



Optimizing System z Performance

# Solving Mainframe Systems Management Challenges in an SOA World Using OMEGAMON

## Agenda

- Building a better understanding of what SOA means
- Common performance and availability management challenges of SOA
- How to forge an effective performance and availability management strategy
- Sources of management information
- Monitoring, management and alert strategies for SOA

## Service Oriented Architecture (SOA) Defined

- Service Oriented Architecture is an architectural style for creating and using computer business processes
- Service-Oriented Architectures (SOA) is a set of patterns for building distributed systems where one application that comprises a system can find another application that provides needed service and can exchange data with it

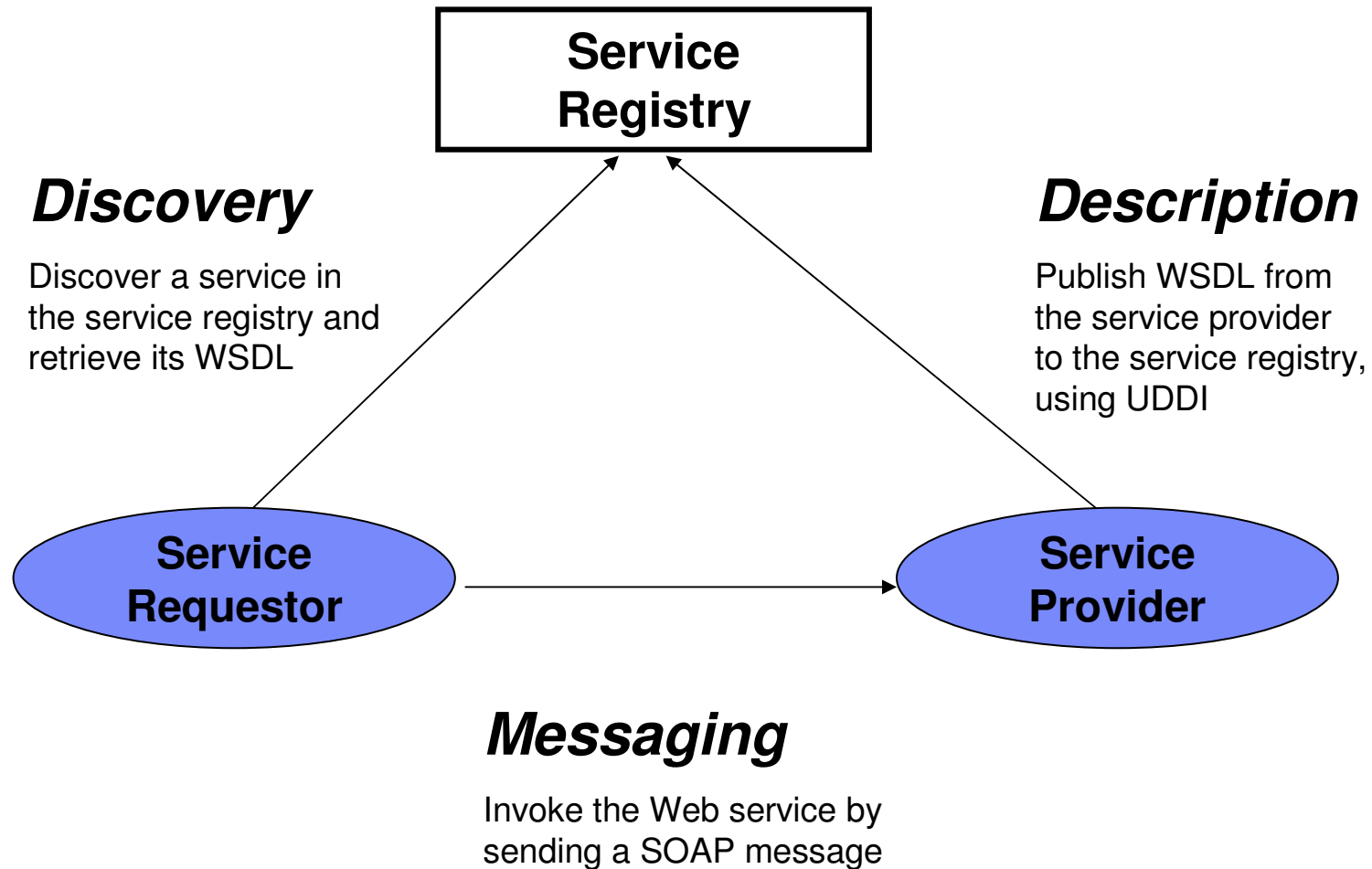
## Common Characteristics Of SOA Applications

- SOA is based on a loosely coupled paradigm
  - No interdependencies between systems
  - Characterized by an abstraction from the implementation aspects of the application
  - In SOA, the interface is defined in a neutral manner independent of the hardware, operating system, and programming language
- SOA ideally reuses existing technology infrastructure
  - For example - The mainframe can be an important component
    - Many programs written decades ago still run on current IBM mainframes
- Based upon industry standards □
  - Built around XML and other common industry standards
    - XML, SOAP, JDBC, Message oriented middleware

## System z And Systems Oriented Architecture

- One of the key strengths of the mainframe and z/OS is transaction processing
  - Many services in SOA are business transactions
  - Process large amounts of data simultaneously
  - Flexibility with mixed workloads
- System z provides many advantages
  - High scalability, availability, reliability, and security
  - Flexibility and cost control with specialty engines
- IMS and CICS can serve transactions that cooperate directly in a service-oriented environment
  - IMS and CICS support high volume, high reliability transaction workload
  - Ideal for services today that require those same high qualities of service
- DB2 provides XML support

# Web Services Invocation Model



## Web Services - Useful Definitions

- WSDL is used to describe the function(s) that an application will be calling documenting in a standard way its entry points, parameters and output
  - WSDL (Web Services Description Language) is a public description of the interfaces offered by a web service. Using XML, it provides machine readable document that provides a calling application all of the information required to interact with a web service.
- XML is used to carry the values of parameters and the outputs of the function
- SOAP is used as the messaging protocol that carries content (XML) over a network transport (typically HTTP)
  - Industry standard message format for sending and receiving data between a web services consumer and a web service provider
  - SOAP messages are XML documents
- HTTP is used as the network transport layer

## Enterprise Service Bus – ESB

- Enterprise Service Bus (ESB) is a set of patterns that can be applied to implement SOA-based systems
  - These patterns make extensive use of messaging and event notification to deliver core values
- ESB is a intermediary between the clients that consume services and various systems that provide these services
  - Instead of client talking directly to a service provider, requests are routed through a middleware system that handles the specific details
- ESB replaces RPC-like synchronous Web Service invocations with message-based and event-based interactions
- ESB enhances traditional message-based systems with discovery and self-describing characteristics typically attributed to Web Services

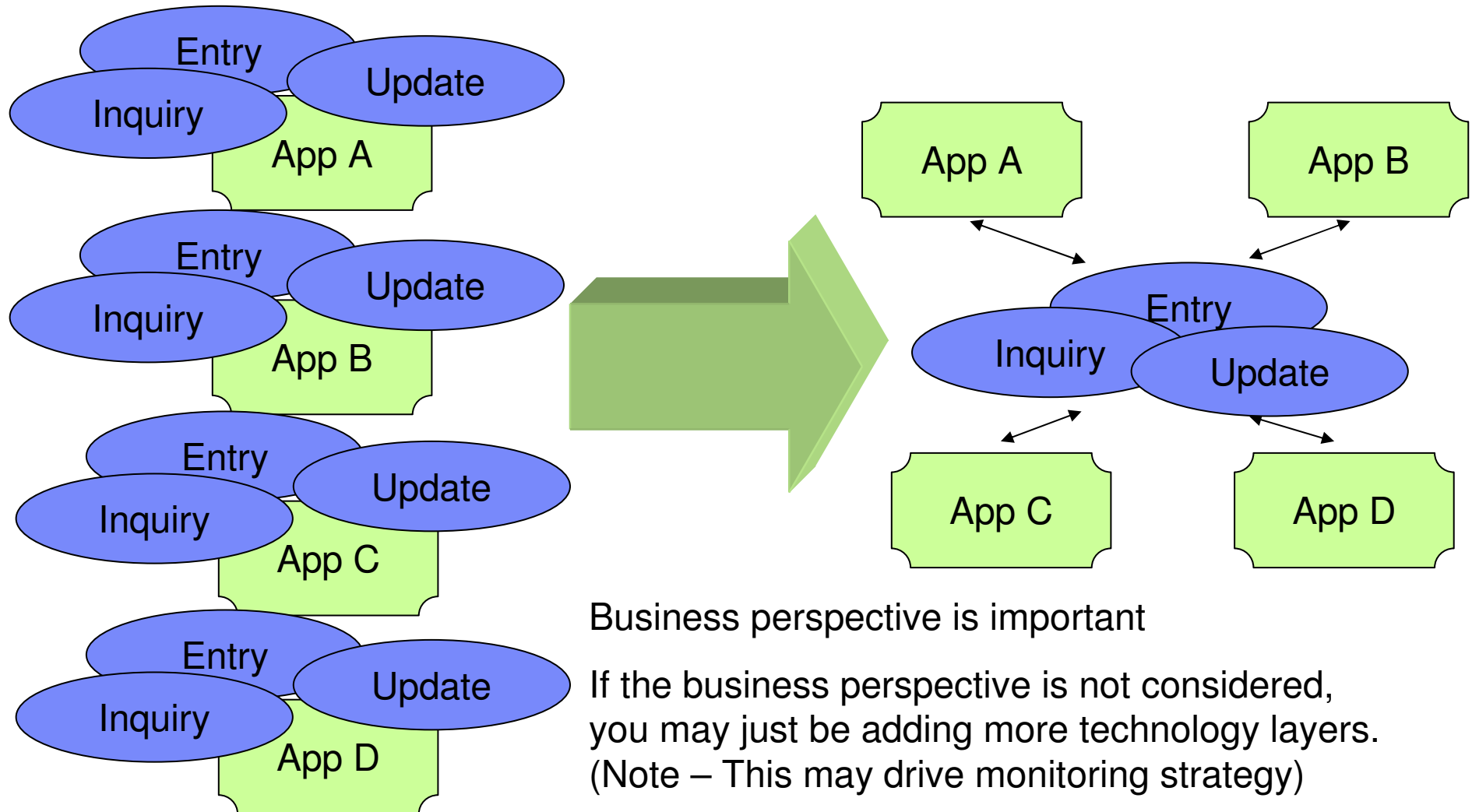


## Common Needs And Challenges Of SOA

- Businesses look at SOA because they need
  - A way to change operational processes quickly
  - To be able to deploy automated process more quickly
  
- SOA addresses common challenges
  - Software processes may not be well documented
  - Key Performance Indicators (KPIs) may not be well defined
  - Complex connections may exist across multiple systems
  - Process change may be time consuming and cumbersome
  - May have limited visibility to performance

# The Value Add Of The SOA Approach

## The Consolidation Of Business Processes



## Common Performance And Availability Management Challenges Of SOA

- The loosely coupled nature of SOA pose unique performance and availability management challenges
  - Measuring, monitoring and managing becomes more of a moving target
- Many key questions to consider when defining a strategy
  - How and what to monitor?
  - How to monitor and analyze the interactions of complex applications?
  - How to define performance and availability?
  - What is the optimal monitoring infrastructure?
    - How to aggregate monitoring information and correlate issues?
    - How to address 'islands of automation'?
  - How to be notified of issues, identify and isolate problems?
    - How to track KPIs and monitor SLAs?
    - How to drill down for detailed analysis?
- It may be important to be able to manage from a business perspective, as well as a technical infrastructure perspective

## Devising A Monitoring Strategy

### Monitor In Breadth And Monitor In Depth

- Monitor in breadth
  - Design a monitoring strategy that allows for an “end-to-end” analysis of the application and it’s key components
  - An integrated approach becomes key to success
    - Avoid silo approaches or “islands of automation”
  - Monitor at key touch points
    - Consider both performance and availability
    - Monitor from the end user perspective (response time and availability)
- Monitor in depth
  - Monitor and analyze the application interaction
  - Monitor underlying key technical components, platforms, and subsystems
    - Resource usage, performance, availability, issues, alerts, outages

