System z Enables Solutions For A Smarter Planet

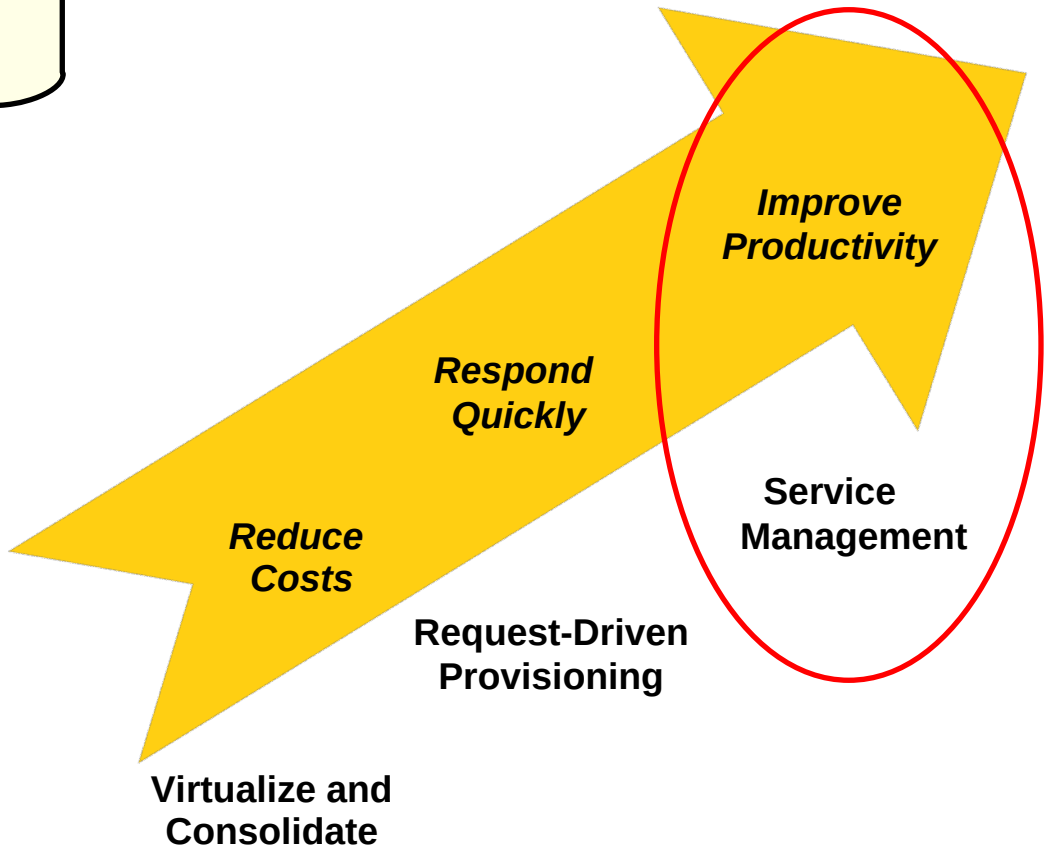
Enterprise Systems Management

Dynamic Infrastructure For A Smarter Planet

My cost of labor is very high!

Service Oriented Finance Data Center Manager

Let's Focus



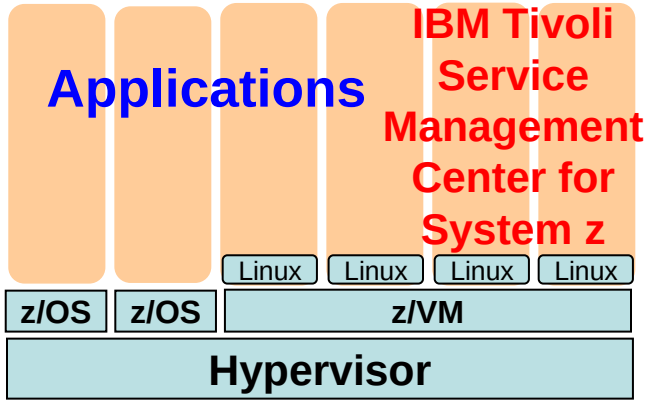
Data Centers Need A Service Management Hub To Meet Service Levels And Reduce Costs

Visibility	Control	Automation
See issues end-to-end in business context	**Standardize IT processes and provide self-service**	**Automate repeating tasks to simplify**
Respond faster and make better decisions	***Improve quality and reduce mistakes***	***Lower costs and build agility***

