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Rapid Problem Isolation with ITCAM for Transactions

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Australian Development Laboratory

In today's economic environment, clients are telling us they face three key demands:

- **Higher service expectations -**
  - Improve efficiencies across the business
  - Respond to new opportunities quickly
- **Rising cost pressures -**
  - Shorten ROI, remove complexities
  - Add value now
- **New risks and threats -**
  - Increase collaboration, but in a protected way
  - Support anywhere, anytime access

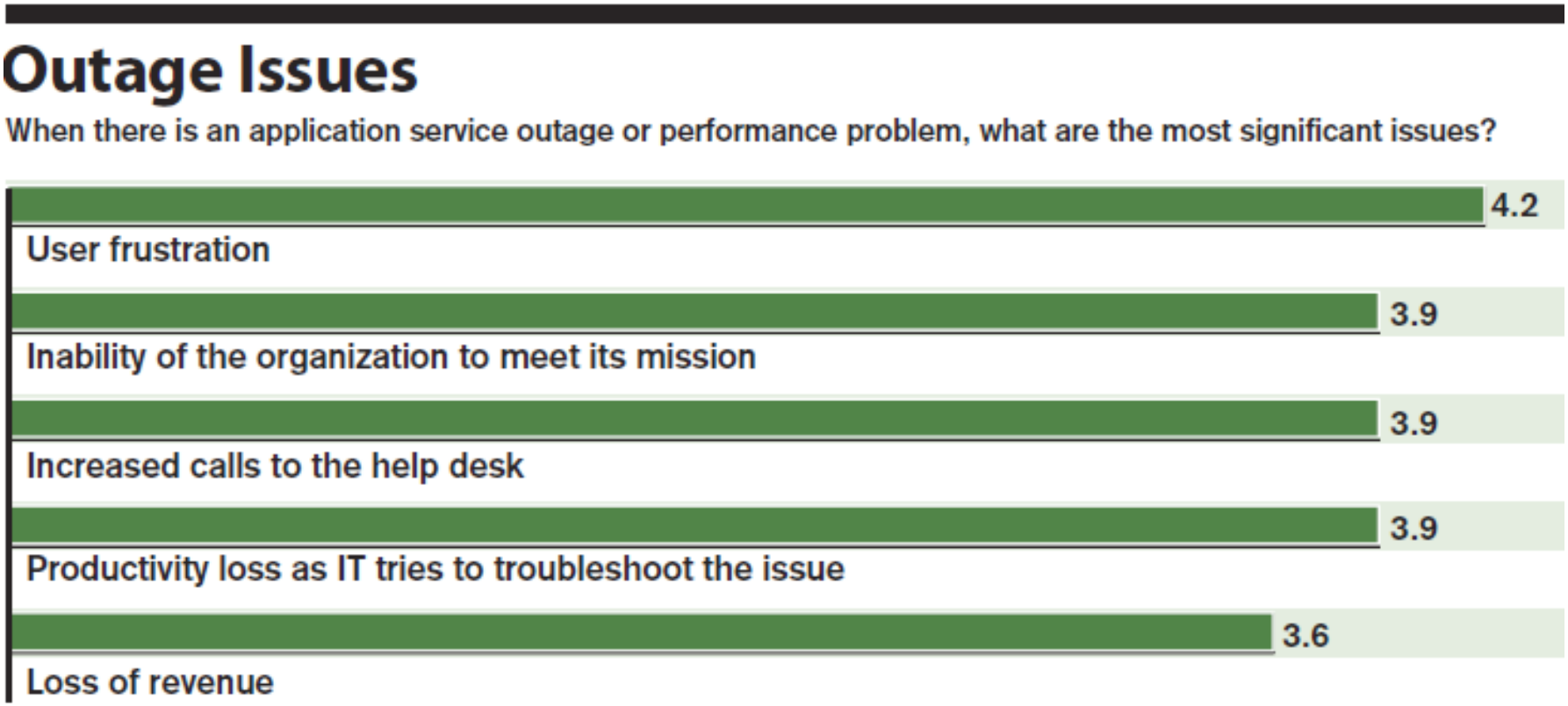
…while acting with a sense of speed and urgency.

Application Performance Impact

- "It's disturbing that **25%** of the 320 business technology professionals who responded to our *InformationWeek* Analytics APM survey say they **experience application performance problems on a daily or weekly basis**. An additional 28% say issues crop up monthly."
- More than half of respondents rate app services as **critically important**
- 95% say customers and employees have **little to no tolerance for outages**

- **Greater than 80% of survey respondents blamed software** as the main cause of most outages
- **82%** said the application outages and network downtime in the past year were **significant enough to affect their business**
- Respondents reported that the average cost of down time was more than **$10,000 per hour** and downtime itself could last an average of **three to four hours**

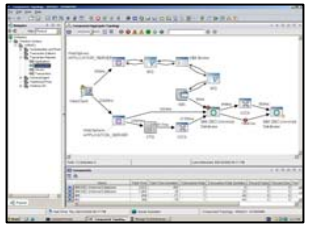
Application performance problems cause …

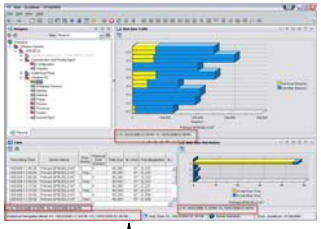


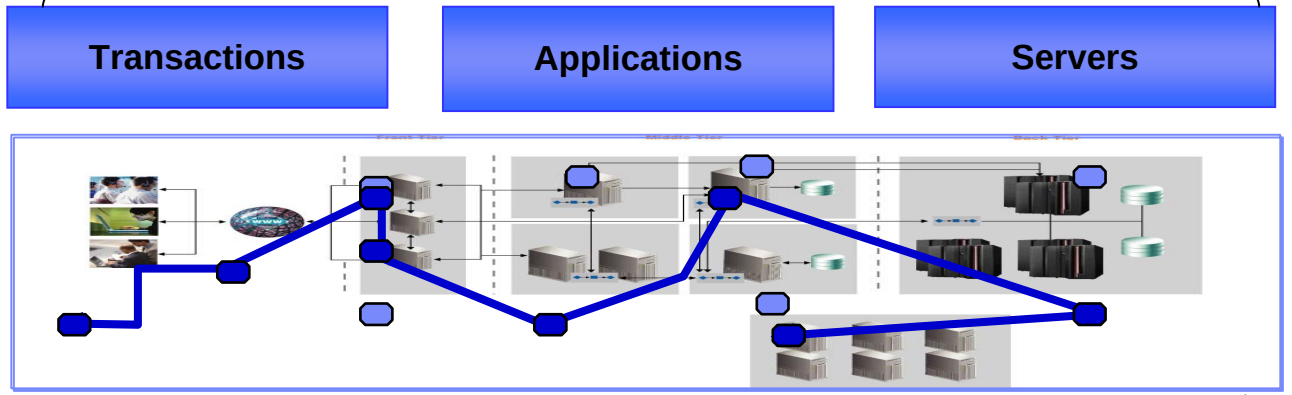
Benefits to Effective Application Performance Management

- Ensure application response meets business expectations
- Understand transaction flows over complex topologies
- Drive close collaboration between departments
- Monitor infrastructure performance and availability
- Diagnose application performance issues
- Increase application availability and customer satisfaction
- Improve MTTR and MTBF

IT Staff







IT Customer

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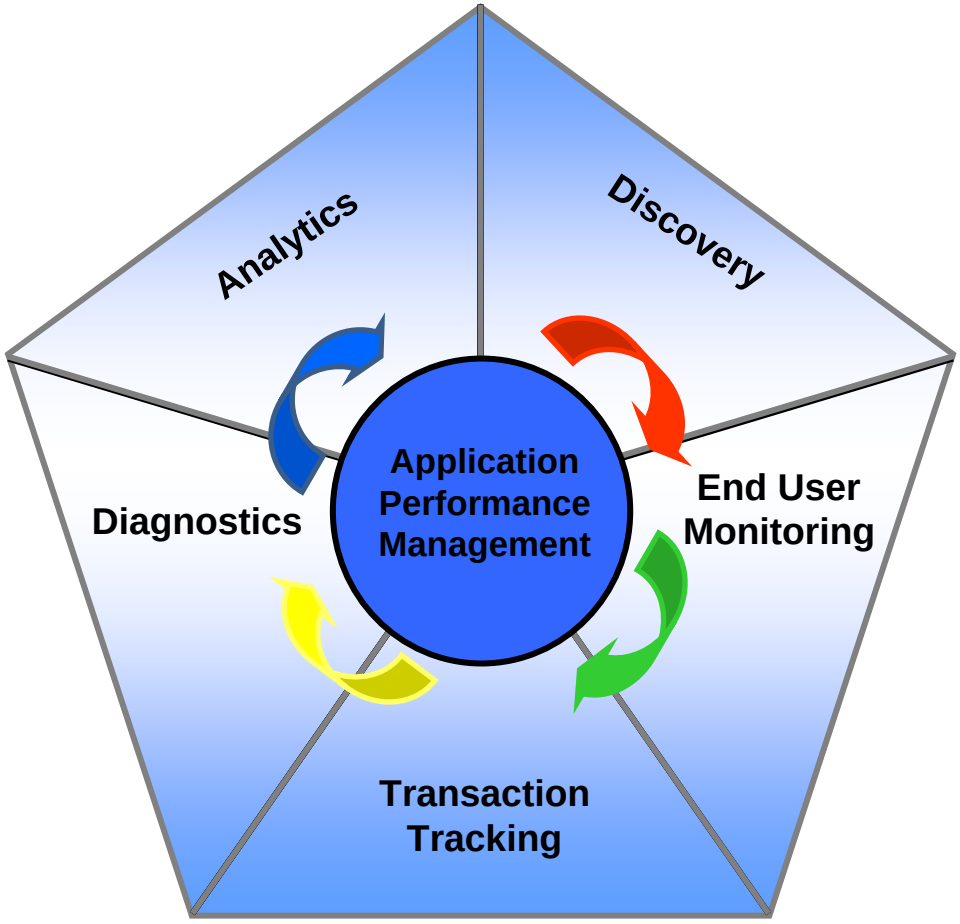
Dimensions of Application Performance Management