## Devising A Monitoring Strategy Monitoring From A Business Application Perspective

- The value add of SOA revolves around an effective understanding of business processes
  - Optimize from a business process perspective to achieve savings
- In an SOA deployment it is important to include the business application perspective in the monitoring and management strategy
  - Track Key Performance Indicators
  - Take into account business application changes
  - Monitor and analyze application usage and SLAs

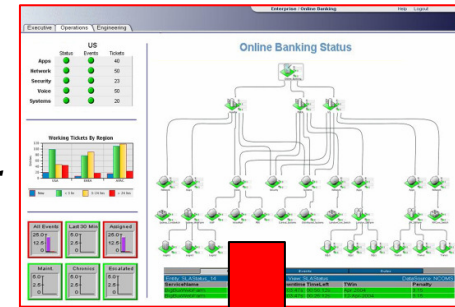
# Benefits Of An Integrated End To End Technical View

- Provide the ability to integrate relevant technical information from a variety of monitoring sources
  - Provides a more complete view of performance
  - Aids with problem isolation and drill down for analysis
- Improved ability to manage composite applications
  - Integrated view of subsystems, platforms, and applications
- Reduce time to problem resolution
  - Improved event and problem isolation
  - Identify and isolate issues more rapidly
  - Superior performance analysis capabilities

# Pulling Together An Integrated Methodology

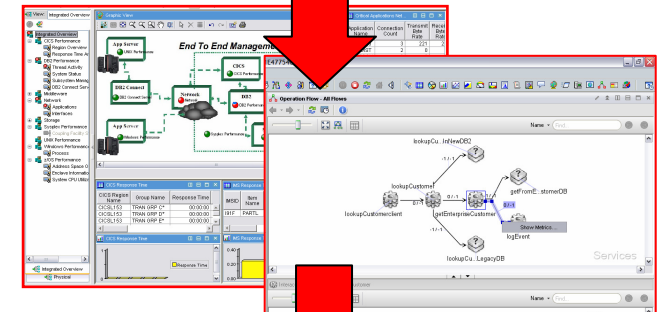
- **Business level analysis**
  - Integrated business application topology analysis
  
- **Integrated technical view**
  - End to end technical analysis
  
- **Technical detail view**
  - Technical deep dive analysis

**Tivoli Business Service Manager  
TBSM**



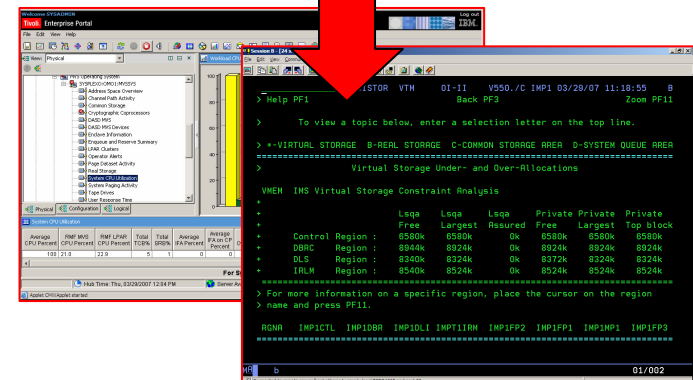
**Drill down**

**OMEGAMON DE,  
OMEGAMON XE,  
& ITCAM**



**Drill down**

**OMEGAMON XE  
(TEP, 3270) &  
ITCAM**



# IBM Tivoli Business Service Manager Provides A Business Application Level View

## Role-based dashboards

- Customizable/sharing common context
- Web 2.0/Mash-ups (IBM & 3<sup>rd</sup> party)
- Launch in context views & automations.
- Realtime & Historical reporting across KPIs, event & performance.

## Distributed & Mainframe

- Visibility across both
- Manage from either
- SOA & Virtualization
- Supports IPv4 & v6

## High Scalability/Availability

- Split UI & Engine
- Self-monitoring
- Failover

The screenshot shows the IBM Tivoli Business Service Manager interface. It features several key components:

- Service Tree:** A hierarchical tree view on the left showing service components like Customer Service, Mobile Integration, and various servers. A callout bubble points to this section.
- Service Maps:** A map of the United States on the right showing service locations. A callout bubble points to this section.
- Event Summary:** A summary panel at the bottom left with six charts for All Events (1084), Assigned (1), Escalated (2), Unack'd (1), Maintenance (0), and Ticketed (0). A callout bubble points to this section.
- Urgent Services:** A table listing services with their status and last changed time.
- Service View:** A diagram at the bottom right showing relationships between services, with a 'Down 3 Up 1' status indicator.



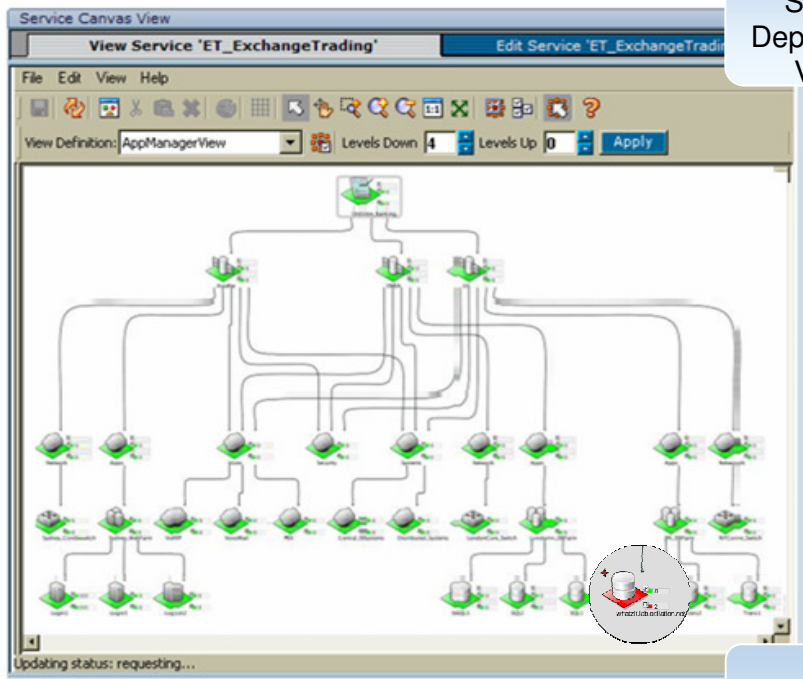
# Business Service Management – Service Details

Balanced Scorecards & KPIs

Tivoli Service Manager View

Service	State	Infrastructure State	% Throughput vs. Baseline	ResponseTime (ms)	Historical Baseline (ms)	Total Tickets
ExchangeTrading	●	●	81%	544	444	35
OnlineBanking	●	●	88%	680	600	3
StockTrader	●	●	101%	592	600	43
ET_CancelOrder	●	●	142%	387	550	10
ET_ChangeOrder	●	●	55%	90	50	0
ET_ExecuteBuyOrder	●	●	267%	52	139	0
ET_ExecuteSellOrder	●	●	81%	92	74	0
ET_GetQuote	●	●		65	136	6
ET_Login	●	●		12	18	4
ET_CancelOrder	●	●	78%	138	107	7
ET_ChangeOrder	●	●	91%	168	153	0
ET_ExecuteBuyOrder	●	●	74%	215	159	0
ET_ExecuteSellOrder	●	●	413%	5	20	0
ET_GetQuote	●	●	188%	3	5	14
ET_Login	●	●	126%	69	87	7
ET_CancelOrder	●	●	202%	81	163	0
ET_ChangeOrder	●	●	65%	293	190	2
ET_ExecuteBuyOrder	●	●	189%	70	132	3
ET_ExecuteSellOrder	●	●	61%	38	23	0
ET_GetQuote	●	●	79%	118	94	0
ET_Login	●	●	58%	193	112	0

Realtime Service Dependency Views



SLA Performance Tracking

Service Details View

Entity: SLAStatus_14	View: SLA Status	DataSource: N...			
Service Name	Best Case %	Downtime	TimeLeft	Twin	Penalty
NYWebFarm	99.991	00:03:47s	00:56:12s	12-Aug-07	145.14
SFWebFarm	97.736	00:03:47s	00:22:15s	19-Sep-07	300.57

Realtime Event & Root Cause Views

Event View

Node	Alert Group	Summary	Last Occurrence	Count	Type
warnrnr.ralei...	Status	Node Down.	10:47:27 AM	1	Problem
omnibus	PROBE	A PROBE process, true10lecad, running on ...	9:38:00 AM	1	Problem
omnibus	probestat	true10lecad probe on omnibus: Going Down	9:38:00 AM	2	Problem
FAPUIDEQ.ra...	Status	Interface 9.27.144.163 down. CRITICAL	10:48:34 AM	1	Problem
FJ6...	Status	Interface 9.27.144.163 down. CRITICAL	10:29:04 AM	1	Problem
rv7	probe on kiwi	Heartbeat Message	10:57:19 AM	97	Not Set

Contextual Views of Federated Data/Intelligence

Contextual Data View

Management Number	Service Impact	Impact Statement	Command Center	Customer
29762127	SORT (Sales out Reporting and Tracking) application: b03edrb001 ('STAGE' db2 server), the DPROF processes that are down are called EVENTAPPLY and RPT_APPLY2	Sales Out Reporting and Tracking- If the SORT application is not available, business partner incentive payments and IBM sales rep commissions will be delayed. Business Partner and IBM users will experience a significant workload increase and Business Partner satisfaction will decline. Currently, the site is available, however, with the DPROF applications not functioning, the SORT application will be running with old data.		

# Business Service Management – Service Drill Down

## Service Navigation:

- Navigate services:
  - Tracks service, infrastructure and transaction health.
  - Realtime KPIs & balanced scorecards
  - Right-click access to other views.

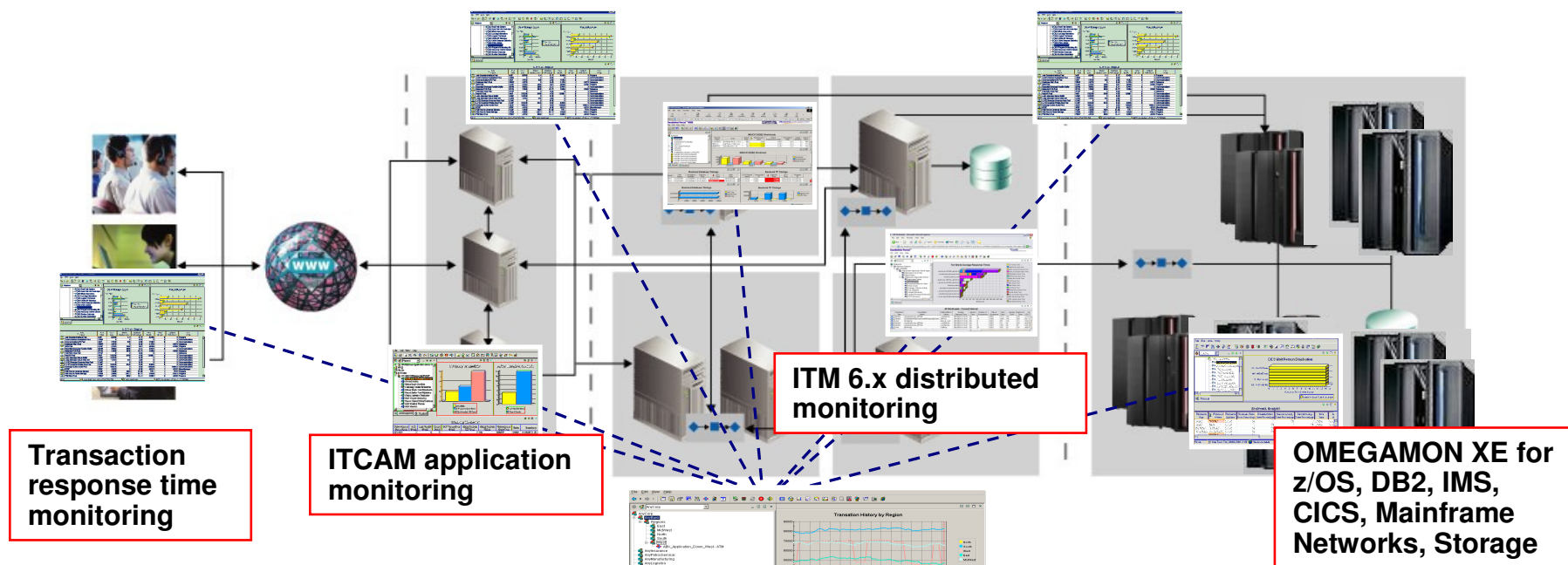
	State	Infrastructure State	% Throughput vs. Baseline	ResponseTime (ms)	Historical Baseline (ms)	Total Tickets
ExchangeTrading	●	●	81%	544	444	35
OnlineBanking	●	●	88%	680	600	3
StockTrader	●	●	101%	592	600	43
London	●	●	142%	387	550	10
ET_CancelOrder	●	●	55%	90	50	0
ET_ChangeOrder	●	●	267%	52	139	0
ET_ExecuteBuyOrder	●	●	81%	92	74	0
cluster34	●	●				
helios:server5 (WebSphere)	●	●				
helios:server7 (WebSphere)	●	●				
helios:server8 (WebSphere)	●	●				
ET_ExecuteSellOrder	●	●		65	136	6
ET_GetQuote	●	●		12	18	4
ET_Login	●	●		76	132	0
New York	●	●		598	533	28
ET_CancelOrder	●	●	78%	138	107	7
ET_ChangeOrder	●	●	91%	168	153	0
ET_ExecuteBuyOrder	●	●	74%	215	159	0

## Event Views:

- View root cause & other service events.
- Enriched events with business context.
  - e.g. device location, problem owner, contact details, maintenance details, etc.

