System z integrated performance monitoring

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OMEGAMON Performance Management for System z

- **Why integrated performance management matters**

- **OMEGAMON v420 release highlights**

  – Faster problem isolation

  – Performance Automation & Integration

  – Lower cost of ownership

A recent survey by Gartner confirms the top business priorities for CEOs

Top 10 Business Priorities	Rank
Business process improvement	1
Reducing enterprise costs	2
Improving enterprise workforce effectiveness	3
Attracting and retaining new customers	4
Increasing the use of information/analytics	5
Creating new products or services (innovation)	6
Targeting customers and markets more effectively	7
Managing change initiatives	8
Expanding current customer relationships	9
Expanding into new markets and geographies	10

IBM Tivoli investments in portfolio integration are a direct response to many of these priorities

Tivoli Offers a Complete Range of System z Performance Management

OMEGAMON Extended Edition (XE) and

Composite Application Manager Families
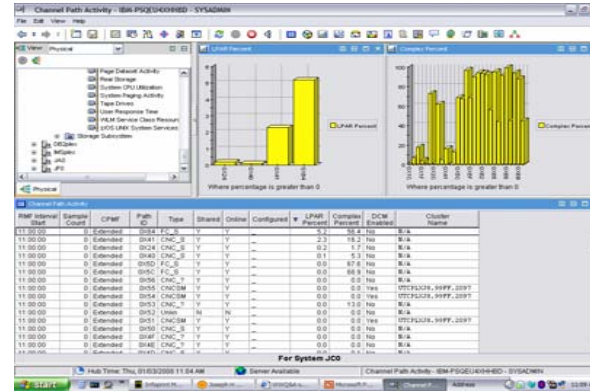
z/OS

z/VM & Linux
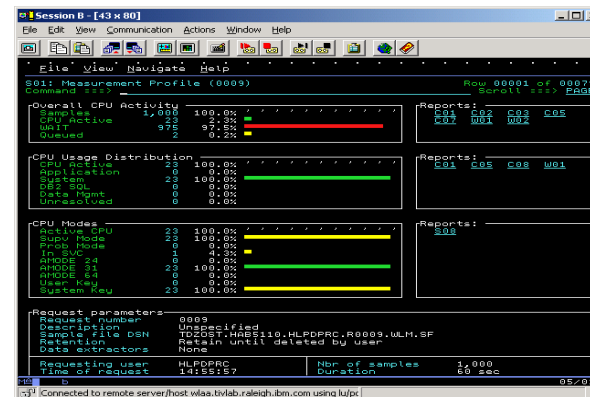
Mainframe Networks

Storage

IMS

CICS

DB2

MQ

WebSphere

Transactions

Launch in context

… **with graphical interfaces to integrate a broad range of IT information for increased awareness**

and provide a fast path back to the SMEs 3270 for deeper introspection and diagnosis.

OMEGAMON v420 Release Highlights

- **Isolate performance problems from a business service view across distributed and mainframe resources.**

- **Enable z monitoring and integrate users and actions across the IT staff for improved workforce effectiveness focused on the business and customer service.**

- **Isolate problems faster by integrating with many z platforms and subsystems to minimize system downtime.**

- **Lower cost of ownership by integrating people and automating process.**

Customer Pain – Sensing and Isolating a Problem Today

Response time is terrible; more than one minute.
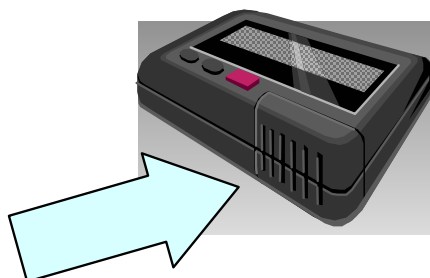
Customers are saying things are running slow

Check all resources

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

Everything looks normal … but performance is still bad

Bridge Call with Tiger Team

Locate Source of Problem … maybe …

- Finger-pointing: "It's the network guy's fault"
- Recreating the problem is difficult
- Isolating the 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 / hr	$10,000
SLA penalties / hr	$5,000
Hours downtime / yr	96
Total indirect costs	$1,440,000