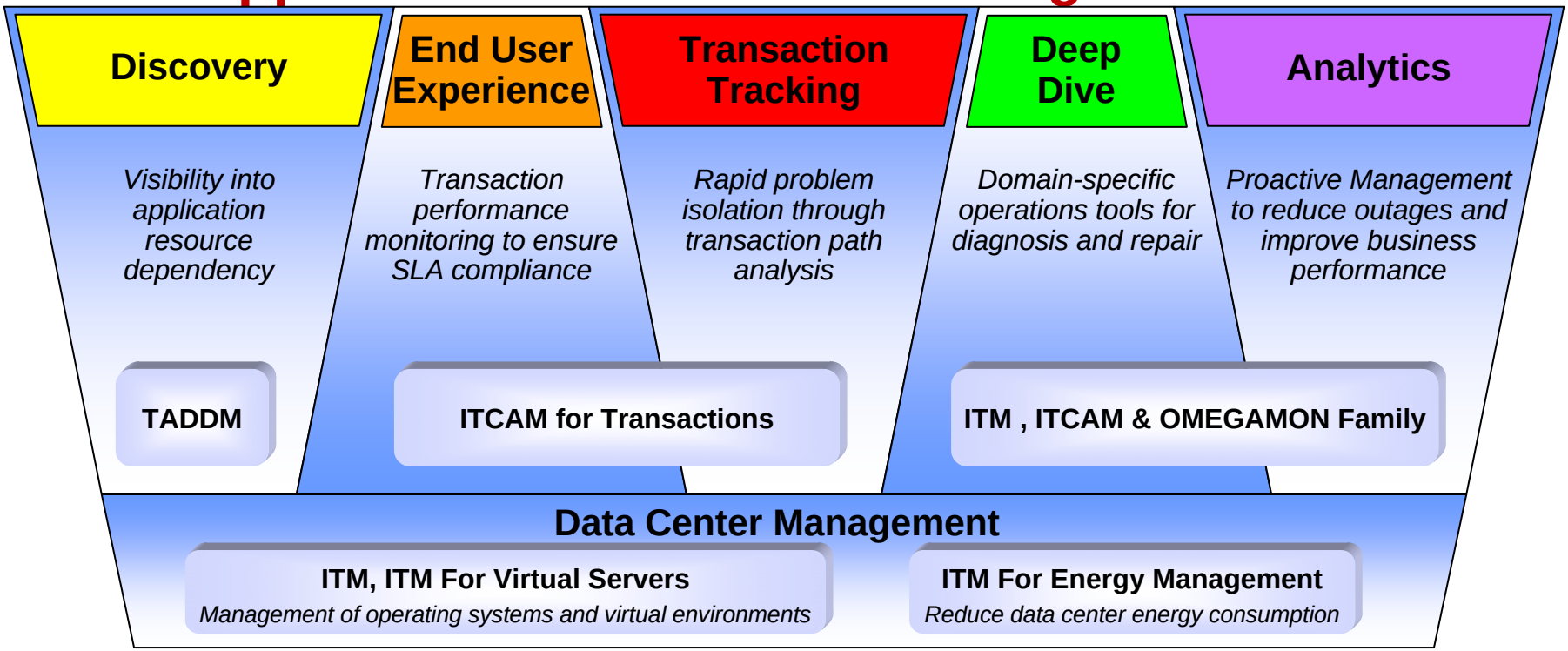
Capabilities

- Continuously evaluate the performance of business transactions
  - Quickly isolate faulty domains affecting transactional performance
    - Proactively manage performance and availability
  - Efficiently diagnose application performance issues
- Automate recovery actions

Benefits

- **Reduce** the cost of maintaining applications
- **Improve** the availability of key business services
- **Manage** risk and avoid problems

Tivoli's Application Performance Management Portfolio



Unified Management

- Central location to view & act on contextualized information
- Reporting Interface to comprehend current appl environment and trends
- Central repository for enterprise-wide performance mgmt data

Broader Coverage

- OS & Virtual Environment
- Databases
- Web Servers and App Servers
- Packaged Applications
- Agent Builder supports custom apps

Virtualization

- Predict physical and virtual resource capacity bottlenecks
- Ensure maximum resource utilization

Predictive Analytics

- Automating Threshold Mgmt
- Automate Trending to identify emerging Capacity and Performance issues
- Predictive Learning – uncover anomalies

Application Performance Management Workflow

Sense

Detect that a threshold has been breached and that a problem occurred, or is about to happen

Isolate

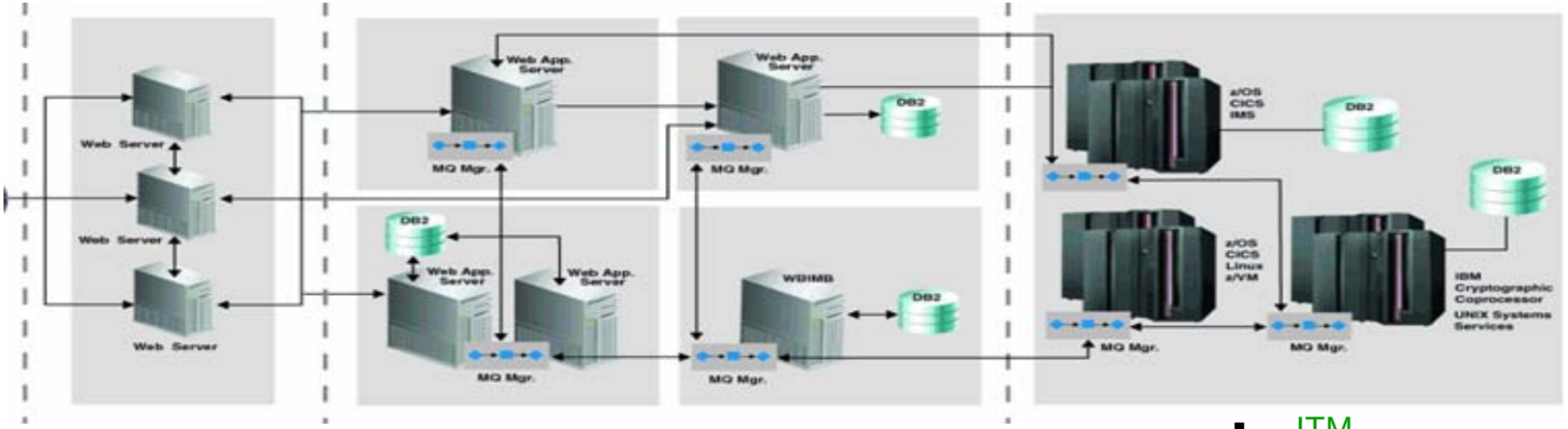
Pinpoint the problem to a specific part of the environment and hand-off to the appropriate specialist

Diagnose

Drill down into the details and get to the root cause of the problem

Repair

Fix the faulty component, validate the fix and roll back into production

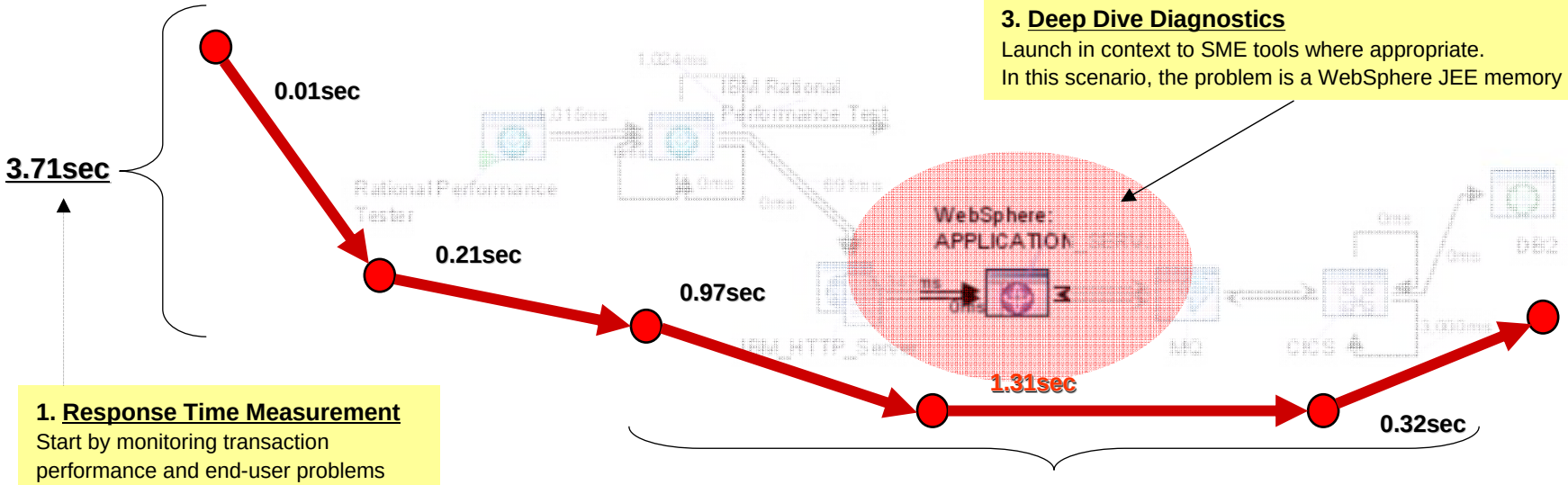


ITCAM for Transactions

Deep-dive tools

- ITM
- ITCAM for AD
- ITCAM for Applications
- OMEGAMONs

End-to-End Monitoring, Tracking and Diagnosis



3. Deep Dive Diagnostics
Launch in context to SME tools where appropriate.
In this scenario, the problem is a WebSphere JEE memory leak.

1. Response Time Measurement
Start by monitoring transaction performance and end-user problems

2. Transaction Tracking
Correlate data from app server, MQ, CICS, IMS, custom instrumentation, etc. to show topology and isolate problems

Transaction Root Cause Analysis		
1. **Sense** End User Experience and alert on threshold violation	2. **Isolate** by measuring performance data against baseline through entire infrastructure	3. **Diagnose and repair** through launch-in-context into deep-dive diagnostics

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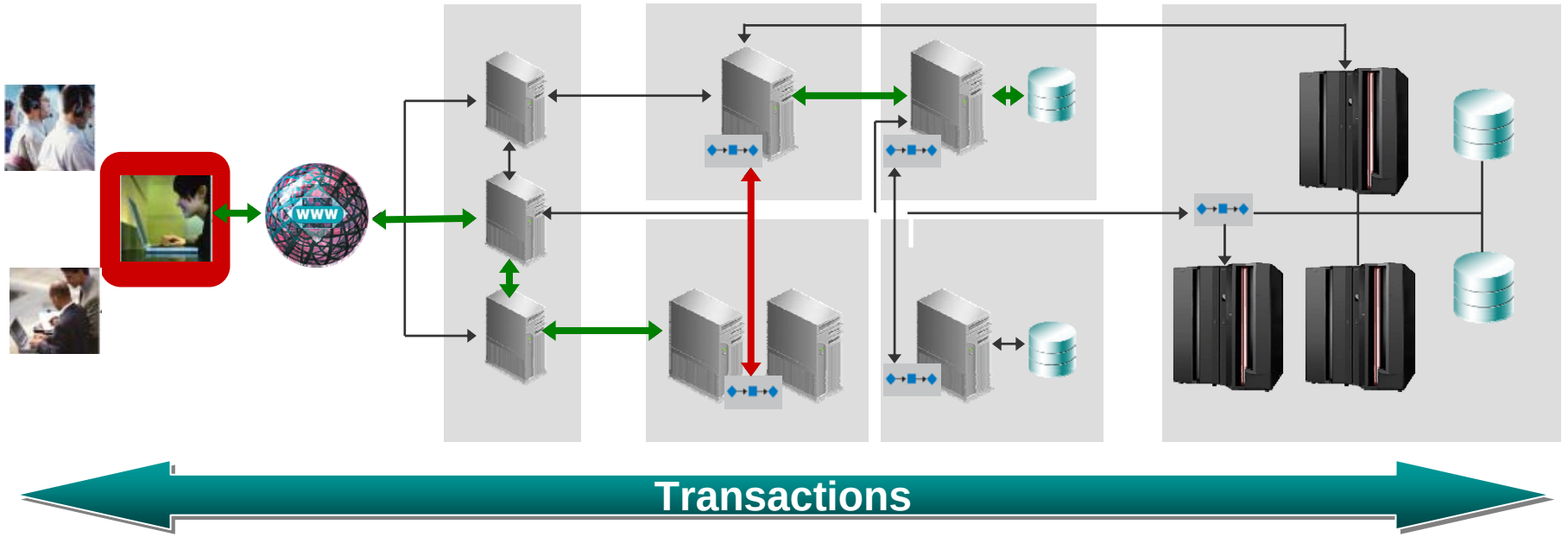
End User Response Monitoring

Why Monitor End-User Response?