Node	Alert Group	Summary	Last Occurrence	Count	Type
warrenw.talei...	Status	Node Down.	10:47:27 AM	1	Problem
omnibus	PROBE	A PROBE process, tme10tecad, running on ...	9:38:00 AM	1	Problem
omnibus	probestat	tme10tecad probe on omnibus: Going Down ...	9:38:00 AM	2	Problem
EAPVIDEO.ra...	Status	Interface 9.27.144.163 down. CRITICAL	10:48:34 AM	1	Problem
IBM-YIA5FJ6...	Status	Interface 9.27.144.169 down. CRITICAL	10:29:04 AM	1	Problem
kiwi		rv7 probe on kiwi: Heartbeat Message	10:57:19 AM	97	Not Set

# Integrated Technical View Using The TEP Tivoli Enterprise Portal



**The TEP provides an integrated monitoring interface that is required for an integrated technical view.**

**Navigation and drill down for a variety of monitoring solutions.**

**Tivoli Enterprise Portal (TEP)**

**TEP is a common user interface for a variety of Tivoli OMEGAMON and ITM monitoring solutions**

# Integrated Technical View Using The TEP Tivoli Enterprise Portal

**The TEP enables integrated alert and automation capabilities needed for the Integrated Technical View**

**Many z/OS components, including CICS, IMS, DB2 and MQ may be part of an SOA deployment.**

**Performance and availability management requires an integrated approach**

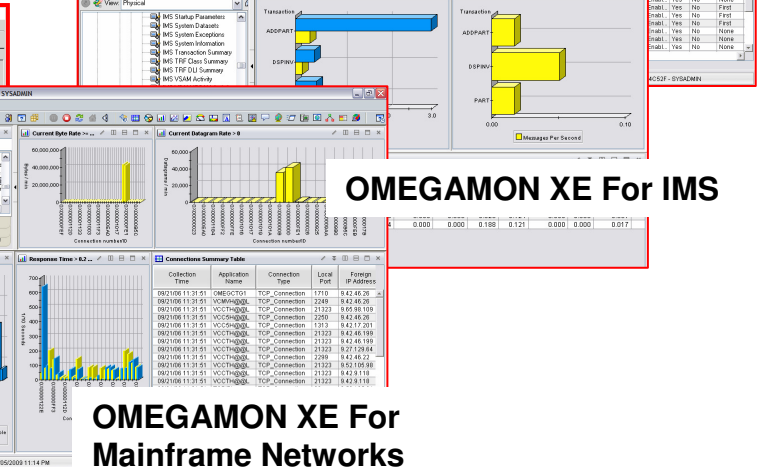
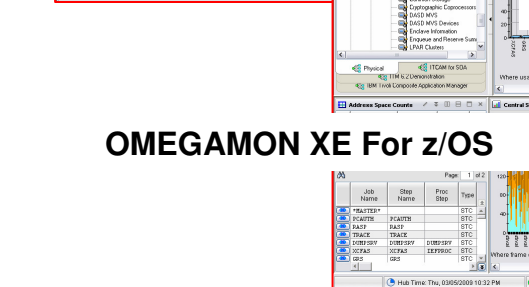
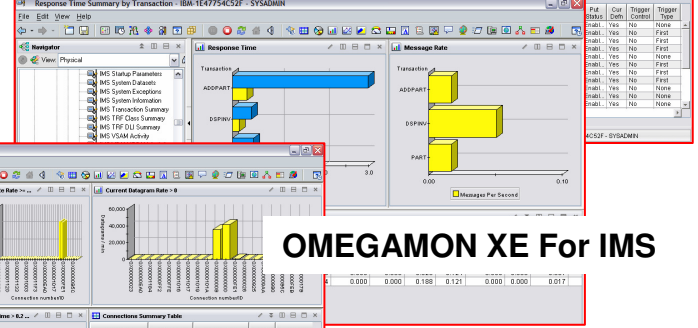
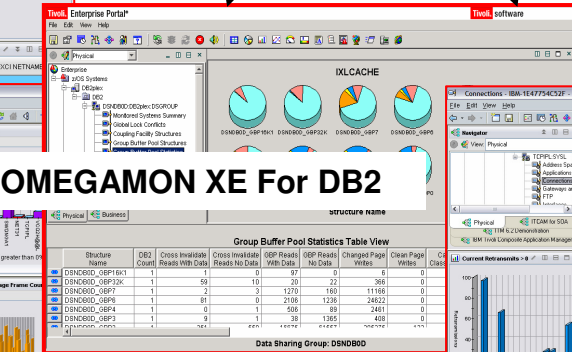
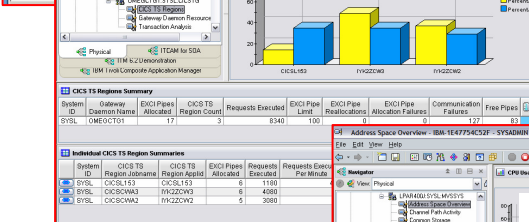
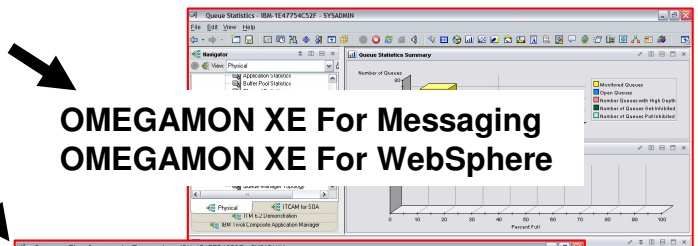
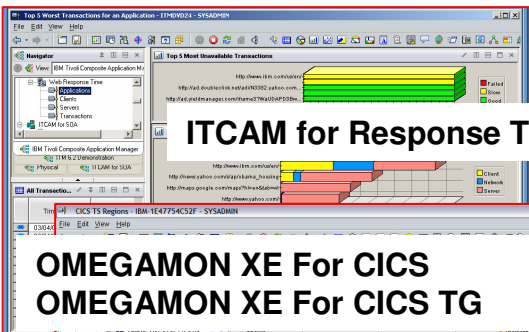
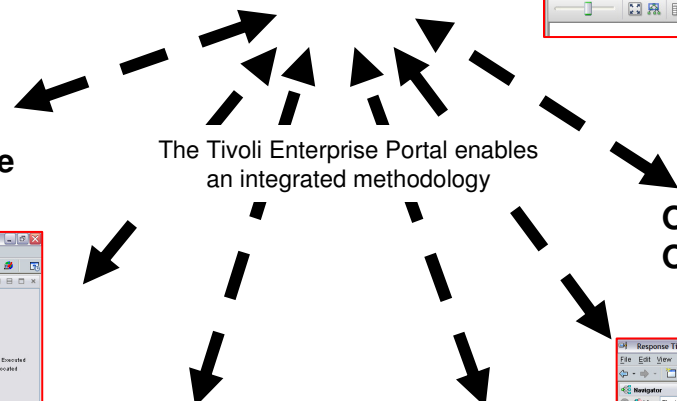
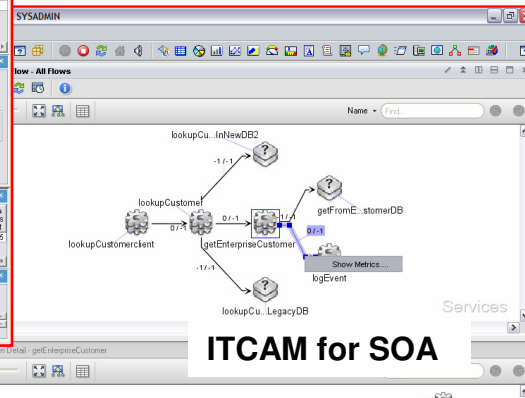
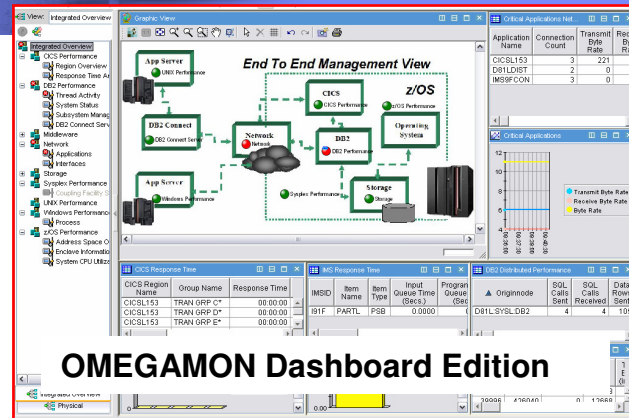
**Monitor from an end to end perspective with drill down for details**

Region name	Group Name	Response Time
L153	TRAN GRP C*	00:00:00
L153	TRAN GRP D*	00:00:00
L153	TRAN GRP E*	00:00:00

IMSID	Item Name	Item Type	Input Queue Time (Secs.)	Program Queue Time (Secs.)
I91F	PARTL	PSB	0.0000	

