End to End Security and Management on the Mainframe

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Vice President, Tivoli Security and Storage Software

Agenda

- **Challenges and Trends**

- **The IBM Service Management Strategy and Approach**

- **Securing the Enterprise**

- **Managing the Enterprise**

- **Integration Beyond Visualization**

- **Summary**

Businesses are Under Pressure to Innovate and Grow

Competitive Advantage through Service excellence

- Need to retain and add new customers through quality and value add services

Operational Efficiency and Effectiveness

- Cost containment
- Reduce the risk of security exposure
- Greater regulatory and auditing requirements

Business Growth

- Financial performance & market share growth expectations from investors

Business Depends on Quality Service Delivery

Challenges to Delivering Innovation and Growth

Growing Complexity
- Disparate technologies and service infrastructures

Rapid, Constant Change
- Industry consolidation, technology convergence

Rising Costs
- Process inefficiencies, administration, maintenance

Tougher Compliance
- Added security, audit and governance requirements
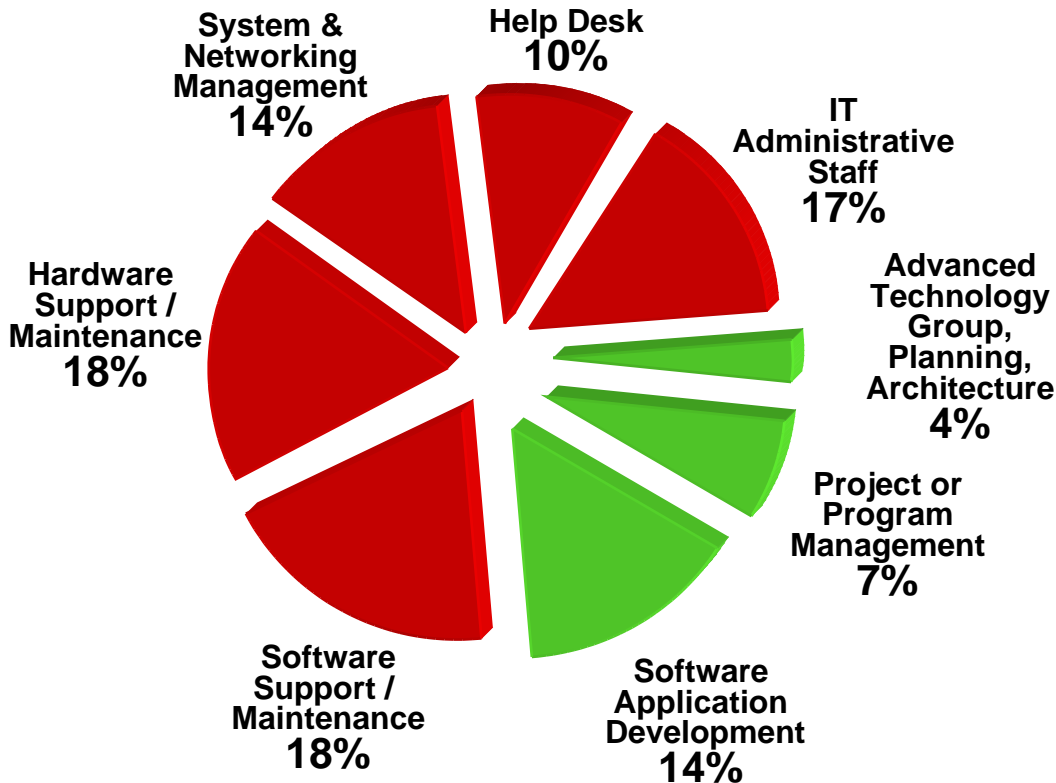
Lack of Service Context
- Silos of people, process, technology, information

Obstacles to Innovation

Obstacle	Value
Unsupportive culture	~35
Limited funding	~35
Internal workforce issues	~27
Process immaturity	~24
Inflexible infrastructure	~15
Insufficient access to information	~14

0   10   20   30   40

Despite Focus on IT Operations' Effectiveness and Efficiency, Little Change in IT Spending Percentages Over Past 5 Years

2005 Total IT Spending on IT Internal Staff[1]

Pie chart: 2005 Total IT Spending on IT Internal Staff

- Help Desk 10%
- IT Administrative Staff 17%
- Advanced Technology Group, Planning, Architecture 4%
- Project or Program Management 7%
- Software Application Development 14%
- Software Support / Maintenance 18%
- Hardware Support / Maintenance 18%
- System & Networking Management 14%

77% of firms rated improving IT efficiency as the most important operational priority in 2006[2]

Source 1: Gartner Research "U.S. IT Spending and Staffing Survey, 2005, Table 5" dated 2 November 2005
Source 2: Forrester research "North America's 2006 Enterprise IT Spending Outlook" 3 February 2006

Criteria for Service Management: Autonomic Approach

- Event Management

- Business Service Visualization

- Process Automation

Service Management Platform
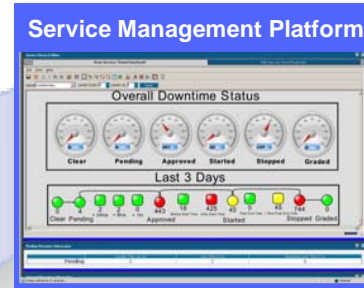
How does this relate to the business service?
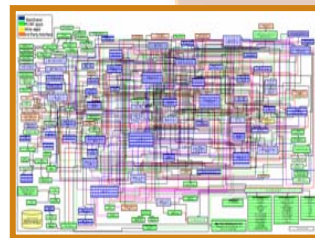
What's happening with the infrastructure?

What actions do we take to correct the problems?
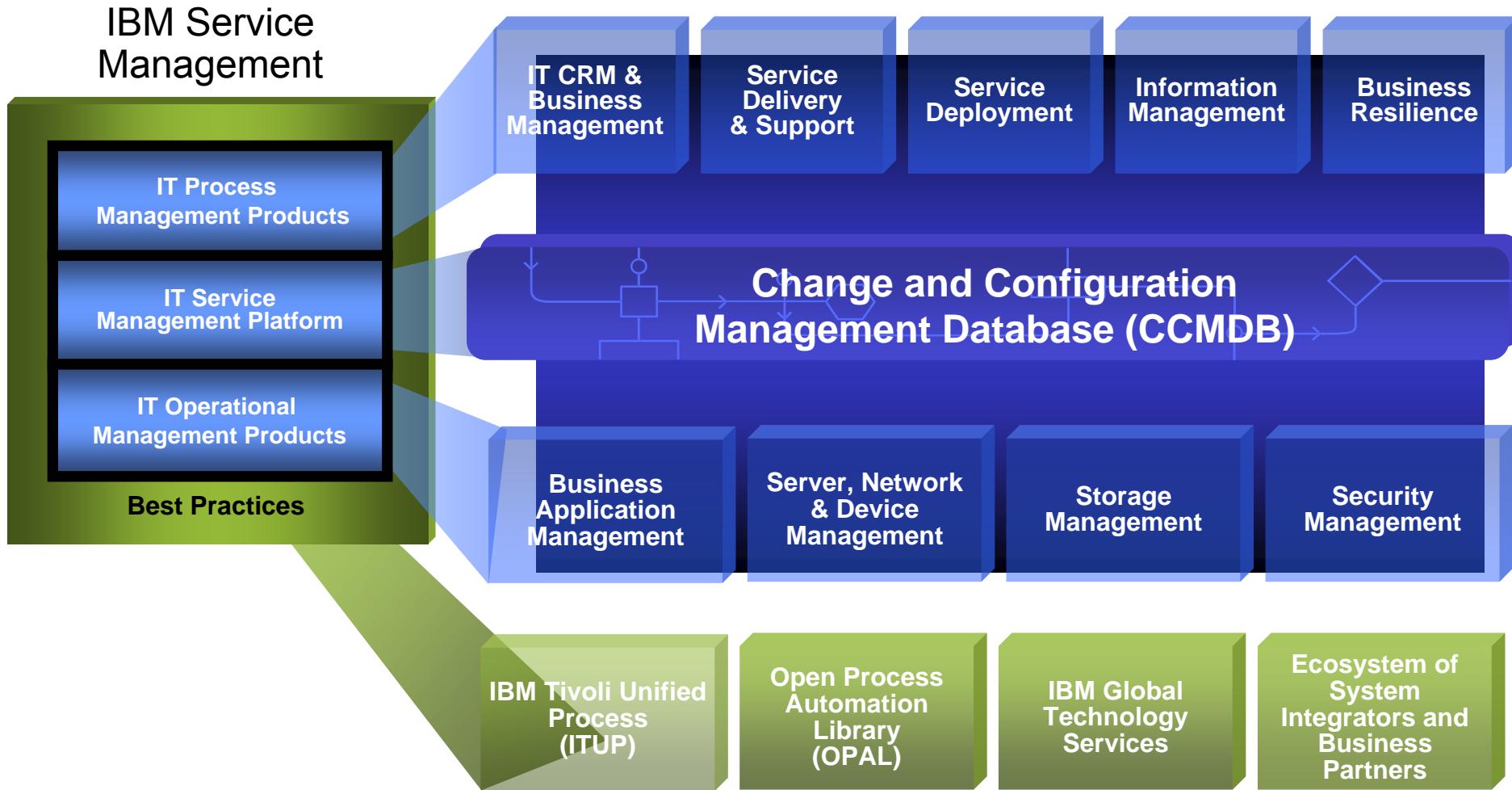
A Comprehensive Approach to IT Service Management

IBM Service Management

IT Process Management Products

IT Service Management Platform

IT Operational Management Products

Best Practices

| IT CRM & Business Management | Service Delivery & Support | Service Deployment | Information Management | Business Resilience |

Change and Configuration Management Database (CCMDB)

| Business Application Management | Server, Network & Device Management | Storage Management | Security Management |

| IBM Tivoli Unified Process (ITUP) | Open Process Automation Library (OPAL) | IBM Global Technology Services | Ecosystem of System Integrators and Business Partners |

A CMDB Needs to Do More Than Just Store Data

- **Data management and integration**
  - Integrates and shares data across complex organizational silos
  - Proactively manages data currency and accuracy
  - Is the true, authoritative source of record

- **Workflow integration**
  - Is coupled with an automated change management process to ensure integrity and consistency of configuration items
  - Increases coordination and data sharing

- **Policy integration**
  - Enforces policies for compliance with internal and regulatory requirements

IBM Service Management

Process Management

Service Management Platform

Operational Management

Best Practices

Change and Configuration Management Database (CCMDB)

Information isn't valuable until it's acted upon …
a CMDB should facilitate action

2006 CCMDB and System z Resources

- **z/OS Discovery Library Adapter**
  - Includes System z resources such as LPAR, z/OS, IMS, DB2, CICS, MQ and WebSphere

- **Tivoli Business System Manager integration for Line of Business objects to leverage investment in TBSM resources**

- **Discovery of IP networking resources from NetView for z/OS**

- **Info/Man Incidents affecting Computer Systems**

- **Context sensitive launch to OMEGAMON XE**
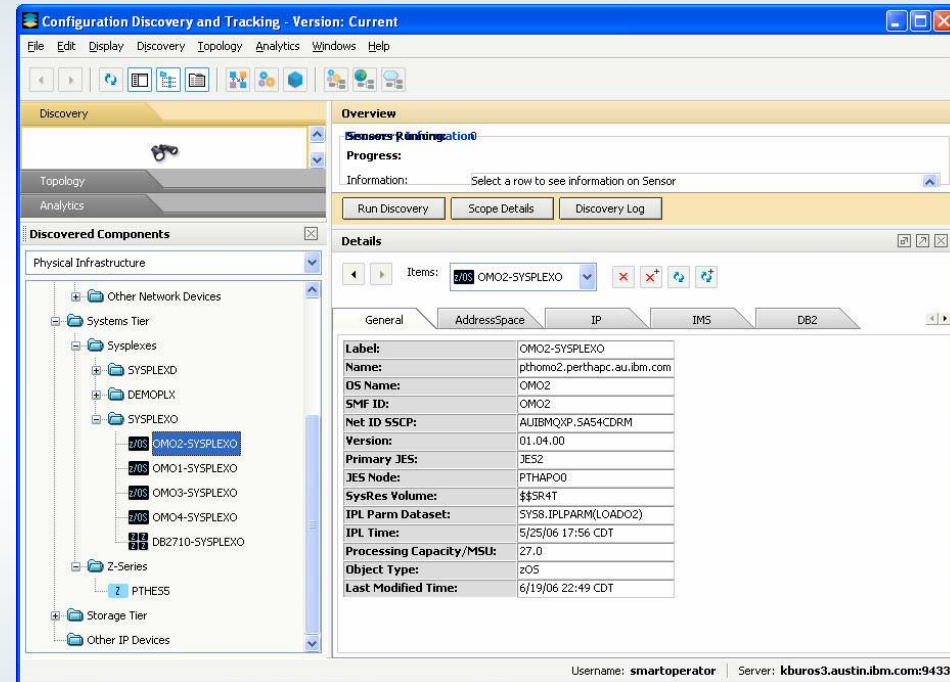
CCMDB Extends System z Coverage in Early 2007

- **Relationships for CCMDB Topology Views**
  - Linking distributed with z/OS subsystems
  - Linking z/OS subsystem to z/OS subsystems (extending distributed to z/OS further) e.g. WAS to CICS to DB2

- **Attributes for CCMDB Detail, Comparison & Change Views**

z/OS	Link list datasets, Parmlib datasets, Proclib datasets, Volumes etc
Address Space	Dataset Allocations etc
IMS	Transactions, Programs, Databases etc
CICS	Transactions, Programs, Files etc
DB2 for z/OS	Databases, Tablespaces, Tables, Views etc
MQ for z/OS	Channels, Queues etc
WAS for z/OS	Comprehensive coverage via the CCMDB WAS sensor. This sensor currently supports distributed WAS only and will be enhanced to support WAS on z/OS. The z/OS DLA will discover the WAS Soap Port to seed this discovery.

Operational Management Products

IBM Service Management

- Process Management
- Service Management Platform
- Operational Management

Best Practices

Business Application Management

Products include:

- **Tivoli Composite Application Manager Family**
- **Tivoli Business Systems Manager**
- **Tivoli Intelligent Orchestrator**
- **Tivoli Service Level Advisor**
- **Maximo Asset Management for IT (Replaces Tivoli Contract Compliance Manager)**
- **Tivoli License Compliance Manager Family**
- **Tivoli Usage and Account Manager**
- **Netcool/Impact**
- **Netcool/RAD**
- **Tivoli Decision Support for z/OS**

Server, Network & Device Management

Products include:

- **Tivoli Enterprise Console**
- **Tivoli Monitoring Family**
- **Tivoli OMEGAMON Family**
- **Tivoli NetView Family**
- **Tivoli Remote Control**
- **Tivoli System Automation Family**
- **Tivoli Workload Scheduler Family**
- **Tivoli Provisioning Manager**
- **Tivoli Configuration Manager**
- **Operations Manager for z/VM**
- **Tivoli Performance Modeler for z/OS**
- **Netcool/OMNIbus**
- **Netcool/Proviso**
- **Netcool/Precision**
- **Netcool/Monitors**

Storage Management

Products include:

- **Tivoli Storage Manager**
- **IBM DFSMS Family**
- **Tivoli Continuous Data Protection for Files**
- **TotalStorage Productivity Center**
- **Tivoli Allocation Optimizer**
- **Tivoli Output Manager**
- **Tivoli Automated Tape Allocation Manager**
- **Tivoli Tape Optimizer**
- **Tivoli Advanced Catalog Management**
- **Tivoli Advanced Audit for DFSMShsm**
- **Tivoli Advanced Backup & Recovery for z/OS**
- **Tape Manager for z/VM**
- **Backup & Restore Manager for z/VM**
- **Archive Manager for z/VM**

Security Management

Products include:

- **Tivoli Access Manager Family**
- **Tivoli Identity Manager Family**
- **Tivoli Federated Identity Manager Family**
- **Tivoli Directory Server**
- **Tivoli Directory Integrator Family**
- **Tivoli Security Compliance Manager**
- **Tivoli Security Operations Manager**
- **Consul zSecure**
- **Consul InSight**

Demonstrating our continued commitment

IBM Service Management

Best practices

- Process management
- Service management platform
- Operational management

Service management for converged networks

MICROMUSE NETCOOL SOLUTIONS
Network management

Vallent
Network performance and wireless

Service deployment

Rembo Technology
Automated provisioning

mro software
Service delivery and support

collation
Change and configuration management

Service asset management

ISOGON DORANA
Software asset management

mro software
IT asset management and enterprise asset management

Governance and security

CIMS KNOW WHAT IT COSTS
Software usage metering

consul
Log management, access monitoring & compliance reporting

INTERNET SECURITY SYSTEMS Ahead of the threat
Internet security

IBM's security management vision and strategy: _Proactive, comprehensive security and compliance offerings_

WATCH internal and external behaviors; address aberrations and violations

ASSESS the overall security and compliance status of business infrastructure

Manage **ACCESS** of business systems and information to ensure integrity and compliance

DEFEND against potential security threats and business risks

Watch

Assess

Access

Defend
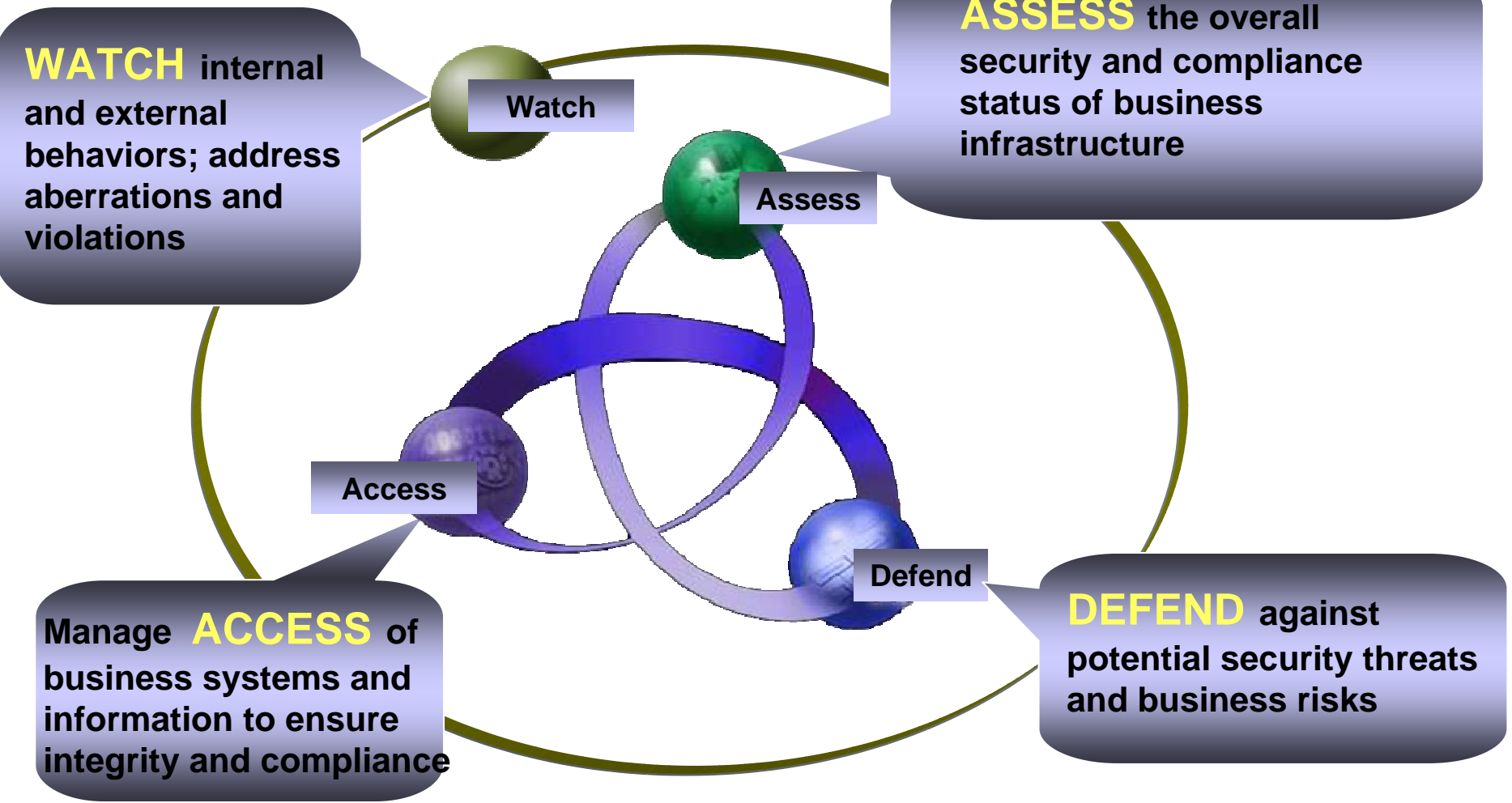
IBM's security management vision and strategy:
Integrated capabilities from Tivoli, Consul, ISS, and IGS

Watch
- **ISS Site Protector**
- **Tivoli Security Operations Manager**
- **IBM Health Checker for z/OS**
- **Consul InSight Suite**
- **Consul zSecure Suite**

Assess
- **GBS Assessment consulting**
- **ISS Vulnerability Assessment Service**
- **ISS Enterprise Scanner**
- **Tivoli Security Compliance Manager**
- **Consul InSight Suite**
- **Consul zSecure Suite**

Access
- **Tivoli Identity and Access Management Solutions**
- **RACF**
- **Consul InSight Suite**
- **Consul zSecure Suite**

Defend
- **ISS preemptive security solutions (ahead of the threat)**
- **ISS Products & Managed Services**

Consul InSight and zSecure
Comprehensive compliance, integrated security management and mainframe administration

Consul InSight™ Suite

Consul zSecure™ Suite

### Enterprise security audit and compliance

For:

- Chief information officers
- Chief information security officers
- Chief financial officers
- Enterprise security managers
- Compliance officers
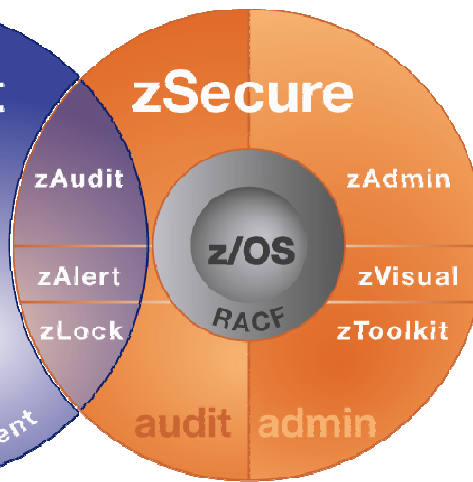- Auditors and regulators
- Network administrators

Concerned about:

- Regulations
- Privileged-user access
- Trusted-user access
- Log Management
- Security event management
- Network complexity
- Passing stringent audits
- Identity and access management
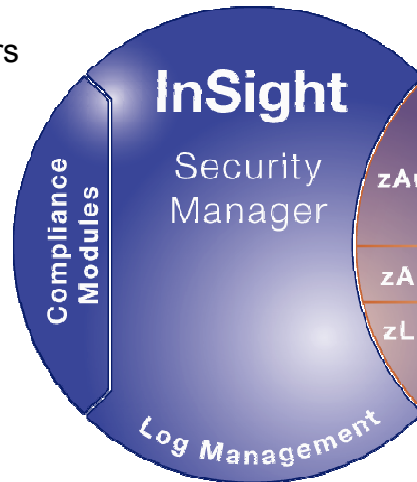
Mainframe security audit and management

For:

Mainframe security managers
Mainframe auditors
RACF administrators
System programmers
Helpdesk managers

Concerned about:

- Regulations
- Audit and monitoring
- Intrusion detection and alerting
- Policy enforcement
- RACF administration
- Distributed administration
- CICS and API interface

Consul **InSight**™Suite   Consul **zSecure**™Suite

InSight
Security Manager
Compliance Modules
zAudit
zAlert
zLock
Log Management

zSecure
z/OS
RACF
zAdmin
zVisual
zToolkit
audit | admin

Compliance monitoring, auditing, and reporting with InSight

- Patent-pending W-7 methodology and 7 out-of-the box compliance support modules to help accelerate clients' policy, and compliance initiatives
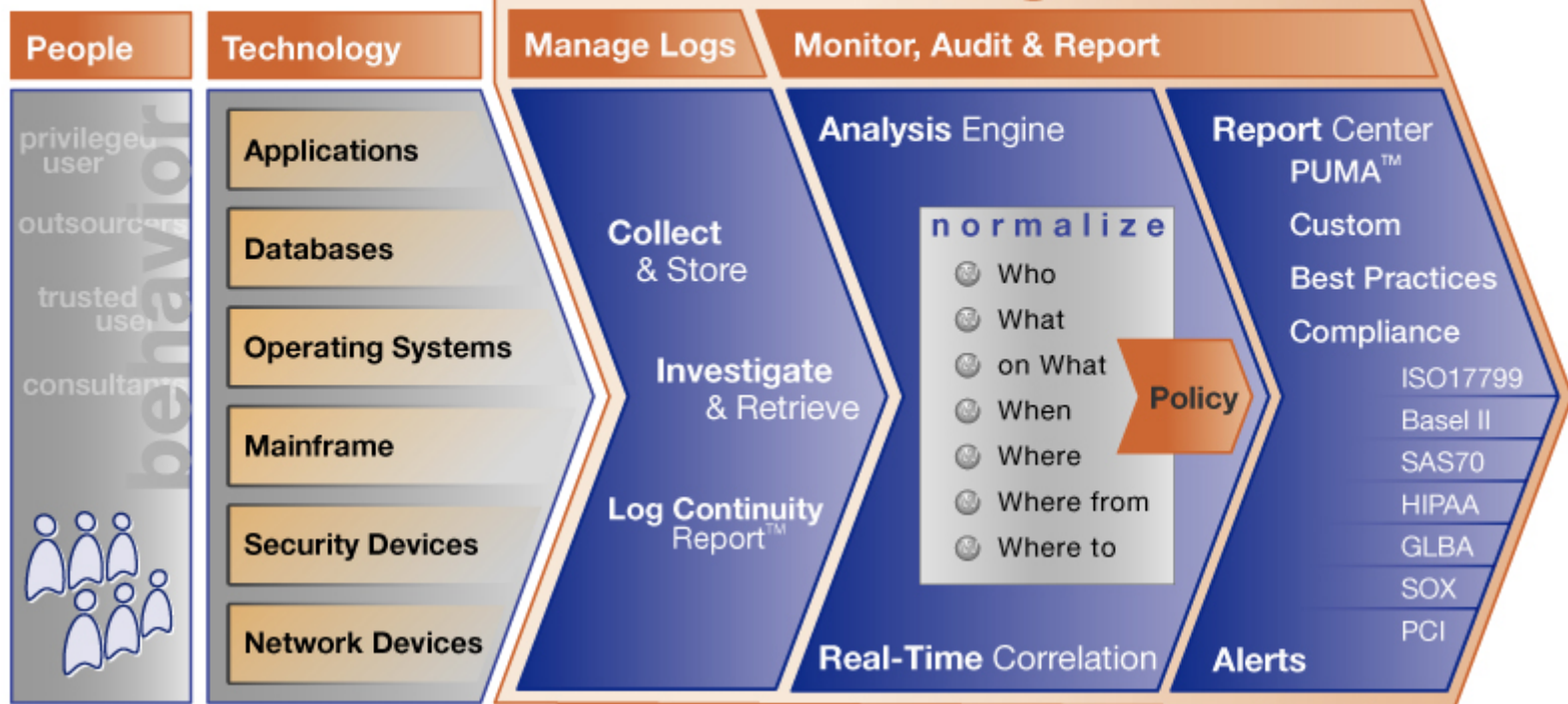
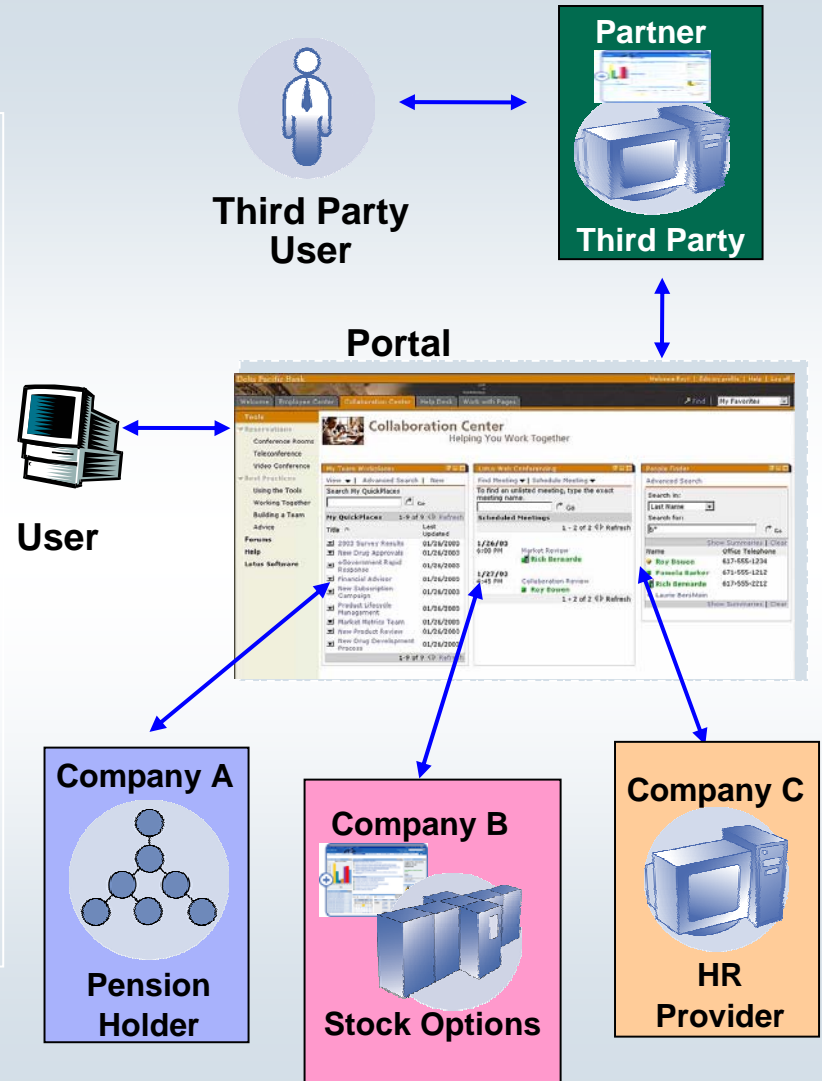# Federated Identity Manager for z/OS

Allows web services, backed by z/OS subsystems such as CICS, to be secured by z/OS Security Services

Preserves identity at the granularity of the requesting user for audits

Uses z/OS auditing (SMF) to improve regulatory compliance

Improves integration and user experience

Can be used between business partners or between multiple lines of business within an enterprise enabling secure, trusted transactions

Third Party User

Partner

Third Party

Portal

User

Company A

Pension Holder

Company B

Stock Options

Company C

HR Provider

Identity Manager for z/OS

Automates and centralizes access rights management and provisioning across systems, applications and databases

Role based provisioning

**Web GUI for administration – common look and feel when provisioning accounts**

User self service and self registration

Integrated workflow to authorize accounts

Built-in reporting and auditing

Installation and configuration is performed using SMP/E and TSO ISPF Panels

**Runs on z/OS and allows you to leverage the power, stability and security of the Mainframe**

TIM Server

End User Or Admin

Agent(s)

LDAP on z/OS

DB2

SIEBEL

SAP

Microsoft
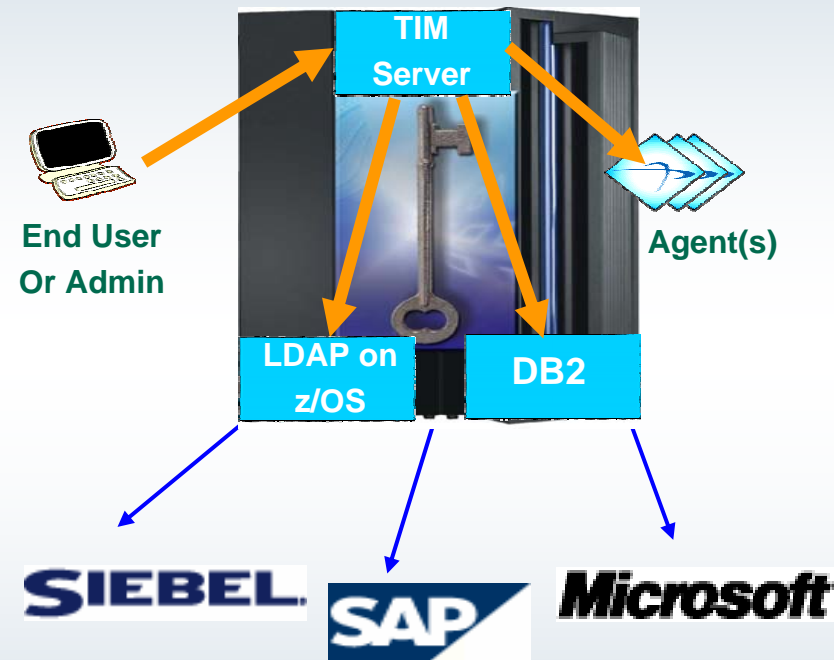
End to end tape encryption solution: An Industry First!

Available Now!

- **IBM System Storage TS1120 Tape Drive**

- **New Encryption Key Manager program**

- **Manage tape encryption based on security policies**

- **Integration with IBM tape systems, libraries**

- **Enhancements to Tivoli Storage Manager**

- **Integration with System z security and encryption capabilities**
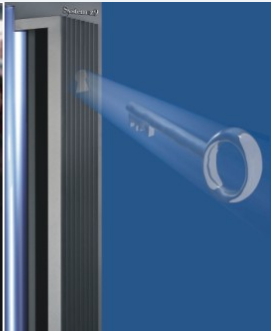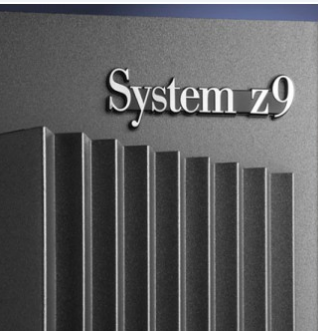
Securing The Enterprise

- System z has 40 years proven experience in securing complex commercial applications

    – **It *is* the world's most secure platform!**

- Tivoli has proven experience in securing distributed computing environments

- Both solutions embrace standards, common criteria

- The strengths of System z and Tivoli are best when leveraged <u>together</u>

    – **Solution greater than the sum of its parts**

- Modern computing environments require a paradigm shift in security

- End to end security requires a seamless and complete security approach

- New solutions integrate IBM capabilities….

- A combined approach for the best in policy, auditing, identity, access and risk management….and more

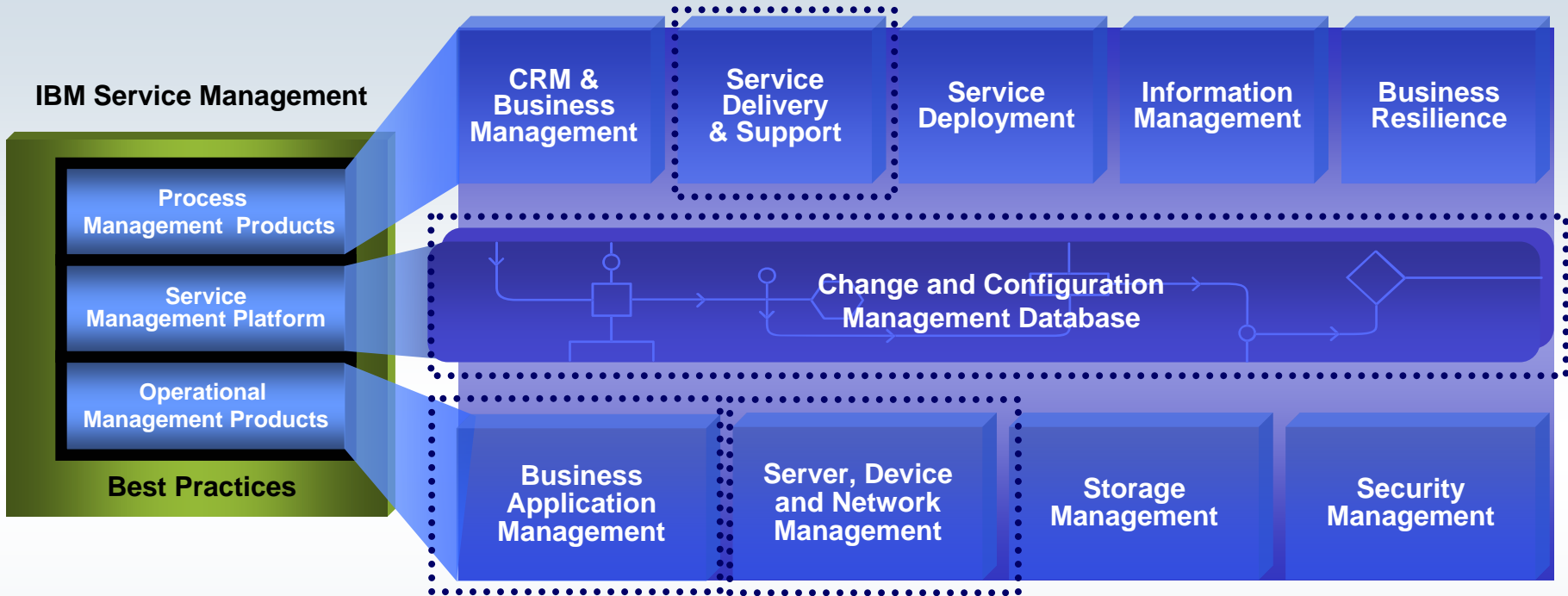# Introducing the Netcool Suite to Service Management

- **Extensive product portfolio under the flagship Netcool® brand**

- **Extend IBM Service Management with real-time Network Service Assurance capabilities**

- **Manages the world's most complex networks and services**

"As our business grows, we must deal with increasing complexity while delivering high quality IT services to our business users. The combined Netcool and Tivoli suite will help us meet the challenge."

— *Mr. Yuan Jun De, Deputy General Manager, Bank of China Information Center*

What Netcool Products Mean to IT Operations

IBM Service Management

CRM & Business Management	Service Delivery & Support

Service Deployment	Information Management	Business Resilience

Process Management Products

Service Management Platform

Operational Management Products

Best Practices

Change and Configuration Management Database

Business Application Management	Server, Device and Network Management	Storage Management	Security Management

Netcool Solutions bring leading management capabilities:

- Network Management
- Resource Monitoring
- IP Convergence

- Performance Management
- Event Consolidation
- Business Service Management

OMEGAMON XE Monitoring Solutions

IBM Tivoli OMEGAMON XE on z/OS v4.1.0

IBM Tivoli OMEGAMON XE for CICS on z/OS v4.1.0

IBM Tivoli OMEGAMON XE for IMS on z/OS v4.1.0

IBM Tivoli OMEGAMON XE for DB2 Performance Expert on z/OS v4.1.0

IBM Tivoli OMEGAMON XE for DB2 Performance Monitor on z/OS v4.1.0

IBM Tivoli OMEGAMON XE for Mainframe Networks v4.1.0

IBM Tivoli OMEGAMON XE for Storage on z/OS v4.1.0

IBM Tivoli OMEGAMON XE for z/VM and Linux v4.1.0

IBM OMEGAMON z/OS Management Console v4.1.0

Diagnose IT problems across applications, middleware and systems

SOA-enabled or traditional computing infrastructures

New OMEGAMON XE Capabilities

Common across the OMEGAMON portfolio of solutions

- **CCMDB Integration**

- **Language globalization**
  - French, German, Italian, Spanish, Portuguese, Chinese (simple & traditional), Japanese, Korean

- **Advanced interoperability via workspace linkages**
  - Enhances and improves problem resolution

- **Problem Determination Guides**
  - Improves diagnose and operational problem solving

- **Multi-product version support**
  - Enables incremental deployment of products

- **IBM zIIP monitoring**
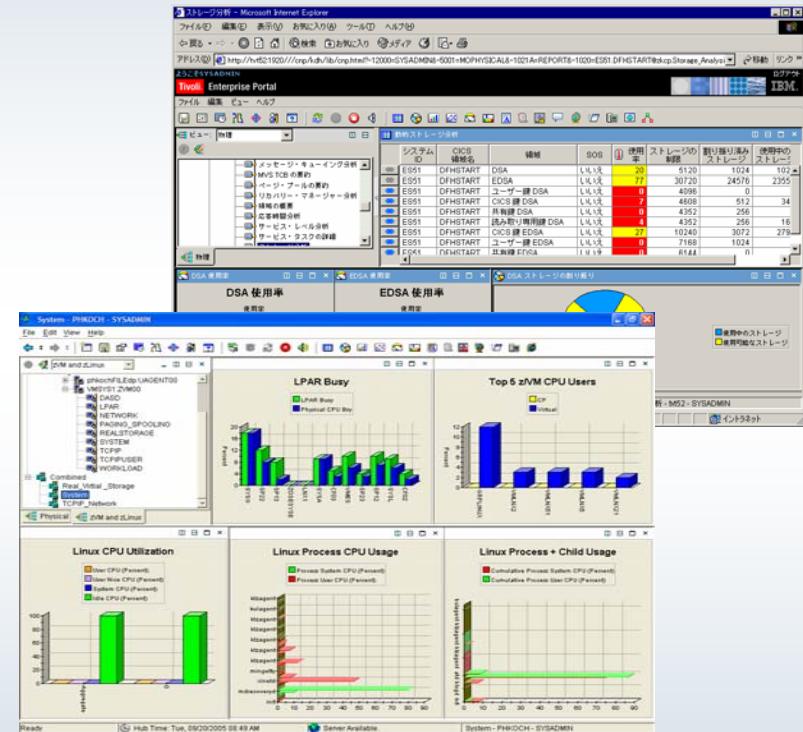
IBM OMEGAMON z/OS Management Console

- **Available at no charge for z/OS 1.4 and above**
  - Easy upgrade to comprehensive Tivoli Monitoring products

- **For monitoring the health of z/OS sysplexes and systems**
  - Replaces complex DISPLAY commands
  - Integrated Health Checker reports

- **Powerful features:**
  - Event notification
  - Drill-down to problem details and expert advice

- **Version 4.1 adds new workspaces**
  - Monitoring sysplexes
  - LPAR clusters
  - UNIX processes

Version 4.1 available 12/06

The Health Checker examines configuration values for deviations from best practices

Health check exceptions are highlighted in the zMC

IT staff can open a report for details and recommended corrective actions
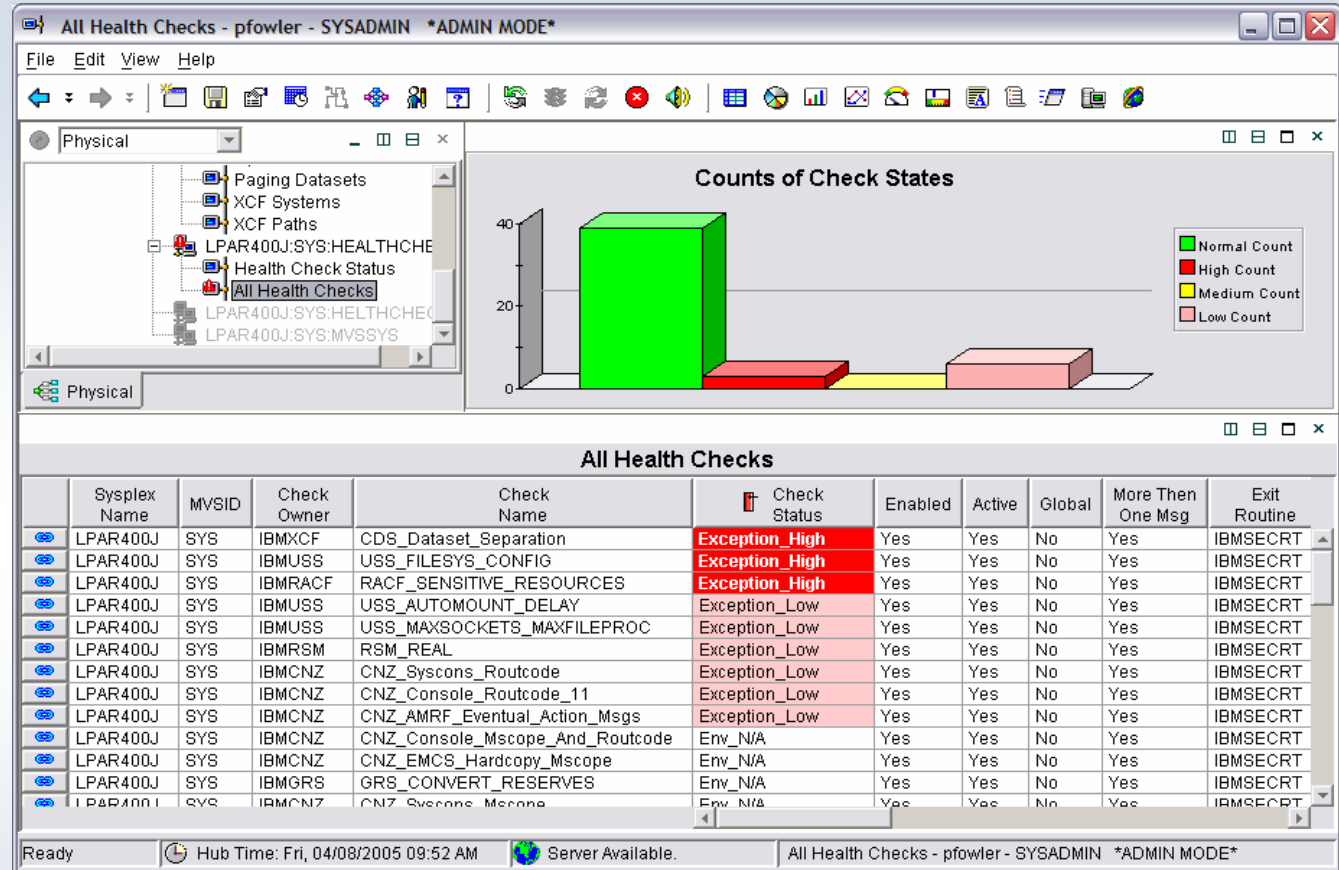
Health Checker integration is a unique feature of the IBM OMEGAMON z/OS Management Console (zMC)

Composite Application Management Solutions

IBM Tivoli Composite Application Manager for WebSphere v6.1

IBM Tivoli Composite Application Manager for J2EE v6.1

IBM Tivoli Composite Application Manager for SOA v6.1

IBM Tivoli Composite Application Manager for Response Time Tracking v6.1

IBM Tivoli OMEGAMON XE for Messaging v6.0
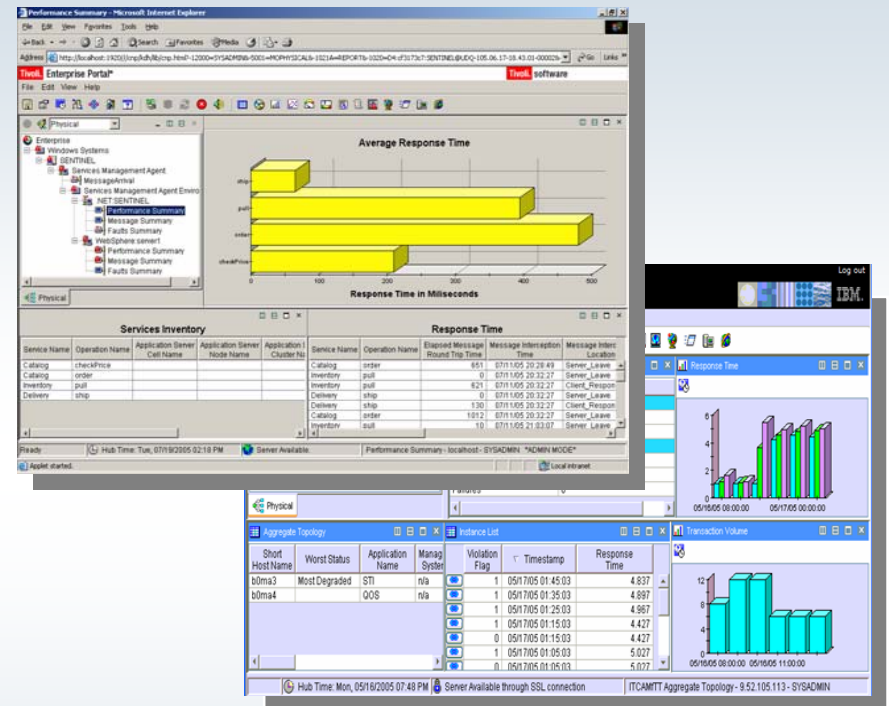
Automatically monitor, analyze and resolve problems within component-based applications regardless of their cause

Composite Application Manager for SOA v6.1

Support for ISM strategy

- Discovery Library Adapters add discovered Service information to CCMDB
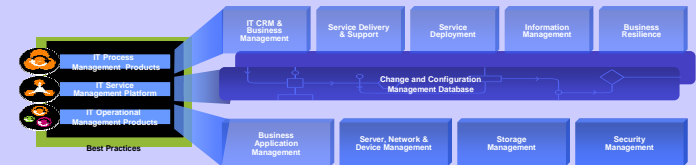
Integration with WebSphere Service Registry and Repository

- Reconciliation of registered services with those monitored by TCAM
- Tivoli Enterprise Portal views show business process relationships for impact analysis

Integration with WebSphere Enterprise Service Bus SCA runtime

- Provides SCA-based mediation primitives for enhancing management functions (monitoring, logging, routing and transformation)
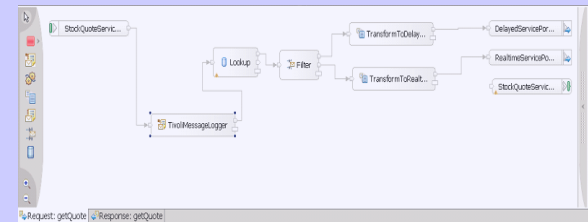
New Platform support

- CICS TS 3.1, DataPower SOA Appliances, WebSphere ESB, WebSphere CE, JBOSS Application Server, SAP NetWeaver

# System Edition for WebSphere DataPower v6.1

Management Solution for multiple WebSphere DataPower SOA Appliances

- Single Agent designed to manage multiple WebSphere DataPower SOA Appliances
- Basic monitoring for the appliances included
- Provided with every appliance or firmware upgrade

D2 Express

TEPS

TEMS

DP SNMP UA and Agent

ITCAM for SOA Agent / DP DC

Up-sell

Management Server - Windows or Linux based system
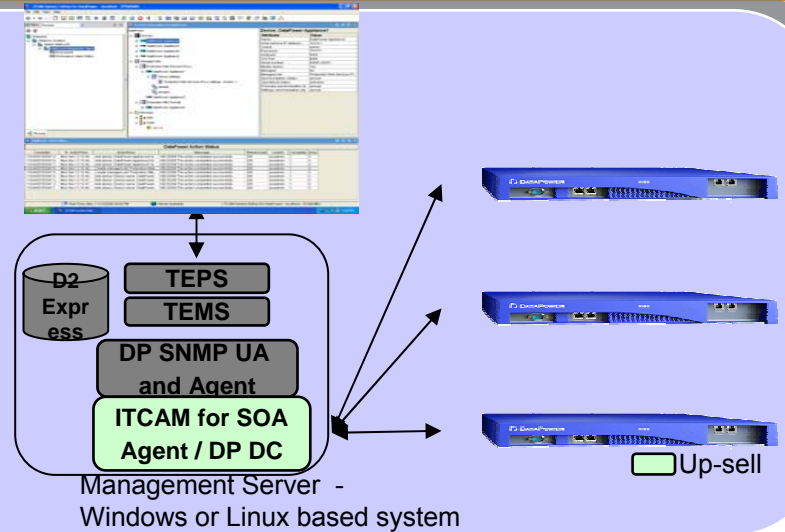
Integration with ITM and ITCAM for SOA

- Easy to add ITCAM for SOA or other ITM agents
- System Edition views coexist with ITM and SOA monitoring and management TEP portal views
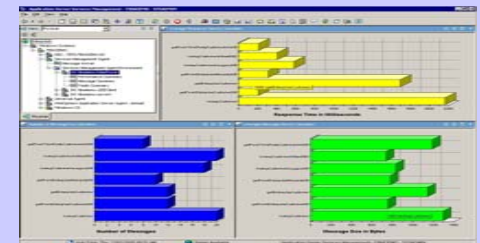
Integration with WebSphere DataPower Web GUI

- Provides ability to launch into WebSphere DataPower Web GUI for appliance configuration

Tivoli Composite Application Management Portfolio

Delivering high-performing composite applications

Analyze and Measure Transactions & Services

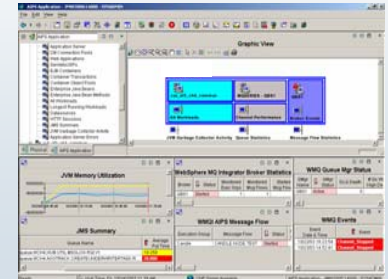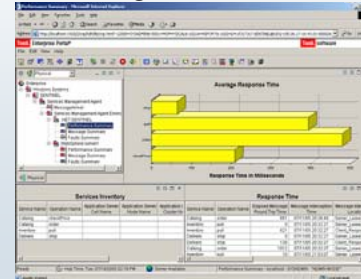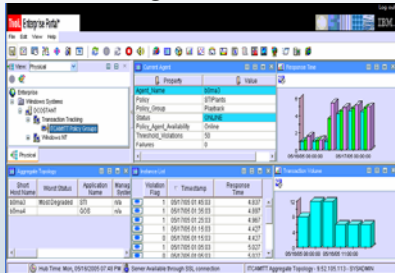Manage Application

Monitor Infrastructure
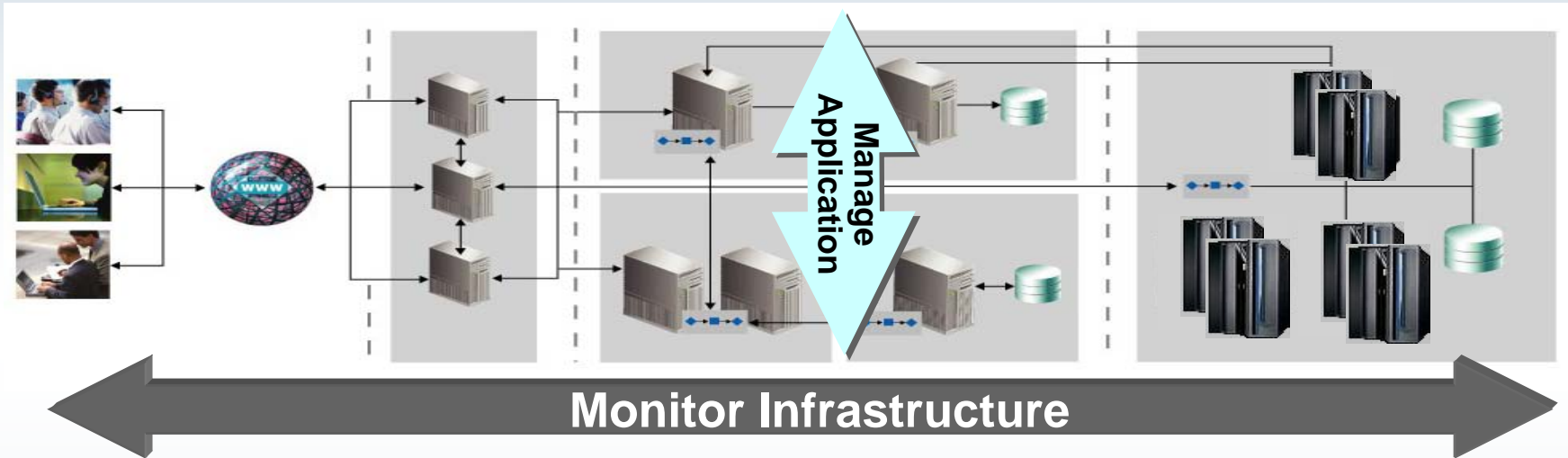
Composite Application Manager for for RTT

Composite Application Mgr for WebSphere & J2EE

Composite Application Manager for SOA

OMEGAMON XE and ITM

Workload and System Automation Solutions

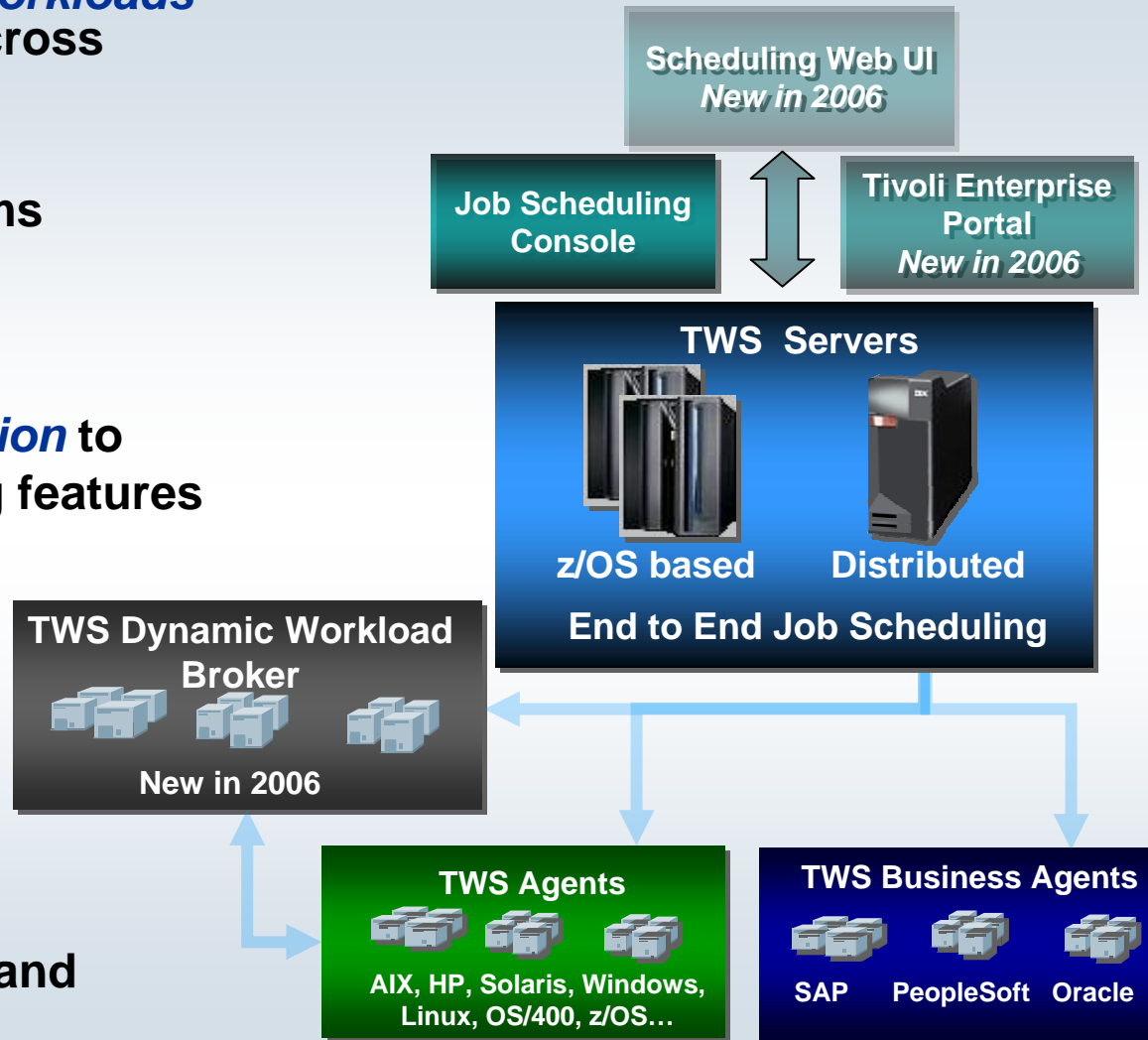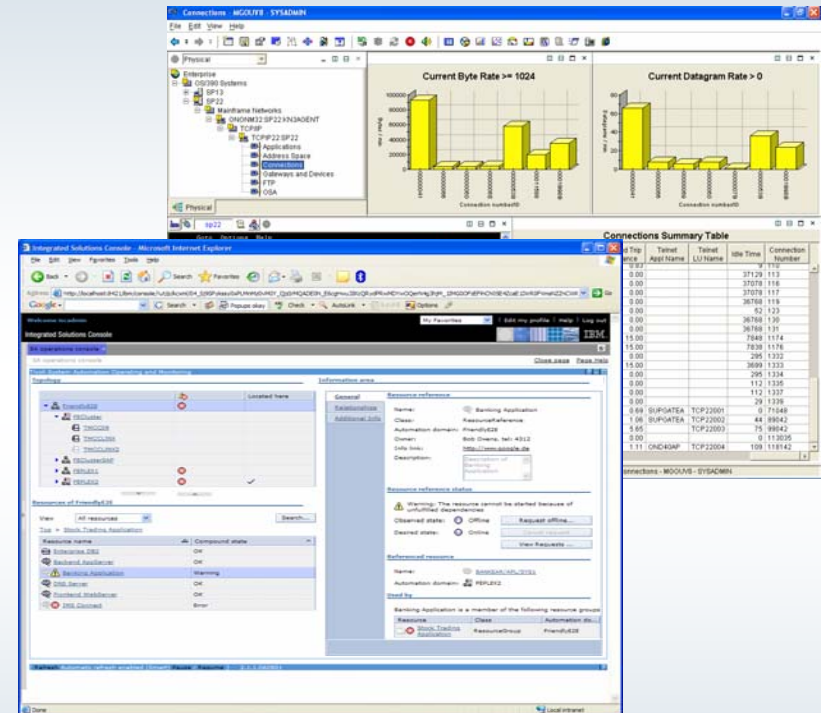| Product	Description
IBM Tivoli Workload Scheduler for z/OS v8.3	**Monitor, manage and automate workloads across traditional infrastructure and SOA-enabled environments**
IBM Tivoli Dynamic Workload Broker v8.3	**Extends the automatic clustering, scheduling and management capabilities of TWS to virtual computing and SOA**
IBM Tivoli System Automation for Multiplatforms v2.2	**Automate I/O operations, Sysplex resources, and system operations from a single point of control**
IBM Tivoli AF/REMOTE v1.0.1	**Enhanced alerting, notification and escalations**
IBM Tivoli System Automation for z/OS v3.1 (for TWS integration)	**Automatically start and stop application groups according to planned, event-based or ad hoc TWS workload schedules**
IBM Operations Manager for z/VM v1.2	**Automate z/VM routine tasks by using defined actions to automatically respond to specific issues when they arise**

IBM Tivoli Workload Scheduler

- *Single solution to integrate workloads* **from multiple applications, across multiple platforms.**

- *Improves availability and integrity* **of production systems**

- *High Availability and Fault Tolerant* **architecture.**

- *Enhanced TWS-WLM integration* **to support new WLM scheduling features**

- *New TEP integration* **to monitor the status of TWS critical jobs**

- *Dynamic real-time workload automation* **in addition to traditional calendar and event-based scheduling**

- **New** *Critical Path Monitoring* **and management feature for TWS**

Scheduling Web UI
New in 2006

Job Scheduling Console

Tivoli Enterprise Portal
New in 2006

TWS Servers

z/OS based　　　**Distributed**

End to End Job Scheduling

TWS Dynamic Workload Broker

New in 2006

TWS Agents

AIX, HP, Solaris, Windows, Linux, OS/400, z/OS…

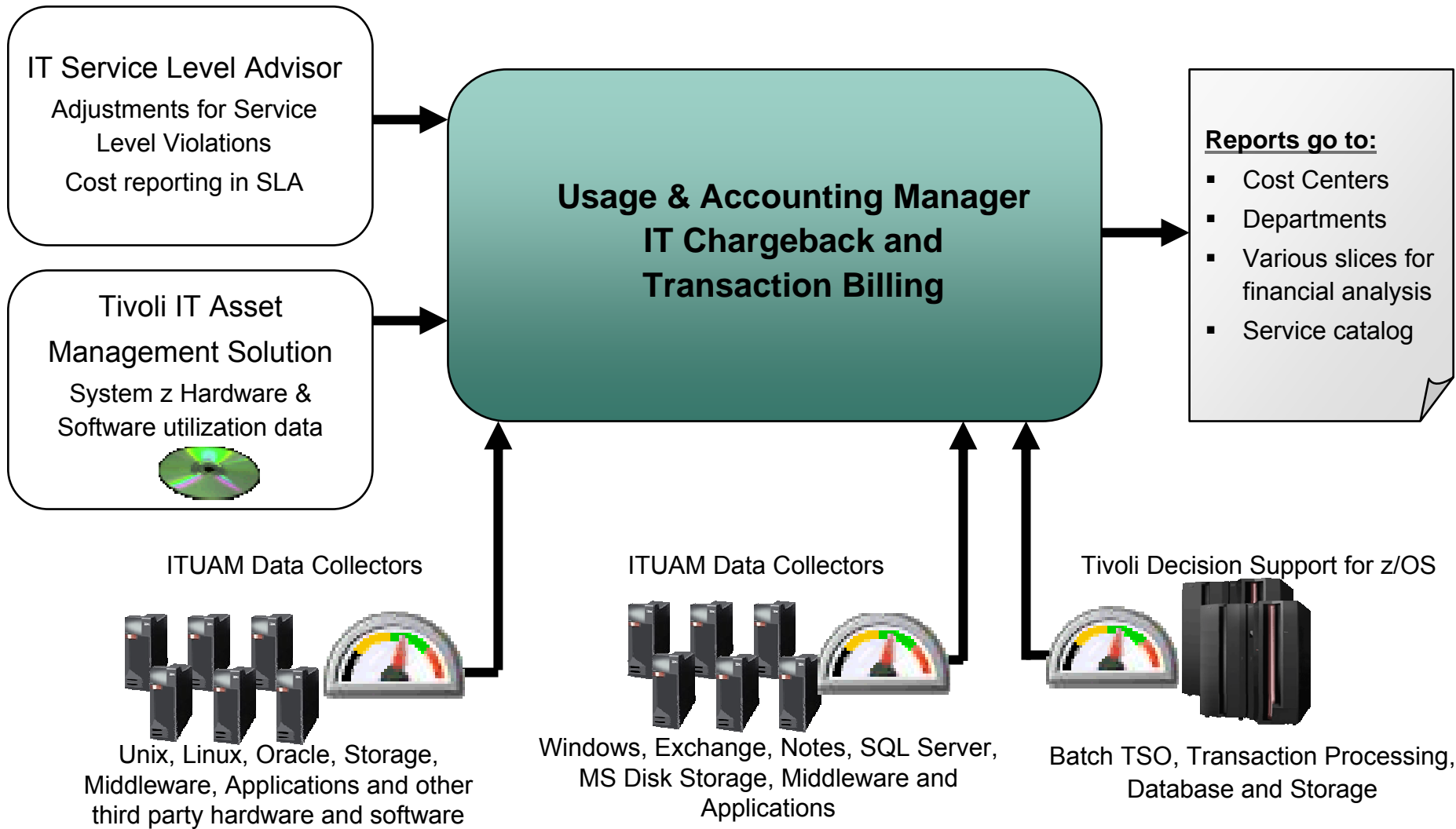**TWS Business Agents**

SAP　　**PeopleSoft**　**Oracle**

System Automation & NetView for z/OS

- **Enhanced *Tivoli System Automation on z/OS* (TSA) integration with Tivoli Workload Scheduler (TWS)**

- ***Tivoli System Automation for Multiplatforms* provides integration with IBM High Availability Cluster Multiprocessing (HACMP) and Microsoft Server Cluster Service (MSCS)**

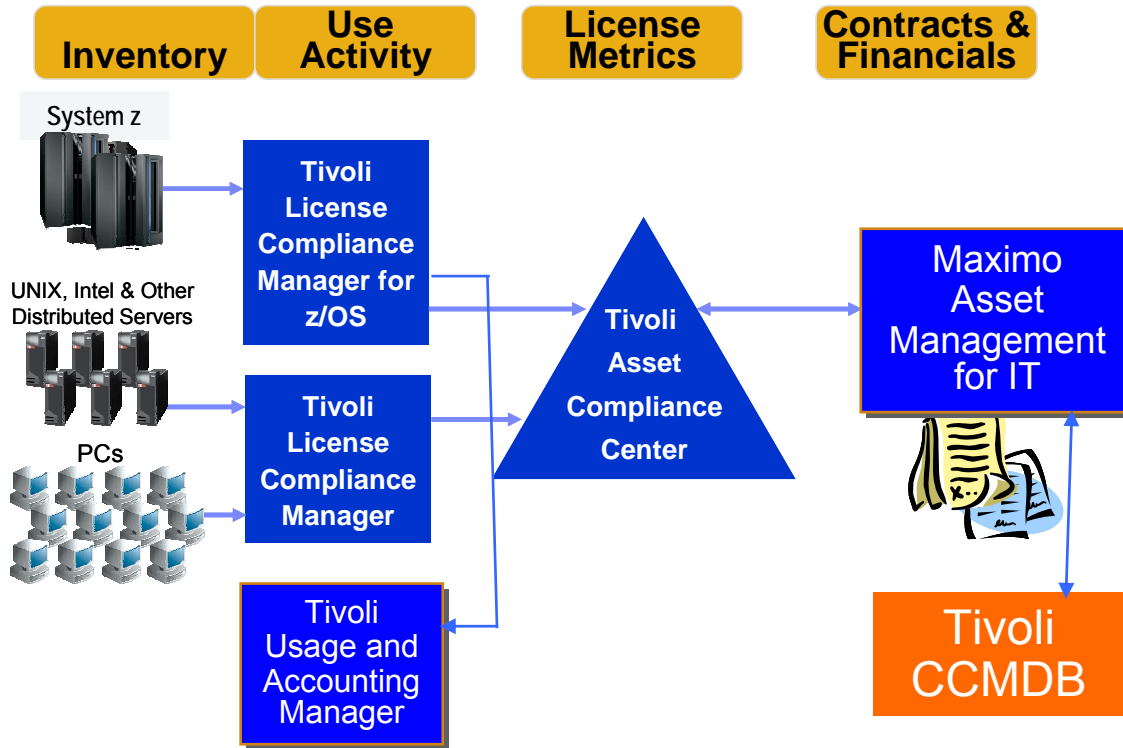- **Tivoli NetView on z/OS enhanced TEP integration improved network availability and performance management**

IT Financial Management: Tivoli Usage & Accounting Manager

IT Service Level Advisor

Adjustments for Service Level Violations

Cost reporting in SLA

Tivoli IT Asset Management Solution

System z Hardware & Software utilization data

Usage & Accounting Manager IT Chargeback and Transaction Billing

Reports go to:
- Cost Centers
- Departments
- Various slices for financial analysis
- Service catalog

ITUAM Data Collectors

ITUAM Data Collectors

Tivoli Decision Support for z/OS

Unix, Linux, Oracle, Storage, Middleware, Applications and other third party hardware and software

Windows, Exchange, Notes, SQL Server, MS Disk Storage, Middleware and Applications

Batch TSO, Transaction Processing, Database and Storage

Tivoli End-to-End Asset Management

"Enterprises that begin an asset management program experience up to a 30% reduction in costs the first year.. and continue savings of 5-10% for the next 5 years" – Gartner

Inventory	Use Activity	License Metrics	Contracts & Financials

System z

Tivoli License Compliance Manager for z/OS

UNIX, Intel & Other Distributed Servers

Tivoli License Compliance Manager

PCs

Tivoli Usage and Accounting Manager

Tivoli Asset Compliance Center

Maximo Asset Management for IT

Tivoli CCMDB

Only IBM Tivoli delivers the four essential sets of integrated information required for effective Software Asset Management across all significant environments.