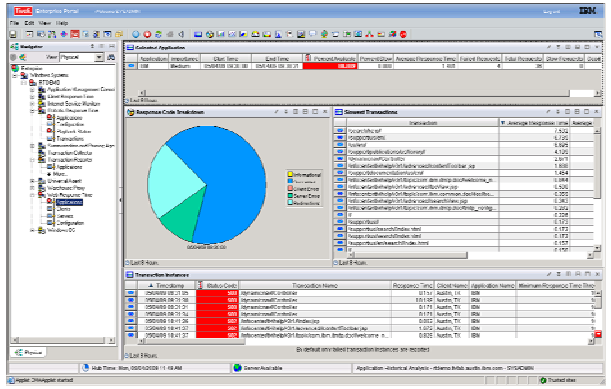
- See what your users are experiencing
- Validate production system performance
- Identify problems before they affect SLA's
- **If you have a problem, find out about it *before* the customers start complaining**

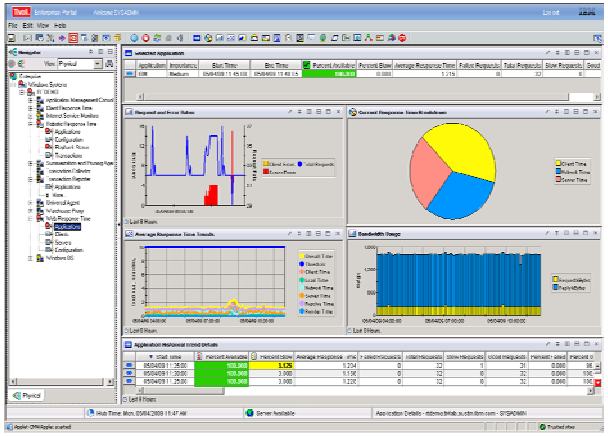
A majority of IT problems are still being **identified by customer complaints**

Two Techniques for Response Time Monitoring

Real End User Transactions

- **Web Response Time Monitoring**
  - Monitors actual customer experience
  - Agentless solution
- **Client Response Time Monitoring**
  - Monitors real-user client desktop applications
  - Detailed response measurement for VIP customers





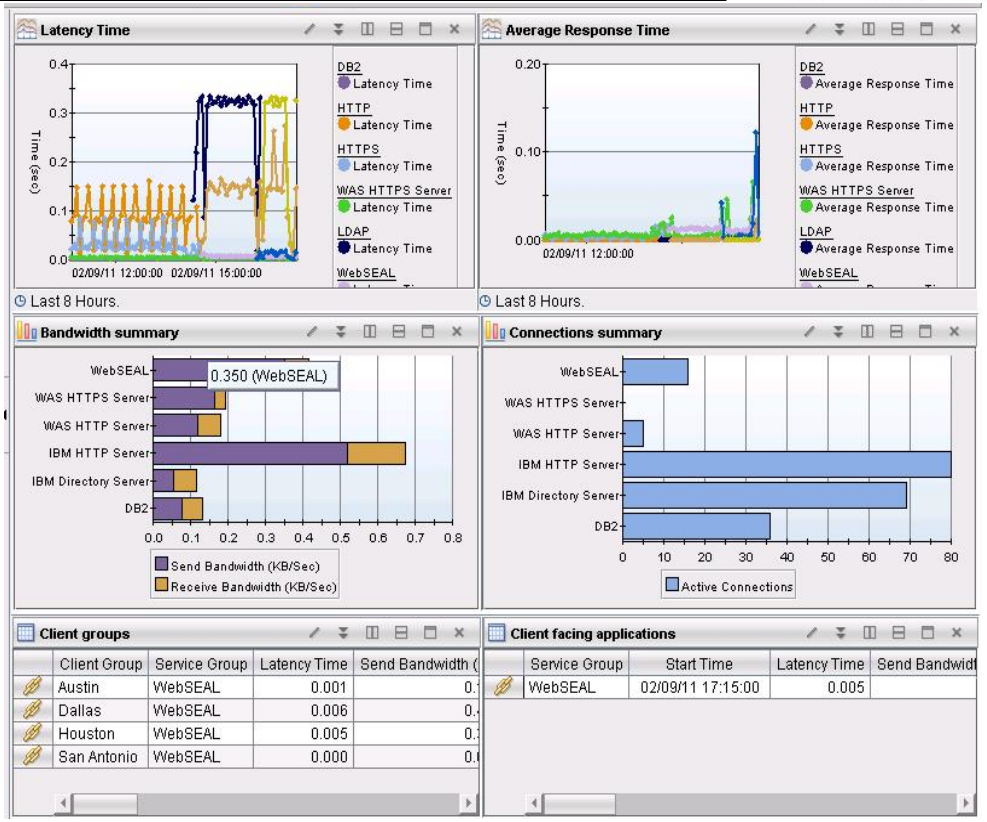
Robotic Transactions

- **Robotic Response Time Monitoring**
  - Repeatable testing of high-priority transactions
  - Early warning of failures or performance problems
- **Internet Service Monitoring**
  - Periodic testing of services that make systems run
  - Simple and lightweight

Real User Monitoring

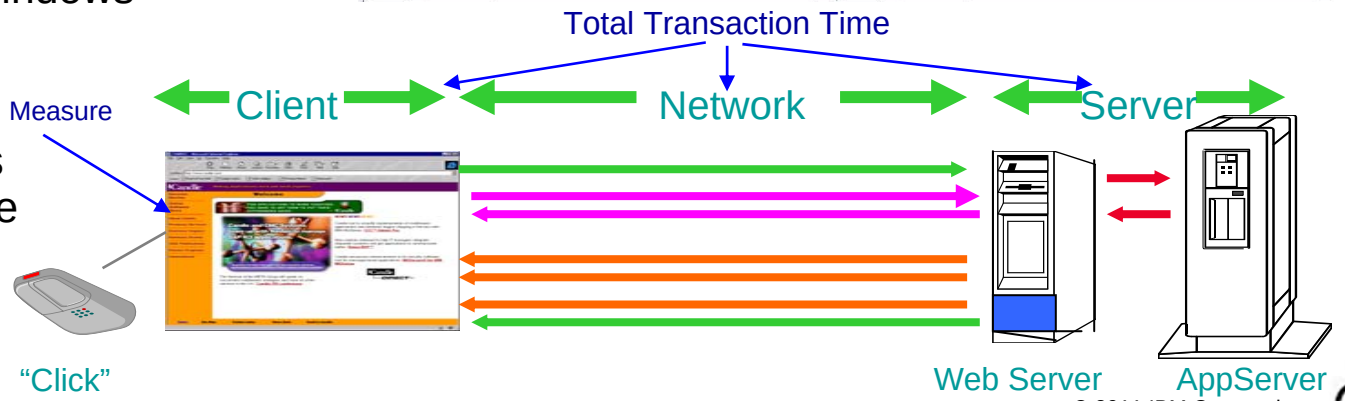
Web Applications - Agentless

- Captures performance and availability data of actual users for SLA reporting
- Completely non-invasive, agentless monitoring
- Monitors network traffic for HTTP(S) requests to the web server



Windows Applications - Agent

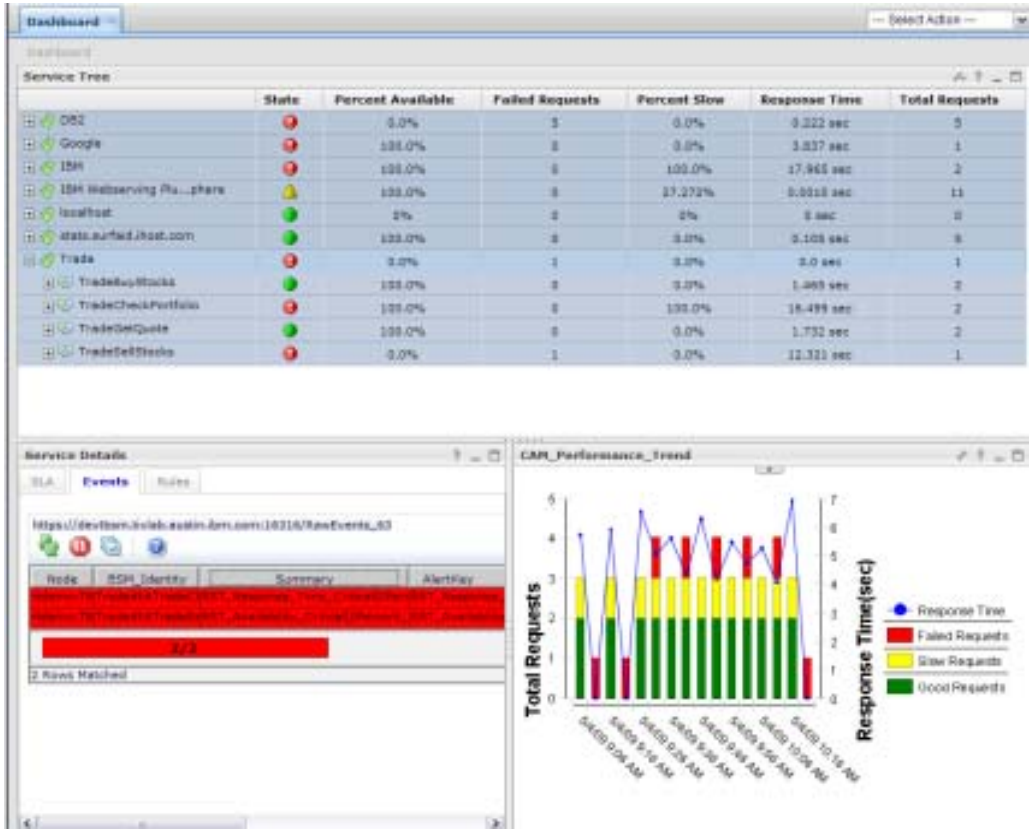
- Monitors selected Windows applications
- Agent on client workstation provides details response time analysis