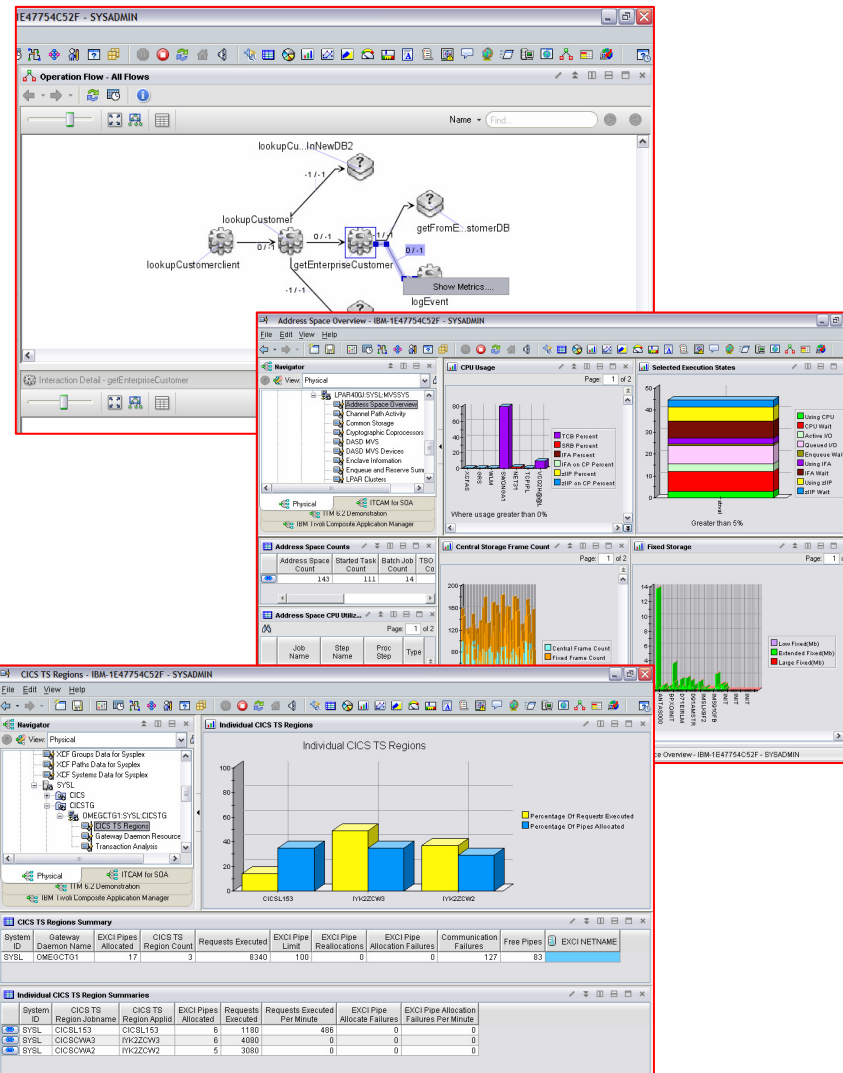
Originnode	SQL Calls Sent	SQL Calls Received	Data Rows Sent
DB41:SYSL:DB2	4	4	105

# TEP Provides Drill Down To Detail With Dynamic Workspace Linking



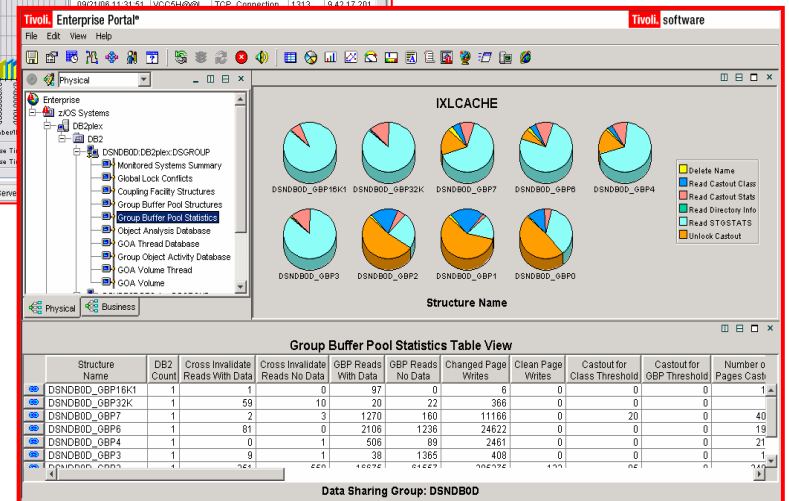
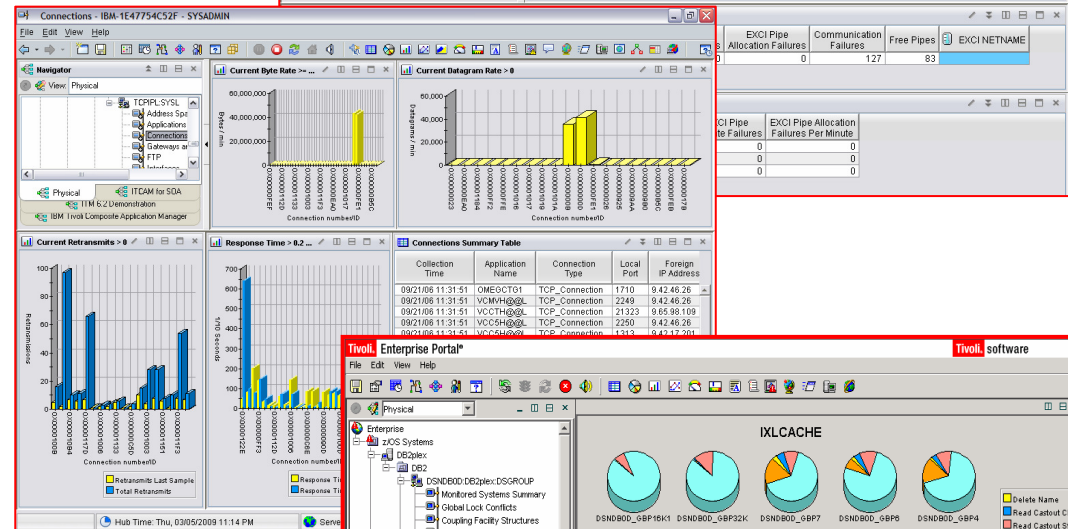
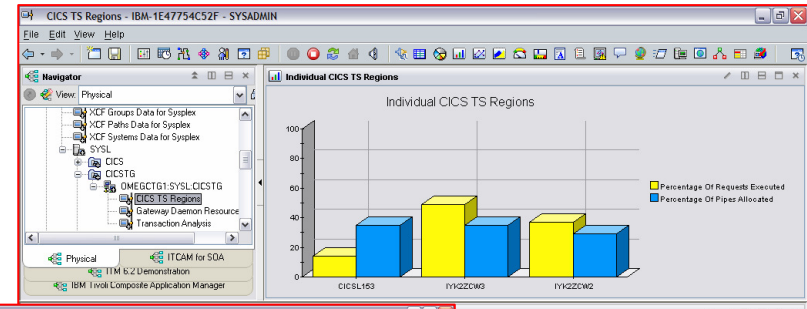
# The Monitoring Components

- IT Composite Application Manager (ITCAM) For SOA
  - A view of the service-to-service topology within your environment
  - Drill down for performance detail
  
- OMEGAMON XE For z/OS
  - Monitor z/OS operating system
    - Workloads, WLM, Address Spaces
    - CPU, Storage, DASD, paging
    - Bottleneck and Impact Analysis
    - Enqueues/GRS & Alerts
    - Sysplex, Coupling Facility Structures and utilization
  
- OMEGAMON XE For CICS
  - CICS Service Level Analysis
  - Transaction, UOW, & Bottleneck Analysis
  - Journal & Logstream Analysis
  - VSAM File and Lock Analysis
  - Connections Analysis
  - Temp Storage & Transient Data Usage
  - CICS Region Overview
  - DB2 Summary and Task data



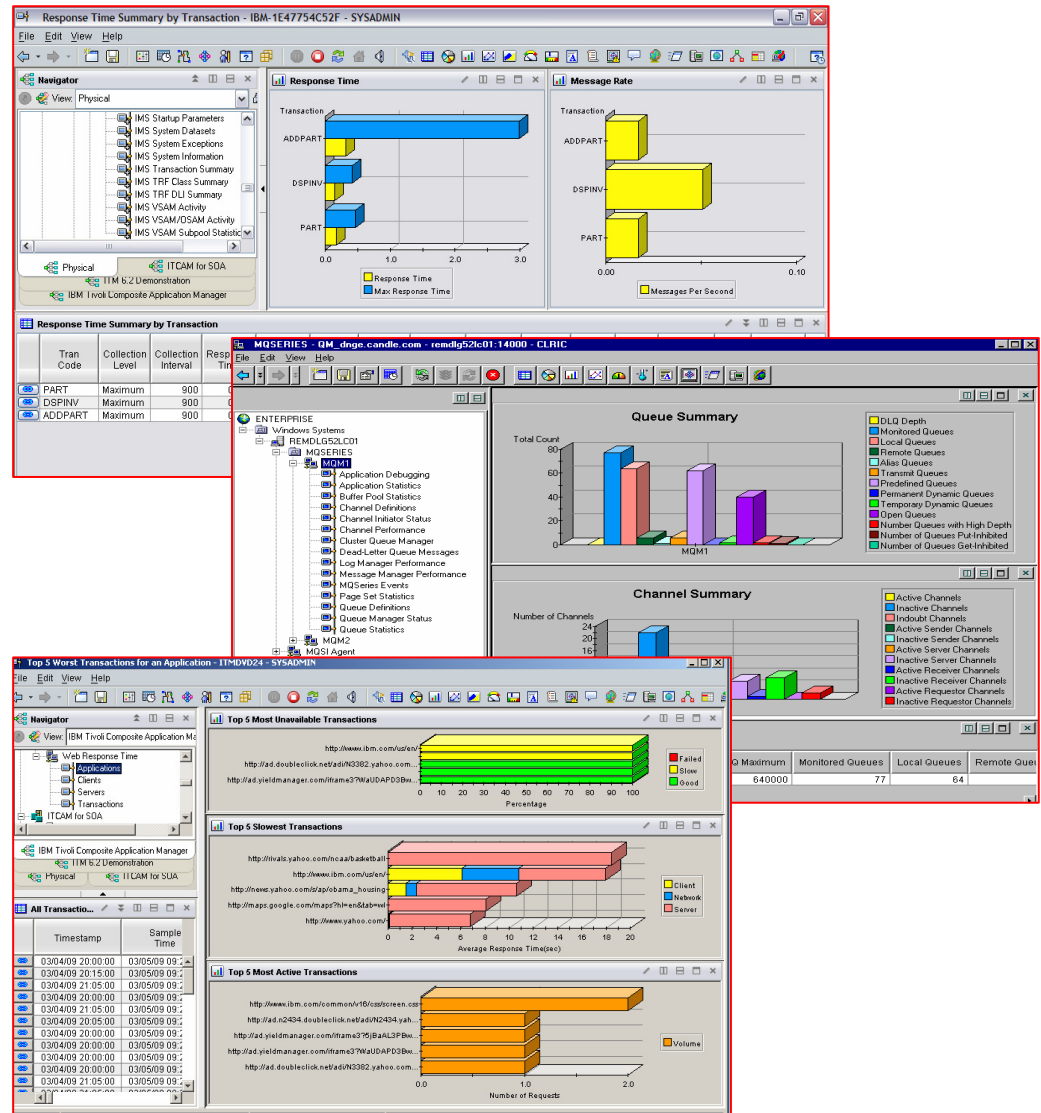
# The Monitoring Components

- **OMEGAMON XE For CICS Transaction Gateway**
  - Collect CICS TG statistics,
  - Report CICS TS communication failures,
  - Resource waits and EXCI (External CICS Interface) pipe usage
  - Check for excessive transaction rollbacks
  
- **OMEGAMON XE For Mainframe Networks**
  - Monitor TCP/IP and SNA network resources from a common interface
  - Real time and historical monitoring capabilities
  - Monitor applications, connections
  - Monitor common network performance issues
  
- **OMEGAMON XE For DB2**
  - Real Time Thread Analysis
    - Thread detail & performance
    - Triggers, Procedures, & UDFs
  - Real Time – DB2 subsystem
    - Virtual & EDM Pool analysis
    - Locking & Logging Analysis
    - Storage Analysis



# The Monitoring Components

- OMEGAMON XE For IMS
  - Real Time Monitor
    - Subsystems, regions, resources, pools, DBs, Fast path
    - IMS Connect, OTMA
  - Response Time Analysis (RTA)
    - Transaction Response time by user defined groups
  - Bottleneck Analysis
    - Workload performance and task analysis
  
- OMEGAMON XE For Messaging
  - Monitor MQ series queues, messages, and traffic
  - Monitor queue depth and key MQ resources
  
- ITCAM For Response Time
  - Track end user response time
  - Break out client, network, and server time
  - Correlate response time by server and user



