Welcome to IBM Service Management Jams

- **Today's Jam, April 28, 2009**
  - **Improve Performance and Service Levels of Your IBM Maximo Environment with Tivoli Monitoring**
    - **Pradeep Nair, IBM Maximo Product Manager, Strategy and Planning**
    - **Adrian Mitu, Program Director, Service Availability and Performance Management**
    - **Colleen McCretton, IBM Maximo Product Designer and Architect**

- **IBM Service Management Jams program**
  - *View* live weekly webcasts for Tivoli customers, IBM Business Partners, IBMers and the business community
  - *Hear* about the hottest topics in service management thought leadership, solution deep dives and real-world experiences
  - *Converse via two-way communication*: type in your questions at any time during the presentation or *your* topic on the interactive IBM Service Management Community
  - Share with top speakers: executives and experts from IBM Tivoli, IBM GTS and across IBM, customers, IBM Business Partners, and industry experts
  - *Access* upcoming Jams, Replays on-demand and Related Resources on the Jams eMedia Center: Jams eMedia Center Web page
  - Subscribe to weekly Jam email notice: *Upcoming Jams* Subscription page

- **Next Jam: May 5, 2009**
  - **Save Money, Solve Problems: Faster and Smarter with IBM Application Management**

Improve Performance and Service Levels of Your IBM Maximo Environment with Tivoli Monitoring

Pradeep Nair, IBM Maximo Product Manager, Strategy and Planning

Adrian Mitu, Program Director, Service Availability and Performance Management

Colleen McCretton, IBM Maximo Product Designer and Architect

Agenda

- IBM Maximo
  - Maximo Architecture
  - Customer IT Environment
  - IBM Autonomic Computing Initiative

- Tivoli Monitoring Portfolio
  - Service Availability and Performance Management
  - IBM Tivoli Monitoring

- Maximo Monitoring Agent
  - Maximo Agent
  - Packaging
  - Release Plan

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Maximo Architecture

- ## Web-based n-tier architecture
  - Leverages the latest Internet standards and technologies
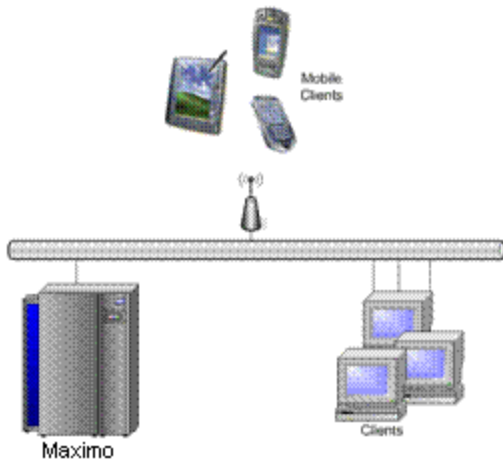   - Web services
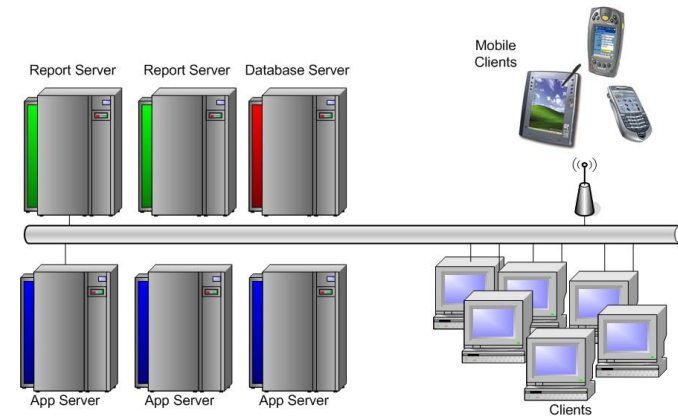   - HTTP(S)
    - J2EE
    - HTML
    - XML
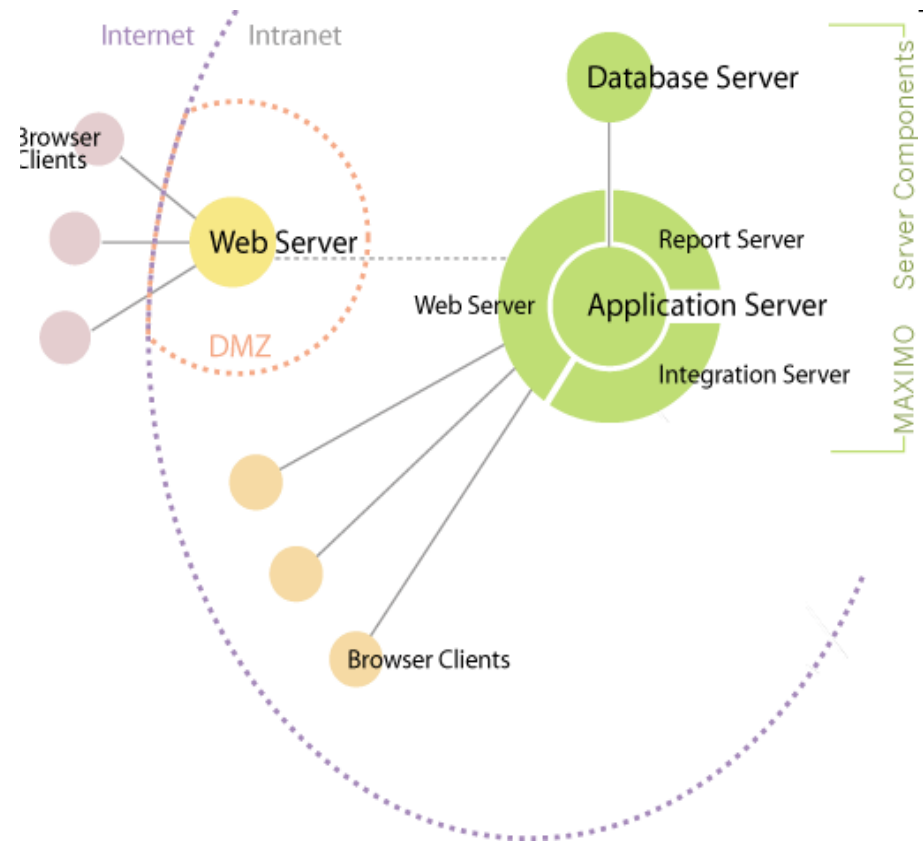
Highly Scalable Architecture

- Performance and resiliency thru:
    - Horizontal and vertical scaling
    - Clustering, load-balancing and failover support

