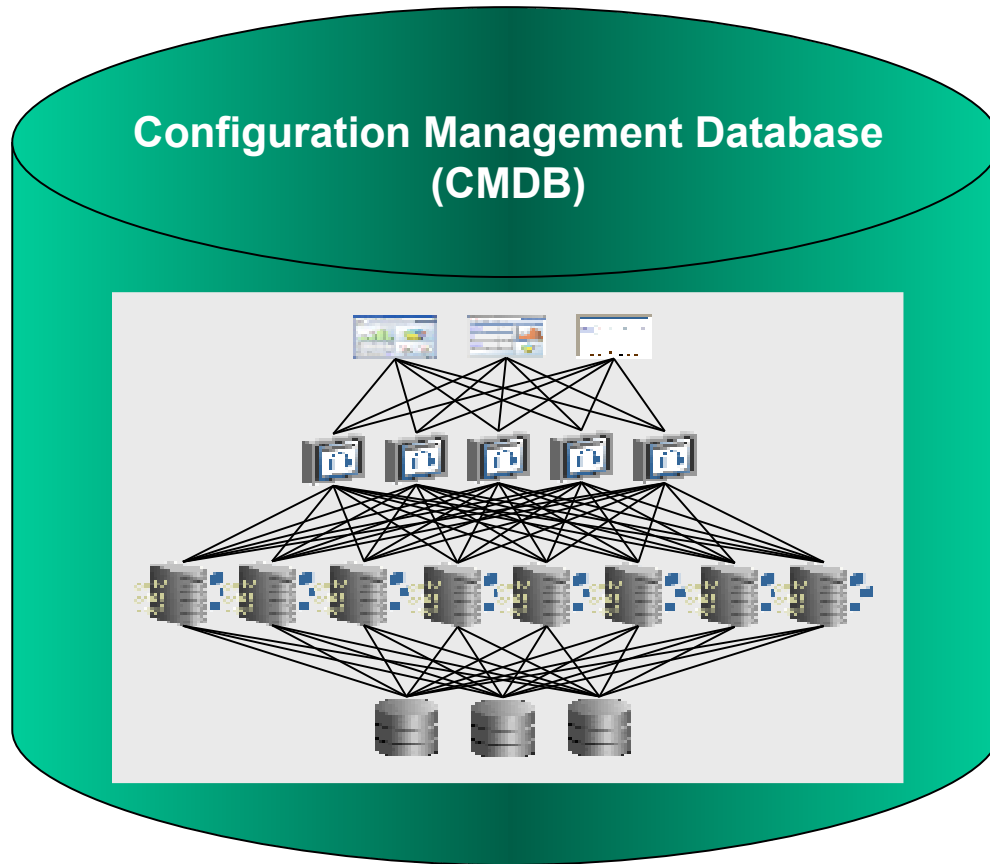
BPEL Management - Runtime Governance



Complex Application Environments



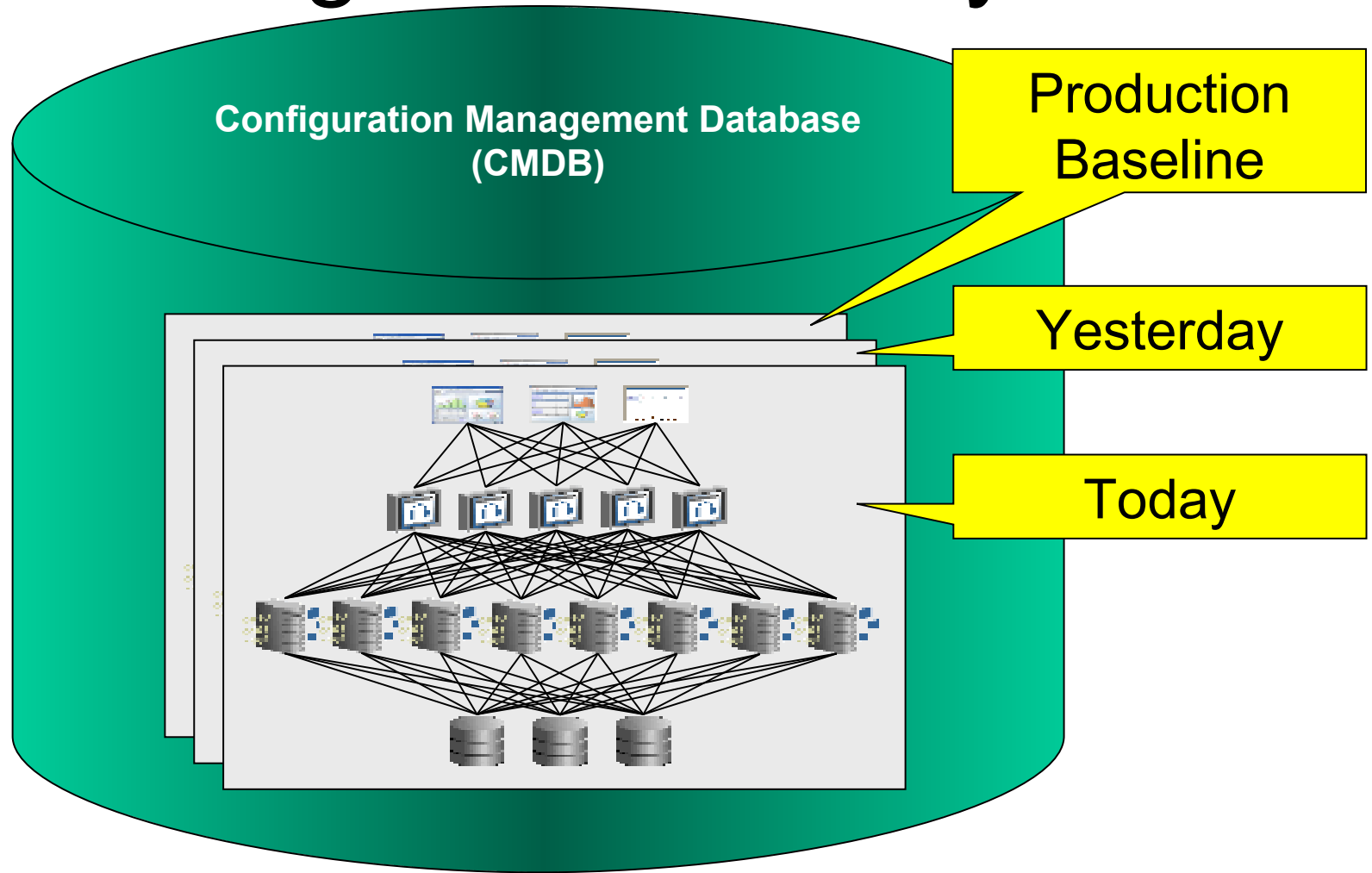
Configuration Discovery



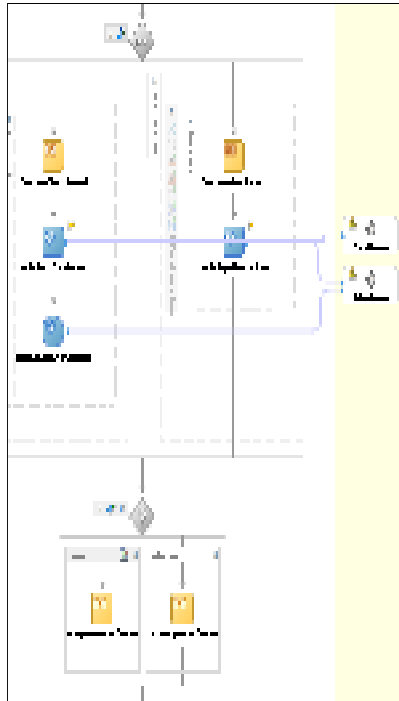
CMDB Content

- Server attributes
- Domain attributes
- Infrastructure attributes
- Process definitions
- Version information
- Configuration files
- Change history and violations
- **Apply Policies**