Agentless Real-User (Passive) Monitoring

Monitor every end user's experience

- See what your users are experiencing and immediately identify problems
- Agentless – no impact to production machines
- User/session tracking – observe individual user experience
- NEW (Q2): Multi-protocol support (beyond HTTP/S)

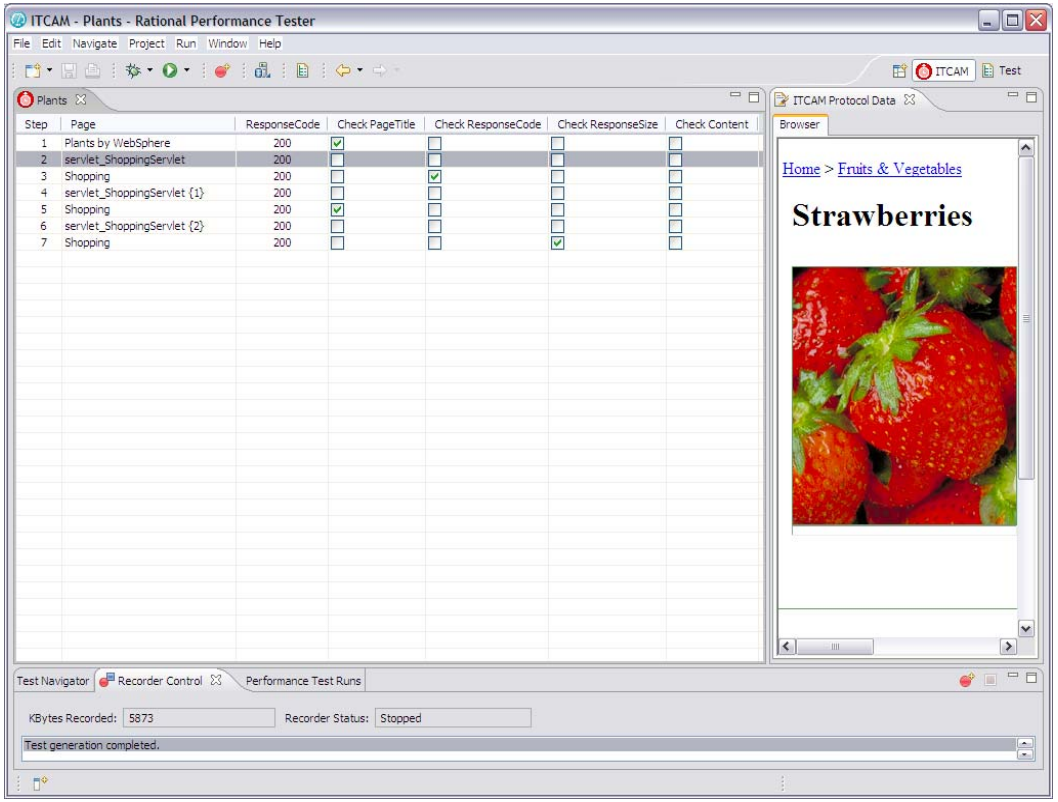


Robotic Monitoring

- Verification Points for content matching and response code checking
- HTTP transactions correlate with downstream instrumentation for problem isolation
- Improved scalability for more concurrent playbacks on a single agent
- Support for a growing list of protocols: HTTP(S), Siebel, Citrix, web services

Simplified Rational Performance Tester Editor

- New recording interface for creating and uploading RPT scripts
- Automatically sets default verification points for use with robotic playback
- Browser view for easy reference
- Ability to switch to “Advanced” view (original RPT workbench)

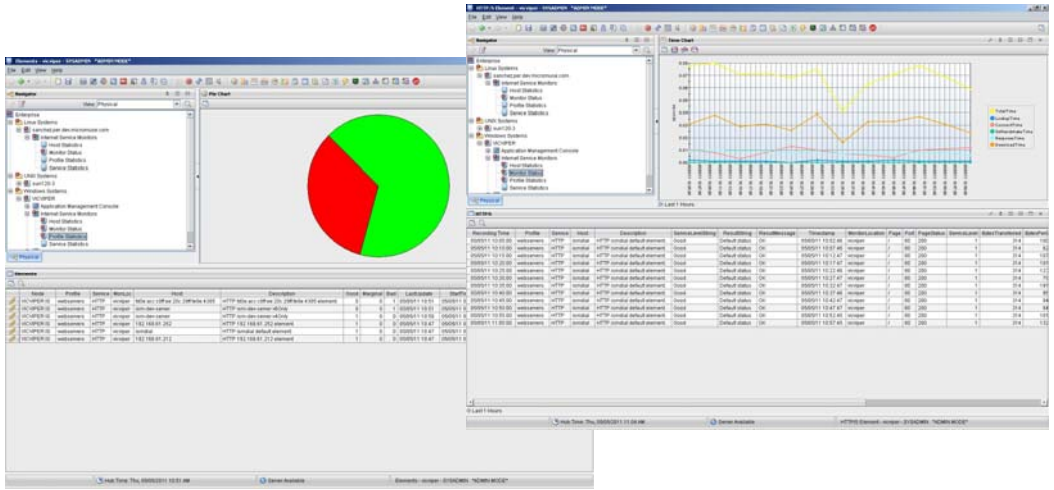


Internet Service Monitors

Agentless protocol-level availability monitoring

Comprehensive service monitoring

- Measure availability, performance and content accuracy of services via 25 protocols
- Simulates clients of services
- Periodic testing
  - Measure against defined SLA - % availability
  - Identify long term trends with historical reporting
- Broad application / service coverage



ITCAM for ISM supports 25 protocols and complements the robotic and real user response time monitoring functions of ITCAM for Response Time. Together they form Tivoli's comprehensive solution for application response time monitoring.

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Transaction Tracking

The Issue – Sensing and Isolating a Problem Today

Step 1

Response time is terrible; more than 1 minute

Step 2

Check all resources

- System Alerts
- Health Monitors
- OS Statistics
- Network traffic
- Application log files
- Database metrics

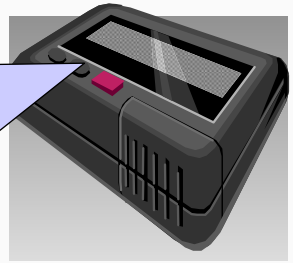
Step 3

Everything looks normal … but performance is still bad

Step 4

Bridge Call with Tiger Team

Involves IT Ops, Web admin, network admin, server admin, etc. when only one will be responsible for failing component



Step 5

Locate Source of Problem … maybe …

- Finger-pointing: "It's the network guy's fault"
- Recreating problem is difficult
- Isolating cause can take hours or days
- Solutions by chance

Customer Value – Demonstrating ROI

Money wasted isolating problems

Sev 1 outages/slowdowns per year	12
Average time to isolate (hrs)	8
SME's involved in isolation	15
Avg. loaded hourly rate (/hr)	$75
Total direct costs	$108,000

Revenue lost during outages

Lost revenue per hour	$50,000
Hours downtime / yr	96
Total indirect costs	$4,800,000

Total costs of poor problem isolation capability

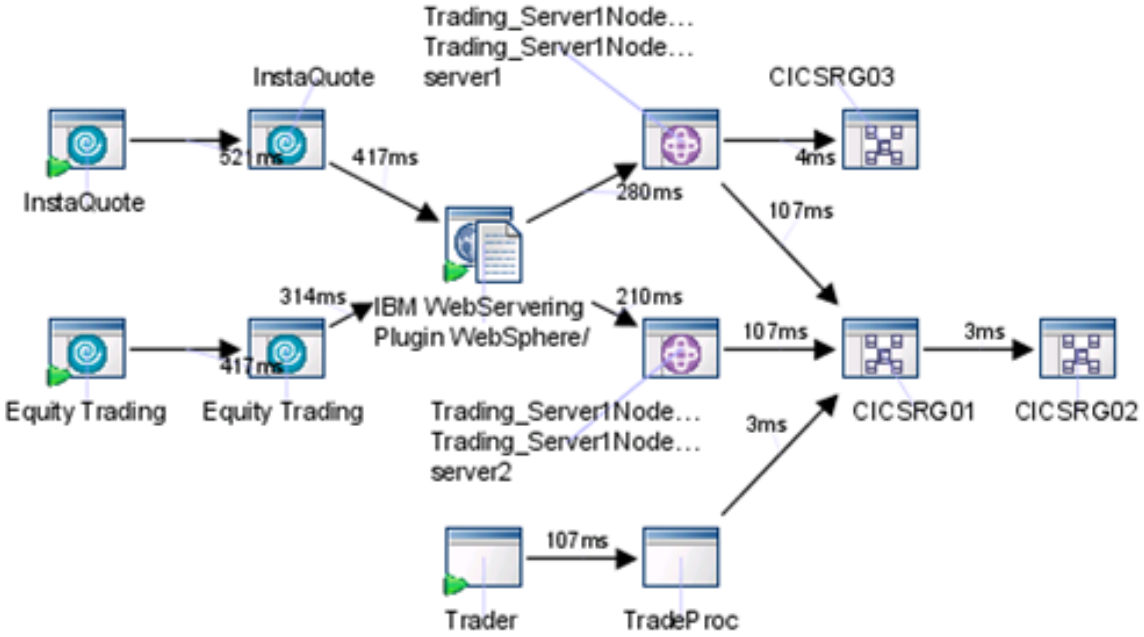
Total lost / yr	**$4,908,000**

Every customer case will be different …

*…what do **you** lose each year due to poor performance?*

Problem Isolation Through Transaction Tracking

- Unified, end-to-end transaction tracking
- Heterogeneous environments
  - fully integrated across distributed and System z



- Support for asynchronous transactions
- Extensible, modular framework
- Integrated response time and transaction tracking