- Scales from small, single-site deployments to large, multi-site global deployments
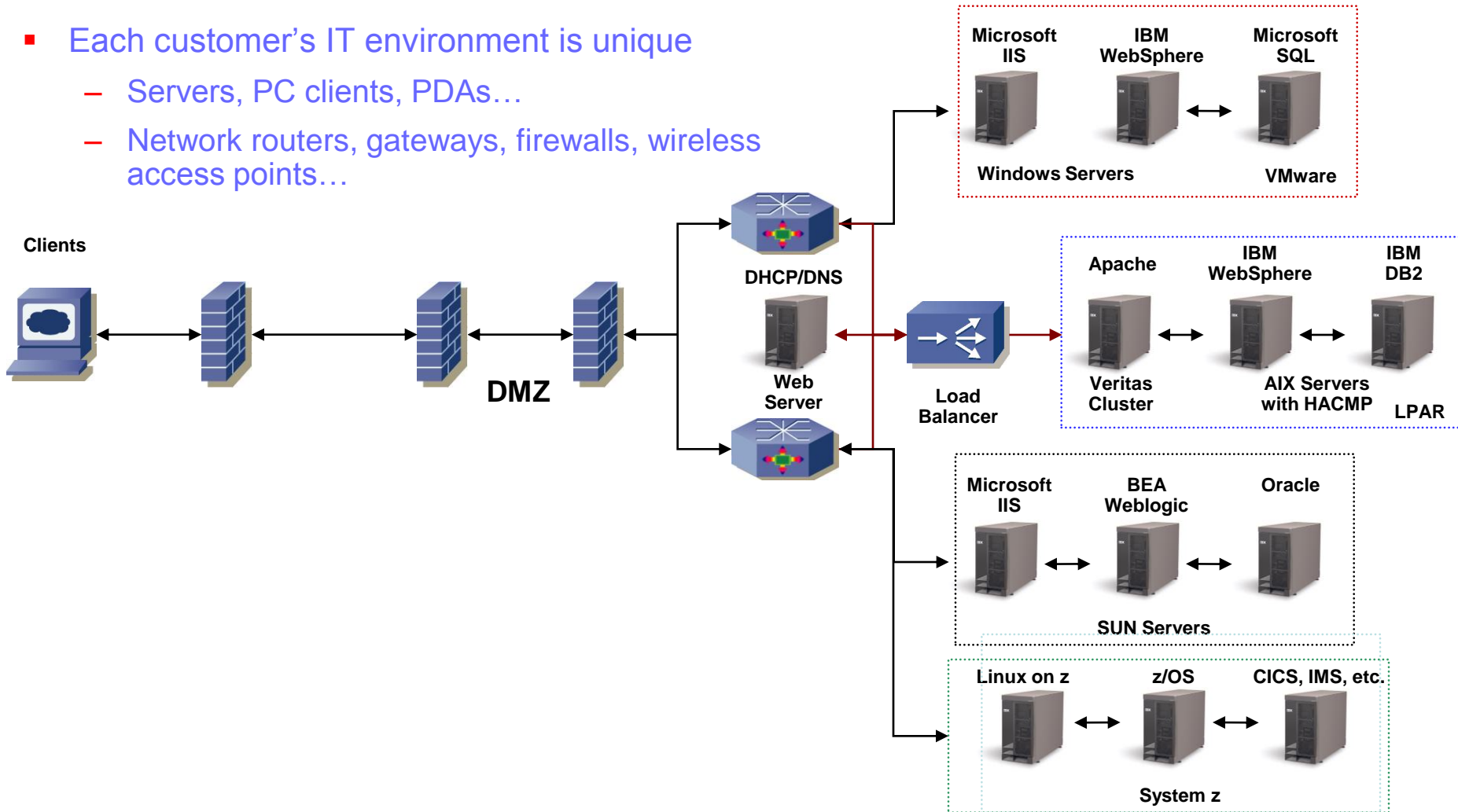

Small Scale Asset and Service Operations

Large Scale Asset and Service Operations

Customer IT Environment

- Each customer's IT environment is unique
  - Servers, PC clients, PDAs…
  - Network routers, gateways, firewalls, wireless access points…

Clients

DMZ

DHCP/DNS

Web Server

Load Balancer

Microsoft IIS | IBM WebSphere | Microsoft SQL

Windows Servers | **VMware**

Apache | IBM WebSphere | IBM DB2

Veritas Cluster | **AIX Servers with HACMP** | **LPAR**

Microsoft IIS | BEA Weblogic | Oracle

SUN Servers

Linux on z | z/OS | CICS, IMS, etc.

System z

Improving Performance and Service Levels

- Instrument Maximo for configuration, optimization and troubleshooting support
    - Statistics
    - Process tuning
    - User sessions
    - Response times

- Identify performance optimization targets
    - Monitor and report on Maximo and supporting IT infrastructure components
        - Servers, routers, gateways, OSes, databases…
   - Identify and isolate issues to the component level
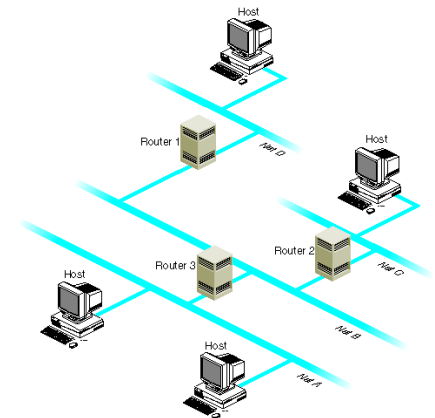
# Autonomic Computing Solution Health Initiative

Resiliency

Products need to be resilient (sometimes called highly available and/or restorable) in order to accurately and quickly recover from unplanned outages or disasters.
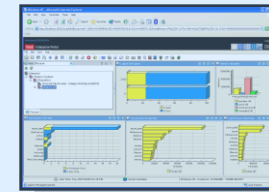
This category provides guidance for resiliency utilizing Tivoli solutions for clustering and fail-over together with basic data protection techniques.
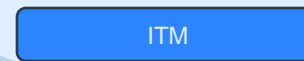
Tivoli System Automation, Storage Manager, Replication Manager
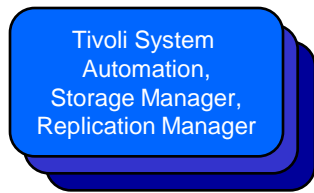
Maximo Environment
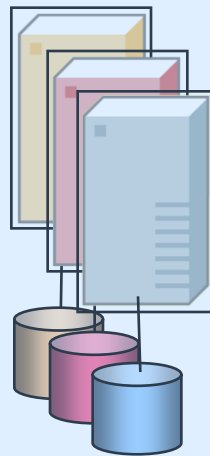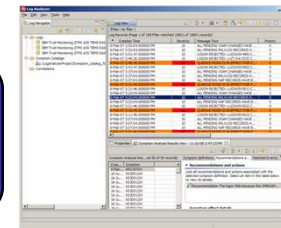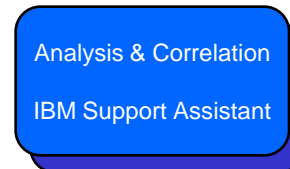
Self-Monitoring

TEP

ITM

Products capable of reporting on their health and the health and performance of the functions they perform.

Data and events are collected real-time and reported in the Tivoli Enterprise Portal. They can also be stored in the data warehouse for reporting

The value to the customer is the ability to differentiate between resource problems and management infrastructure problems

Serviceability

When a problem is encountered, this category of integration is intended to allow customers & support teams to identify and fix problems and defects in the most efficient way possible, reducing product downtime.