Solution: ***IBM Tivoli Service Management Center for System z***

Mainframe As A Service Management Hub

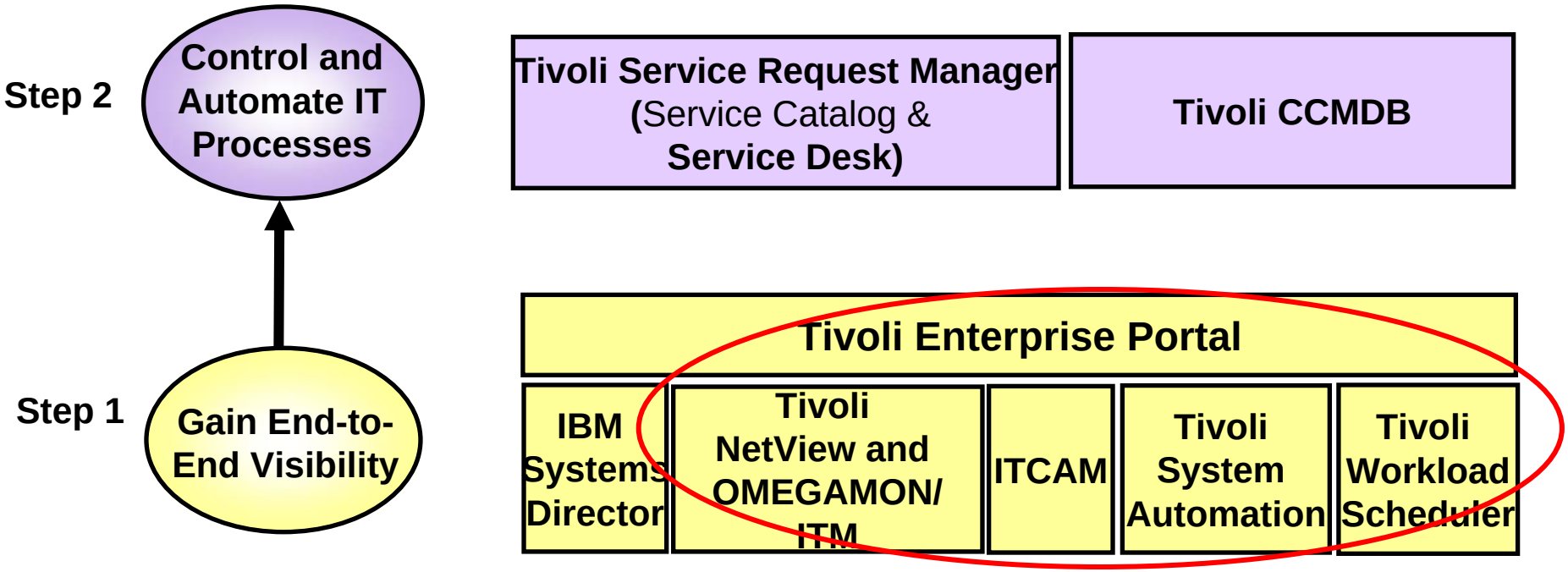
- Consolidate management on the mainframe
  - Service Management hub on Linux on z
  - z/OS supported as a managed system
- Manage the Dynamic Infrastructure
  - Best practices
  - Productivity
  - Lowest Cost



Applications

Systems Management

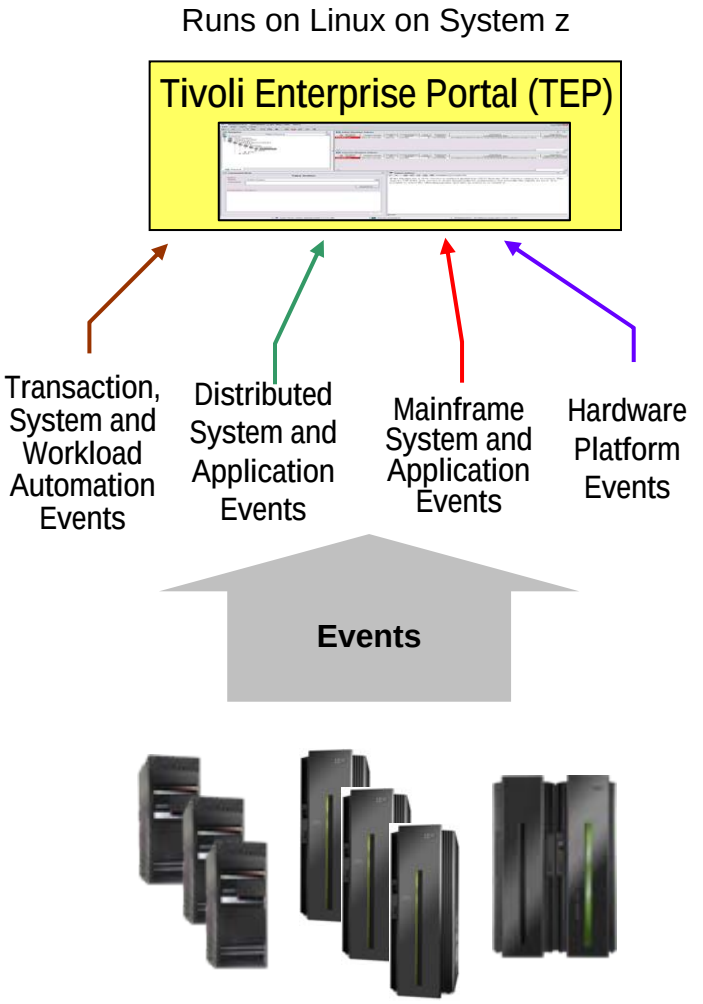
A Step By Step Approach To Implementing Tivoli Service Management Center For System z