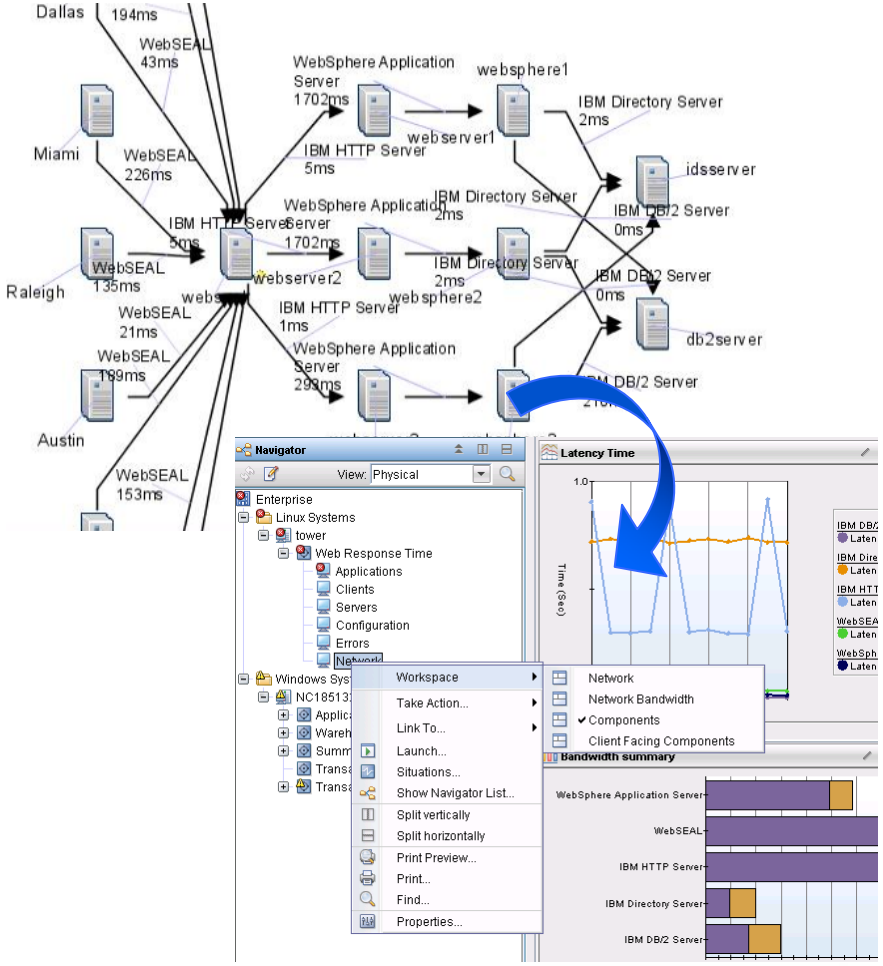
New! Agentless Transaction Tracking

Pros:

- Offers much faster Time-To-Value
- End-to-end view in short time span
- Zero overhead, zero transaction impact
- Using proven WRT technology
- Server and component level topologies
- Very little configuration
  - Most common applications are pre-configured out of the box
- Can add custom network applications

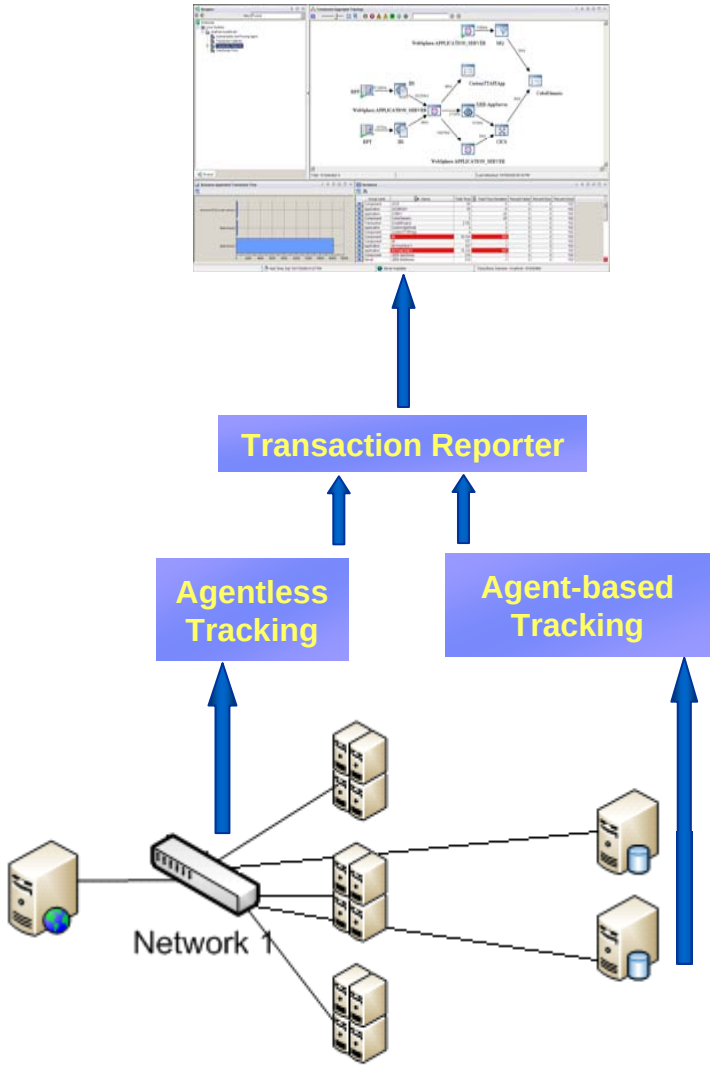
Provides platform on which to invest agent-based tracking

- Visibility inside the server
- Transaction level details
- Does not provide instance data



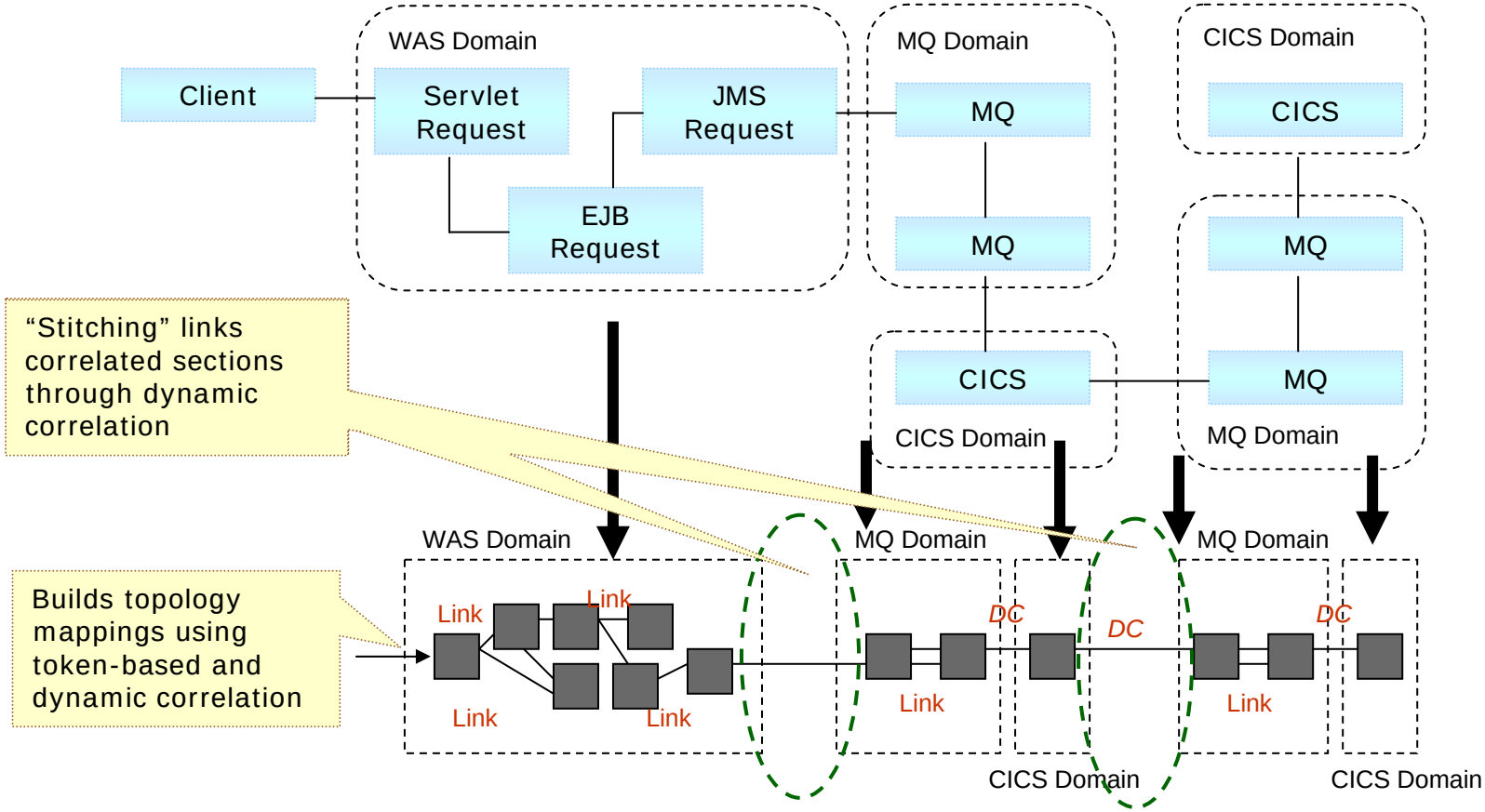
Industry-unique Functionality

- The ability to integrate agentless and agent-based data into a single transaction topology
  - Gives customers the flexibility to start with Agentless, and seamlessly transition to agent-based as their needs require
  - Use bottleneck analysis to prioritize domains to instrument.
  - Can also use Agentless for most domains, and Agent-based for their problematic or high-risk domains

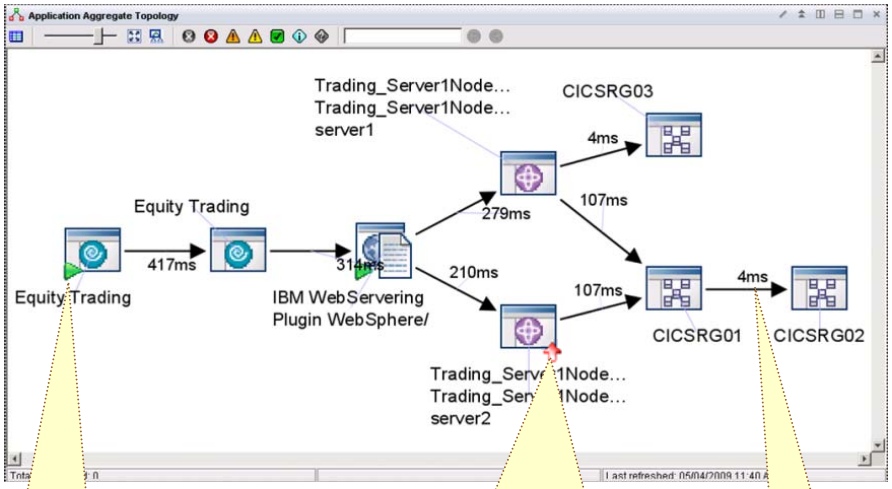


Enterprise-Wide Tracking

- Track inside domains with correlated techniques
- Track between domains through stitching