Analysis & Correlation

IBM Support Assistant

LA Console
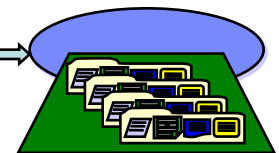
Symptoms

Solution Health Initiative

- Self-Monitoring
  - Instrumenting products to report system and component health
  - Differentiate between resource problems and infrastructure problems

- Serviceability
  - Allow customers and support teams to identify and fix problems and defects in the most efficient way possible, reducing product downtime

- Resiliency
  - Clustering and fail-over with basic data protection techniques
  - Self-healing

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- Maximo Monitoring Agent
  - Maximo Agent
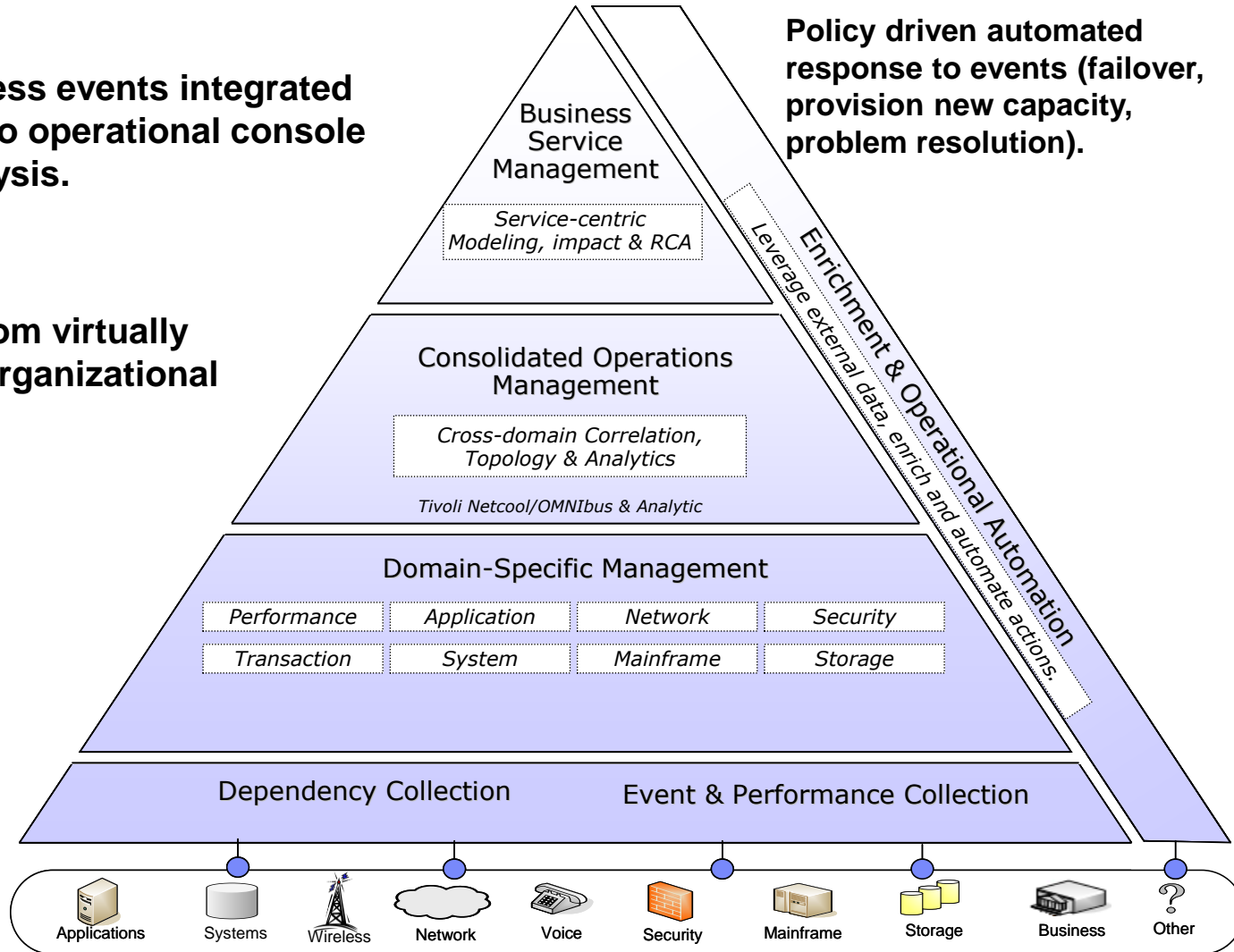 - Packaging
  - Release Plan

Service Availability and Performance Management

IT Operational and business events integrated in one console. Launch to operational console for quick root cause analysis.

Policy driven automated response to events (failover, provision new capacity, problem resolution).

Real-time data access, from virtually any data source across organizational boundaries

Consolidated operational view of performance & availability

**Complete coverage of over 1000 device types**

Business Service Management

Service-centric Modeling, impact & RCA

Enrichment & Operational Automation
Leverage external data, enrich and automate actions.

Consolidated Operations Management

Cross-domain Correlation, Topology & Analytics

Tivoli Netcool/OMNIbus & Analytic

Domain-Specific Management

| *Performance* | *Application* | *Network* | *Security* |
| *Transaction* | *System* | *Mainframe* | *Storage* |

Dependency Collection

Event & Performance Collection

Applications   Systems   Wireless   Network   Voice   Security   Mainframe   Storage   Business   Other

Note: All layers are inclusive of distributed and mainframe.

Composite Application Management and Resource Monitoring

- Monitor application response to ensure business expectations are met

- Understand transaction flows over complex topologies

- Monitor infrastructure performance and availability

- Diagnose application performance issues

- Increase application availability and user/customer satisfaction

- Reduce MTTR, increase MTBF

IT Staff

IT Customer

| Transactions | Applications | Servers |
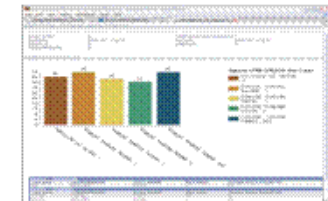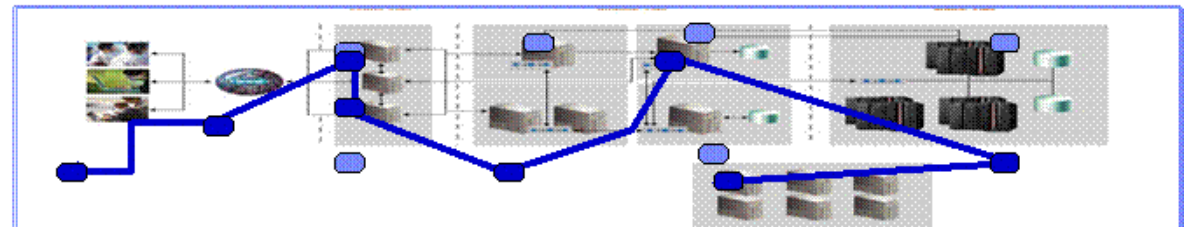
IBM Tivoli Monitoring