Visibility… Control… Automation

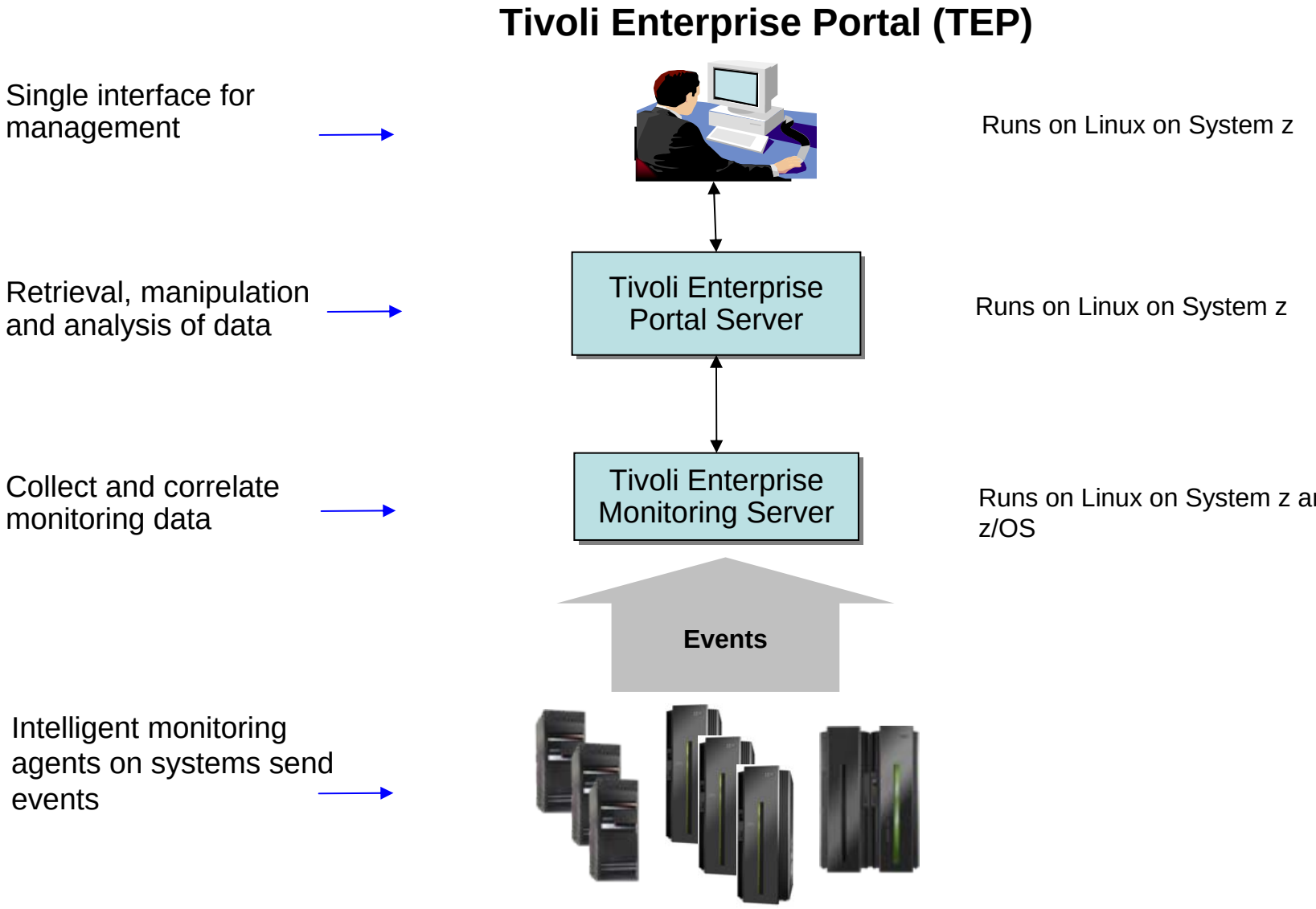
Tivoli Enterprise Portal (TEP) – A Common Monitoring Dashboard On System z