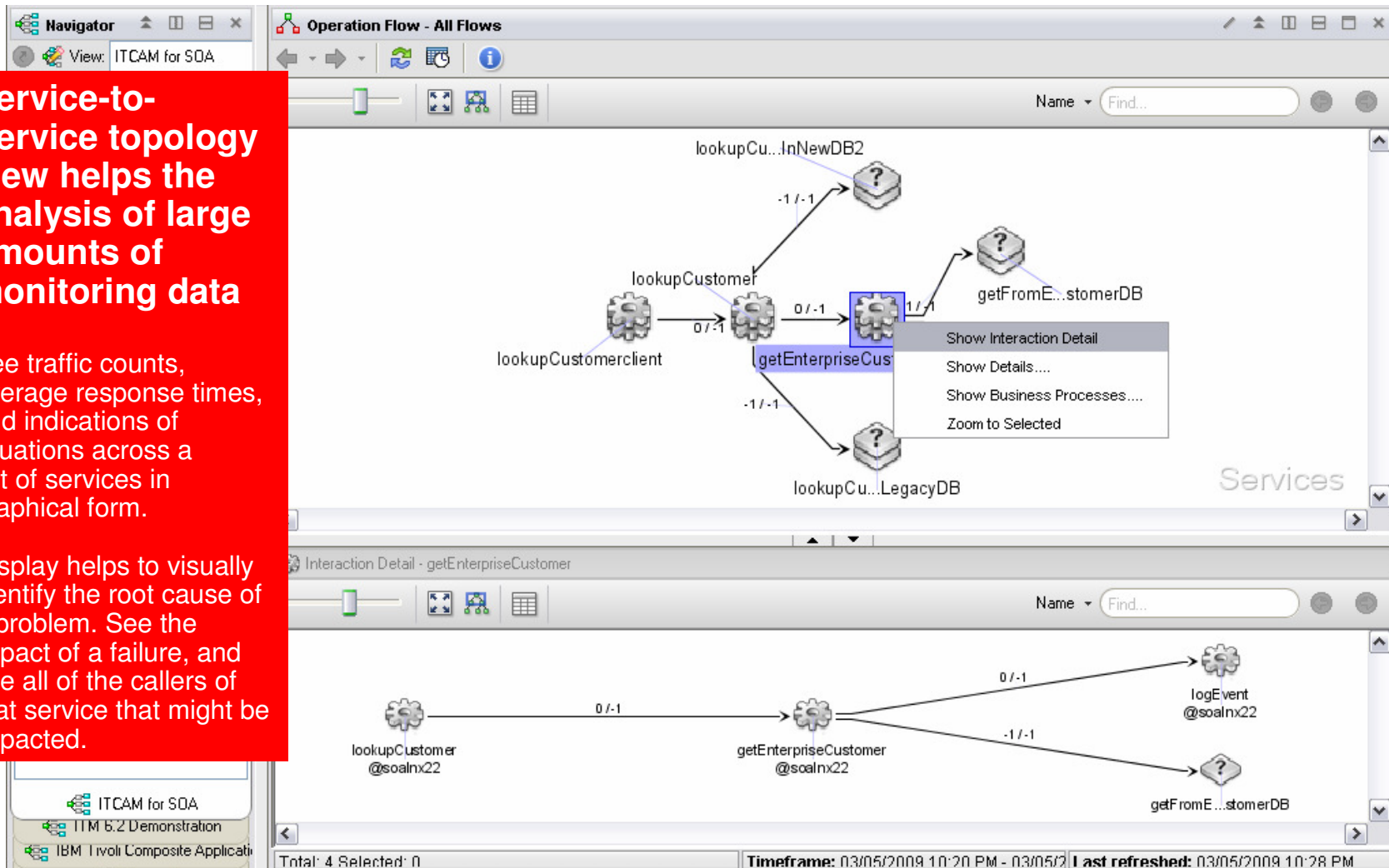


# ITCAM for SOA V7.1.0 Provides A View Of The Service-to-Service Topology

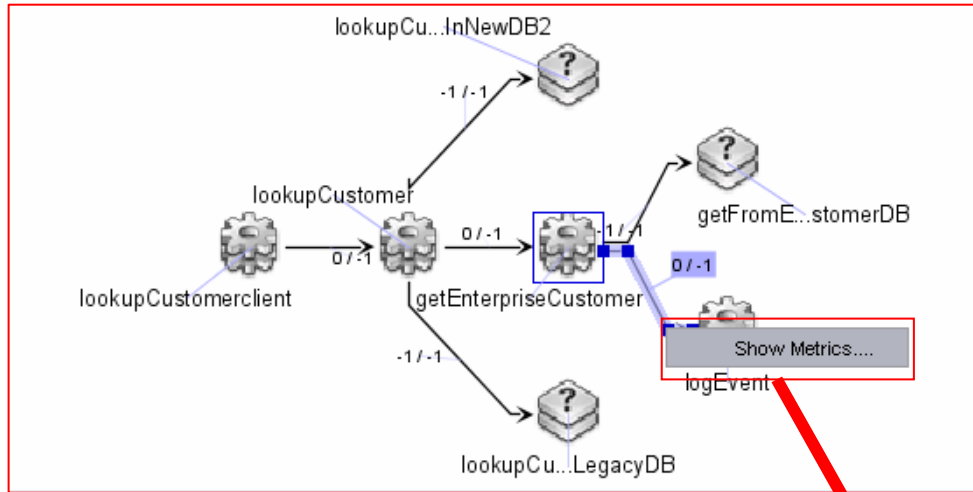
**Service-to-Service topology view helps the analysis of large amounts of monitoring data**

See traffic counts, average response times, and indications of situations across a set of services in graphical form.

Display helps to visually identify the root cause of a problem. See the impact of a failure, and see all of the callers of that service that might be impacted.



# ITCAM for SOA V7.1.0 Provides A View Of Performance Metrics



The screenshot shows the ITCAM interface. The top window is titled 'All Flows' and displays the same SOA flow diagram as above. A red arrow points from the 'Show Metrics...' button in the diagram to a 'Metrics' window. The 'Metrics' window shows the flow between 'getEnterpriseCustomer @soalnx22' and 'logEvent @soalnx22'. It contains four charts: 'Response Time (seconds)', 'Fault Count', 'Message Count', and 'Message Size'. All charts currently show 'No Value'. The window also includes a legend for 'Provider Enter', 'Provider Leave', and 'Requester Response'.

**Drill down to see performance metrics.**

**See relevant performance metrics such as message counts, message size, and response time.**

# Use Dynamic Workspace Links To Drill Down To Detail

**Dynamic workspace links enable drill to down detailed information in context. Drill down from the topology view to a detailed ITCAM or OMEGAMON view.**

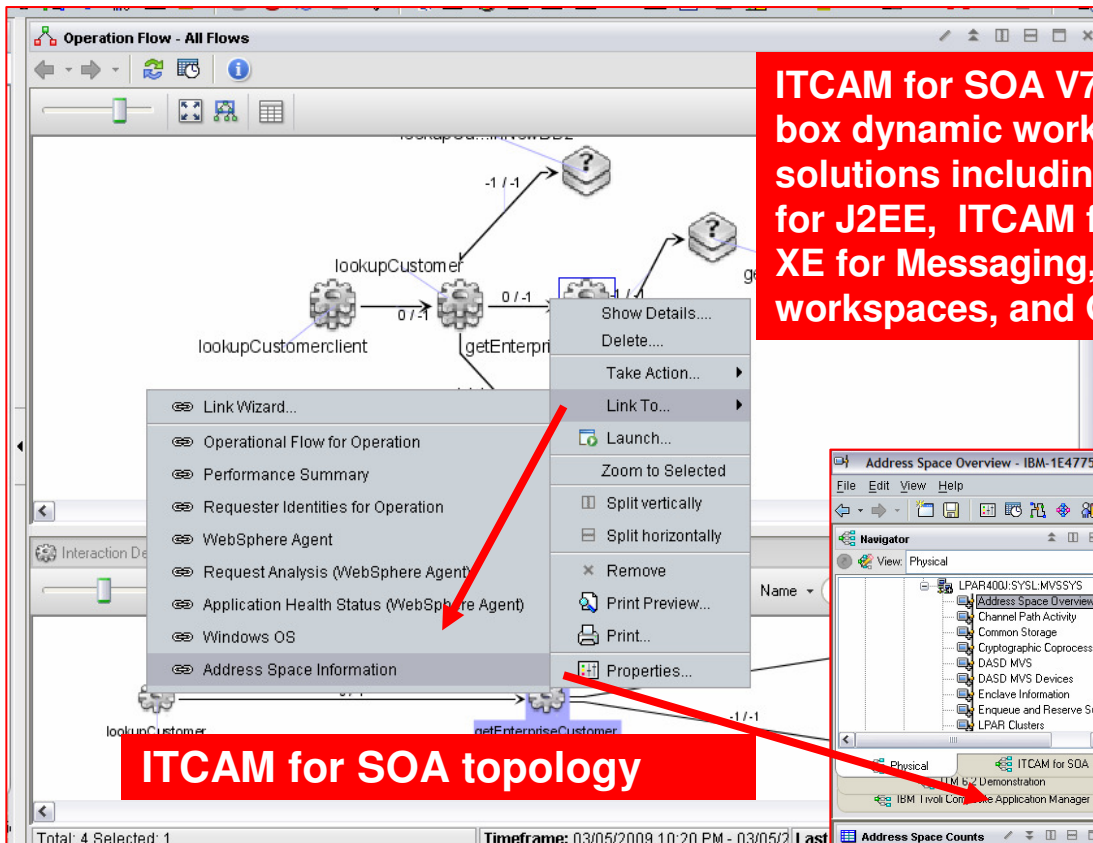
**ITCAM for SOA topology**

**ITCAM for SOA performance summary information**

**See service name, service type, port and response time detail**

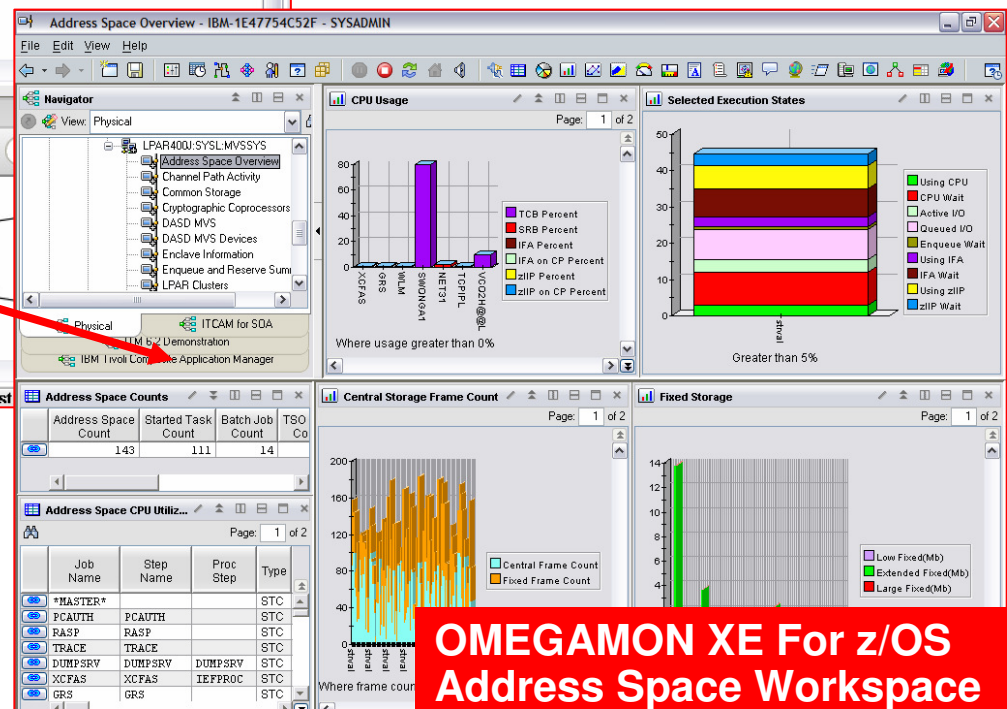
Service Type	Service Port Name (Unicode)	Service Port Name Type	Service Port Namespace (Unicode)	Operation Name (Unicode)
Requester	Catalog	WSDL_Port_Name	http://catalog.trinkets.com	order
Provider	Catalog	WSDL_Port_Name	http://catalog.trinkets.com	order
Requester	Delivery	WSDL_Port_Name	http://catalog.trinkets.com	order
Provider	Delivery	WSDL_Port_Name	http://catalog.trinkets.com	order
Requester	EnterpriseCustomer	WSDL_Port_Name	http://catalog.trinkets.com	order
Provider	EnterpriseCustomer	WSDL_Port_Name	http://catalog.trinkets.com	order
Requester	EnterpriseCustomerDB	WSDL_Port_Name	http://catalog.trinkets.com	order
Provider	EnterpriseCustomerDB	WSDL_Port_Name	http://catalog.trinkets.com	order
Requester	EnterpriseCustomerWarrantDB	WSDL_Port_Name	http://catalog.trinkets.com	order
Provider	EnterpriseCustomerWarrantDB	WSDL_Port_Name	http://catalog.trinkets.com	order

# Use Dynamic Workspace Links To Drill Down To Detail



ITCAM for SOA V7.1 provides a number of out of the box dynamic workspace links to various monitoring solutions including: ITCAM for WebSphere, ITCAM for J2EE, ITCAM for Web Resources, OMEGAMON XE for Messaging, various Tivoli Monitoring OS agent workspaces, and OMEGAMON XE for z/OS.