Gain Visibility into Core Resources in your Dynamic Infrastructure

- Maintain Visibility into all critical resources
    - OS, Middleware, Applications
    - J2EE Application Servers and WebServers
    - Virtual Hypervisors
    - System z and z/OS
    - ERP, CRM
    - CICS, IMS
    - MQ, Message Broker
    - E-Mail and Collaboration
    - Databases
- Leverage Predictive Infrastructure
    - Dynamic Thresholds
    - Proactive Capacity Monitoring
- Resource Details Enable:
    - Risk Management
    - Problem Diagnosis
    - Capacity Planning
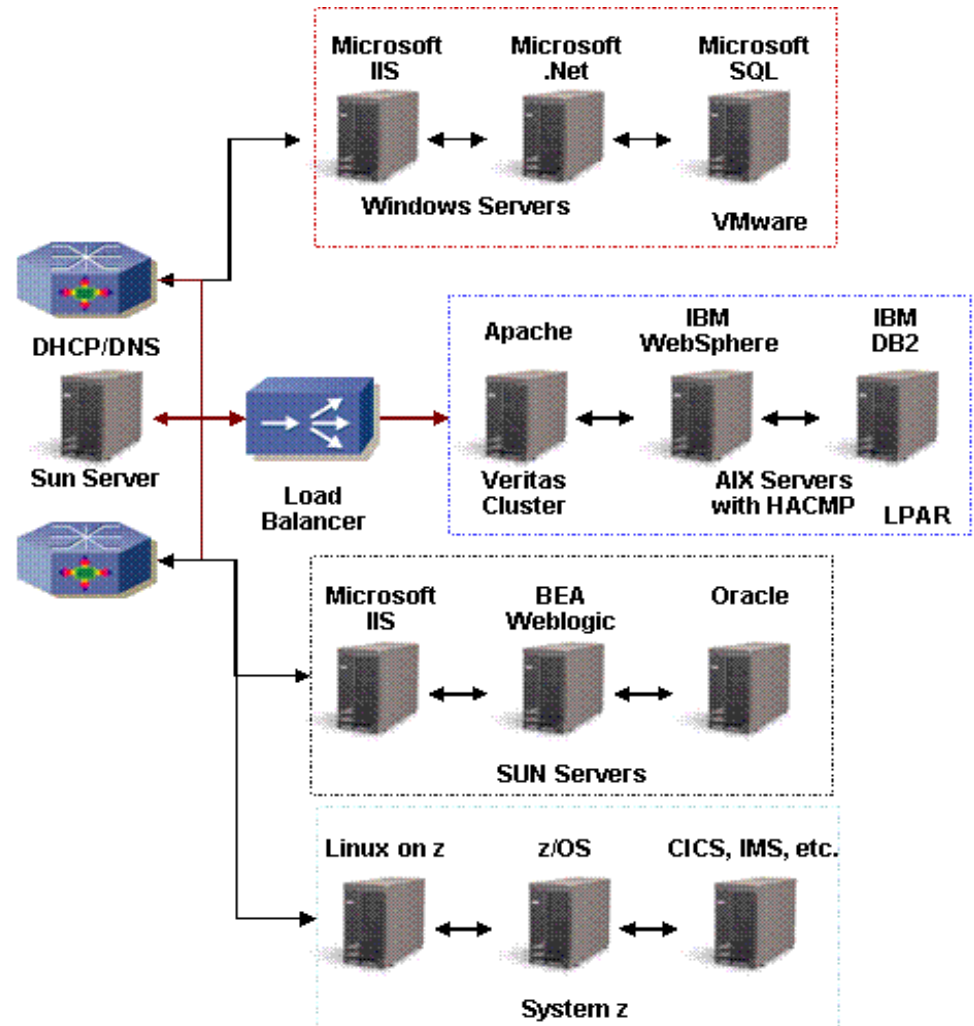
IBM Tivoli Monitoring
The Industries' Most Extensive Resource Monitoring

Operating Systems	Infrastructure	Application and Collaboration	Business Integration	Web Environment	Database	Universal Agent
AIX	AIX (LPAR DLPAR WPAR)	SAP	CICS	WebSphere	DB2	Agentless or Agent Adapter
i5/OS		Siebel	Web Services	WebLogic	SQL	
z/OS	VMware	PeopleSoft	IMS	IIS	Oracle	
Windows	Windows Hyper-V	Tuxedo	MQ	Oracle	Sybase	OPAL solutions (100+ packages)
Linux	Solaris Zones	Domino	Message Broker	NetWeaver	Informix	
Unix		Exchange .Net Biztalk Sharepoint		JBoss		Microsoft Message Queue and more....
	Citrix			Apache		Blackberry
	Clustering			Sun Java System		Micromuse

IBM Tivoli Monitoring Architecture

- **Highly Scalable** from SMB to Largest Enterprise. (1 to over 20000 monitored endpoints)

- **Agent**-based and **Agent-less** natively supported
  - Agent-based technology resides directly on a managed server and collects data based on policy set locally or by the management server
  - Agentless technology resides primarily on a management server and gets its data via a remote application programming interface (API)

- **Extensible architecture** at the agent and server level
  - Universal Agent
  - Agent Builder

- Fully **Integrated Warehouse**

- **Adaptive Event Management** to allow customized thresholds for individual resources/servers

Tivoli Enterprise Portal User

Tivoli Enterprise Portal Server

Tivoli Data Warehouse

Hub Tivoli Enterprise Management Server

Remote Tivoli Enterprise Management Servers

Agentless Monitors

Monitoring Agents

"IBM Tivoli Server Managed Environments"
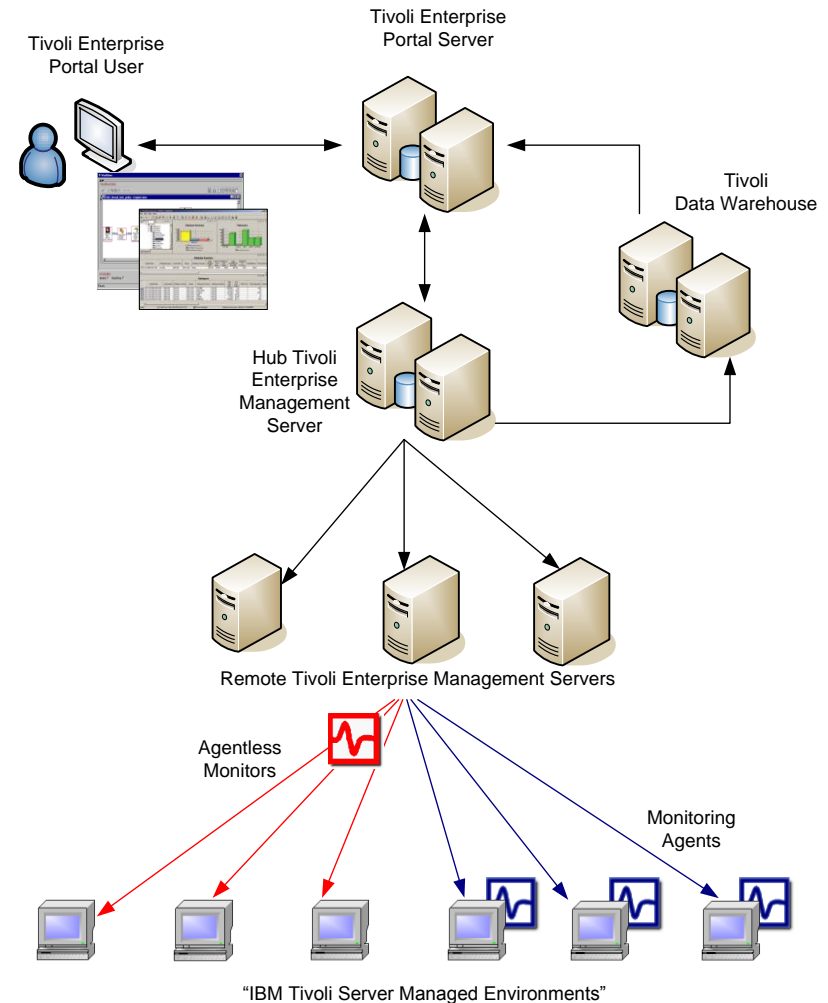
IBM Tivoli Monitoring - Visibility