- Resource status/health from various event sources:
  - Hardware events from **IBM Director**
  - Mainframe events from **Tivoli OMEGAMON**
  - Distributed events from **Tivoli Monitoring (ITM)**
  - Transaction events from **Tivoli Composite Application Manager (ITCAM)**
  - System automation events from **Tivoli System Automation (TSA)**
  - Batch workload events from **Tivoli Workload Scheduler (TWS)**
  - Events from 3rd party monitors
- Detect incidents with *situations*
  - Out-of-the-box supplied *situations* include combination of metrics and thresholds
  - Built-in situation editor allows to customize
- *Expert advice* helps obtain detailed explanation and recommendation for resolution
- *Take action* to automatically resolve recurring problems with existing or customized scripts



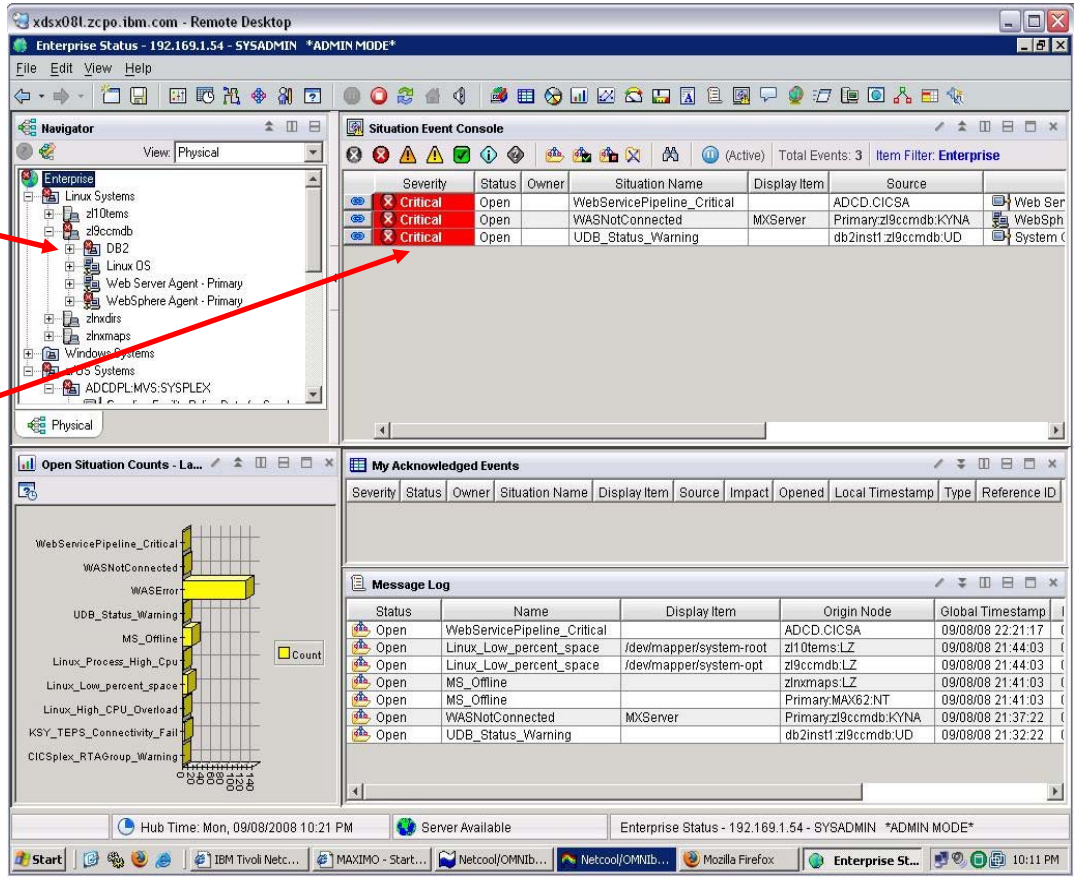
Visibility to What's Going On

End-To-End Visibility With Intelligent Monitoring



DEMO: Tivoli Enterprise Portal (TEP)

- Monitor resources end-to-end with workspaces
- *Situations* triggered by problems, for example:
  - CICS application not responding
  - DB2 application has issues



A Dynamic Role-based Portal for End-to-End Monitoring!

Tivoli NetView And Tivoli OMEGAMON XE – Monitor Mainframe Resources

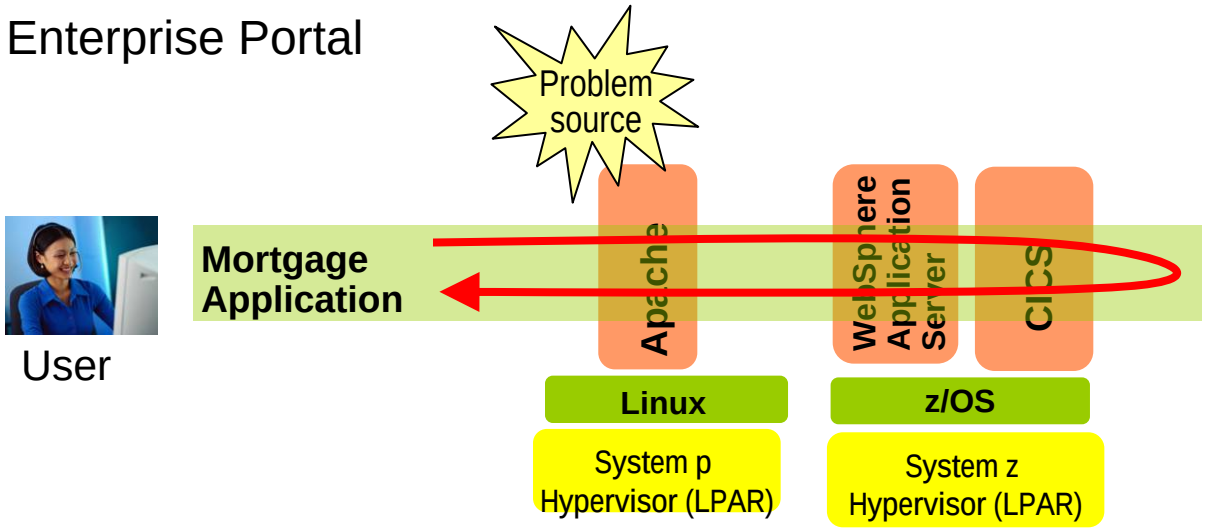
- Tivoli NetView and Tivoli OMEGAMON XE agents for mainframe servers
  - *NetView on z/OS* – monitor and control TCP/IP and SNA networks to help maintain high availability
  - *OMEGAMON XE on z/OS* – monitor key resources such as CPU, LPARs, I/O, network, enqueue, paging, zIIP, zAAP, Cryptoprocessors
  - *OMEGAMON XE on z/VM and Linux* – monitor z/VM and Linux usage of resources such as CPU, network, storage
  - *OMEGAMON XE for Mainframe Networks* – collect data and diagnose network performance issues across z/OS systems
  - *OMEGAMON XE for DB2 PM/PE on z/OS* – monitor performance of DB2 in a z/OS environment
  - *OMEGAMON XE for IMS on z/OS* – manage IMS systems
  - *OMEGMAON XE for CICS on z/OS* – manage CICS systems

Tivoli Monitoring – Monitor Distributed Resources

- Tivoli Monitoring agents for distributed servers
  - *Monitoring* (base) – monitor system resources such as CPU, I/O, network
  - *Monitoring for Database* – monitor availability and performance of distributed databases such as DB2, Oracle, Microsoft SQL Server
  - *Monitoring for Business Integration* – manage IBM WebSphere MQ, WebSphere MQ Integrator, WebSphere MQ Workflow and IBM WebSphere Interchange Server
  - *Monitoring for Applications* – monitor SAP
  - *Monitoring for Messaging and Collaboration* – monitor Lotus Domino

Tivoli Composite Application Manager (ITCAM) – End-To-End Transaction And SOA Management

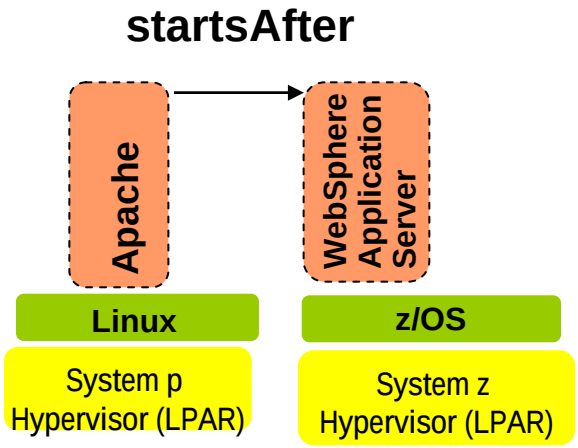
- Tracks transaction performance end-to-end across multiple physical and/or virtual systems to isolate bottlenecks quickly
  - Isolate source of performance problem across web servers, WebSphere and WebLogic application servers, CICS, IMS and DB2 subsystems, as well as ERP environments
- Monitors and performs simple control of message traffic between Web services in the SOA environment
  - Filter messages based on user-configurable criteria
- Sends events to Tivoli Enterprise Portal



Visibility to Track End-To-End Transactions

Tivoli System Automation (TSA) – Automate System Operations

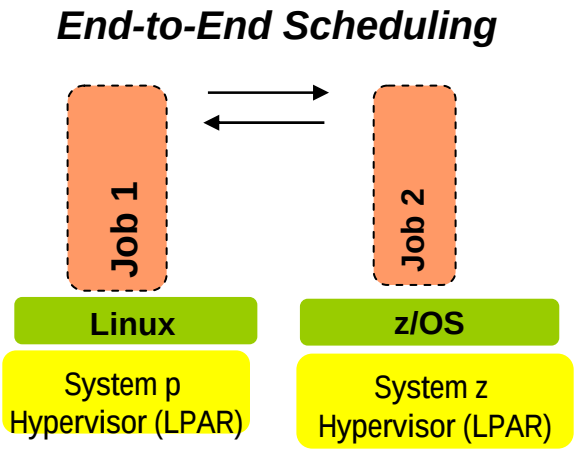
- Automate operations on hardware, I/O and applications
- No Scripts, policy-based automation
- Can manage relationship between resources and grouping of resources to automate at application level
- Includes out-of-the-box automation modules for middleware such as IMS, CICS, DB2, mySAP, WebSphere
- Can enable end-to-end application startup and shutdown across System z and distributed platforms
- Sends events to Tivoli Enterprise Portal



Automate Routine Operations

Tivoli Workload Scheduler (TWS) – Batch Workload Automation

- Enables planning for hundreds of thousands of jobs, resolves interdependencies, launches and tracks each job
- Powerful calendar-based and event-based scheduling capabilities
- Automatic recovery of jobs
- Workload Manager (WLM) integration to optimize resource utilization and favor late critical jobs
- Provides a single point of control for System z workloads or enterprise-wide workloads in end-to-end environments
- Sends events to Tivoli Enterprise Portal



Automate Job Scheduling

Control And Automate IT Processes

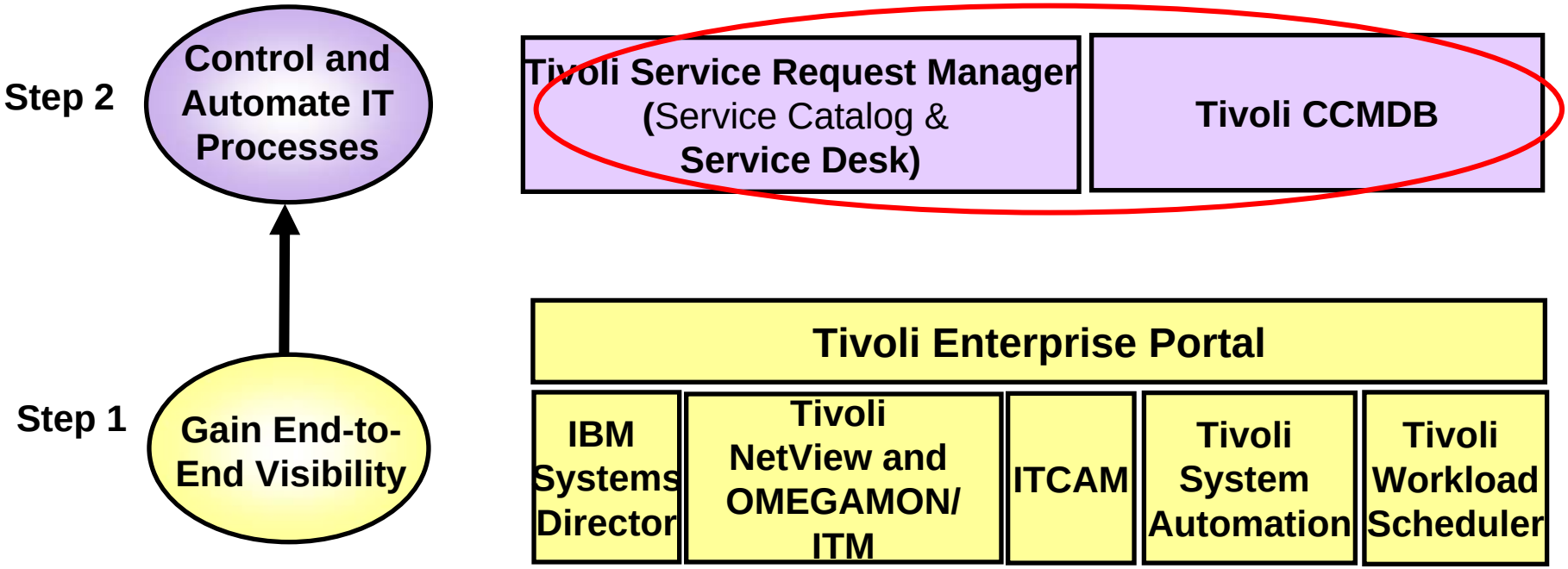
One of my key staff members is leaving.

My new employees don't have the experience to handle problems when they come up.

Data Center Manager

New Employee

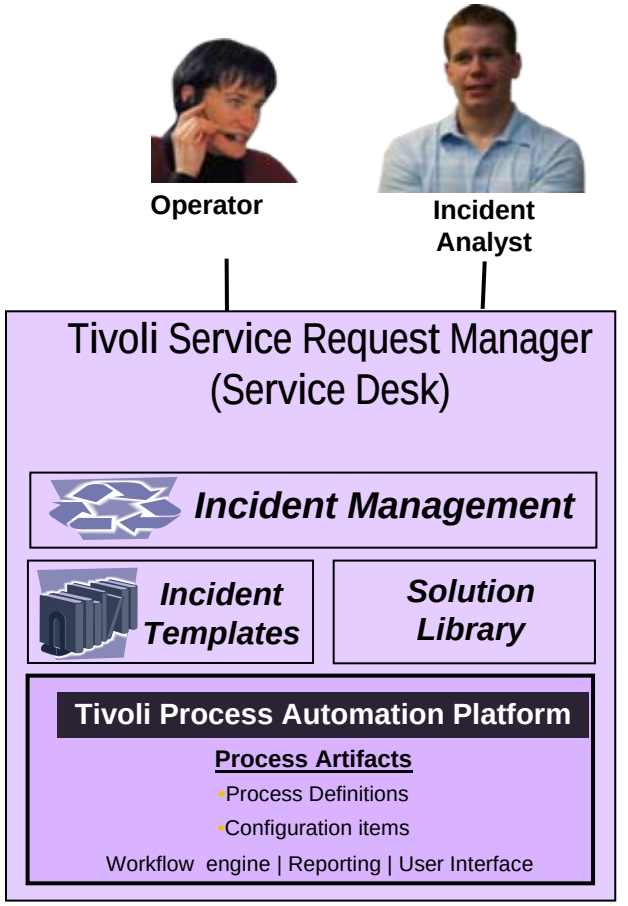
A Step By Step Approach To Implementing Tivoli Service Management Center For System z



Visibility… Control… Automation

Tivoli Service Request Manager (Service Desk) – Control Incident Management Process

- Central point to control service requests for help, information and service
- Create incident templates for common service desk calls and library of reusable solutions
  - Use templates to quickly create tickets
  - View updates and search library for solutions
- Automate incident management process
- Built on the common Tivoli Process Automation Platform to enable integration with other processes via common UI, common workflow engine, common database

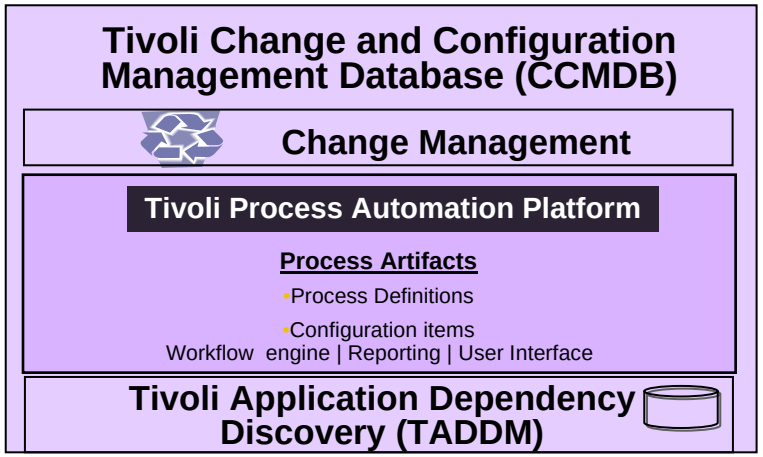


Runs on Linux on System z

Capture and Execute Best Practices

Tivoli Change And Configuration Management Database (CCMDB) – Discover And Manage Changes

- Discover assets and keep track of changes
  - Discovery library adapter for z/OS
  - 200 out-of-the-box sensors discover distributed resources
- Automated dependency mapping via application descriptors
  - Capture information about modules in business applications via descriptors
- Leverages common Tivoli Process Automation Platform to enable integration of change process with other processes
  - Common UI
  - Common workflow engine
  - Common database