Business Challenges

- Software costs are difficult to "control"

- Potential for unexpected expensive software license compliance costs

- Hard to obtain essential "who uses what software" information that enables effective software asset management

- Difficult to shift software spending to align with business needs

- Align costs of business services to departments for budgets and chargeback

Tivoli Asset Management Benefits

- Tivoli end-to-end asset management solutions help control software costs and license compliance exposure to free up funds for priority projects

- Helps organizations demonstrate adherence to stringent accounting standards (Sarbanes-Oxley)

- Track usage of software packages, storage and system z IO for resource accounting and chargeback

Event and Automation Roadmap

- **Critical Concepts**
  - Moving to *Single* Console
  - Everything to Event MoM
    - The Event Infrastructure is just plumbing
  - Flexibility of Correlation

- **Converged Event Manager**
  - Performance, Scalability, Resiliency

- **Protect Existing Investment:**
  - TEC Rulesets
  - OMNIbus Integration, scale and availability

NetView for z/OS
Event Dashboard
Complex Correlation
Lots of customization

TEC
Event Dashboard
Complex Correlation
Lots of customization

OMNIbus
Event Dashboard
Rapid In Memory
Event store
Lots of Customization

ITCAM
RTT
WAS
SOA
J2EE

OMEGAMON
z/OS, CICS,
IMS, DB2,
Storage, MFN
Messaging

ITM
Servers,
Databases,
Applications,
Agentless…

Omnibus Probes
ISM
ASM
SSM

Internet,
Application,
System
Service Monitors

Discovery
Capabilities

**Information regarding future direction/roadmaps represents IBM's
current goals/intent only & is subject to change or withdrawal by IBM**

Today's Storage Management Challenges

60%+ *of CEOs: Need to do a better job capturing and understanding information rapidly in order to make swift business decisions*

Only **1/3** *of CFOs believe that the information is easy to use, tailored, cost effective or integrated*

79% *of companies: have 2 + repositories… 25%: have 15 +*

48 *disparate financial sys. and 2.7 ERP sys. in the average $1B company*

30% *of people's time is spent searching for relevant information*

Customers

Employees

Transactions

Partners

Products

Organizations Financials

e-Mails

Databases

Web Content

Reports

Media

Documents

17% *of IT Budgets Spent on Storage HW, SW, People*

40% *of IT budgets may be spent on integration*

37% *CGR Disk Storage Growth '96-'07*

80% of IT problems are reported by end users

Sources: IBM & Industry Studies, Customer Interviews

IBM End-to-End IBM Storage Management Direction

Expand Storage Management ISM Solutions
- Enable common process execution across all platforms

Integrate System z & Open Storage Management
- Leverage CCMDB as a common data repository
- Provide common end-to-end reporting

Unify System z Storage Portfolio
- Leverage TEP technology to provide a more integrated System z Storage portfolio

Comprehensive IBM System z Storage Management

IBM service management

Process management

Service management platform

Operational management

Best practices and services

Infrastructure Management

IBM Data Facility Product (DFSMSdfp)

IBM Removable Media Manager (DFSMSrmm)

IBM Tivoli OMEGAMON XE for Storage v4.1

IBM Tivoli Advanced Catalog Managment for z/OS v1.1

IBM Tivoli Allocation Optimizer v1.2

IBM Tivoli Tape Optimizer v1.2

IBM TPC for Disk

Allows administrators to manage data and a broad range of devices such as switches, tape, removable media and storage servers

Business Continuity

IBM Data Set Services (DFSMSdss)

IBM z/OS Global Mirror v1.1

IBM Backup and Restore Manager for z/VM v1.2

IBM Tivoli Advanced Backup & Recovery for z/OS v1.1

NEW

IBM TPC for Replication

Minimizes operational risk by ensuring business data meets backup and recovery objectives

Lifecycle and Retention

IBM Hierarchical Storage Manager (DFSMShsm)

IBM Tivoli Advanced Reporting for DFSMShsm

NEW

IBM Tape Manager for z/VM v1.2

IBM Tivoli Advanced Audit for DFSMShsm v1.1

IBM Tivoli Automated Tape Allocation Manager v2.2

IBM Archive Manager for z/VM v1.1

Helps control storage growth and control costs for data requiring long retention periods.

Tivoli Enterprise Portal
Everything at your Fingertips
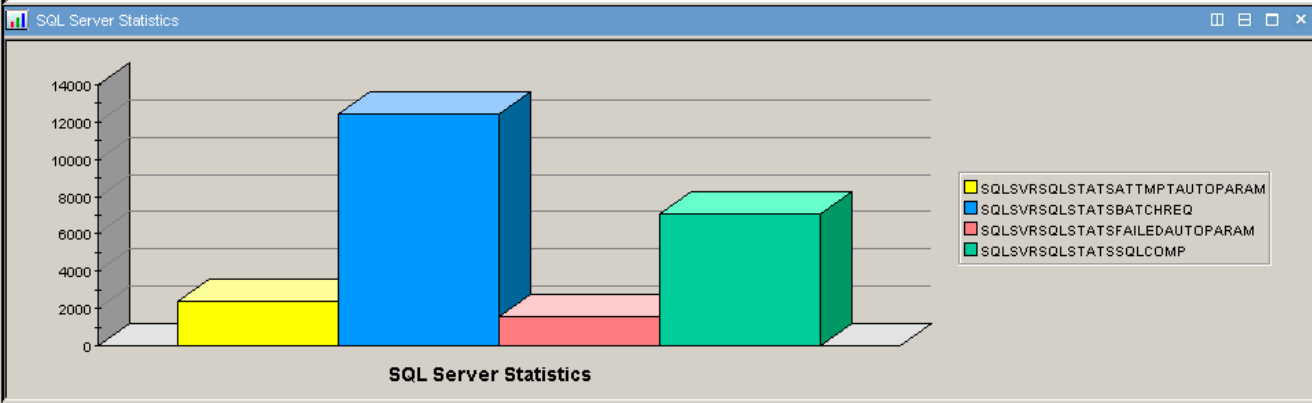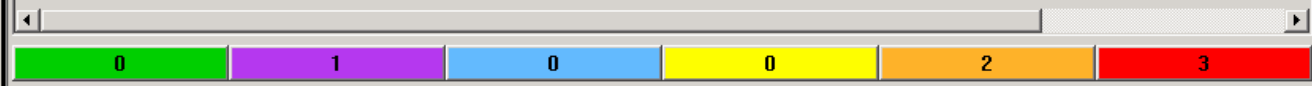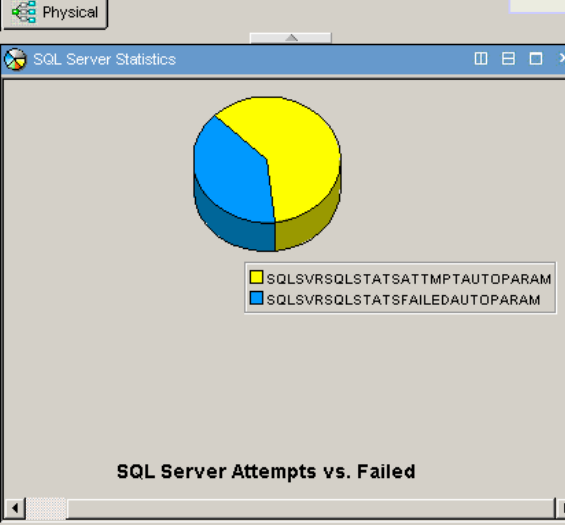
Tivoli Enterprise Portal Delivers

- Consistent, enterprise-wide monitoring and data warehousing infrastructure

- Powerful visualization and customizable views of all operations and performance metrics from across the enterprise

- A consistent, simplified, modernized user experience to reduce need for unique and scarce System z skills

Tivoli IBM System z Road Ahead

4Q 2006
- IBM Tivoli OMEGAMON v4.1
  - CICS, IMS,DB2 PE/PM
  - Mainframe Networks
  - Storage
  - z/VM & Linux
- IBM Tivoli Composite Application Manager
  - for WebSphere v6.1
  - For J2EE v6.1
  - for SOA v6.1
- IBM Tivoli Identity Manager for z/OS v4.6
- IBM Tivoli Federated Identity Manager for z/OS v6.1.1
- IBM Tivoli System Automation for Multiplatforms v2.2
- IBM Tivoli Workload Scheduler for z/OS v8.3
- IBM Tivoli License Compliance Manager for z/OS v4.2
- IBM Tivoli Usage and Accounting Manager v6.1
- IBM Tivoli Asset Management for IT v6.2
- IBM Tivoli Performance Modeler for z/OS v2.3
- IBM Tivoli Advanced Catalog Management for z/OS v1.1
- IBM Tivoli Advanced Audit for DFSMShsm v1.1
- IBM Tivoli Advanced Backup & Recovery for z/OS v1.1

1Q 2007
- IBM Tivoli OMEGAMON on z/OS v4.1
- IBM OMEGAMON z/OS Management Console v4.1
- IBM Tivoli System Automation for z/OS v3.1 (SPE) Sparkler – TEP Integration
- Consul zSecure v1.8

2Q 2007
- IBM Tivoli NetView for z/OS v5.3
- IBM Tivoli System Automation for z/OS v3.1 (SPE) Sparkler – GDPS Enhancements
- IBM Tivoli Directory Server for z/OS v1.8
- IBM Tivoli Directory Integrator for z/OS v6.1.1
- IBM Maximo Asset Management for IT v6.3
- IBM Tivoli Advanced Reporting for DFSMShsm v1.1

3Q 2007
- IBM Tivoli OMEGAMON for CICS TG on z/OS v4.1.0
- IBM Tivoli System Automation Multiplatforms v2.3
- IBM Tivoli System Automation for Integrated Operations Management v2.1
- IBM Tivoli Usage & Accounting Manager for z/OS v7.1
- IBM Tivoli Decision Support for z/OS v1.8
- Consul zSecure v1.8.1

4Q 2007
- IBM Tivoli System Automation for z/OS v3.2
- IBM Tivoli License Compliance Manager for z/OS v5.1
- IBM Tivoli Advanced Catalog Management for z/OS v1.2
- IBM Tivoli Advanced Audit for DFSMShsm v1.2
- IBM Tivoli Advanced Reporting for DFSMShsm v 1.2
- IBM Tivoli Advanced Backup & Recovery for z/OS v1.2
- IBM Tivoli Federated Identity Manager for z/OS v6.2
- Consul zSecure v1.9

Note: Plans not committed

IBM Service Management Summary
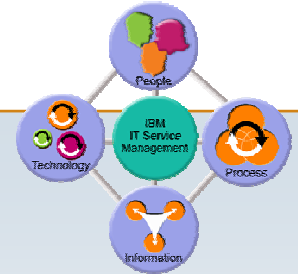
- **IBM Tivoli is committed to bringing System z solutions that:**
  - Expand System z capabilities while enhancing its proven strengths
  - Reduce the costs associated with operational and systems management

- **Integrate and Interoperate**
  - Maintaining our leadership in enhancing System z hardware and software to integrate and interoperate with new platforms and applications

- **End to End Solutions**
  - Providing End-to-End management solutions to find and fix problems quickly, leveraging System z and Tivoli solutions

- **IBM Service Management Solutions**
  - Delivering IBM Service Management solutions that can meet your key challenges cost effectively

Extending Service Management Client Value

We Delivered…

We Will Deliver…

- Initial set of automated process modules
- Adapters to OMPs

→

- IT Financial Management
- Request Center
- Automated Capacity Management
- IT Governance Support
- Touchless Service Deployment
- Converged Asset Management
- Automated Storage Management
- Automated Configuration Compliance

IBM Service Management

- Process Management
- Service Management Platform
- Operational Management

Best Practices

- CCMDB
- Relationship Discovery
- Workflow Engine

→

- Enhanced Service Visualization
- Enhanced Application Discovery
- Configuration Impact Analysis
- Enhanced Service Level Compliance and Enforcement

- New products
- Enhanced functions
- Improved ease of use

→

- Converged Network Management
- Automated Provisioning
- Enhanced Identity and Access Management for SOA

- Across Entire Portfolio

→

- Ease of Use
- Integration across all layers
- Visualization and Reporting