IBM Tivoli Enterprise Portal (TEP)

VISIBILITY
-
Tivoli Enterprise Portal (TEP)

Tivoli Enterprise Portal 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**

- Visualization for ITM – ITCAM Family

Personalized
Workspaces
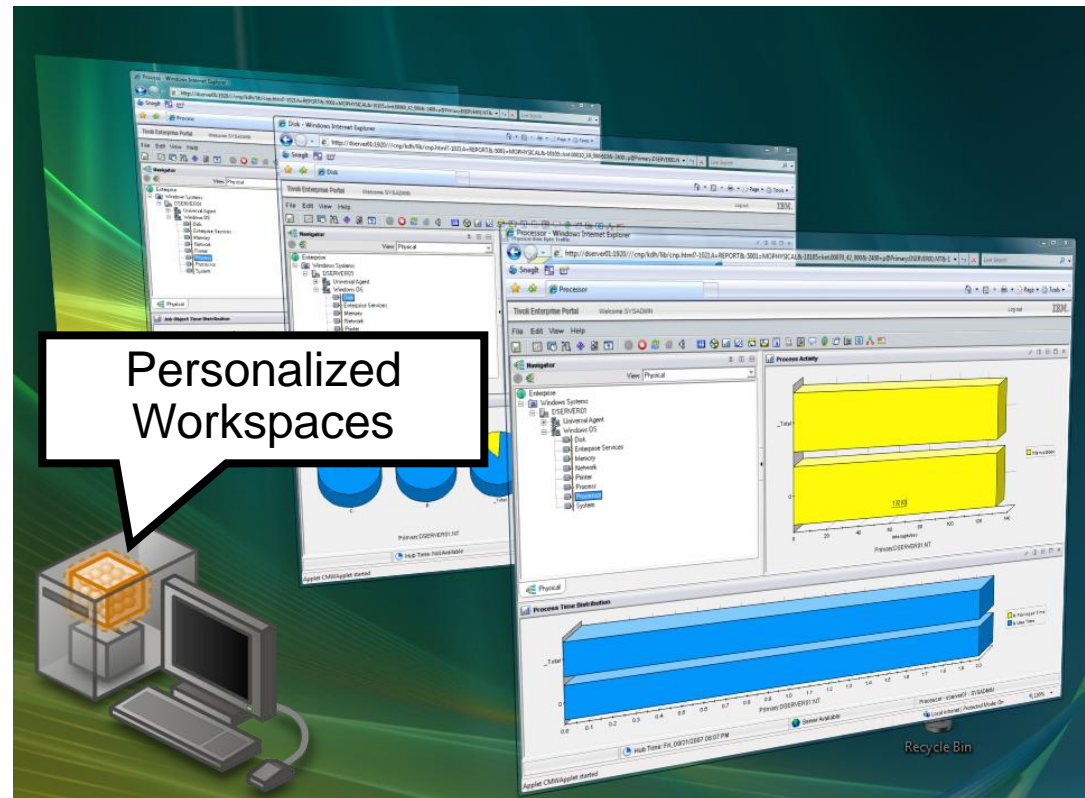
IBM Tivoli Monitoring - Control
IBM Tivoli Data Warehouse (TDW)

CONTROL
-
**Tivoli Data
Warehouse (TDW)
and Situations**

Tivoli Data Warehouse is the backbone repository and central data store for all historical management data and the basis for Tivoli reporting

- The data is **stored, pruned and summarized** for ease use and cost savings.

- **Centralized and consolidated** data is crucial to reducing mean time to recovery

- **Side-by-side** historical data assists in separating intermittent from reoccurring problems from peak workloads

Real-time and Historical Data
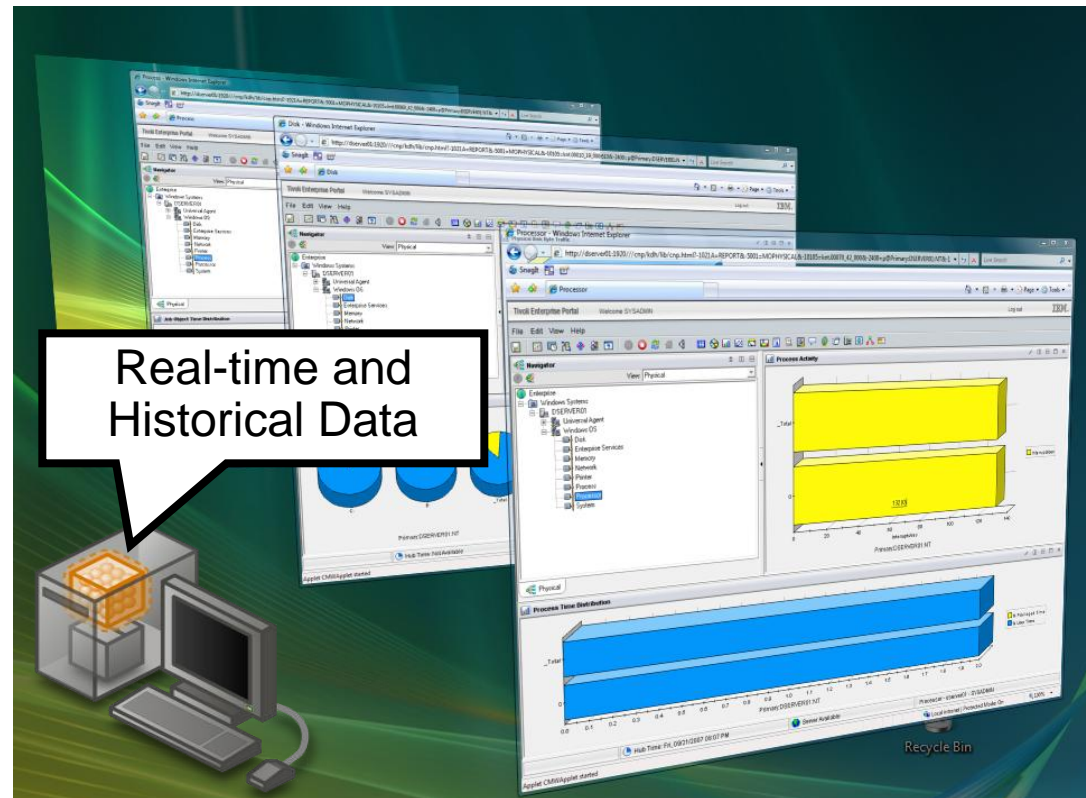
IBM Tivoli Monitoring – Visibility and Control
IBM Tivoli Common Reporting (TCR)

