Business Transaction Management
Deep Dive

Andrew Brown, Director, Product Management
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Program Agenda

- Business-driven Application Management
- Business Transactions and Their Risks
- BTM Capabilities and How to Leverage Them
Business-Driven Application Management
Business-Driven IT Management

Business-Driven Application Management
- Understand business needs
- Manage from business perspective

Integrated Application-to-Disk & Cloud Management
- Eliminate management silos
- Create agile IT for dynamic business

Integrated Systems Management & Support
- Proactively identify and fix problems
- Maximize business productivity

Business Users and Customers

User Experience

Business Transactions
- WEB PORTAL
- PRODUCT CATALOG
- ORDER ENTRY
- OTHER SERVICES

Business Services

Services Cloud
- Oracle Support

Integrated Application-to-Disk and Cloud Management

Integrated Systems Management and Support

APPLICATIONS
- MIDDLEWARE
- DATABASES
- SERVERS
- STORAGE

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Business - IT Disconnect

Business Demand

- How satisfied are my users?
- How many orders did we complete?
- My order is stuck, what’s going on?

Traditional IT Response

- The application was up 90% of time.
- We had 200 database transactions.
- Our servers are up. We will look into it.

The application was up 90% of time.
How satisfied are my users?

How many orders did we complete?

My order is stuck, what’s going on?

99% of users were satisfied.

We completed 250 orders.

There is an issue with a supplier’s app. It has been escalated.

Oracle Solution

Oracle Business-Driven Application Management

User Experience Management

Business Transaction Management

Business Service Management

New IT Response

Business Demand
Today's Composite Applications:
Modular and distributed, spanning diverse infrastructure
Today's Composite Applications: Support Distributed Business Transactions

Health Claim Processing Transaction
Today's Composite Applications:
Support Distributed Business Transactions

CRM Transaction
Business Transactions:
The Key Challenge for IT

• Transactions prone to vanish without a trace because of delays, failures, errors
  • IT staff typically unaware until end-user complains
  • No single source for status of each transaction
• Problem diagnosis and managing exceptions is laborious, high mean-time-to-resolve
  • Manual effort, based on log mining
  • 80% of effort spent merely isolating the issue
  • Diverts valuable developer resources to IT fire-drills
• System-centric monitoring is not sufficient
  • Lacks critical business context
    • Customer name, order size, part numbers
  • Ignores a range of business-oriented errors & faults
Oracle Business Transaction Management (BTM)

- Always On, Real-time tracking of each transaction
- 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
How to Get There
Deploying Business Transaction Management

- Monitor
- And
- Manage
- Deploy Core Services
- Deploy High Availability Monitors
- Instrument Applications

- Runtime Repository
- Discovery
- Dependency
- Performance Server
- Transaction Server
- Operational Policies
- Message Log
- Monitor
- Message Log
- Monitor
- Monitor
- Monitor
- Message Log
- Appliance
- Web
- Process Engine
- Service Bus
- DBMS
- Partner and Cloud

Monitoring Layer
Instrumentation: Two Approaches
Both Non-invasive, Requiring No Code Changes

- **Pipeline**
  - Handler wrapped in pipeline component, independent of observed service
  - Used in well defined SOAP Stacks (e.g., JAX-WS)

- **Aspect-oriented Programming (AOP)**
  - Uses Java byte code injection
  - Handler “injected” into observed service when its loaded into the runtime environment
Example: Instrumenting Oracle Service Bus

1. Deploy the BTM observer into OSB:
   - Copy AOP observer files to OSB home
   - Modify observer configuration to point to BTM monitor

2. Configure a BTM “Communication Policy”
   Tells the Observer:
   - What to Observe
     - OSB, EJB, POJO, JDBC, etc.
   - How to Observe
     - Logging Settings
     - Queuing Settings
     - Discovery Settings
Map Dependencies
Real-time view of application across components
Map Dependencies
Across JVMs, Platforms, Processes, and Technologies

Service Bus

Packaged Applications

Process Engine

Data Access

Appliance
Web
Process Engine
Service Bus
DBMS

Partner and Cloud

DB
Apply Operational Policies: SLAs
Measure Responsiveness, Availability, Faults & Throughput (RAFT)

- Measure agreements in real time
- Enables preventative and corrective actions
  - Not just reporting violations after its too late

Performance Metrics
- Response time
- Availability
- Throughput
- Etc.

Monitor against baselines and thresholds

End-to-End

Historical Reporting
Apply Operational Policies: Conditions

- Continuously evaluates critical transactions
  - Flexible instrumentation model: doesn’t require visibility into every step
- Detects Exceptions both Business & Technical
  - Stalled processes, missing steps, dropped transactions
  - Business errors, such as credit denied, orders over $1M, shipment longer than 7 days
  - App faults, protocol errors
- Notifies stakeholders, invoke other systems – trouble ticketing, other exception handlers, etc
Continually Evaluate Transactions

- Eliminates costly manual search through log files across containers
  - Unified view of transaction across different keys, IDs, etc.
- Inspect related request/response pairs for entire flow
Search Across Observed Payloads