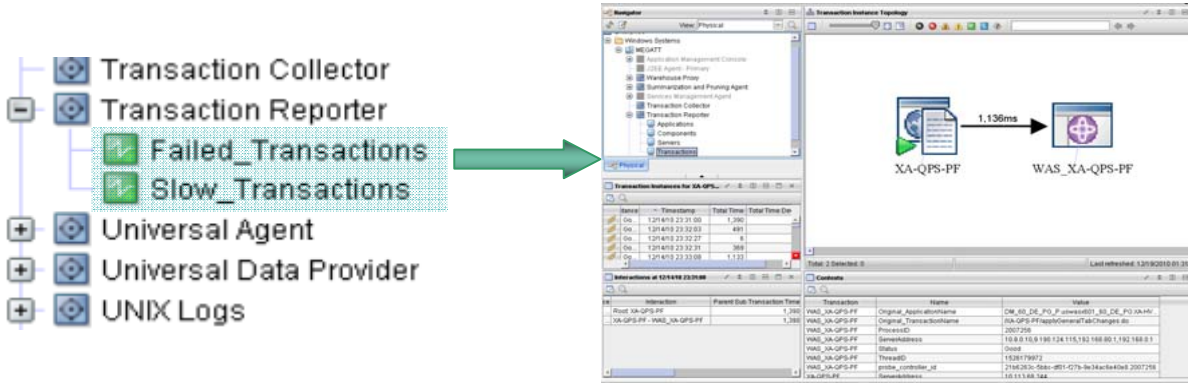
Getting More Detail with Data Collectors



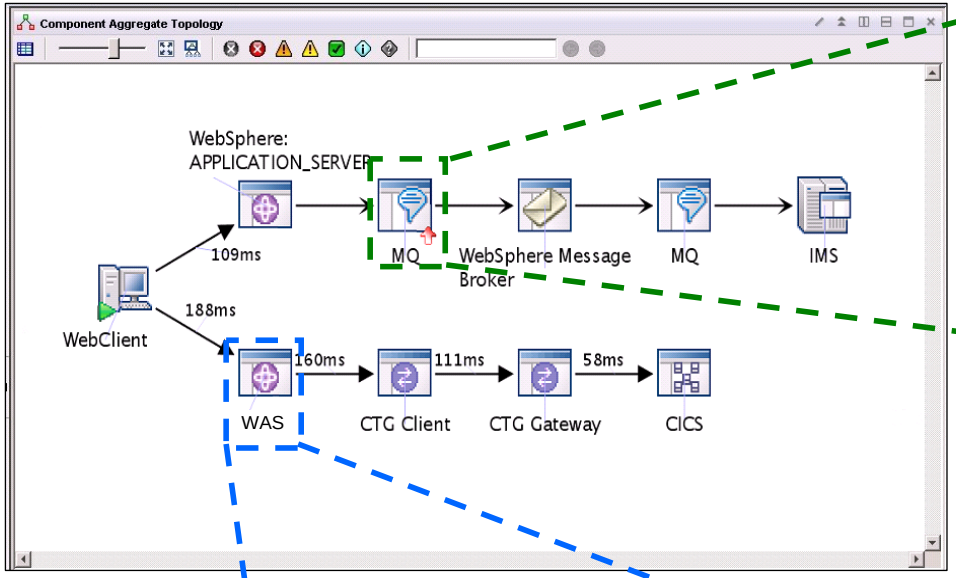
IBM WAS	WebSphere 6/7/8 tracking supported using ITCAM for AD – distributed and z/OS. Supporting HTTP, EJB, RMI/IIOP, JAX-RPC/WS, CICS, IMS, MQ, JMS, JDBC, LDAP and JNDI connections
Other JEE	Non-WAS JEE support (Weblogic, JBoss, Tomcat, SAP NetWeaver, Oracle App Server) using ITCAM for AD
MQ 5/6/7	MQ 5.3 and up tracked by ITCAM for Transactions natively – distributed and z/OS
CTG	CICS Transactions Gateway (CTG) 7.1+
CICS	CICS 2.3+ transactions and services, including any CICS hosted applications – CICS->DB2, CICS → IMSDB – CICS 4.1 SOAP support
IMS	IMS 8.1+, including OTMA, IMS Connect and IMS Batch
WMB	WebSphere Message Broker v6.0+ (distributed), supporting HTTP, SOAP, MQ
Tuxedo	Tuxedo Server (FML32 over ATMI) v9/10
Microsoft	Microsoft .NET ASMX, WCF, ADO, ODBC and LDAP
ARM	ARM 2.0/4.0 instrumentation supported
Siebel	Siebel SARM
SOA	Integrated Service Tracking support through ITCAM for SOA: WebSphere ESB, WebSphere Process Server, Datapower
TTAPI	Customer instrumentation possible through our published Transaction Tracking API (TTAPI). Current language bindings include: – C, C++, Java (distributed) – C, C++, Java, COBOL, PL/I, Assembler – .NET

Detecting and Warehousing Transaction Instances

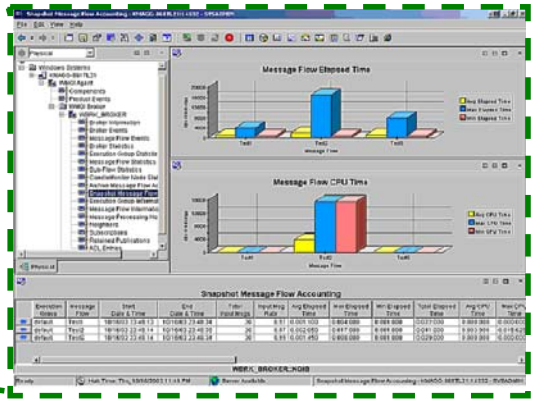
- Transaction Tracking has, by default, two situations
  - Slow Transactions
  - Failed Transactions
- Failed Transactions can also be defined using a Maximum Response Time threshold
- Take Action for collecting and warehousing Transaction Instances
- These Transactions of interest get automatically stored in the Tivoli Data Warehouse so they can be reviewed
  - Transactions in the warehouse can be visualized with an instance topology,
  - Can identify post-alert where the transaction failed or was slowing down



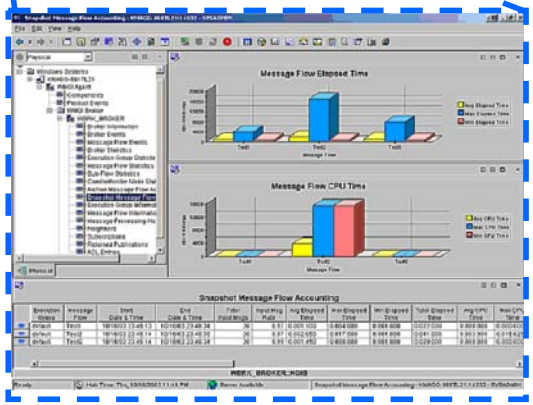
Adding Deep Dive Function



ITCAM for Transactions



OMEGAMON XE for Messaging



ITCAM for Application Diagnostics

- Launch-In-Context allows SME to quickly and easily drill down to the problem
- Speeds MTTR

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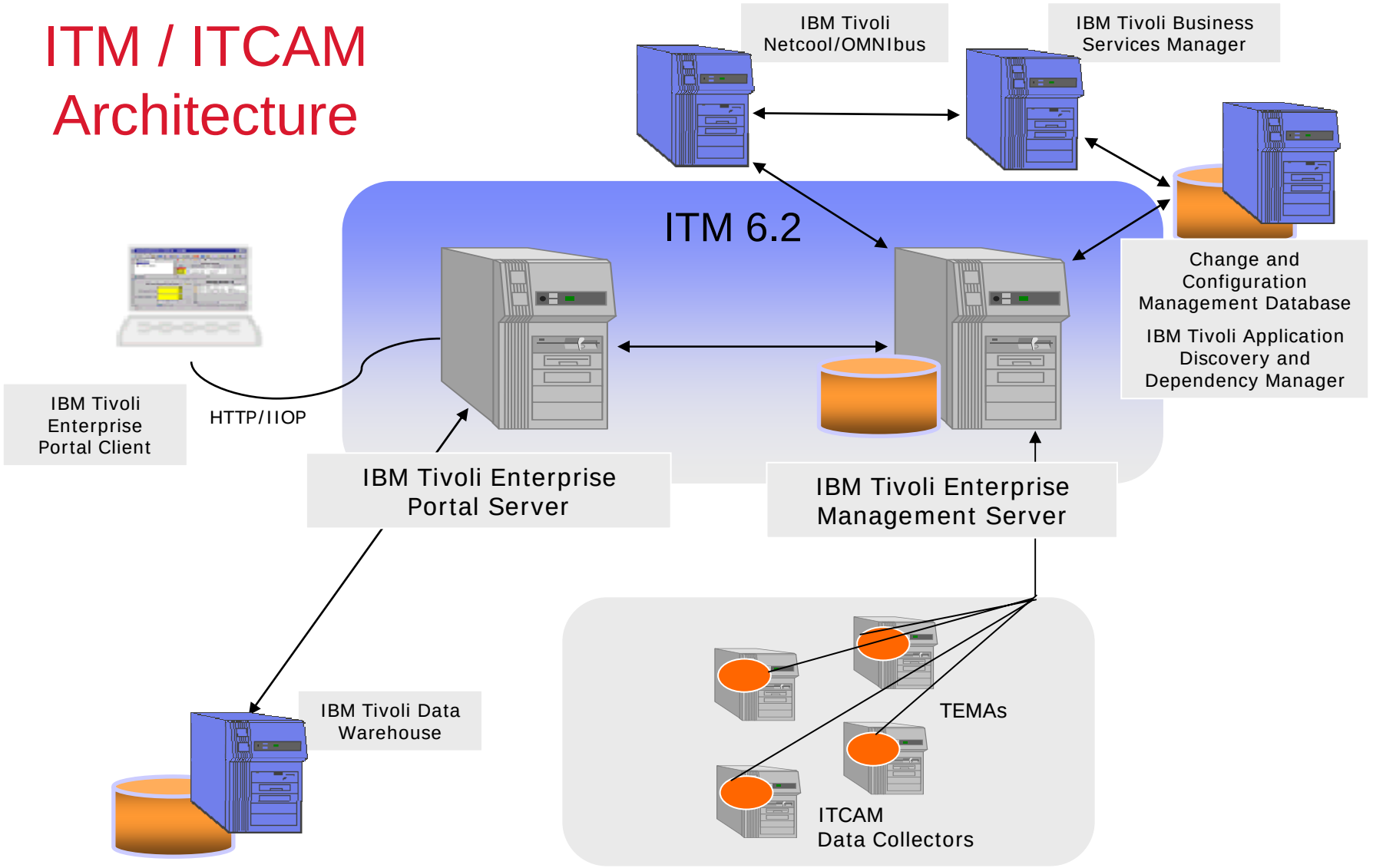
Tivoli Application Performance Management