Start Date	Oct 28, 2007 12:00 AM	**End Date** Nov 27, 2007 11:59 PM
Report Period	Last 30 days	**OS Type**
System Name	Primary:TIVREPORTING:NT	**Attribute**

Threshold specification for Heat Chart Colors

<=20%	< =30%	<= 60%	<=80%	>=80%	No Data

Heat Chart Type

Icon Representation   Bar Representation

> This should only show up if using Agentless Technology

> Easy Identification of CPU, Memory or Disk Usage

Average CPU utilization per hour over a period of time

Date / Hour	00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23	Avg
Fri, 11/16/07		
Sat, 11/17/07		
Sun, 11/18/07		
Mon, 11/19/07		
Tue, 11/20/07		
Wed, 11/21/07		
Thu, 11/22/07		

> Graphical representation by day of week by hour to see patterns of usage.
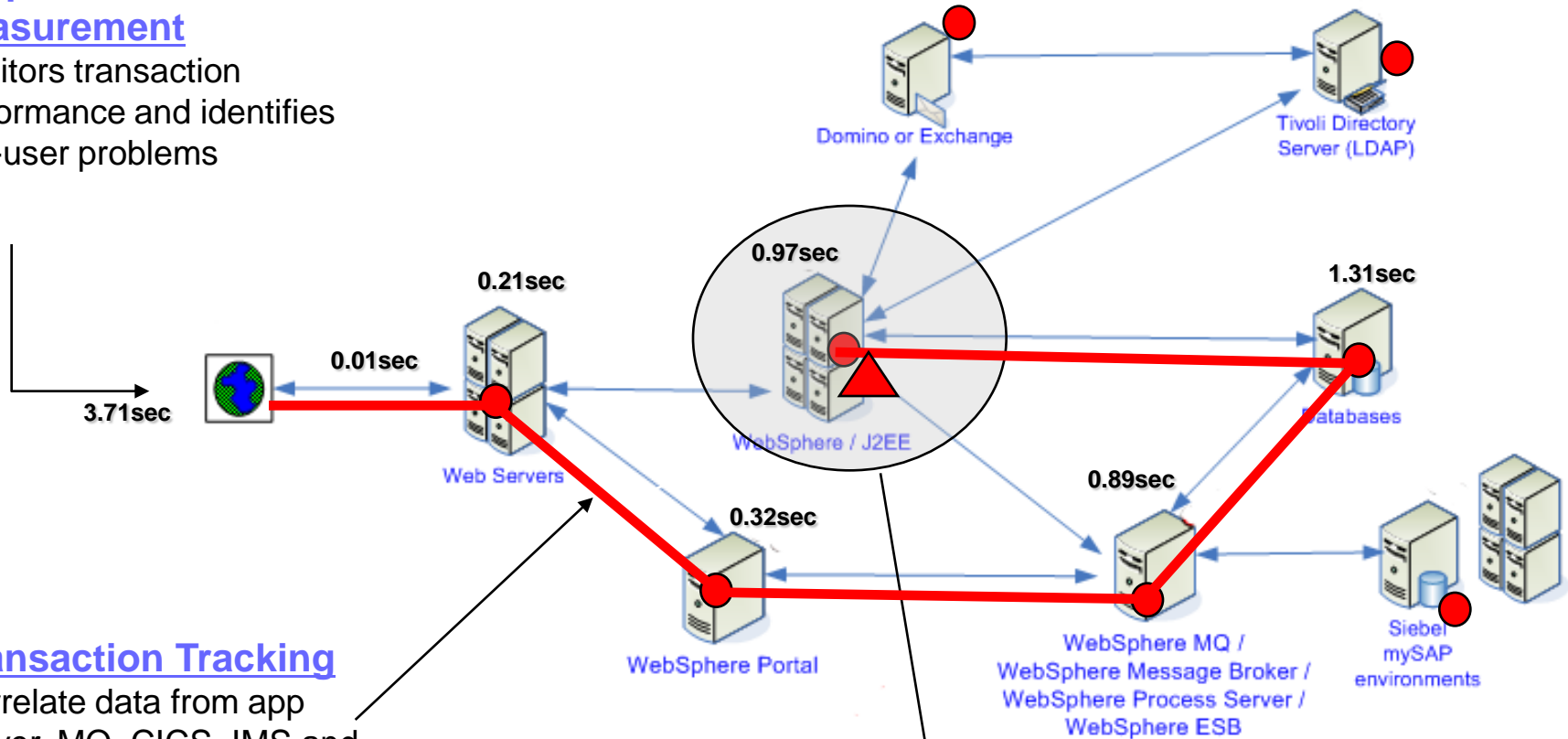
Custom Remote Monitoring option

- Remote Agents developed with Agent Builder wizard

- Native and Remote Agents integrate directly into TEP

- Each system appears and is treated individually even though they are monitored by a single agent

- In addition to native agents, ITM provides remote monitoring option for

  - Windows OS

  - AIX OS

  - HP OS

  - Linux OS

  - Solaris OS
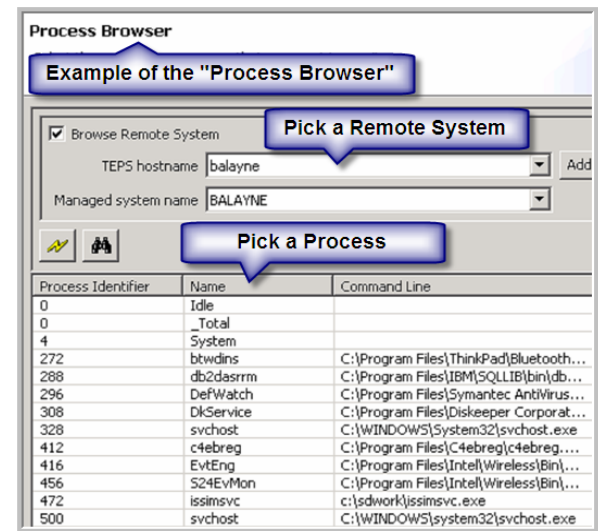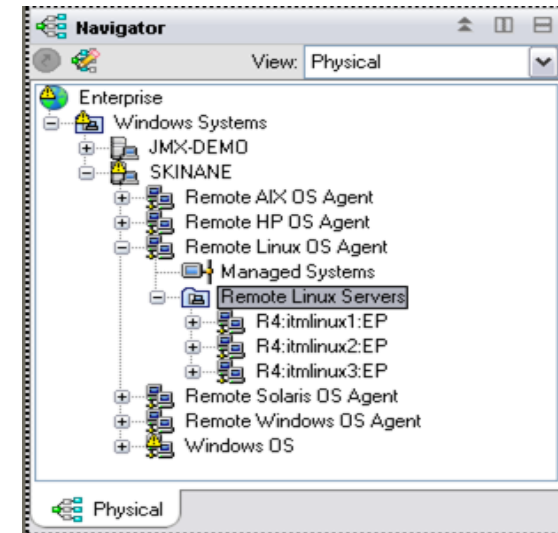
End-to-End Monitoring, Tracking and Diagnosis