Configuration History



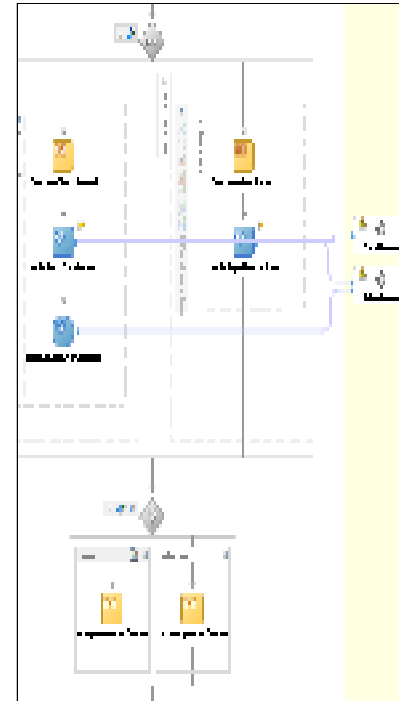
Process Version Comparison



In Production

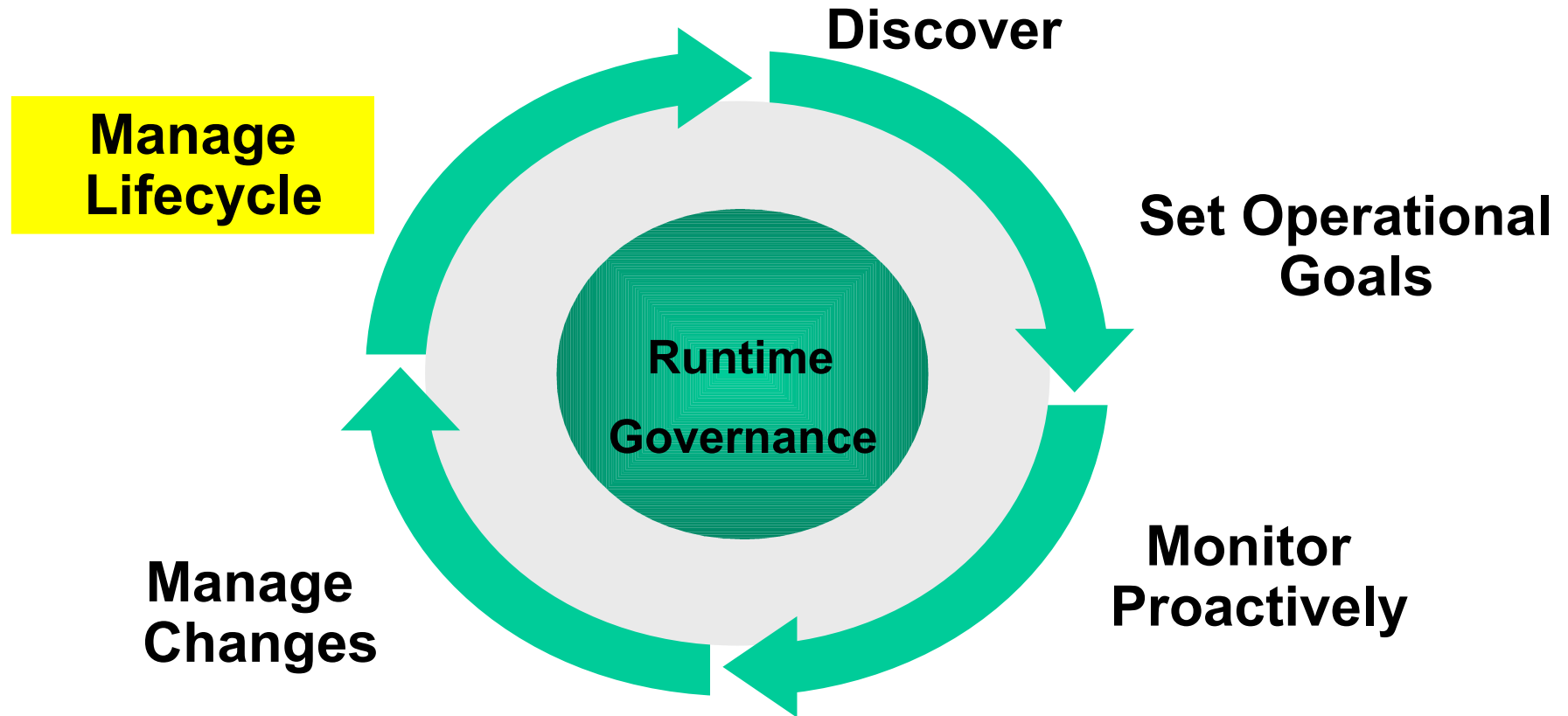
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New Version