Industry-leading Integration

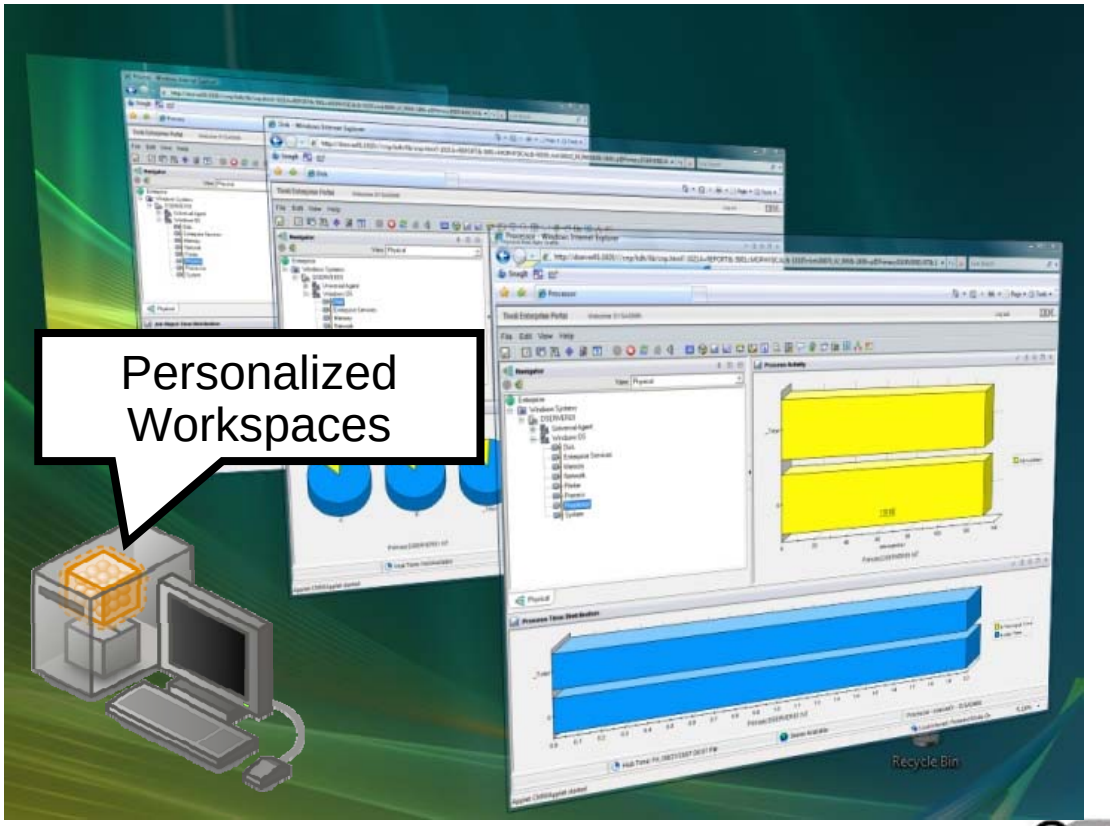
ITM / ITCAM Architecture



UI Integration -
IBM Tivoli Enterprise Portal (TEP)

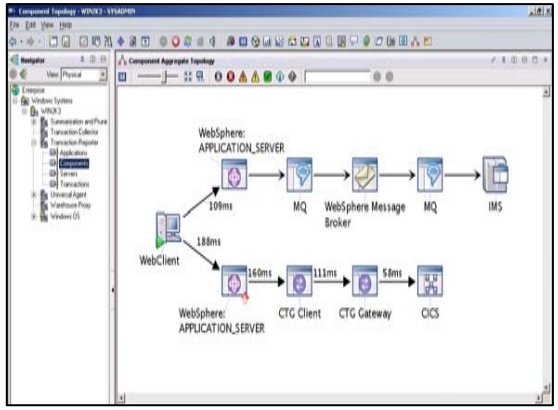
The Tivoli Enterprise Portal (TEP) is the central location to view and act on contextualized information provided by the system monitors

- **Consolidated** view and **contextual** information can significantly reduce mean time to recovery by aiding in **"root cause"** analysis
- **Centralized** visualization of real-time and historical data can help with "intermittent" problems
- **Personalized** views based on the user roles and scope
- **Visualization of resource utilization** can highlight areas to reduce costs
- Anything visualized in the TEP is available **in the Data Warehouse**



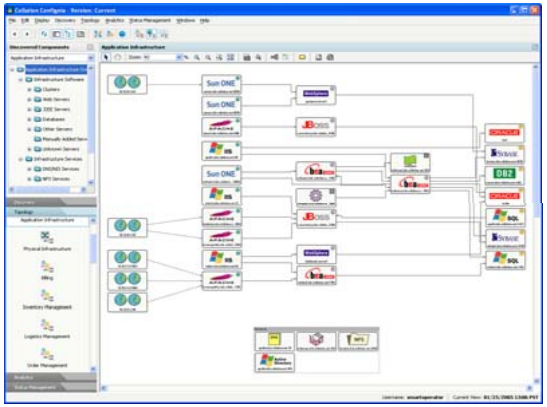
Operational Integration

Transaction Tracking

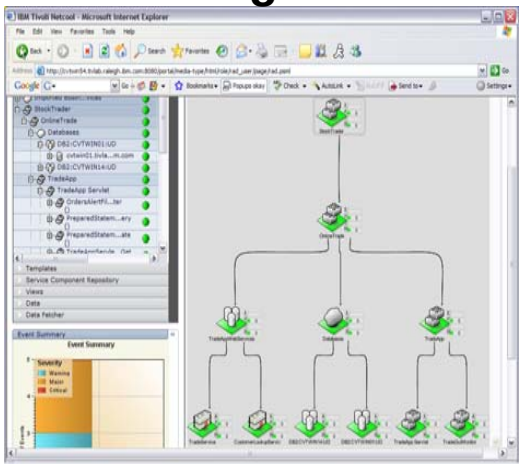


Automatic Service Model Generation

Discovery



Business Systems Management



Launch in context for problem isolation

Cross tier application maps
Configuration changes

BUSINESS VALUE: INCREASED SERVICE AVAILABILITY

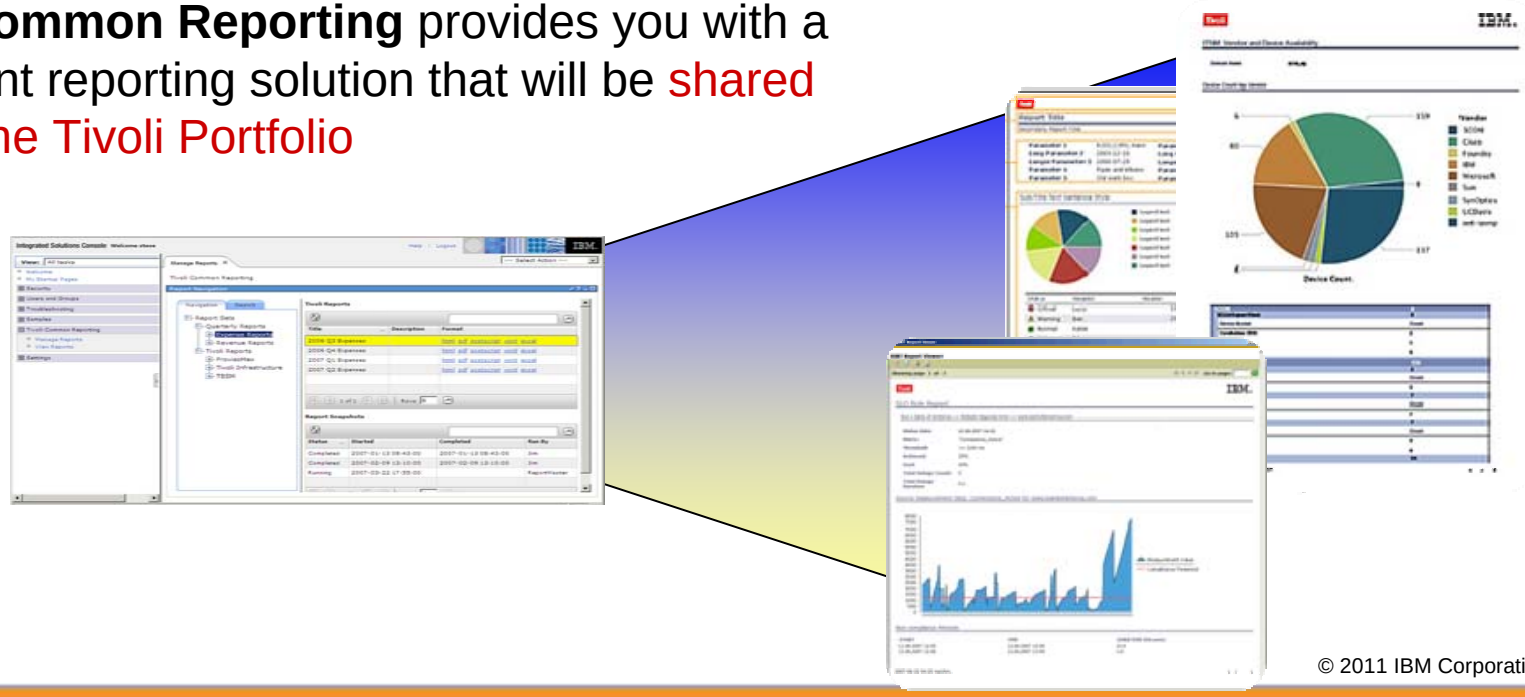
- Align IT infrastructure with the business through discovery automation
- Reduce mean time to repair (MTTR)
- Accurate and comprehensive cross-tier service visibility

Reporting Integration - Tivoli Common Reporting

Tivoli Common Reporting adds value to your Tivoli based solutions by simplifying how information is