**ITCAM for SOA topology**



**OMEGAMON XE For z/OS Address Space Workspace**

# Dynamic Workspace Links To Drill Down From OMEGAMON XE For CICS TG To OMEGAMON XE For CICS

**OMEGAMON XE For CICS Transaction Gateway**

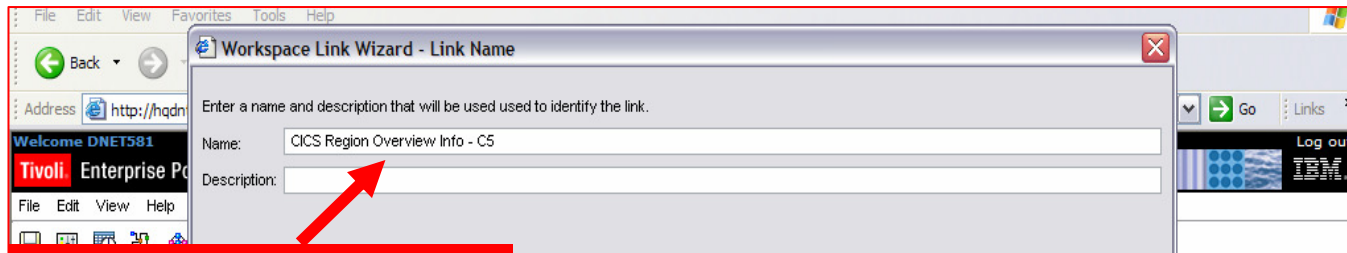
**Drill down**

**OMEGAMON XE For CICS Transaction Analysis workspace**

**Transaction Analysis - IBM-1E47754C52F - SYSADMIN**

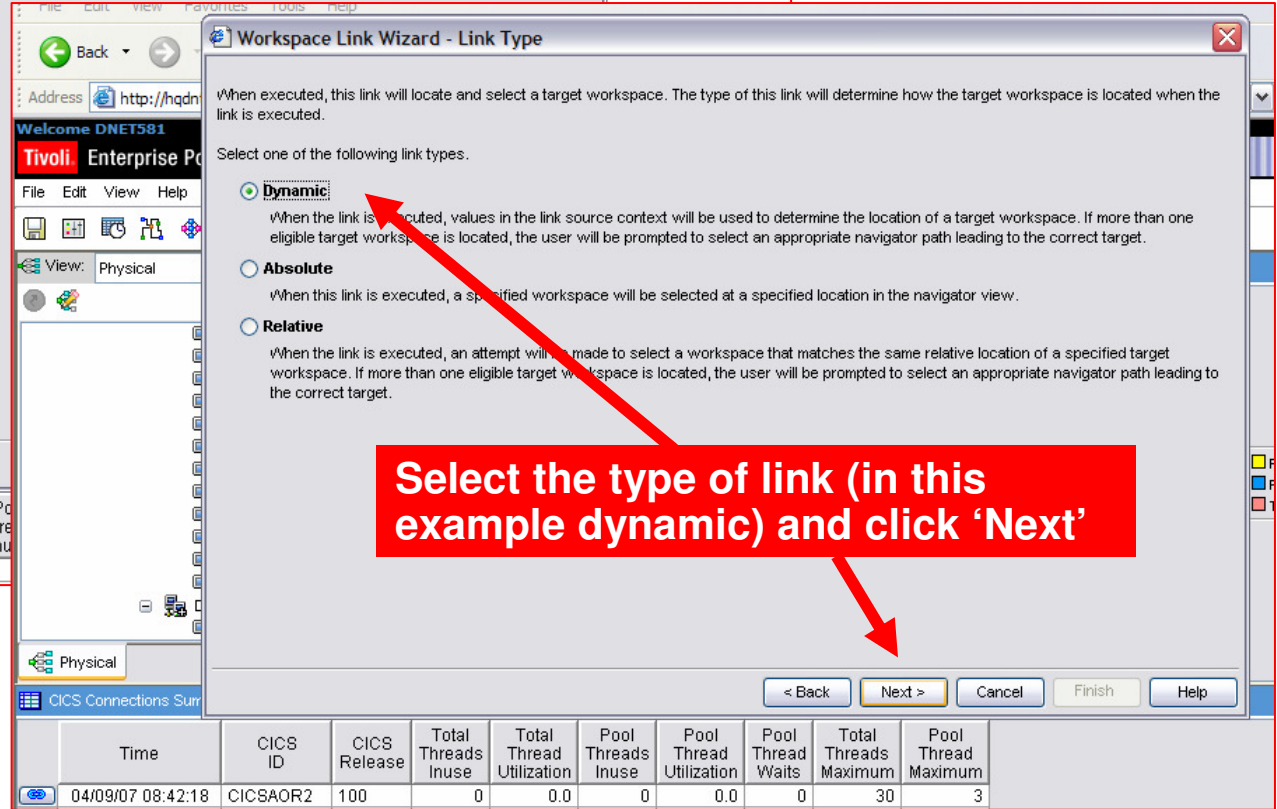
System ID	CICS Region Name	CICS SYSIDNT	Transaction ID	User ID	Terminal ID	Task Number	Resource Type	Resource Name	Task State	Elapsed Time	CPU Time	Program ID
SYSL	CICSL153	L153	CIRP	CICSUSER	n/a	00193	AVA J	8003 R	unning	85 Days	133 Days	DFJIIRP
SYSL	CICSL153	L153	CIRR	CICSUSER	n/a	00192	OCBNOTII	IRR S	uspend	00:00:00.26	133 Days	DFHIIRRS
SYSL	CICSL153	L153	CECI	CICSUSER	M509	00186	NQUEUE D	SDB S	uspend	00:00:02.8	133 Days	DFHECIP
SYSL	CICSL153	L153	CEDF	CICSUSER	0171	00185	CIOWAITD	FHZARG1S	uspend	00:00:02.97	133 Days	DFHEDFP
SYSL	CICSL153	L153	DSDB									FJ\$SDB
SYSL	CICSL153	L153	WD80									KDL8D0
SYSL	CICSL153	L153	CKTI									SQCTASK
SYSL	CICSL153	L153	CKAM									SQCAMOI
SYSL	CICSL153	L153	CJMJ									FHSJML
SYSL	CICSL153	L153	OBEC									OC8R2ZZ

# Flexibility Of Monitoring And Navigation Is Supported With Dynamic Workspace Links



**The link wizard supports the creation of user defined links for drill down analysis**

Time	CICS ID	CICS Release	Total Threads Inuse	Total Thread Utilization	Pool Threads Inuse
04/09/07 08:42:18	CICSAOR2	100	0	0.0	



**Select the type of link (in this example dynamic) and click 'Next'**

Time	CICS ID	CICS Release	Total Threads Inuse	Total Thread Utilization	Pool Threads Inuse	Pool Thread Utilization	Pool Thread Waits	Total Threads Maximum	Pool Thread Maximum
04/09/07 08:42:18	CICSAOR2	100	0	0.0	0	0.0	0	30	3

# Use The Link Wizard To Define New Dynamic Workspace Links – Customizable Drill Down Navigation To z/OS Detail

**Workspace Link Wizard - Target Filters**

In order to dynamically determine a target path at link-time, sufficient target filters must be configured. Target filters are configured by assigning them source context expressions. Assigned expressions will be evaluated against the target filter.

**Filter**

Managed system name	
Hostname	
IP address	
SMFID	

**Pass managed system name (example – MVSID.CICSREGION) or SMFID to drive drill down**

**Symbols**

- Values
  - Link
  - Selected Row
  - Attributes
    - CICS ID
    - CICS Release
    - Orignnode
    - Pool Thread Maximum
    - Pool Thread Utilization
    - Pool Thread Waits
    - Pool Threads Inuse
    - Time
    - Total Thread Utilization
    - Total Threads Inuse
    - Total Threads Maximum
  - Id
  - Name
  - Type
- Table - CICS Connections Summary
- Query - CICS Connections