- Locate transactions based on monitored and logged information
- Comprehensive searching
  - Business content & context – order #, customer name, etc.
  - Time range
  - Specific faults
- Look for specific conditions such as slow response times or faults as well as broad textual content
- Optimize search on specific, frequently used attributes

### Transaction History

<table>
<thead>
<tr>
<th>Order</th>
<th>Vendor</th>
<th>Date</th>
<th>Amount</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>12-105</td>
<td>Borders</td>
<td>02-15-09</td>
<td>$4,600</td>
<td>OK</td>
</tr>
<tr>
<td>14-448</td>
<td>Amazon</td>
<td>02-16-09</td>
<td>$9,304</td>
<td>OK</td>
</tr>
<tr>
<td>14-843</td>
<td>Barnes</td>
<td>02-22-09</td>
<td>$11,938</td>
<td>Error</td>
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<tr>
<td>30-336</td>
<td>Borders</td>
<td>03-01-09</td>
<td>$21,103</td>
<td>OK</td>
</tr>
<tr>
<td>33-596</td>
<td>Amazon</td>
<td>03-02-09</td>
<td>$7,338</td>
<td>OK</td>
</tr>
<tr>
<td>41-908</td>
<td>Amazon</td>
<td>03-13-09</td>
<td>$33,301</td>
<td>Error</td>
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<tr>
<td>42-308</td>
<td>Borders</td>
<td>03-14-09</td>
<td>$23,901</td>
<td>OK</td>
</tr>
</tbody>
</table>
Collect and Display Business Metrics

**Consumer Usage**
- Who uses what, when and how much
- Detailed end-user impact including exceptions, SLA violations etc.
- Business value flowing through the system - total orders, claims, failures etc.

**Payload Metrics**

**Consumer Compliance**
Close the Governance Loop
Federate Metadata and Metrics

Oracle BTM
- Discovery
- Performance Management
- Transaction Management

Repositories/Registries
- Discovered
  - Approved Services
  - Intended Usage
  - Policies

Publishes
- Services (discovered, changes)
- Performance Scorecard

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Demonstration
Service-level View: Dependencies and Metrics
Transaction Views and Metrics
Message Searching and Transaction Correlation
Transaction Analysis and Diagnosis
### Oracle BTM Roadmap

<table>
<thead>
<tr>
<th>• BTM 11g R1</th>
<th>• BTM 11gR2</th>
<th>• Future releases</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Near Term</strong></td>
<td><strong>Medium Term</strong></td>
<td><strong>Longer Term</strong></td>
</tr>
<tr>
<td>• Oracle SOA 11g</td>
<td>• Open platform</td>
<td>• EMGC consolidation</td>
</tr>
<tr>
<td>• Web-tier monitoring</td>
<td>• Fusion Apps solution</td>
<td>• End-to-end visibility</td>
</tr>
<tr>
<td>• Advanced Console</td>
<td>• Deeper integration</td>
<td>• Cloud management</td>
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</tbody>
</table>

#### Features
- **EM Agents coexistence**
- **SOA 11g Fabric instrumentation**
- **Servlet instrumentation**
- **Advanced replicated services support**
- **Policy-driven monitoring**
- **BTM SDK**
- End-to-end solution for SOA, ESS, Web Services, JEE components in Fusion Apps
- Drill-down from RUEI to BTM
- Drill-down into EMGC
- Agent deployment integration
- **EMGC add-on regions**
- **EMGC alerts integration**
- **AIA, BPM, support**
- Deeper integration with OER (dependencies/SLAs)
- Business metrics to Transaction mappings/flows
- **Cloud-enabled**
BTM 11gR1: Key Features

- Advanced Support for Replicated Business Services
  - Out-of-the-box modeling of replicated business services
  - Support for aliasing, multiple listeners, mixed HTTP and HTTPS environments
  - Automatic detection of load balancers

- Transactions across Replicated Services
  - Leverage updated replicated services model
  - Simplify definition of transactions and properties
  - Decouple transactions from specific endpoints

- Service Monitoring
  - User configurable aggregation of metrics
  - Metric collection at endpoint level
  - Targets, Objectives, SLAs for services and/or endpoints
BTM 11gR1: Key Features

- Enhanced Instrumentation Tools and Procedures
  - Simplified observer installation
  - Template driven configuration of observers
  - Visualization of observer deployments

- Enhanced Environment Migration
  - Transfer of artifacts between AmberPoint installations
  - Scriptable, repeatable, consistent migration

- Backup and Recovery
  - Leverage database tools
Licensing BTM
Oracle Enterprise Manager

- SOA Management Pack EE
  - Manages SOA Suite, BPEL, OSB, ESB, WLI
- WebLogic Server Management Pack EE
  - Manages WebLogic Server SE, EE, WebLogic Suite
- Management Pack for non-Oracle Middleware
  - Manages WebSphere, Jboss, Apache, Tomcat, IIS, BizTalk, BizTalk, Tibco BusinessWorks, IBM DataPower
- Coherence Management Pack
- Management Pack for WebCenter Suite
  - WebCenter Suite, WebCenter Services, WebLogic Portal
  - OAM, OIM, DAS, DIP, OSSO, OAAM, OIF, DAS, DIP, OSSO
  - Access Management Suite, Identity and Access Management Suite