- Visualized
- Delivered and shared

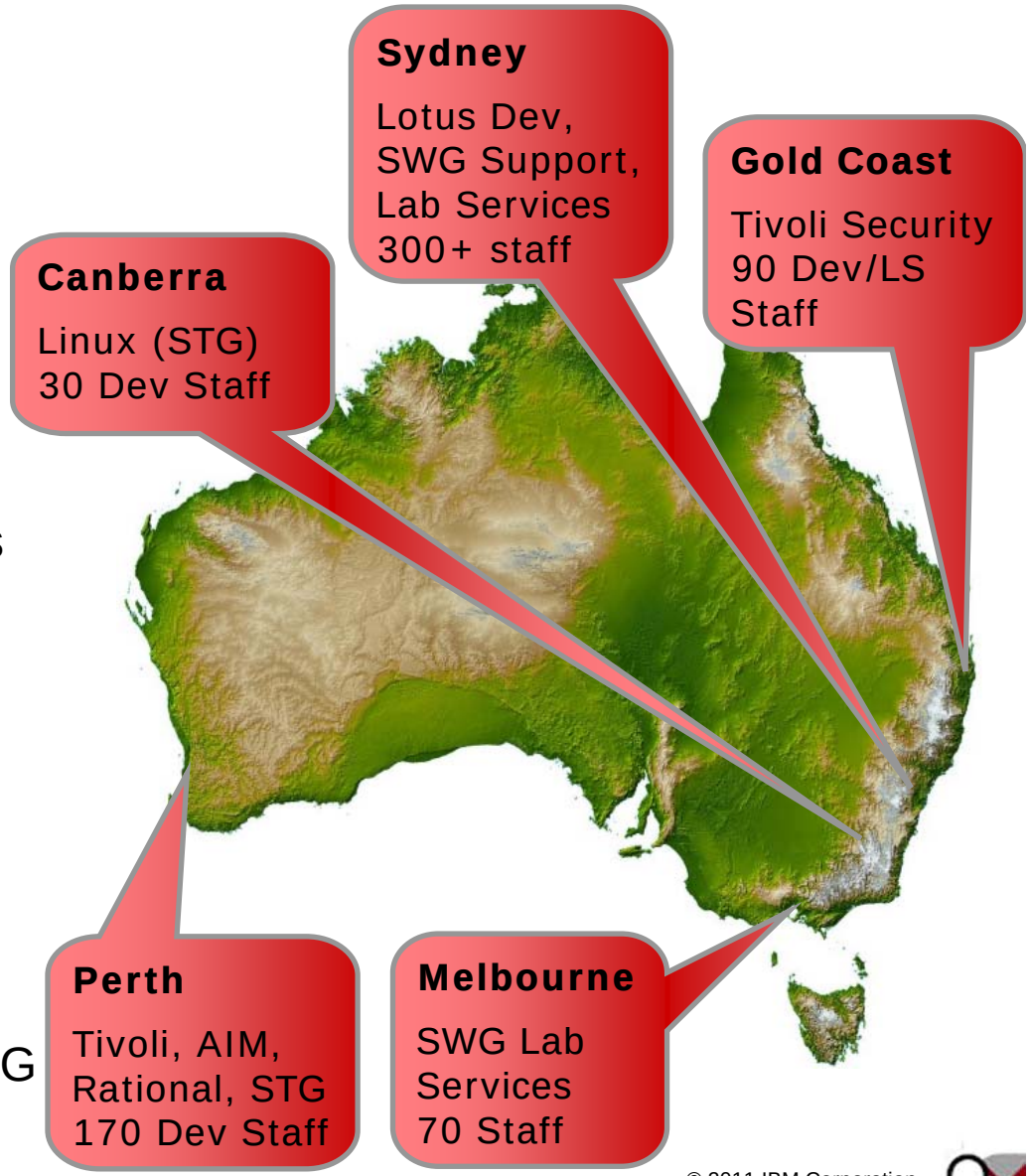
Tivoli Common Reporting provides you with a consistent reporting solution that will be shared across the Tivoli Portfolio



Development

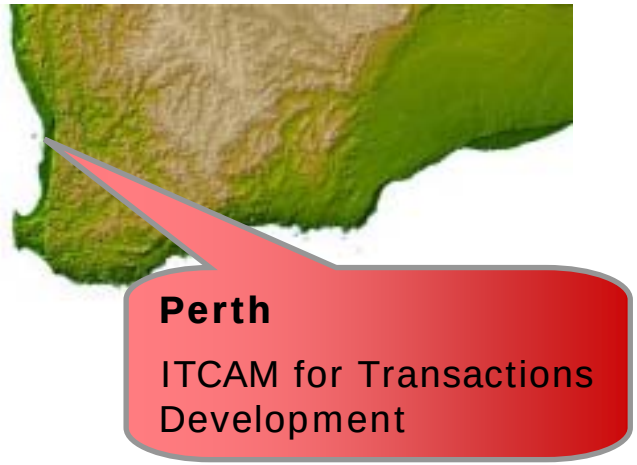
Made in Australia

- IBM A/NZ Business Unit Formed July 20, 2006
- Integrated existing SWG/STG Development, SWG Support, and Lab Services teams
- Heritage primarily via acquisitions (Micromuse, Aptrix, Infomix, etc.)
- 650+ staff with deep technical skills
- Establishes tangible IBM technical credentials in Australian IT market
- A/NZ, GMU and WW client impact
- Catalyst for innovation and solid contributor to IBM patent portfolio
- Interaction with universities and strong relationship with IBM Research
- Part of globally integrated SWG/STG development organisation



ITCAM for Transactions Development

- Core product skills located in Perth
  - Product Development
  - L3
  - Functional Test
  - Documentation
- Product Architects
- Product Management and Ownership
- Mgmt, Product Ownership
- Best Practices, Enablement
- Customer Advocates



Thanks

- More ITCAM for Transactions:
  - 3:30pm Demo Theatrette – ITCAM/OMEGAMON, Roberto Calderon
  - 10:35am Session 7 – Monitoring Applications on System z with ITCAM, Roberto Calderon
  - 11:30am Session 8 – Understanding End to End monitoring, Robert Cheung

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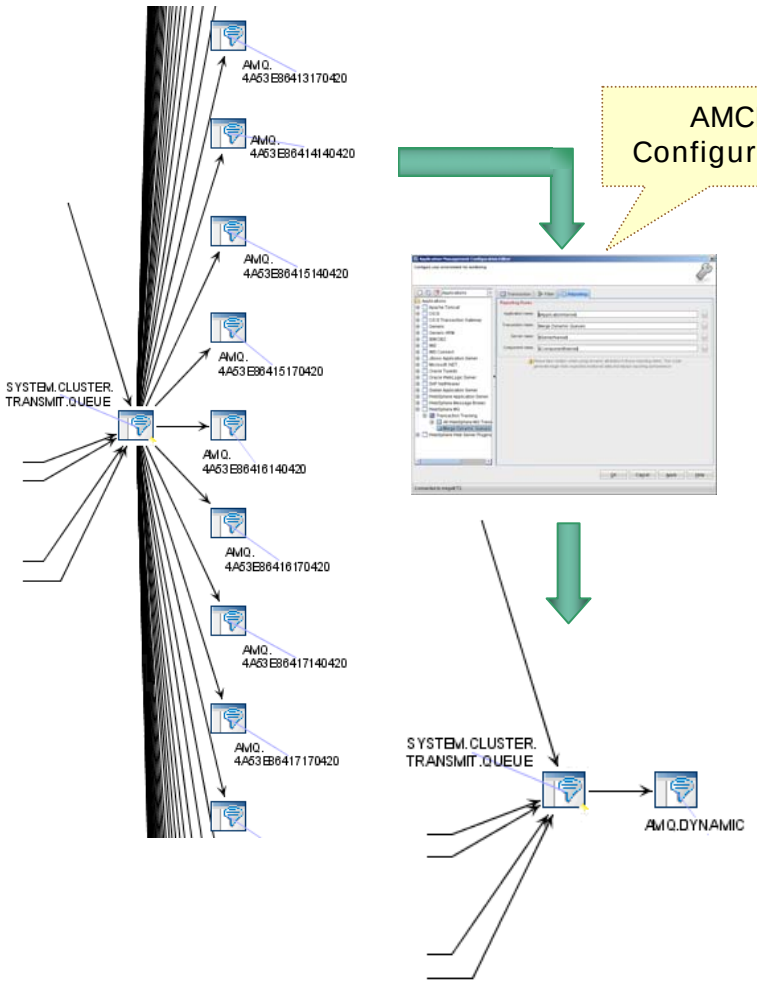
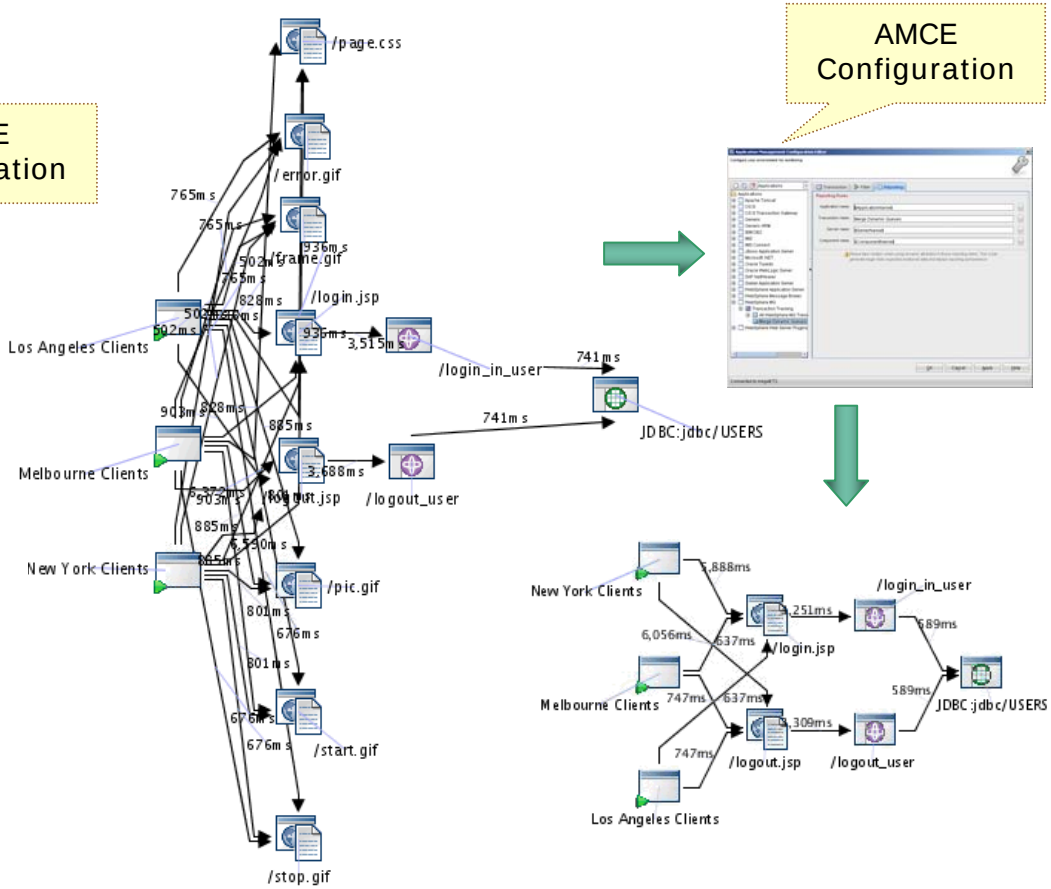
Backup

Simplifying the Topology with Filtering and Grouping

Grouping – MQ Dynamic Queues



Filtering – IHS Image Filtering



Simplifying the Topology with UI Filtering

Topology Filter Configuration - Example

With a Server Component Interaction topology that aggregates on Server Name and shows Component interaction on the arrows, we could show only interactions from “All Clients”
In TEP properties
Different views on same data
Allow for presentation changes

This gives the following topology: