What happened to my Transaction?

Barry D. Lamkin Executive IT Specialist blamkin@us.ibm.com

Transaction Tracking - APM

- Transaction Tracking is a major part of Application Performance Monitoring
- To ensure SLA compliance, monitoring transaction performance is essential for finding and fixing problems before they impact customer satisfaction.
- You need a consolidated view for monitoring resources and activities within your enterprise so performance issues can be detected early and resolved quickly.
- When a problem is detected, is it possible to drill-down to diagnose the root cause of the bottleneck so a solution can be implemented?

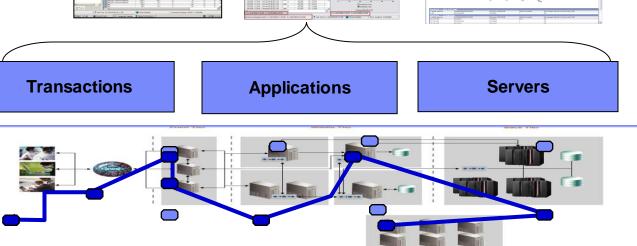
Businesses are facing unparalleled challenges

- Accelerated rate of change drives the need for increased visibility into the application & IT infrastructure
- Monitoring IT resources alone provides an incomplete view of application performance and makes problem isolation and resolution a complex, expensive task
- Lack of visibility into end-user experience, component relationships and service levels in dynamic environments such as cloud
- Performance and availability issues for multiplatform composite applications
- Lack of drilldown capability to find the root cause of problems
- Increased risk of revenue loss and brand damage



Benefits to Effective Application Performance Management

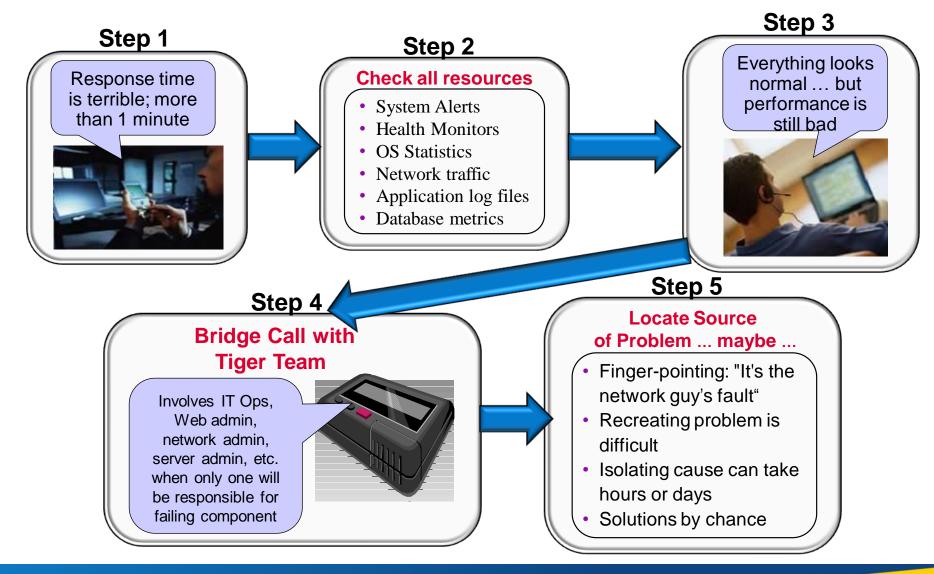
- Ensure <u>application response</u> meets business expectations
- Understand transaction flows over complex topologies
- Drive <u>close collaboration</u> between departments
- Monitor infrastructure performance and availability
- <u>Diagnose</u> application performance issues
- Increase application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

The Issue – Sensing and Isolating a Problem Today



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

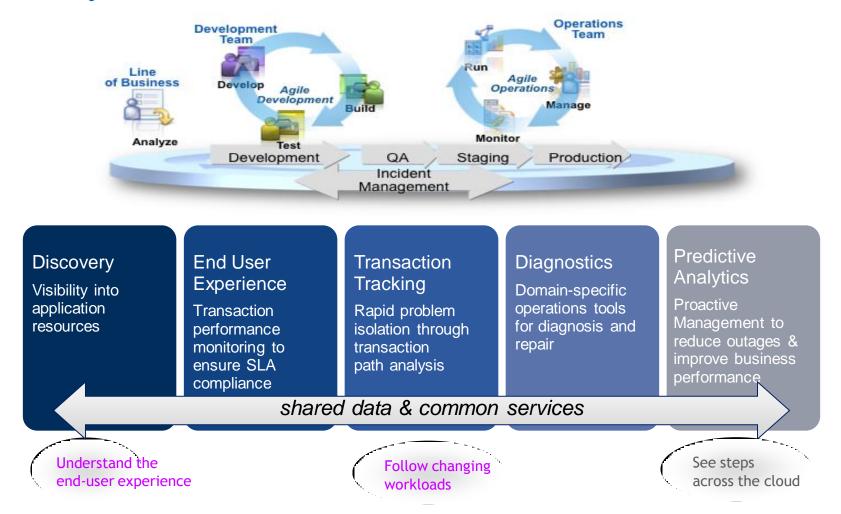
Total costs of poor problem isolation capability	
Total lost / yr	\$4,908,000

Every customer case will be different ...

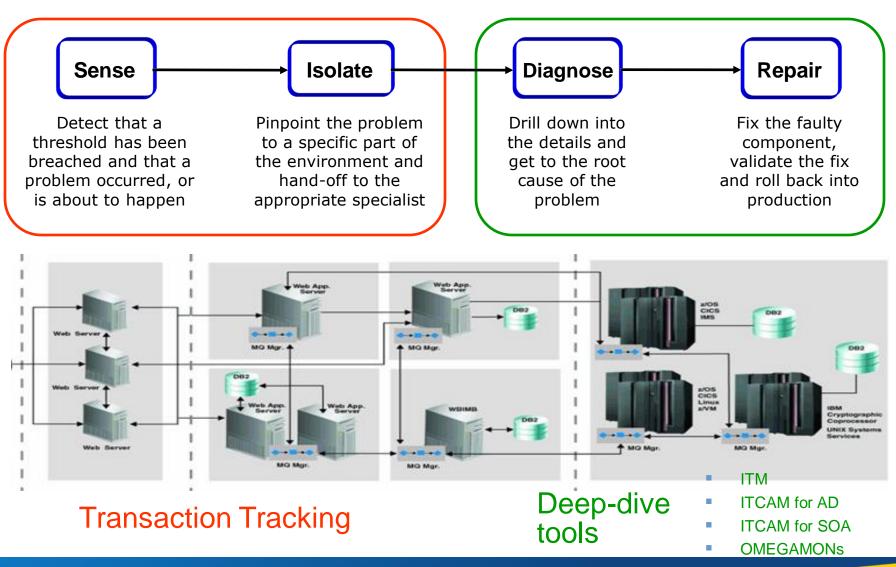
...what do you lose each year due to poor performance?

Application Performance Management provides...

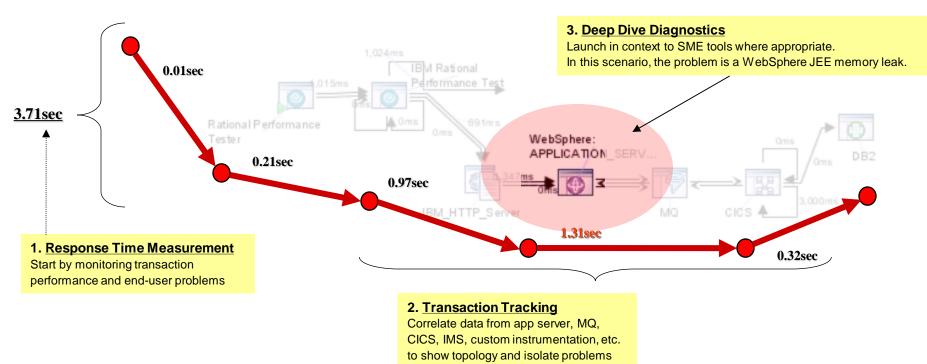
Visibility, control and automation to intelligently manage critical applications in cloud and hybrid environments.



Application Performance Management Workflow

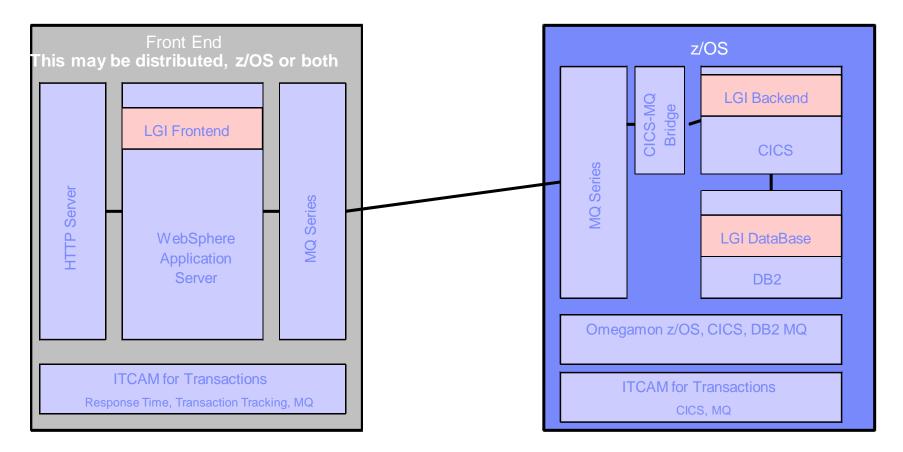


End-to-End Monitoring, Tracking and Diagnosis



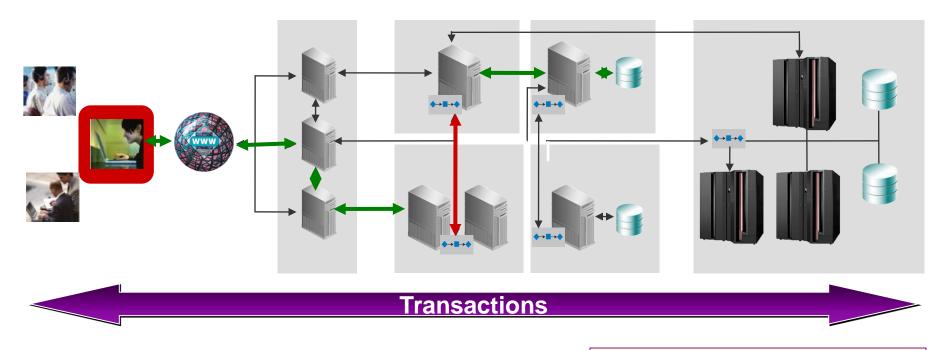
Transaction Root Cause Analysis									
 Sense End User Experience and alert on threshold violation 	 Isolate by measuring performance data against baseline through entire infrastructure 	 Diagnose and repair through launch-in-context into deep-dive diagnostics 							

End-to-End infrastructure - System z backend



The front-end may be either zLinux, distributed or native z/OS or a mix: customers may deploy any of these configurations.

Why Monitor End-User Response?



- See what your users are experiencing
- Validate production system performance
- Identify problems before they affect SLA's

A majority of IT problems are still being <u>identified</u> by customer complaints

If you have a problem, find out about it <u>before</u> the customers start complaining

End User Monitoring

Ensure end user's experience always meets

their expectations

- See what your users are experiencing
- Identify problems before they affect SLAs:
 - Real-User monitoring
 - Robotics monitoring
- Continuously validate production system performance
 - Captures performance and availability data of actual users for SLA reporting
- Monitors network traffic for HTTP(S) requests to the web server
 - Completely non-invasive, agentless monitoring
- If you have a problem, find out about it <u>before</u> the customers complain





50% of problems found through

Agentless Real-User (Passive) Monitoring

Monitor <u>every</u> 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
- Multi-protocol support (beyond HTTP/S)

Dashboard							
Service Tree						A 7 .	
	State	Percent Available	Failed Requests	Percent Slow	Response Time	Total Requests	
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E 🤣 Google		100.0%	0	0.0% 3.037 sec		1	
E 🤣 15M		100.0%	0	103.0% 17.965 sec		2	
E 🥎 15M Webserving Pluphere	4	100.0%	0	27.272%	0.0010 sec	11	
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Robotic Monitoring

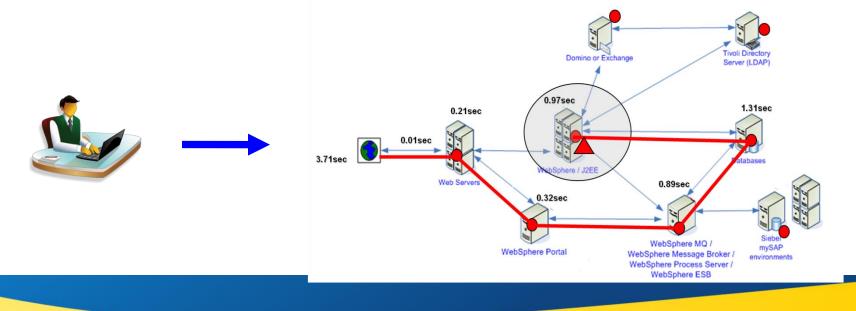
- Verification Points for content matching and response code checking
- HTTP transactions correlate with downstream instrumentation for problem isolation
- Improved scalability for more concurrent playbacks on a single agent
- Support for a growing list of protocols: HTTP(S), Siebel, Citrix, web services



Transaction Tracking

Quickly isolate the failing component in the application

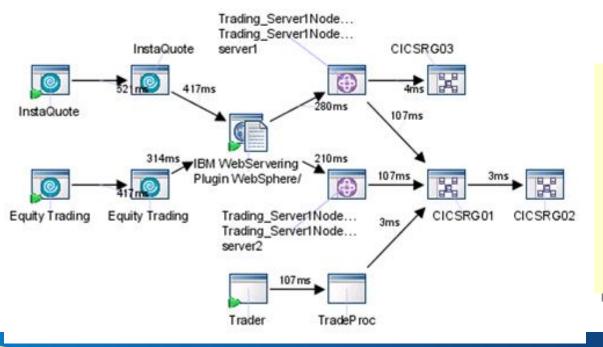
- Follow path of user transactions across application infrastructure domains, making it easier to evaluate a transaction in its entirety
 - Agentless: Track flows through network traffic
 - Agent Based: Detailed, Instance-level Transaction Tracking
- Visibility into how IT infrastructure delivers business critical applications
- End-to-End view of response times across multiple domains helps quickly isolate problems and hand problem off to appropriate specialist



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Problem Isolation Through Transaction Tracking

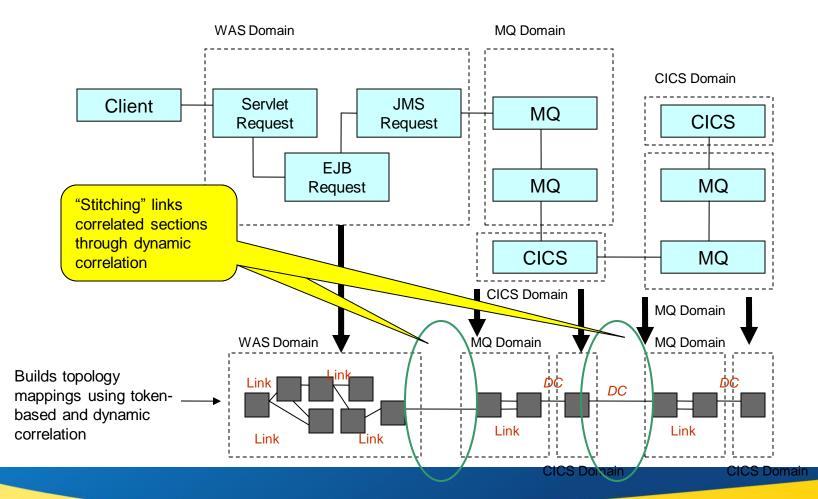
- Unified, end-to-end transaction tracking
- Heterogeneous environments
 - fully integrated across distributed and System z



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

Enterprise-Wide Tracking

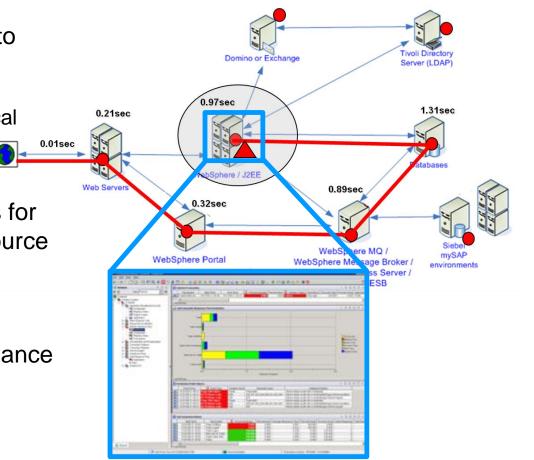
- Track inside domains with correlated techniques
- Track between domains through stitching



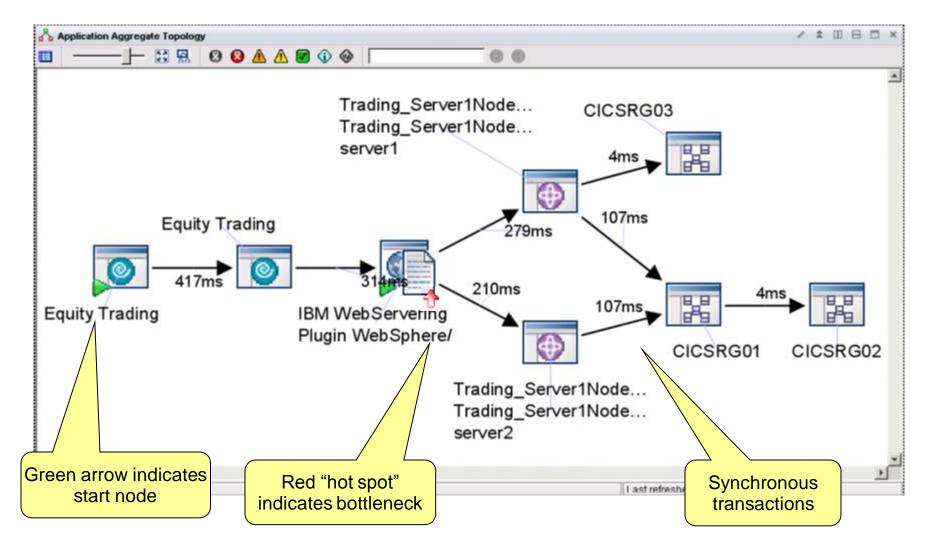
Diagnostics

Quickly identify the source of the failure within the component

- When the failing component has been isolated, detailed performance and availability metrics provided to SME to troubleshoot
 - Access to both Real-time and Historical data within a single UI
- Access to key performance metrics for each resource to quickly identify source of failure
- Expert Help and Best Practice guidance for optimum performance



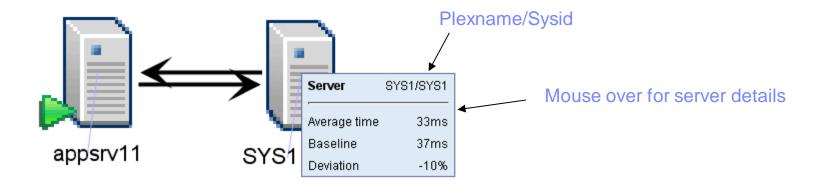
Transaction Tracking Topology



Transaction Tracking – Topology Workspace Views

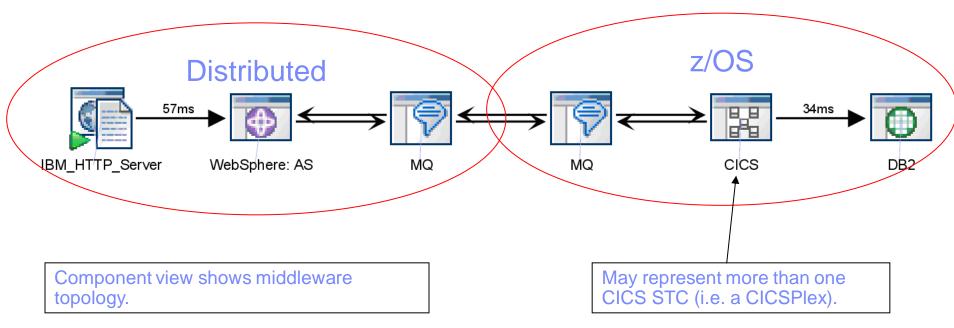
- There are 4 topology workspace views available in the TEP.
 - Server:
 - A topology showing monitored servers (Sysplex name/SMFID or shortname).
 - Component
 - A topology showing the monitored components (Eg: WAS, CTG, CICS, IMS, Connect IMS, WMQ).
 - Application:
 - A topology showing monitored applications (jobnames, STC names, subsystem names).
 - Transactions
 - A topology showing the monitored transactions (Eg: CICS transaction name, IMS transaction name, WAS jsp).

Server topology

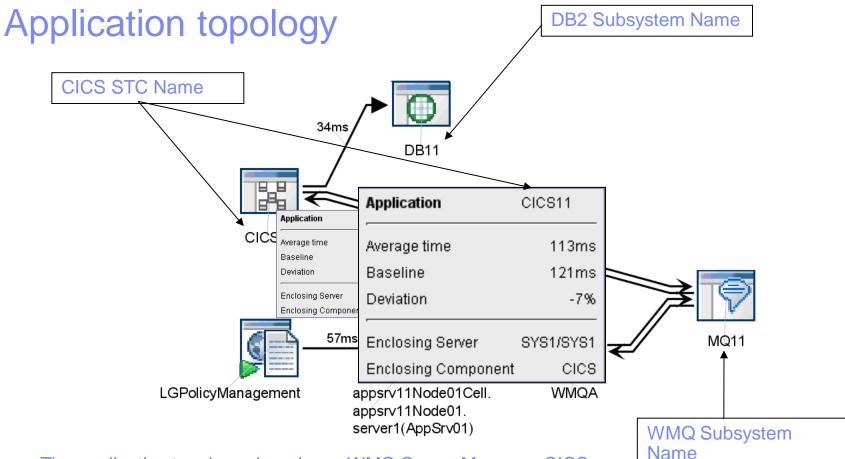


Simple server topology shows single distributed server interacting with a single z/OS server.

Component topology



Component view provides more insight into the deployment. On z/OS, WMQ into CICS (via the bridge) with a typical CICS to DB2 backend. A z/OS monoplex was chosen for simplicity.



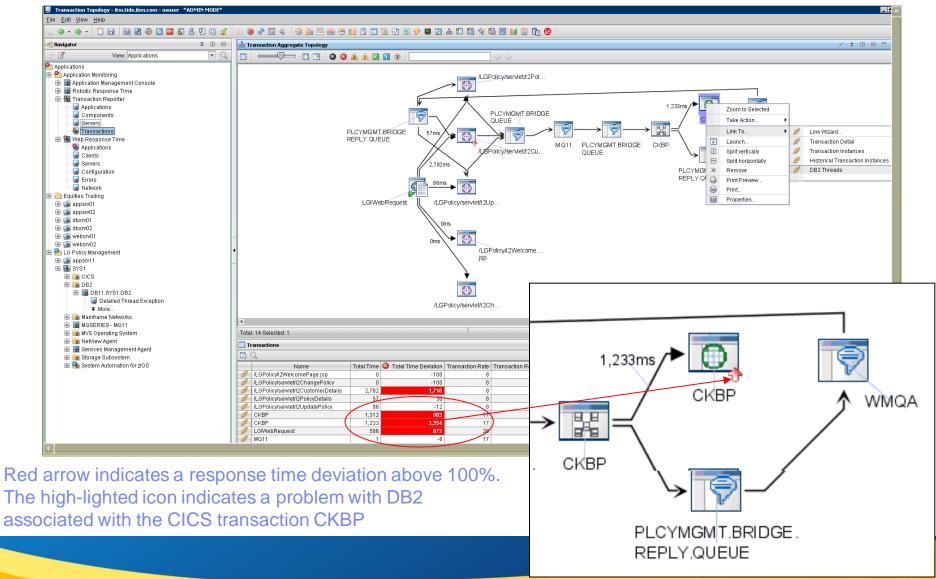
The application topology view shows WMQ Queue Manager, CICS STC, and the DB2 subsystem.

Mouse over shows z/OS host system and response time details.

In a sysplex (shown later) we can use this view to locate a specific

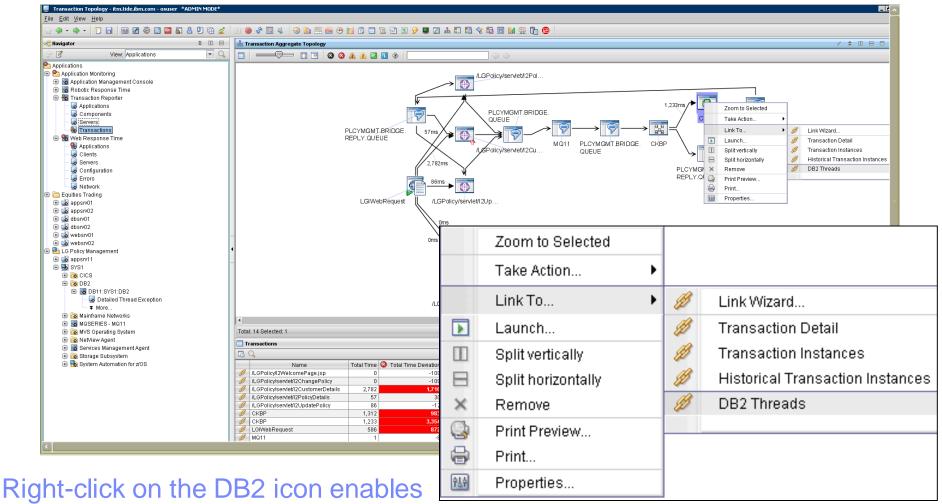
WMQ/CICS/DB2 on the associated sysplex member.

Transaction topology



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Transaction topology – Launch to Omegamon for DB2



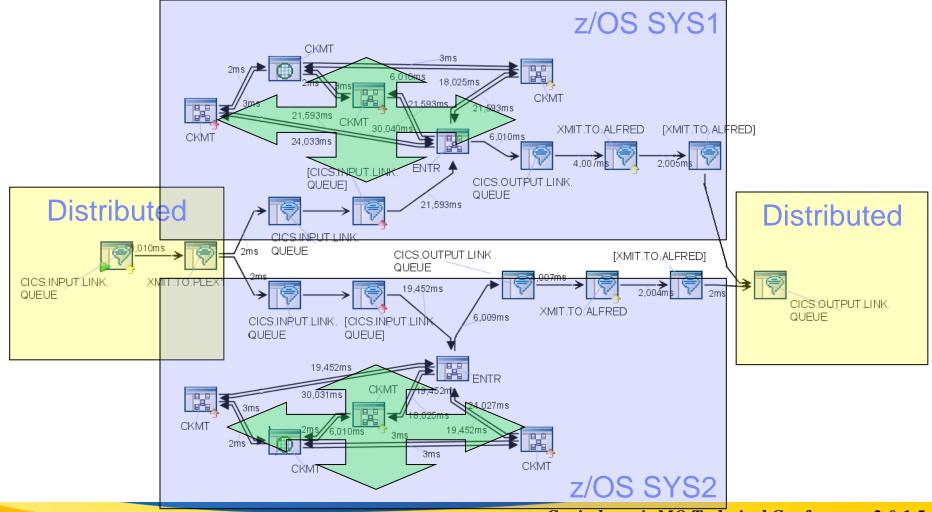
launch to Omegamon for DB2

Omegamon for DB2

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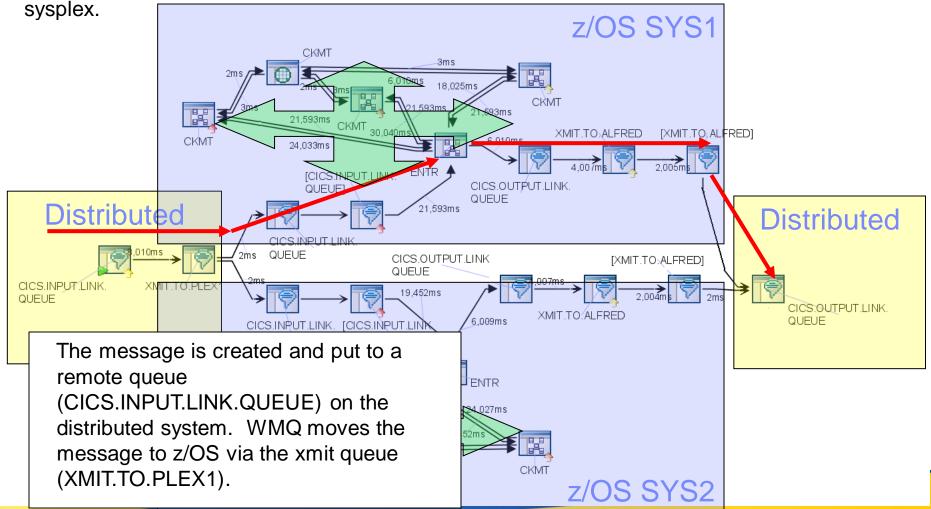
4-Way Sysplex WMQ \rightarrow CICS \rightarrow DB2

 Here is an example of a 4-way sysplex with distributed systems connected to z/OS using WMQ. For simplicity we are only showing 2 systems from a 4-way sysplex.



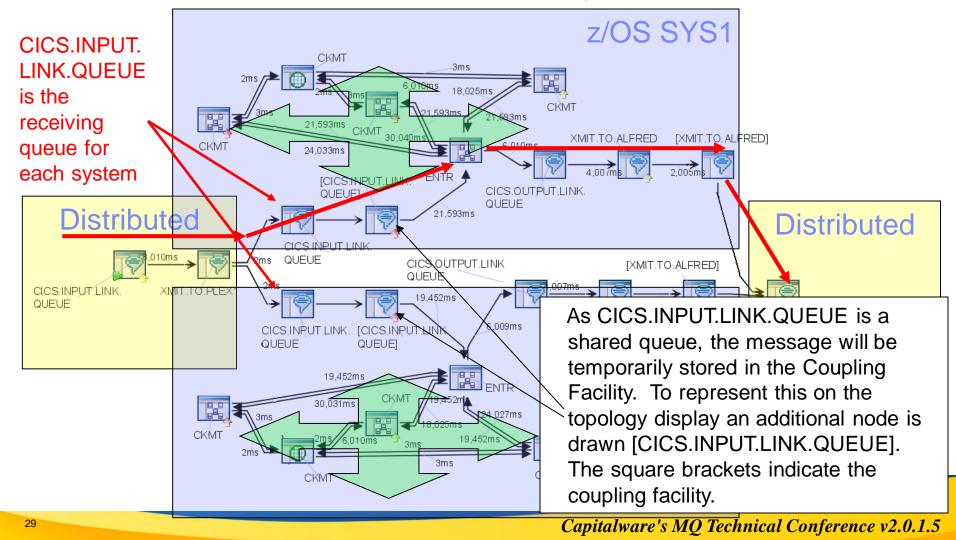
4-Way Sysplex WMQ \rightarrow CICS \rightarrow DB2

The distributed application drives CICS and DB2 on the host. The red arrow shows the path of a WMQ message originating on a distributed system and flowing through to the z/OS



4-Way Sysplex WMQ \rightarrow CICS \rightarrow DB2

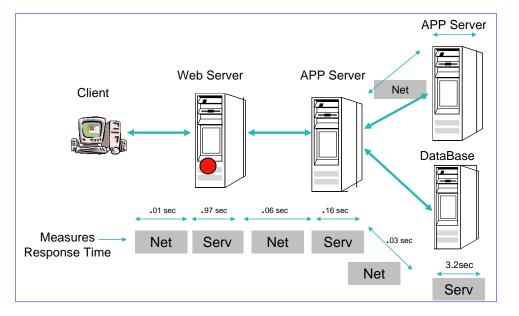
The z/OS system has a shared queue configuration so the message may be directed to any of the 4 systems in the sysplex. In our example, a message is transferred to system SYS1.



Transaction Tracking Focused on simplicity and integration

Response Time Measurement

Monitors transaction performance and identifies end-user problems



Transaction Tracking

Consumes data from app server, MQ, CICS, IMS and custom instrumentation to show topology and isolate problems

Deep dive Analysis

Supports launch in context to SME capabilities including SME level tracking

Summary

- End User Monitoring is critical
 - Real User Monitoring
 - Synthetic Transaction Monitoring
- Transaction Tracking in today's complex environments is critical
- Performance needs to include all platforms/systems
 - Leads to closer collaboration between departments
- Standardize on tooling on each platform
- Standardize on metrics provided & measured where possible
- Standardize on a single pane of glass application view
- Standardize on dashboard design
- Applications should not go into production without adequate monitoring

Questions & Answers