Total costs of poor problem isolation capability

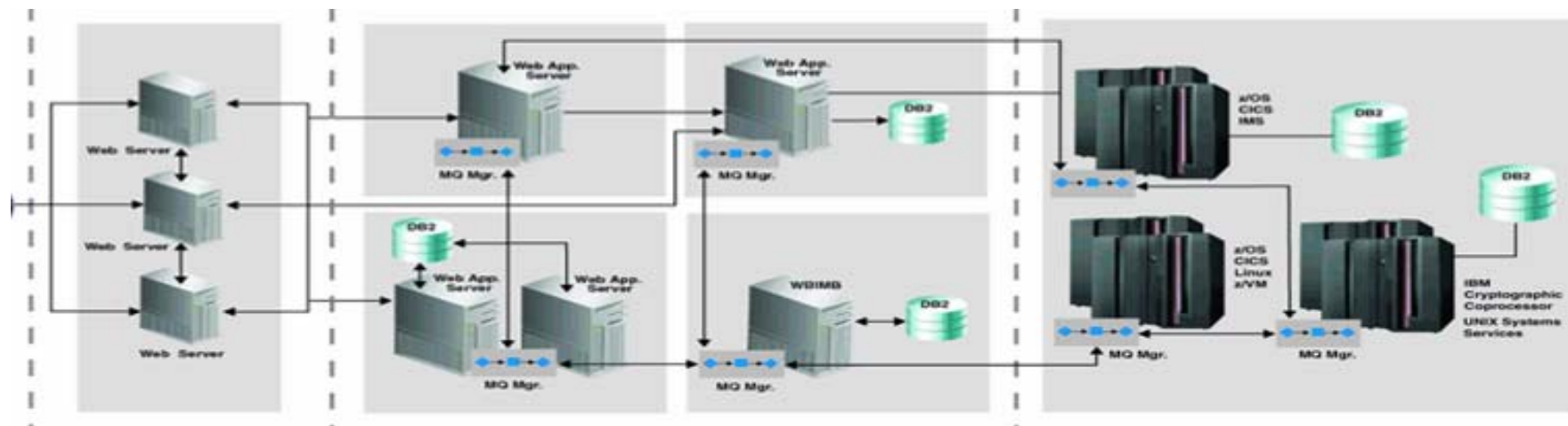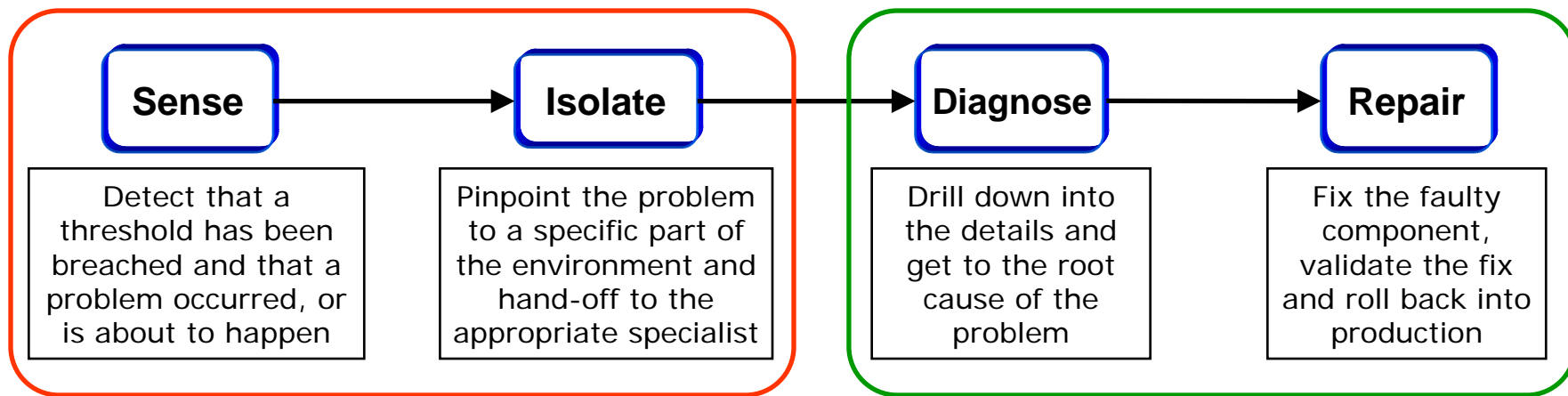|	
Total lost / yr	**$1,548,000**

Every customer case will be different …

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

Capable to establish a Workflow process for response time management focused on customer service.

| **Sense**	**Isolate**	**Diagnose**	**Repair**
Detect that a threshold has been breached and that a problem occurred, or is about to happen	Pinpoint the problem to a specific part of the environment and hand-off to the appropriate specialist	Drill down into the details and get to the root cause of the problem	Fix the faulty component, validate the fix and roll back into production

integrating staff

integrating tools

A Help Desk or Customer Service UI that can quickly sense where a Response Time concern has been reported.

Green arrow indicates start node
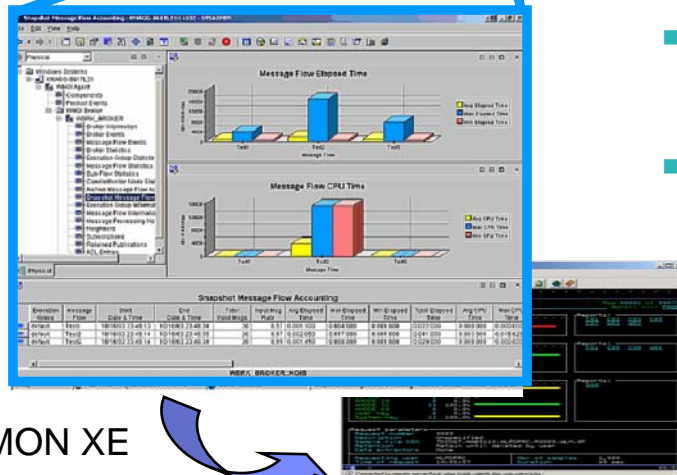
Red "hot spot" indicates bottleneck
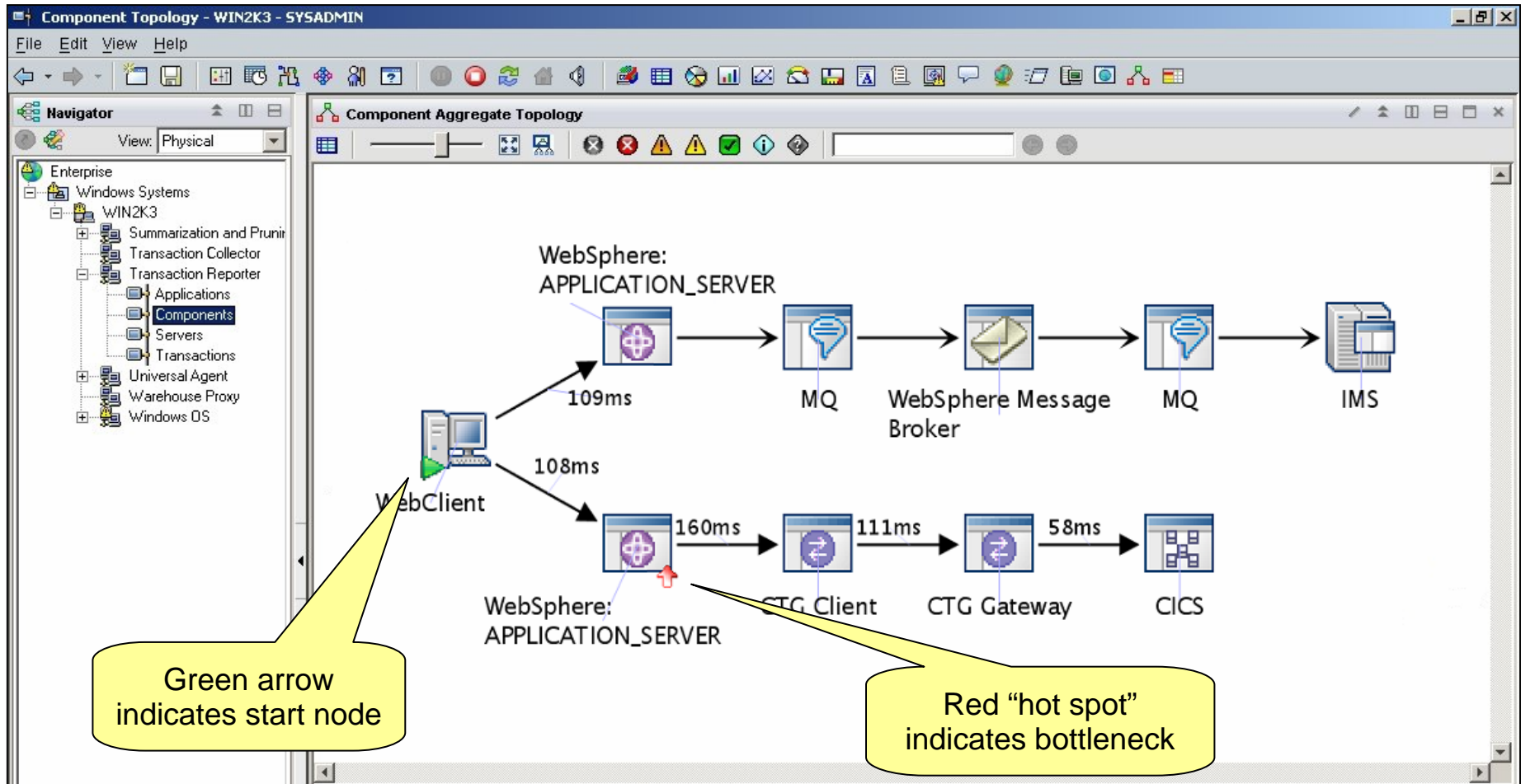
Sense   Isolate

Passing the problem to a performance analyst as part of the integrated UI and tool workflow process

ITCAM for Transactions

OMEGAMON XE

Deep-dive drill down

- So a Customer Service Rep using the Tivoli Enterprise Portal can see a RTM concerns and from the problem domain, open up a ticket and pass the problem to the Performance Analyst.

- The Performance Analyst can also use the TEP workspace with the reported problem to launch to do a deep dive with OMEGAMON XE for IMS,CICS, Messaging, WAS

- Uses Dynamic Workspace Links to launch in context into appropriate SME tool.

- So the Drill Down can do further Diagnosis and Isolation of the problem:
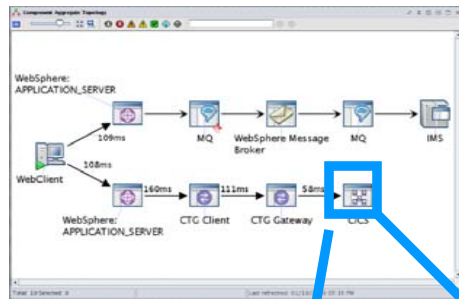
  from the ITCAM for Transactions domain -> to OMEGAMON XE
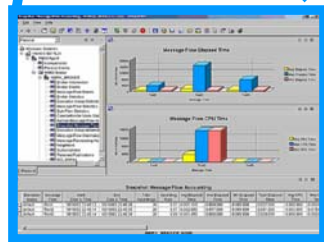
Isolate **Diagnose**

Passing the problem to an SME /AD as part of the integrated UI and tool workflow process

- after isolating the problem, the SME can use their integrated tools to use fix and repairs the problem with the Explorer integrated tools.. in this case using CICS Explorer and CICS performance analyzer

ITCAM for Transactions

Configuration Manager   Interdependency Analyzer   Performance Analyzer

CICS Explorer

Isolate - Repair
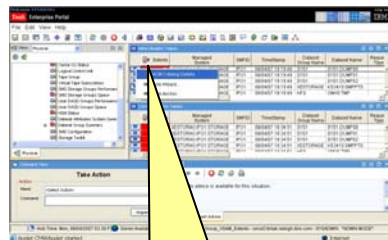
OMEGAMON XE

Repair

more details at z/Advisor

http://www-01.ibm.com/software/tivoli/systemz-advisor/2009-11/omegamon-xe-for-cics.html

A workflow process for zStorage problem monitoring diagnose/repair to bridge problems – Synergy, Efficiency, and cost reduction!

Sense → **Isolate** → **Diagnose** → **Repair**

1 Operations detects a problem and opens a ticket for a catalog problem

2 The Storage Admin linked to the event isolates the problem as a catalog extent problem

3 The Storage Admin links to the Advanced Catalog Management Catalog Details workspace (using the catalog name as a link attribute) to determine if reorganization would be beneficial.

4 Viewing the Advanced Catalog Management Catalog Details workspace, the Storage Admin analyzes extent growth rate and notices that this catalog experienced rapid extent growth rate.
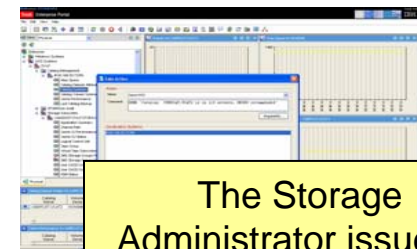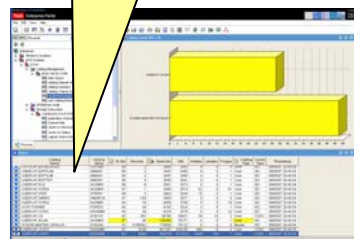
5 The Storage Administrator issues a WTO via the Take Action facility that will drive automation to run a job to reorganize.
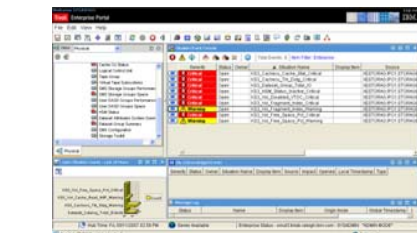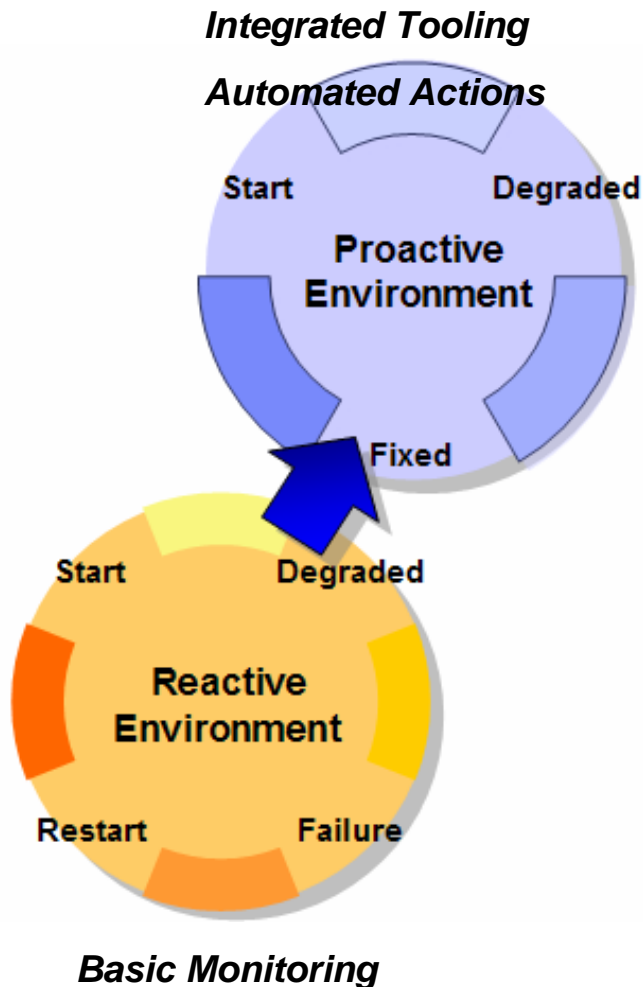
6 The System Programmer checks the outcome on OM for successful a out come.

An Integrated Single Point of Control using the Tivoli Enterprise Portal

Performance Automation Enables Policy-Driven Resolution of Common Problems

Integrated Tooling

Automated Actions

Start | Degraded

Proactive Environment

Fixed

Start | Degraded

Reactive Environment

Restart | Failure

Basic Monitoring

- **OMEGAMON XE**
  - Integrates with Tivoli System Automation and can provide help
  - Eliminate bottlenecks
  - Provision additional resources
  - Move workloads with Tivoli Workload Scheduler
  - Prepare for planned outages

- **OMEGAMON XE**
  - Integrates with OMNIbus and TBSM for centralization of enterprise events and performance notification of Business services
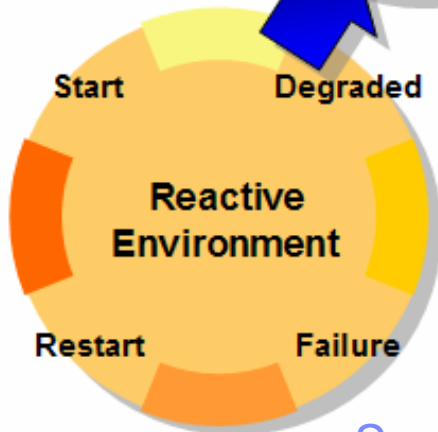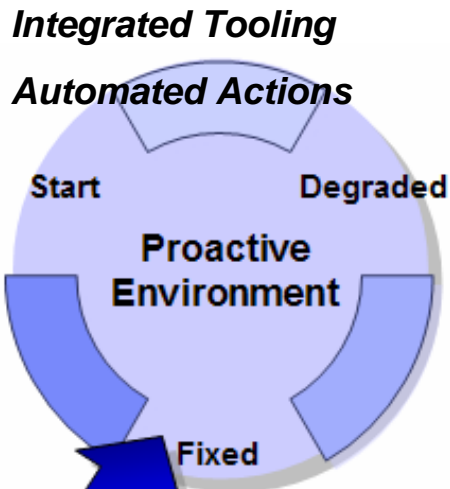
- **OMEGAMON XE**
  - Integrates with Tivoli NetView for z/OS for data center network availability and control of both SNA and IP resources

Setting up some basic performance monitoring for Automation Performance with situations

Integrated Tooling

Automated Actions

Basic Monitoring

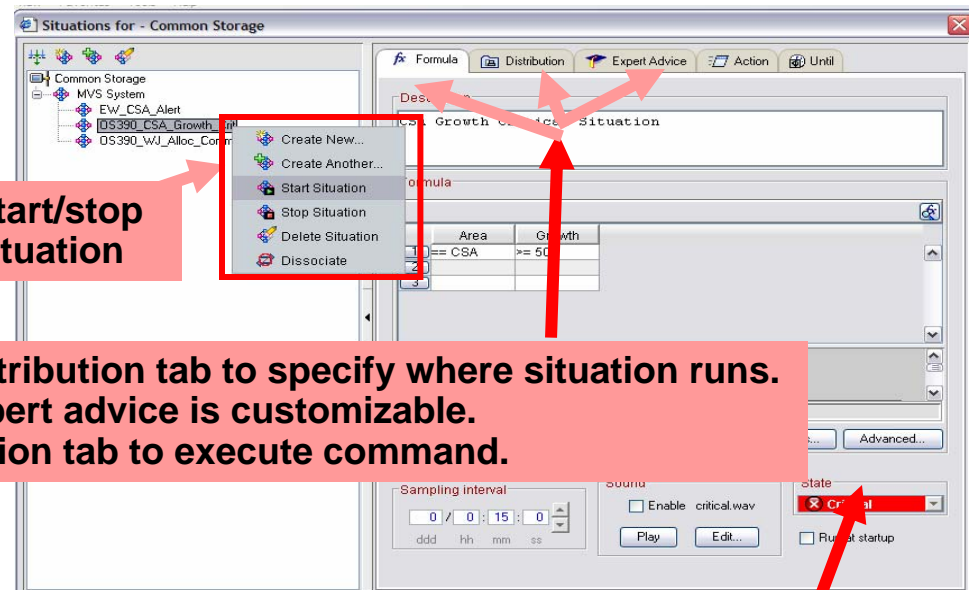***A Basic Example Situation Automation Alert On z/OS CSA Utilization Growth***

now for CSA, we have moved from reactive to proactive

Start/stop situation

**Distribution tab to specify where situation runs.
Expert advice is customizable.
Action tab to execute command.**

Sample situations are shipped with

every OMEGAMON product

Specify severity and whether to run at Omegamon startup

Automating an auxiliary Storage Shortage

Sarah defines Reflex Automation
for *Auxiliary Storage Shortage*
situation

1.

3.

SA adds another Page
Dataset in response to the
Auxiliary Storage Shortage
situation
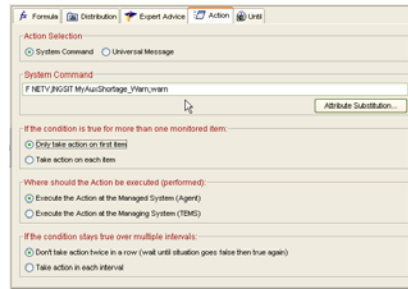
2. *Auxiliary Storage Shortage* situation
becomes true

6.
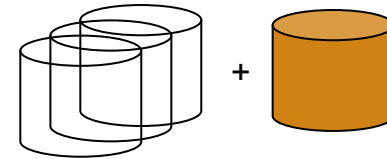
4.

SA acknowledges the
situation via SOAP
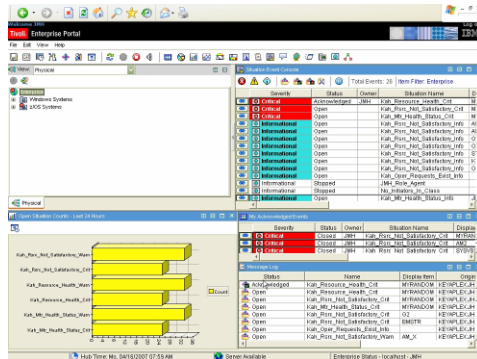
SA closes the situation via
SOAP if issue was resolved
or resurfaces the situation
again to ask for operator
intervention

5. SA monitors Auxiliary
Storage space for a while,
e.g. via SOAP or console
commands

Integrated Performance Driven Automation Improves
Staff Effectiveness and helps define a repeatable process