BPEL Management - Runtime Governance

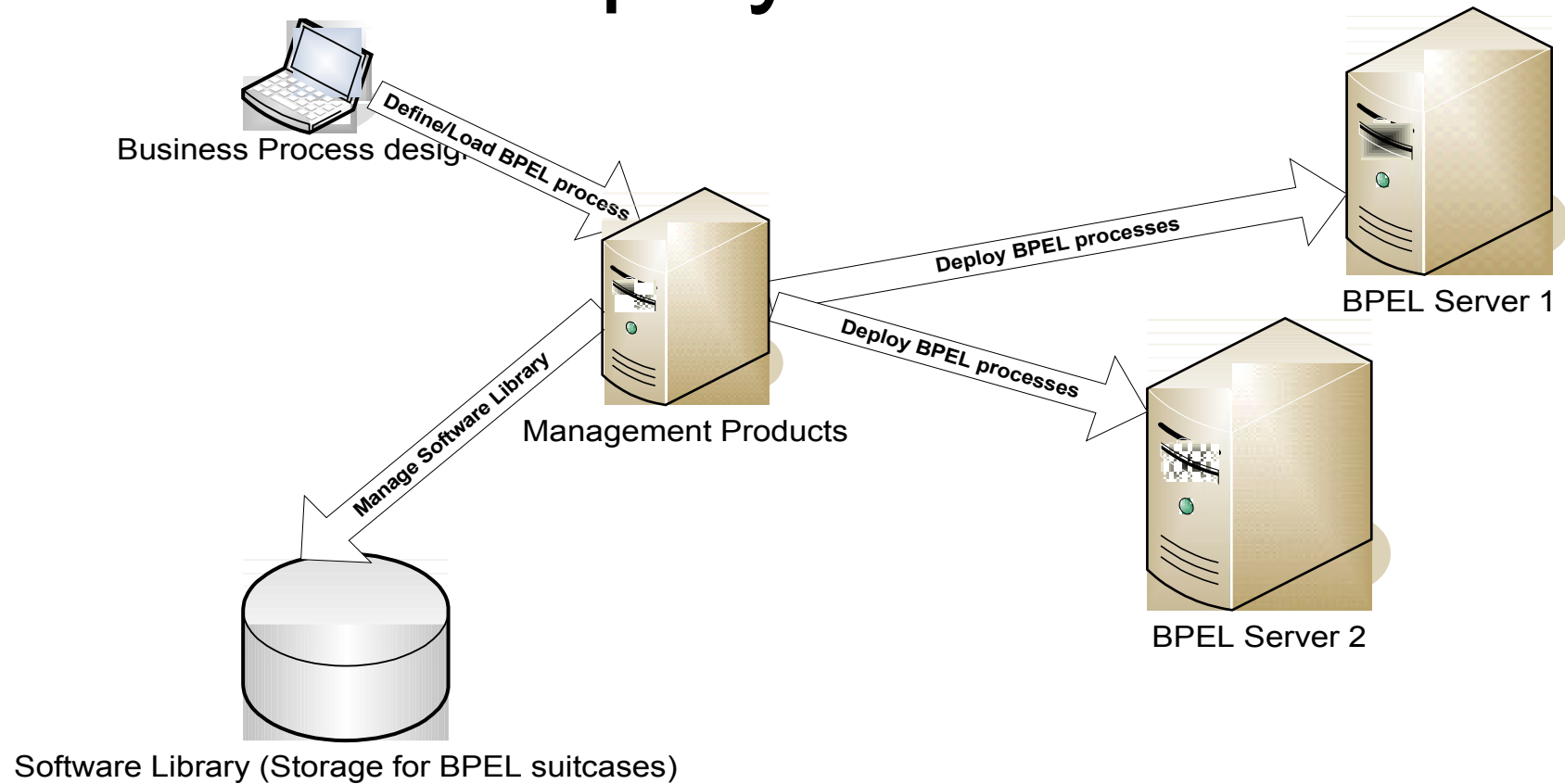


Application Lifecycle Management

- Different environments
 - Test
 - Stage
 - Production
- Different roles
 - Developer
 - Change Manager
 - Administrator
- Dependencies
- Maintenance Window
- Availability Criteria

- Two BPEL processes
- Developer tests on test env
- Deploys on stage
- Change Manager analyzes, approves process changes
- Customer maintenance window at 9pm – 12 midnight Friday
- Administrator deploys to three production environments

Automate BPEL Process Deployment



Best Practices

- Manage complete ecosystem
- Establish service level objective
 - processes
 - partner links
- Automate routine operations
- Keep track of membership changes
- Keep gold image of your configuration
- Monitor resources used by BPEL engine
- Align monitoring with business processes
- Use dashboards for top level picture of consolidated performance

Choose a right management
tool!

Resources

- Articles, Whitepapers and product download:

<http://otn.oracle.com/products/oem>

Questions?