Response Time Measurement
Monitors transaction performance and identifies end-user problems

0.97sec

0.21sec

1.31sec

3.71sec

0.01sec

Domino or Exchange

Tivoli Directory Server (LDAP)

WebSphere / J2EE

Databases

Web Servers

0.32sec

0.89sec

WebSphere Portal

WebSphere MQ / WebSphere Message Broker / WebSphere Process Server / WebSphere ESB

Siebel mySAP environments

Transaction Tracking
Correlate data from app server, MQ, CICS, IMS and custom instrumentation to show topology and isolate problems
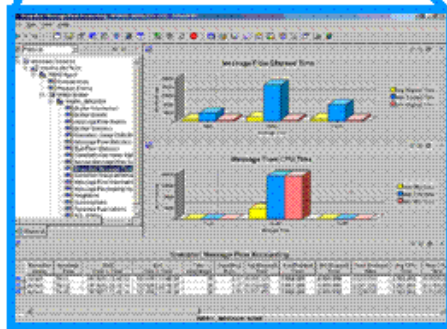
Deep Dive diagnostics
Launch in context to SME capabilities including SME level tracking within specific domain

Deep-dive diagnostics
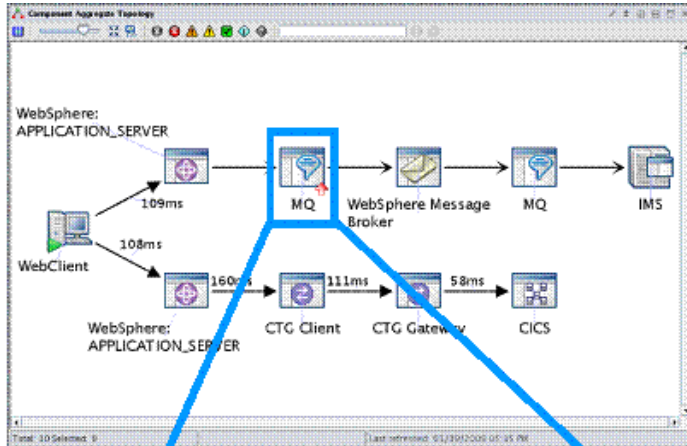
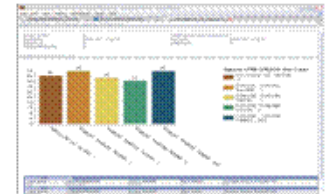ITCAM for Transactions

OMEGAMON XE for Messaging

- Launch in context into appropriate SME tool via dynamic workspace links

- Launch destinations depend on type on data source, e.g:
  - MQ -> OMEGAMON XE for MSG
  - WAS -> ITCAM for WS
  - CICS -> OMEGAMON for CICS
  - IMS -> OMEGAMON for IMS

- Drill down to specific workspace, e.g:
  - MQ Queue Manager drilldown links to the Queue Manager Status Workspace for the specific Queue Manager

J2EE Application Performance Diagnosis

- **Monitor high-level application health status**
  - Tier by tier analysis
  - Correlation to remote EJB containers

- **Identify J2EE/J2SE performance problems**
  - Slow or Hung requests
  - Intermittent application slow downs

- **Monitor essential application resources**
  - Throughput
  - Heap Usage
  - CPU usage
  - Garbage Collection

- **Real time deep dive diagnosis**
  - Display all in-flight requests, as well as details for a single request
  - Memory leak analysis
  - Method and stack "traces" to display the detailed execution flow of a request
  - Lock Contention Analysis on serialized methods

- **Link with CICS and IMS deep dive diagnosis**

Throughput

Health

Resources

Alerts & Take Actions

Problem Determination

Memory Analysis

Application Trace

Composite Application Management and Resource Monitoring

- Monitor application response to ensure business expectations are met

- Understand transaction flows over complex topologies

- Monitor infrastructure performance and availability

- Diagnose application performance issues

- Increase application availability and user/customer satisfaction

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| Transactions | Applications | Servers |

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Maximo Agent

- Metrics monitored
    - System Information
    - User Sessions
    - Cron tasks
    - Database connections
    - Memory usage
    - Business Objects
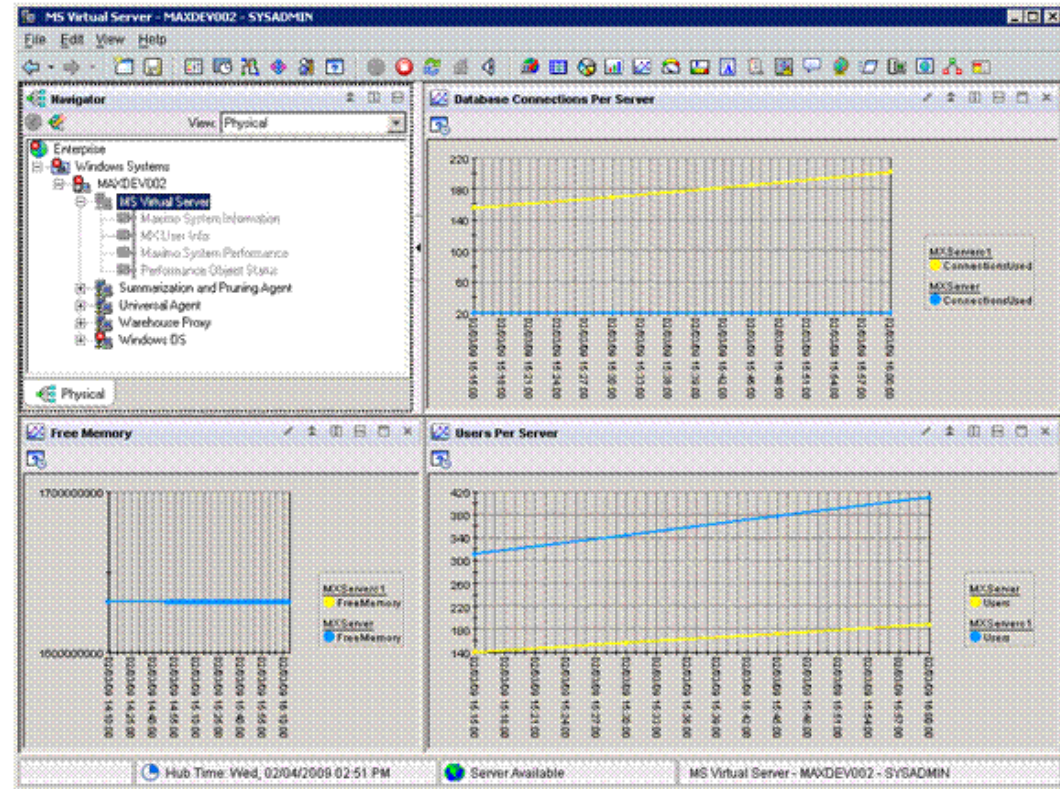
Maximo Agent System Information