**Click 'Symbol' to specify what information to pass**

**Expression Editor - Managed system name**

```
$NODE:-1022$+'.'+$kfw.TableRow:ATTRIBUTE.DP_CI_EXCS.CI_CICSID$
```

**In this example this will create a managed system name for the CICS region drill down**

**Example - MVSA.CICSAOR1**

Buttons: Symbol..., Operator..., Function..., Clear, Evaluate, OK, Cancel, Help

**Click 'Evaluate' to see what gets generated**

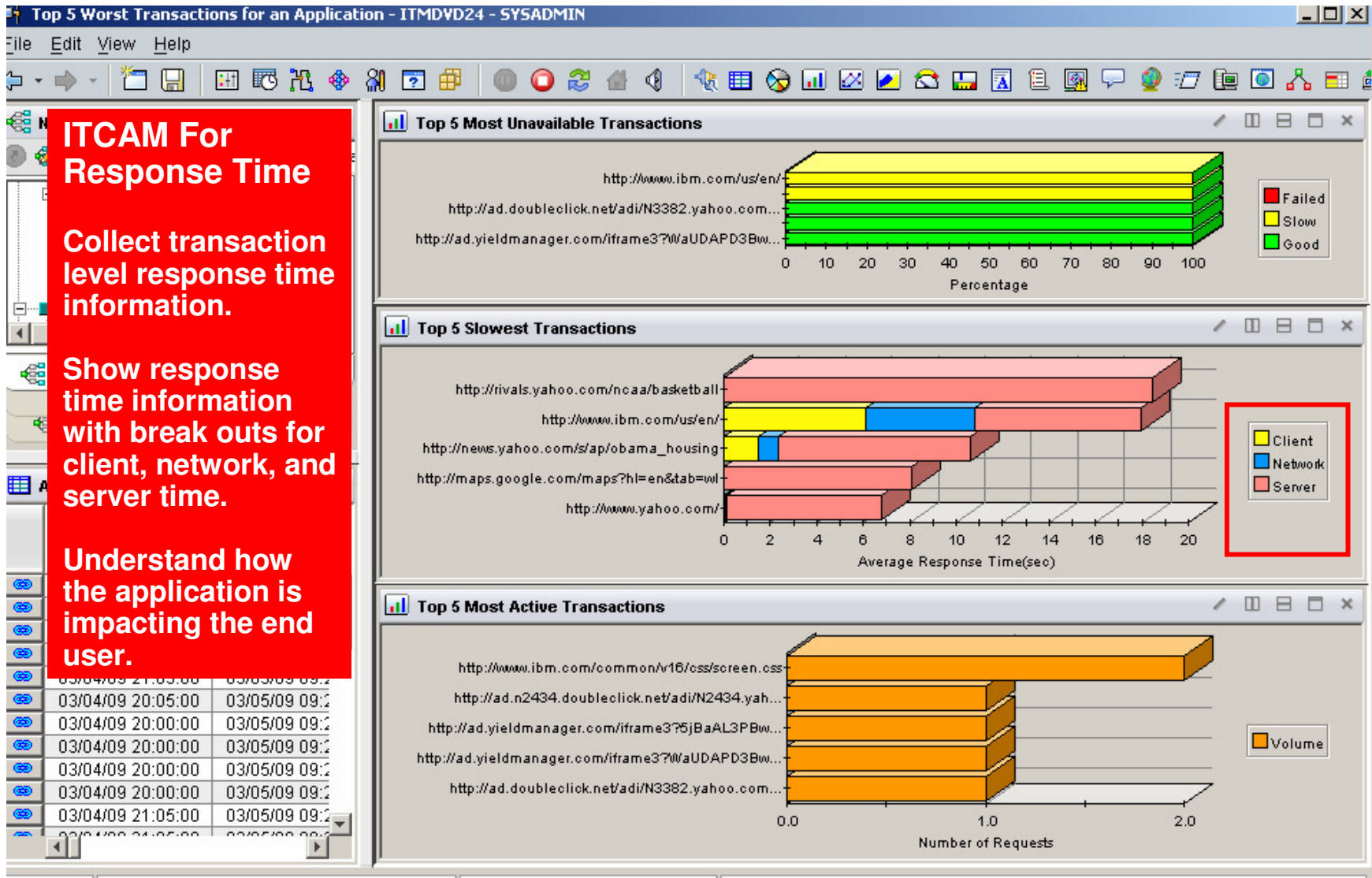
**Click 'Next' when done**

workspace

Buttons: < Back, Next >, Cancel, Finish, Help

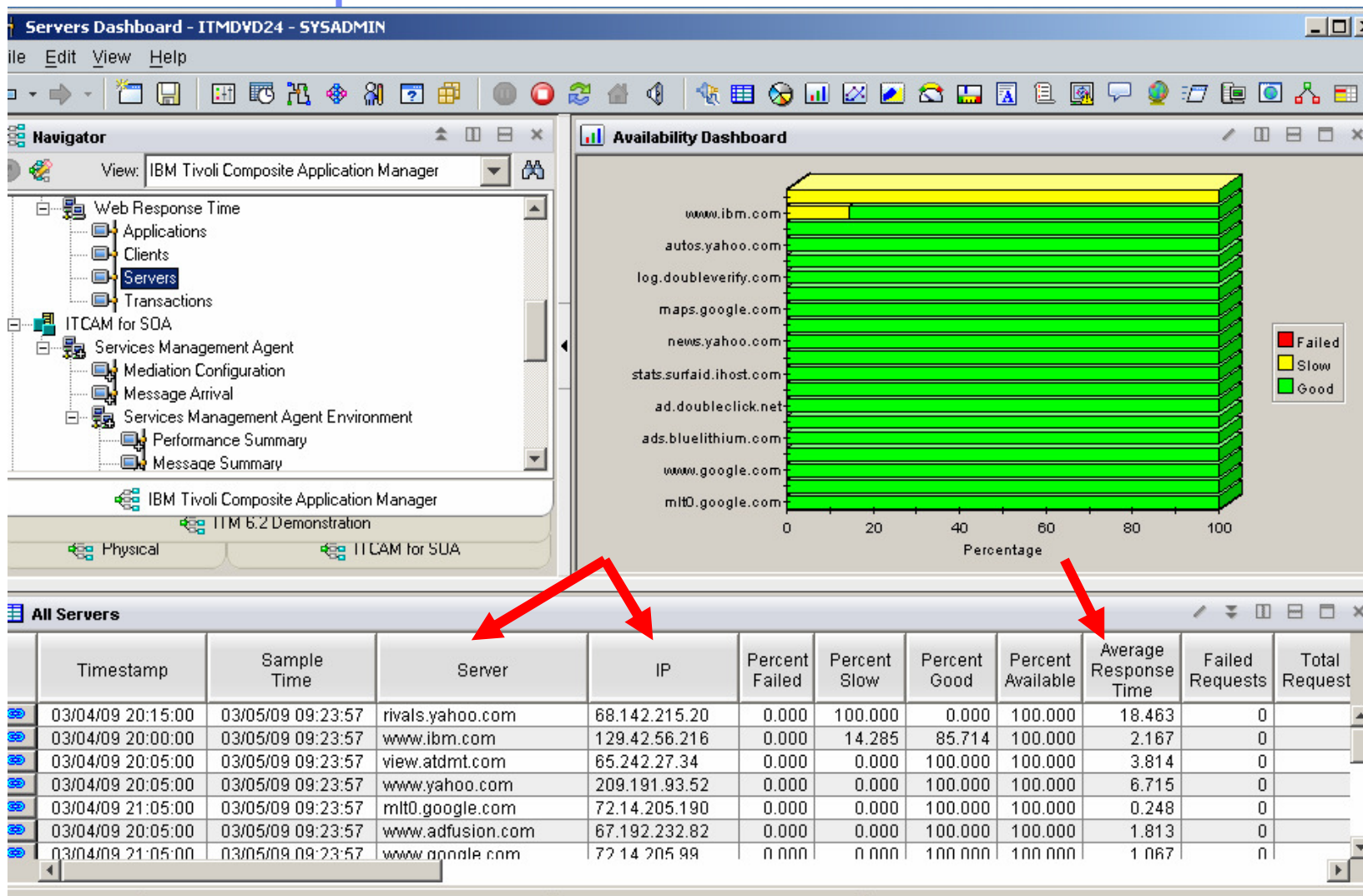
Pool Threads Inuse	Pool Thread Utilization	Pool Thread Waits	Total Threads Maximum	Pool Thread Maximum
0	0.0	0	20	2

# Including End User Response Time





# Collect Response Time Data From The Server Perspective

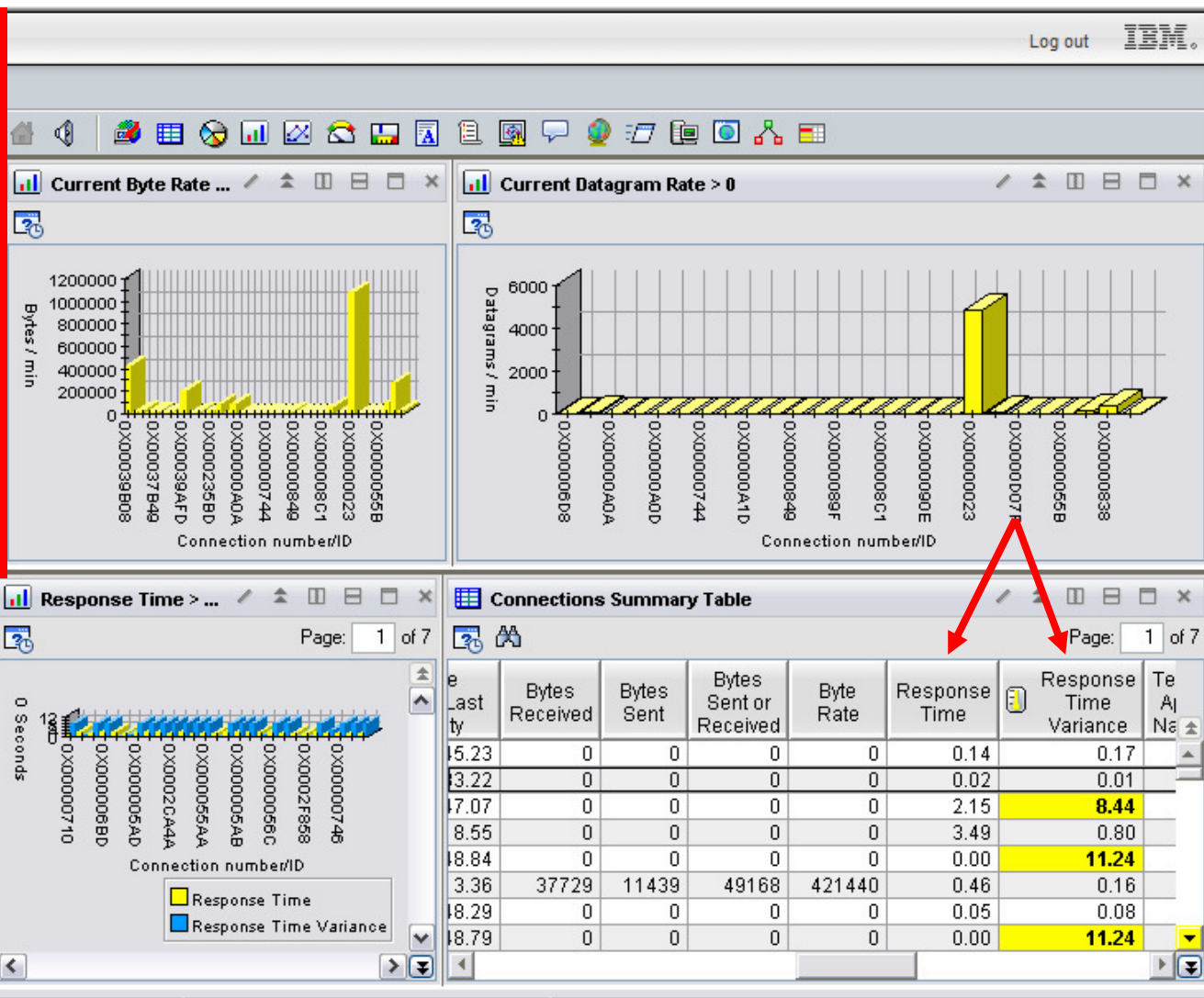


# The Importance Of Network Performance To SOA

Monitor network connections to z/OS and performance

Monitor network response time and response time variance

Monitor for common network issues (retransmission, fragmentation, other issues)



# Use OMEGAMON Situation Alerts In The Integrated Technical View To Highlight Issues

**OMEGAMON has detected an issue with a DB2 thread**

**Situation alerts may be used by any of the OMEGAMON XE or IBM Tivoli Monitoring solutions to highlight performance and/or availability alerts**

**CRITICAL**  
 Dist\_DB2\_Net\_Alert TCPIPL:SYSL 04/01/08 10:10:40

KPWMTM1011 Select workspace link button to view situation event results.

**To see detail on the DB2 alert click on the link symbol**

**Critical Applications**

Transmit Byte Rate	Receive Byte Rate	Byte Rate
~11	~11	~11

**CICS Response Time**

CICS Region Name	Group Name	Response Time
		0:00:00
		0:00:00
		0:00:00

**IMS Response Time**

IMSID	Item Name	Item Type	Input Queue Time (Secs.)	Program Queue (Sec)
I91F	PARTL	PSB	0.0000	

**DB2 Distributed Performance**

Originnode	SQL Calls Sent	SQL Calls Received	Data Rows Sent
D81L:SYSL:DB2	4	4	105

# Situation Detail Drill Down Detail To Analyze Problems

Welcome DNET581 Log out

**Tivoli Enterprise Portal**

File Edit View Help

View: Physical

DB2

- DB1S: MVSA: DB2
- DB2S: MVSA: DB2
- DSNA: MVSA: DB2
  - Thread Activity
  - System Status
  - Detailed Thread Exception
    - EW\_Thread\_Alert**
    - Lock Conflicts
  - Utility Jobs
  - EDM Pool
  - Buffer Pool Management

**What is the problem?**

**Initial Situation Values**

Getpage Count	Originnode	Name	Time	Plan Name	Correlation Identifier	Connection Identifier	DB2ID	MVS System	Int Ti
6705	DSNA: MVSA: DB2		07/02/07 08:36:37	DISTSERV	javaw.exe	SERVER	DSNA	MVSA	00
2040	DSNA: MVSA: DB2		07/02/07 08:36:37	DSNJDBC	BBOS001S	RRSAF	DSNA	MVSA	00

**What are the details?**

**Current Situation Values**

Getpage Count	Originnode	Name	Time	Plan Name	Correlation Identifier	Connection Identifier	DB2ID	MVS System	Int Ti
6705	DSNA: MVSA: DB2		07/02/07 08:37:11	DISTSERV	javaw.exe	SERVER	DSNA	MVSA	00
2040	DSNA: MVSA: DB2		07/02/07 08:37:11	DSNJDBC	BBOS001S	RRSAF	DSNA	MVSA	00

**Take Action**

Action

Name: <Select Action>

Command: <Select Action>

- Kill Thread
- Message to console

Arguments...