IBM Tivoli Business Service Manager

SA IOM

IBM TEC -or- OMNIBus

IBM Tivoli System Automation

IBM Tivoli NetView for z/OS

IBM Tivoli OMEGAMON Monitoring Family

z/OS   IMS   DB2   z/VM

Linux   CICS   WebSphere

- **Active or passive performance monitoring**
  - Managed by automation
  - Integrated with monitor products

- **Determine health state or exceeded tresholds**

- **Gather more information from other monitors**

- **Send a notification to default event receiver or specified owner of resource**
  - Status/Event console (System z or end-to-end)
  - Callout router (escalation process)
  - Email, SMS, pager

- **Start/stop/move resources (work around)**

- **Expert level: Cure performance problem by**
  - Using performance monitor, system or affected subsystem API

- **Advanced: Change WLM policy or LPAR weights**

Is there Value in this approach as an Integrated performance solution?

"*And if it weren't for OMXE/TEPS monitoring the zOS systems resources, these type of problems would have gone unnoticed in production centers. Everyone would be oblivious of any looping conditions and problems would likely to continue on for **years and years and not being discovered**. Clearly, the **OMXE/TEPS has demonstrated the added value many times over**. The value and benefits speak for itself and we got our money worth hundreds times over. Because of this proactive monitoring, **application quality no doubt has improved. Applications are now running more efficiently and effectively which in turn translates to hard dollars in CPU cycles, mips and resources savings**. This is not just one single case. Already, there are quite a few cases that OMXE/TEPS alerted the problems and Performance group diligently follow-up with the applications.*"

<div align="right">- North American Financial Institution - 2010</div>

Additional release highlights enable faster problem isolation, ultimately reducing MTTR

- **OMEGAMON XE on z/OS**
  - Uses a zIIP processor to offload some OMEGAMON data collection
  - Detect loopers wasting CPU
  - New USS and z/OS enhancements

- **OMEGAMON XE on z/VM and Linux**
  - z/VM and Linux usage of resources such as CPU utilization, storage, mini-disks and TCP/IP
  - Resource constraint analysis health workspace
  - Identify what has changed in your environment from a single point of control

- **OMEGAMON XE for Mainframe Networks**
  - Take Action in context menu items provided for Ping and Drop commands available from the TEP
  - Available from the Connections, TCP Connections, UDP Endpoints and TCP Listeners workspaces
  - monitoring of IPsec and SSL transmissions

- **OMEGAMON XE for Storage**
  - Major extensions to the online toolkit and batch
  - Support for DFSMSrmm
  - Dynamic Workspace Linking to IBM DFSMS family

Additional release highlights, continued…

- **OMEGAMON XE for CICS**

  - Now contains CICS Transaction Gateway support for both local and remote configurations

  - CICS TS 4.1 - Application Bundles, ATOM feeds,   Business Events, Resource Definitions, WMQ shared tasks

  - Plug in's for integration between the Tivoli Enterprise Portal and CICS Explorer GUIs.   More integration to CICS PA

- **OMEGAMON XE for Messaging**

  - Provide rapid concurrency of MQ functions - Publish and Subscribe messaging support , MQ and Message Broker monitoring integration

  - Virtualization with topology function

- **OMEGAMON XE for DB2 PE**

  - Improved installation and configuration for better TCO

  - Batch reporting enhancements for more statistics and accounting reporting

  - DB2 currency

- **OMEGAMON XE for IMS**

  - Rewritten Application Trace Facility with journaling facility

  - New Transaction Reporting Facility (Near-Term-History) with journaling facility

  - New response time and Lock information

Improving the cost of ownership

- Upgraded IBM Support Assistant (ISA) V4 plug-in

- Elimination of static linking to correlate ITM and OMEGAMON PTFs required in previous releases

- Implemented "Clone batch parameter members" function in batch processing to provide a more automated "quickstart" RTE generation for faster deployment

- Elimination of the need to recycle the HUB TEMS after seeding of product-provided situations

- Elimination of auto started product-provided situations

- Support for a High-Availability Hub TEMS

- Reduce the number of Runtime datasets

- Support for IPv6 for communications between ITM components and monitoring agents

- Support for correlation and forwarding of events (generated by situations) to OMNIbus and TEC.

year-end 2007

year-end 2008

year-end 2009

Key: System Prep Time; z/OS Installation Time; z/OS Configuration Time; ITM Installation Time; Maintenance Time 10 IBM Corporation

OMEGAMON Family products enable IT with a Business Process Approach that is more than just monitoring.