- Metrics monitored

  - Server Information

  - Installed Applications

  - License

    - Licensed products list

    - Type of license

  - Installed Products

    - Installed products list

    - Version information

  - Cron Tasks

    - Cron tasks list

    - Active cron tasks

Maximo Agent User Node

- Metrics monitored

  - Current number of users vs recommended number

    - Yellow bars = number of users

    - Red background = threshold per server
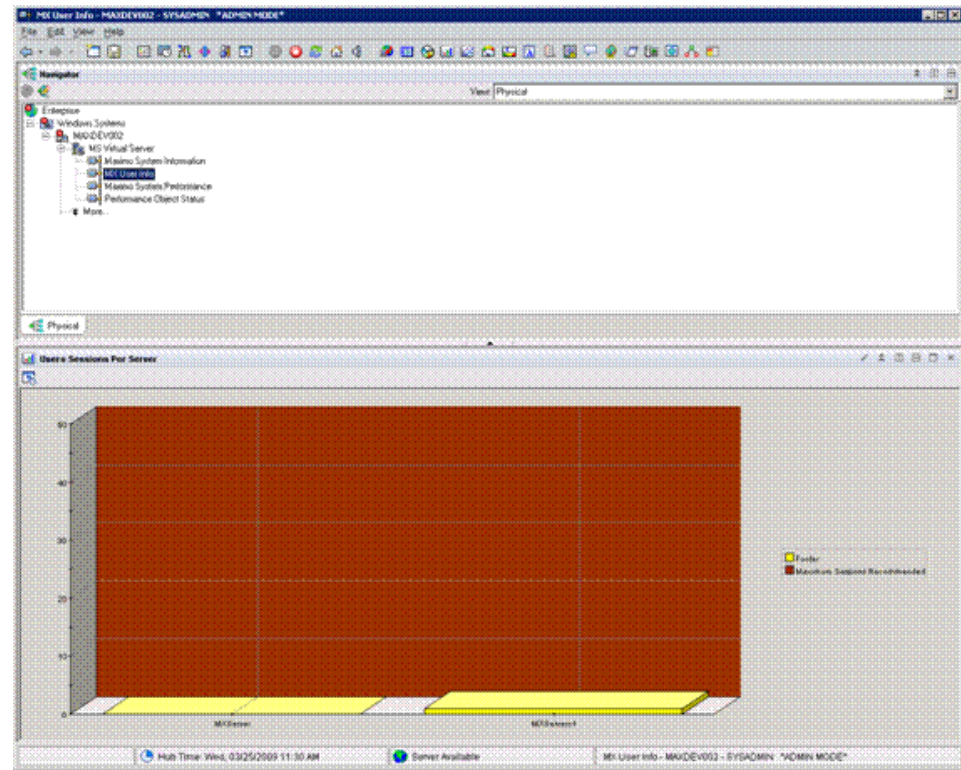
Maximo Agent System Performance Node

- Metrics monitored

  - Memory statistics for each server

  - MBO Count
    - Name of each MBO
    - Number of instances

  - JVM Runtime Properties
    - JVM information
    - Version
    - Uptime
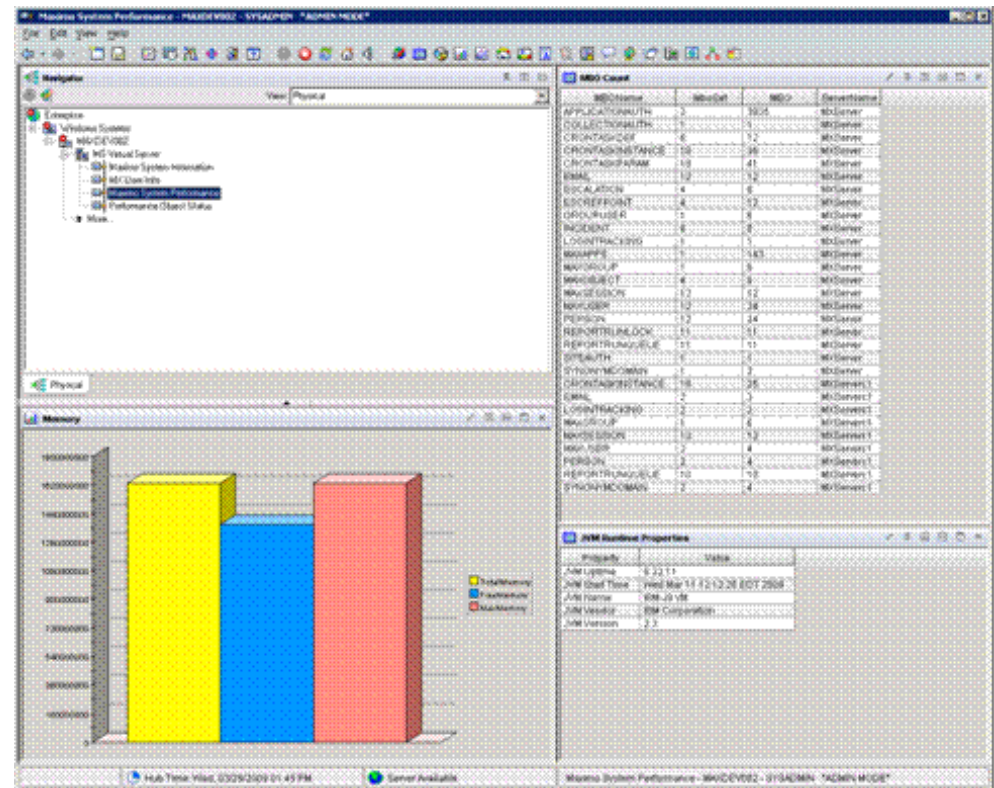
Packaging

- Bundle consisting of:
  - Tivoli ITM console and framework
    - OS agents
    - Database agents
  - Maximo agent

- Licensed for use to monitor Maximo only

- Agents for monitoring additional components
  - Separate chargeable components
  - OPAL

Release Plan

- Beta underway
  - Limited set of customers
  - Beta runs till May 09

- First release with Maximo 6.2x
  - 2H 09

- Subsequent release with Maximo 7x
  - 2H 09

- OPAL delivery
  - Maximo agent only
  - For clients with ITM

- Planned additions:
  - ITCAM
  - BIRT Monitoring

Thank You

IBM Service Management Jams

IBM

Improve Performance and Service Levels of Your IBM Maximo Environment with Tivoli Monitoring

Pradeep Nair, IBM Maximo Product Manager, Strategy and Planning

Adrian Mitu, Program Director, Service Availability and Performance Management

Colleen McCretton, IBM Maximo Product Designer and Architect