**Any Predefined Actions?**

The expert advice is customizable. If the thread exceeds the getpage count, call Ed Woods at 1-888-888-8888

**Any expert advice?**

Expert Advice

# Situation Examples

## Use OMEGAMON XE For DB2 To Track Problem DB2 Threads

**Using boolean logic allows the alert to be application sensitive**

**A single situation can handle multiple application plans/packages if needed**

**Add additional attributes to the logic**

	Getpage Count	Plan Name	Authorization Identifier	DB2 Elapsed Time
1	> 200000	== 'DSNJDBC'	== PRODUSER	> 00:16:40.0
2				
3				

# Use OMEGAMON XE For Mainframe Networks To Alert On DB2 Distributed Network Issues

**Boolean logic capability of the situation editor allows for detailed and targeted alerts**

**DB2 DDF task**

	Application Name	Percent Segments Retransmitted	Response Time Variance	Datagram Rate
1	== D91LDIST		>= 2.00	
2	== D91LDIST	>= 1		
3	== D91LDIST			> 1000

**And/or Alert criteria**

**Alert when the DB2 DDF task is having issues such as segment retransmission, high response variance, or high transmission rate**

Response Time Variance: The number of times the response time exceeded the specified value since the connection was established. The response time is the time taken to receive a response from the remote system.

Segments Retransmitted: The number of segments retransmitted over this connection during the most recent time interval.

Sampling interval: 0 / 0 : 15 : 0 (ddd hh mm ss)

Run at startup

# IMS Alert Example - Use OMEGAMON XE For IMS To Monitor IMS Transaction Response Time And Queuing

**Monitor the queuing and status of the PART transaction.**  
**If PART is queued or the Queue depth is beyond a certain level generate an alert**

	Status	Messages Enqueued	Transaction Name
1	== 'Queued'		== PART
2	== 'Queuing'		== PART
3		> 0	== 'PART'
4			

Situation Formula Capacity: 30%

Sampling interval: 0 / 0 : 1 : 0 (ddd hh mm ss)

Sound:  Enable critical.wav

State:  Critical

Run at startup:

# CICS Performance Example

## Use Situations To Monitor CICS Response Time

**Using boolean logic allows the alert to be application sensitive. This assumes that the global macro is customized to make meaningful RTA groups.**

**A single situation can handle multiple application groups, if needed.**

	Group Name	Response Time
1	== DEMO	> 00:00:00.1
2	== DBCTL	> 00:00:00.2
3		

**Note – this is the RTA group name**

**Consider using the persistence option to filter out outliers**

Situation Formula Capacity: 26%

State: **Critical**

Run at startup:



# OMEGAMON XE For z/OS Resource Utilization Alert

## Alert When zIIP Utilization Is High For zIIP Dependent Workload

**In this example the situation will fire if zIIP utilization is high for the given workload (in this case DB2 DDF) or if a high percentage of work is spilling over to general CPUs.**

**Use wild card functions to track key tasks**

	Job Name	IFA Percent	IFA on CP Percent
1	== DDF	> 80.0	> 40.0
2	== DDF		> 60.0
3			

**Advanced Situation Options**

Situation Persistence:  Display Item

Situation Persistence

Consecutive true samples: 3

**Consider using the persistence option to filter out outliers**

Formula Capacity: 32%

Sound:  Enable critical.wav

State: **Critical**

Run at startup

# Situation Alerts May Appear In The ITCAM Topology View

The screenshot displays the ITCAM Instance View for an interaction named 'lookupCustomer'. The main area shows a topology diagram with a gear icon representing an operation labeled 'getFromCICSService @rohit'. A red arrow points from this operation to the right-hand details panel.

The details panel contains the following information:

- Instance Information:**
  - Type: Operation
  - Instance: lookupCustomer
  - Operation Namespace: http://lc.retail.samples.wsm.ibm.com
  - Service Port: MessagingMonitor
  - Service Port Namespace: /MessagingMonitor
  - Mediation Type: Message Broker Mediation
  - Port Type: Message\_Flow\_For\_SOAP
  - Application Server: CICSHOST
  - Application Server Environment: WebSphere\_Message\_Broker
  - Computer System: rohit
  - Computer System Address: 9.27.131.125
  - Node Name: BK1
- Alerts:**
  - Critical** MessageBrokerLowUsage D4:5b5452df:rohit-CICSHOST 05/09/08 14:25:57

At the bottom of the window, the status bar shows 'Status Current as of 05/12/2008 11:52 AM' and 'Hub Time: Mon, 05/12/2008 11:53 AM'. A red arrow points from the 'Server Available' indicator to the alert panel.

## The Importance Of History In SOA Application Monitoring

- Relevant history may take several different forms
- History of application performance and availability
  - Trend application performance over time
- History of key resource performance and availability
  - Track and trend over time
- History of events and problems
  - Trend events and issue frequency over time
- Trending of resource utilization over time
- After the fact problem isolation
  - Drill down for detail
  - Correlate history for problem analysis
- Use Tivoli Data Warehouse to track key performance information metrics

# Tivoli Data Warehouse History Collection Control

**Select desired group of information, collection interval, and destination**

Group	Collection	Collection Interval	Collection Location	Warehouse Interval	Summarize Yearly	Prune Yearly	Summ Quar
DB2_SRM_Log_Manager							
DB2_SRM_Log_Statistics							
DB2_SRM_Subsystem	Started	15 minutes	TEMA	Off			
DB2_SRM_Subsystem_Statistics	Started	15 minutes	TEMA	1 day			
DB2_SRM_UTL							
DB2_System_States	Started	15 minutes	TEMA	1 day			
DB2_Thread_Exceptions		15 minutes	TEMS	Off			
DB2_Volume_Activity		15 minutes	TEMA	1 day			
Group_Buffer_Pool_Connection							
GBP_Statistics							

**Collect at the TEMA or the TEMS**

**To warehouse or not to warehouse**

**Hourly, Daily, or not at all**

**Specify summarization and pruning along with collection interval**

**Use the Tivoli Data Warehouse to collect key performance metrics**

# Use Tivoli Data Warehouse For Trend Analysis

**Click and drag plot chart icon to plot history data over time**

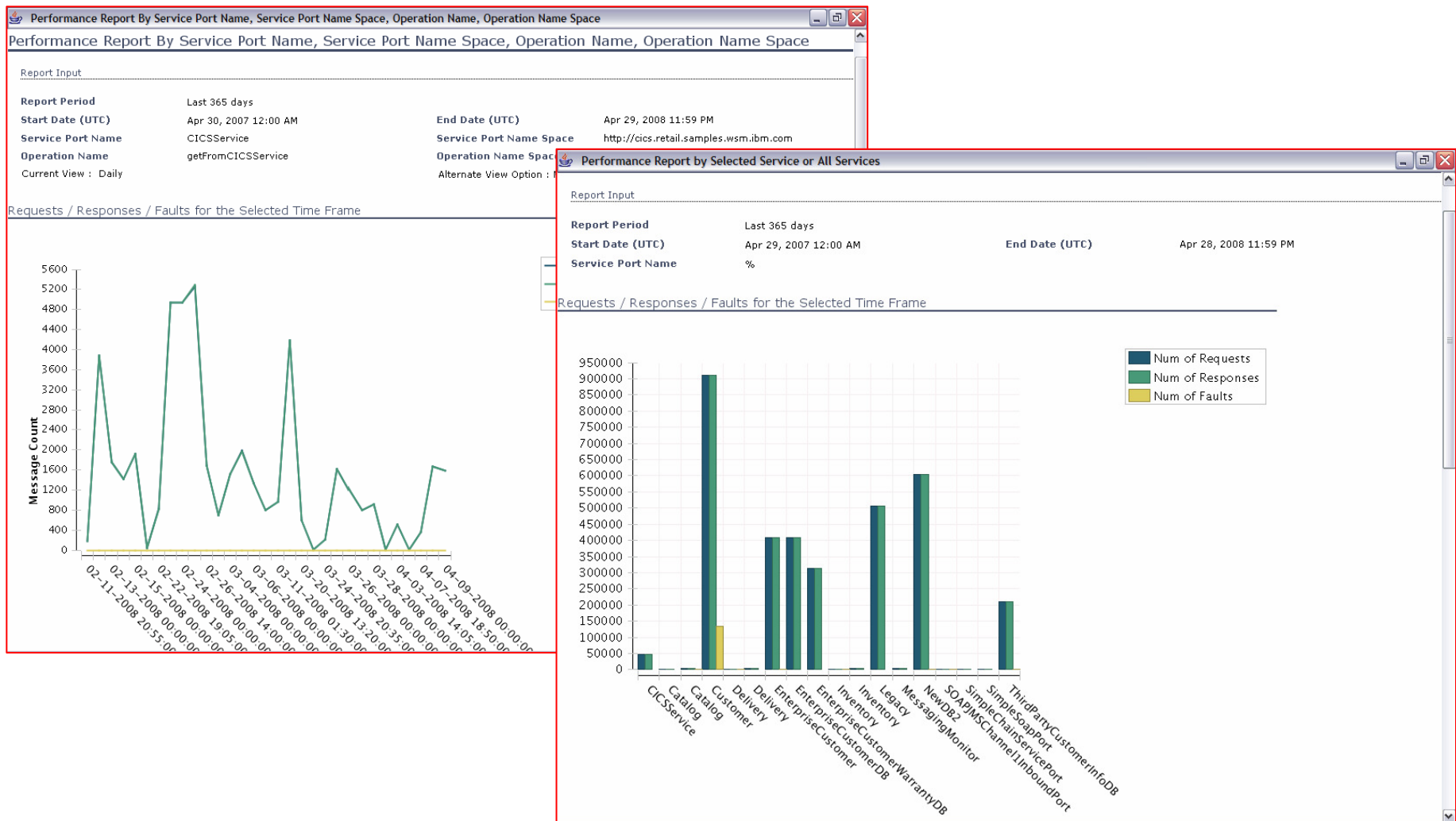
Time	Applications Scheduled	Transactions Queued
04/26/07 13:00:00	7	0
04/26/07 14:00:00	7	0
04/26/07 15:00:00	15	0
04/26/07 16:00:00	15	0
04/26/07 17:00:00	15	0
04/26/07 18:00:00	15	0
04/26/07 19:00:00	15	0
04/26/07 20:00:00	15	0
04/26/07 21:00:00	15	0
04/26/07 22:00:00	15	0
04/26/07 23:00:00	15	0
04/27/07 00:00:00	15	0
04/27/07 01:00:00	15	0
04/27/07 02:00:00	15	0
04/27/07 03:00:00	15	0
04/27/07 04:00:00	15	0
04/27/07 05:00:00	15	0
04/27/07 06:00:00	15	0
04/27/07 07:00:00	15	0
04/27/07 08:00:00	15	0
04/27/07 09:00:00	15	0
04/27/07 10:00:00	15	0
04/27/07 11:00:00	15	0
04/27/07 12:00:00	15	0

# Tivoli Common Reporting

- **Tivoli Common Reporting (TCR) provides:**
  - Installable package
  - Import / export of reports
  - Report management and categorization
  - Report snapshot generation
  - Search functionality
  - Data source modification
  
- **Interaction with TCR can occur via browser using the web application or through the command line interface (CLI)**

*Tivoli Common  
Reporting Web Site  
On IBM  
DeveloperWorks  
[http://www.ibm.com/  
developerworks/spa  
ces/tcr](http://www.ibm.com/developerworks/spaces/tcr)*

# Example SOA Reports Available With Tivoli Common Reporter



## Developing An SOA Monitoring Strategy Final Recommendations

- **If you don't measure it, you can't manage it**
  - Ongoing measurement of application activity and performance is key to success
- **Select and publish ongoing performance metrics**
  - Track and trend KPIs
- **Many issues are anecdotal – gather measurement data**
  - Measurement data quantifies the nature and severity of issues
  - Measuring and tracking response time is important
    - End user response time
    - Response time of services and business processes
- **Establish performance base lines**
  - Snapshot real time data
  - Use history data on an ongoing basis
- **Build business application views for key components**
  - The value of SOA is a business process as well as technical



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