- **Can provide Process improvement**
  - by Maintaining staff productivity to protect service-levels
  - by Reducing the interfaces of problem solving (human & machine)

- **Can help Reduce costs**
  - Manage IT resources with a wide group of staff from a single point of control.
  - Integrates tooling in a solution for problem analysis

- **Improving workforce effectiveness**
  - Helps your highly-skilled System z specialists
  - reduces tiger team collaboration between different IT personas

- **Can Use information/analytics**
  - Can provide insight into complex performance problems
  - Shorten the cycle of fault isolation even in N+1

Top Differentiators - Only OMEGAMON Provides

Product	Differentiators	Business Value
Overall OMEGAMON Suite	•Fully integrated with correlation •Reduced Problem Source Identification •Automation capabilities without extra components	The OMEGAMON Suite reduces the cost of enterprise wide monitoring and management with a flexible, intuitive user interface that is useful for SMEs and Operations staff
OMEGAMON XE on z/OS ↓ Includes USS monitoring ↓ Includes Sysplex monitoring	•Bottleneck analysis shows what is causing response time issues •Impact analysis within the same product •Looping task identification using more metrics	OMEGAMON XE Provides fast Problem source Identification which reduces the time to find and repair issues proactively before they become failed customer interactions
OMEGAMON XE for CICS on z/OS	•Integrates with Workload Manager •Provides Response time at the application and transaction level •Provides Bottleneck analysis •Resource limiting allows you to terminate transactions automatically based on user defined resource consumption thresholds	OMEGAMON XE allows you to know response time at the line of business so you will be able to isolate your most critical business applications and proactively react to response and resources issues

Top Differentiators Continued

Product	Differentiators	Business Value
OMEGAMON XE for IMS on z/OS	• Bottleneck Analysis pinpoints address spaces competing for resources allowing realignment of priorities • Integration with ITCAM for Transactions offers IMS transaction analysis when transaction time is high	OMEGAMON XE provides faster problem isolation showing where slowdowns are occurring and providing the ability to proactively respond before there is an outage.
OMEGAMON XE for Mainframe Networks	• Provides IPSEC support • Tightly integrated with NetVIew • Is a single product for TCP/IP and SNA	The integration between network monitoring and management allows immediate action to be taken from the same user interface for network issues.
OMEGAMON XE for Messaging ⸹ Includes WBI monitoring ⸹ Includes Configuration	• Queue managers on System z and distributed in Same UI • Schedule queue configuration changes	The OMEGAMON XE for Messaging product can help simplify the monitoring, control and management of queues across the enterprise

Top Differentiators Continued

Product	Differentiators	Business Value
OMEGAMON XE on z/VM and Linux	•**Provides Linux network monitoring** •**Provides full z/VM monitoring** •**Provides Linux log analysis and alerting**	**Provides full analysis of z/VM and Linux systems, not just hypervisor stats, giving a full view into resource consumption. Also can monitor the logs so intelligent alerting based on messages can occur without extra products.**
OMEGAMON XE for Storage on z/OS	•**Provides cross-system utilization and contention statistics for true busy** •**Provides dataset level Access statistics by application**	**With a single storage product we can show true utilization across the system z environment and can monitor critical datasets in real time providing information at the business application level.**
OMEGAMON XE for DB2 PE/PM	•**Monitors DB2 connect** •**Has Day 1 support for new releases of DB2** •**Provides Enclave monitoring**	**OMEGAMON XE provides the ability to include diverse off-platform database monitoring through DB2 Connect providing the ability to see database issues before they affect business services**

Competitive Summary

- Only IBM provides an integrated end to end solution
- IBM develops its own MQ Monitor
- Only IBM provides Bottleneck and Impact analysis
- IBM has a robust integrated storage solution
- IBM has a consistent investment in Mainframe Software
- Only IBM can host all its Service Management from System z
- Only IBM can automate events without extra products
- Only IBM integrates Workload Automation, System Automation, System z Performance Monitoring and distributed monitoring in the same user interface
- Only IBM integrates with the z/OS workload manager at the CICS transaction level
- Only IBM can provide cross platform Application mapping with the ability to drill down into a specific problem area.

Bottom Line: IBM provides value across the board and helps you meet your service levels.

धन्यवाद
Hindi

多謝
Traditional Chinese

ขอบคุณ
Thai

Спасибо
Russian

Gracias
Spanish

Thank You
English

شكراً
Arabic

Obrigado
Brazilian Portuguese

Grazie
Italian

多谢
Simplified Chinese

Danke
German

Merci
French

நன்றி
Tamil

ありがとうございました
Japanese

감사합니다
Korean