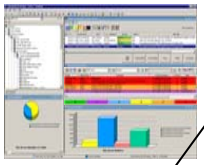
Out-of-the-box Automated Discovery

Auto Discover New Assets

Tivoli CCMDB – Control And Automate Change Management Process

- Associate change window with configuration items (managed assets)
  - Check for schedule conflicts
  - Prevent changes from occurring outside defined window
- Identify the impact of implementing a change
  - Identify and record impacted configuration items using discovered relationship data
  - Subject Matter Experts can document assessment results
  - Get Approvals from all stakeholders before implementing change
- Out-of-the-box best practices and customizable change management process

Mainframe As A Service Management Hub With Tivoli Service Management Center For System z



Applications

Agents

Agents

IBM Tivoli Service Management Center for System z

Tivoli Enterprise Portal

Tivoli Workload Scheduler
Tivoli System Automation
ITCAM
Tivoli NetView and
OMEGAMON/ITM

IBM Systems Director

Tivoli Service Request Manager (Service Desk and Service Catalog)

Tivoli CCMDB

Linux | Linux | Linux | Linux

z/OS | z/OS | z/VM

Hypervisor

Management Focal Point

System Management Software Costs Less On A Consolidated zLinux Platform

Here are more cost savings…

It costs less to install system management software on zLinux than it does to install comparable software in the unconsolidated environment

IBM

Tivoli Or Computer Associates Solution Used To Manage 100 Distributed Linux Servers

100 Servers (200 PVU or Quad-core for each server)
- ***100 apache***
- ***100 WAS***
- ***100 DB2***

3 authorized administrator licenses; 8 concurrent administrator licenses*

manage

Tivoli CCMDB

Tivoli Service Request Manager

ITCAM for Applications

Tivoli software total (5 yr): $2,629,960

OR

CA CMDB

CA Change Manager

CA Service Desk

CA Unicenter (database monitor, web server, WebSphere)

CA software total (5 yr): $6,683,993

*Customer case used as a basis – 1 authorized user per 40 servers , 1 concurrent user per 13 servers

Tivoli Or CA Software (Distributed) Pricing

Parts	1st Year	2nd-5th Year Maintenance
Tivoli CCMDB (base)	$83,600	$66,800
Tivoli CCMDB (VU)	$50,000	$40,000
Tivoli CCMDB (authorized user)	$3,150	$2520
Tivoli CCMDB (concurrent user)	$21,040	$16,800
TSRM (authorized user)	$8,250	$6,600
TSRM (concurrent user)	$55,040	$44,160
ITCAM for Applications (PVU)	$1,240,000	$992,000
TOTAL	$1,461,080	$1,168,880

Parts	1st Year	2nd-5th Year Maintenance
CA CMDB	$50,000	$40,000
CA CMDB Agent	$100,000	$80,000
CA Change Manager	$10,000	$8,000
CA Change Manager (user)	$5385	$4,308
CA Service Desk (user)	$38,500	$30,800
CA Unicenter (database, web server, WebSphere)	$3,509,400	$2,807,600
TOTAL	$3,713,285	$2,970,708

5 year Tivoli Total: $2,629,960

5 year CA Total: $6,683,993

Tivoli Solution Used to Manage 100 Distributed Linux Servers w/TSA & TWS

100 Servers (200 PVU or Quad-core for each server)
- ***100 apache***
- ***100 WAS***
- ***100 DB2***

3 authorized administrator licenses; 8 concurrent administrator licenses*

manage

Tivoli CCMDB

Tivoli Service Request Manager

ITCAM for Applications

Tivoli System Automation

Tivoli Workload Scheduler

Tivoli software total (5 yr): $4,855,960

Parts	1st Year	2nd-5th Year Maintenance
Tivoli CCMDB (base)	$83,600	$66,800
Tivoli CCMDB (VU)	$50,000	$40,000
Tivoli CCMDB (authorized user)	$3,150	$2520
Tivoli CCMDB (concurrent user)	$21,040	$16,800
TSRM (authorized user)	$8,250	$6,600
TSRM (concurrent user)	$55,040	$44,160
ITCAM for Applications (PVU)	$1,240,000	$992,000
Tivoli System Automation (PVU)	$660,000	$528,000
Tivoli Workload Scheduler (PVU)	$576,000	$462,000
TOTAL	$2,697,080	$2,158,880

*Customer case used as a basis – 1 authorized user per 40 servers , 1 concurrent user per 13 servers

Tivoli Solution On zLinux Used To Manage Consolidated Environment On zLinux

Apache/WAS/DB2

10 IFL to consolidate on System z BC or 7 IFL to consolidate on System z EC (120 PVU each)

1 authorized administrator license; 1 concurrent administrator license

manage

Tivoli CCMDB

Tivoli Service Request Manager

ITCAM for Applications

Tivoli System Automation

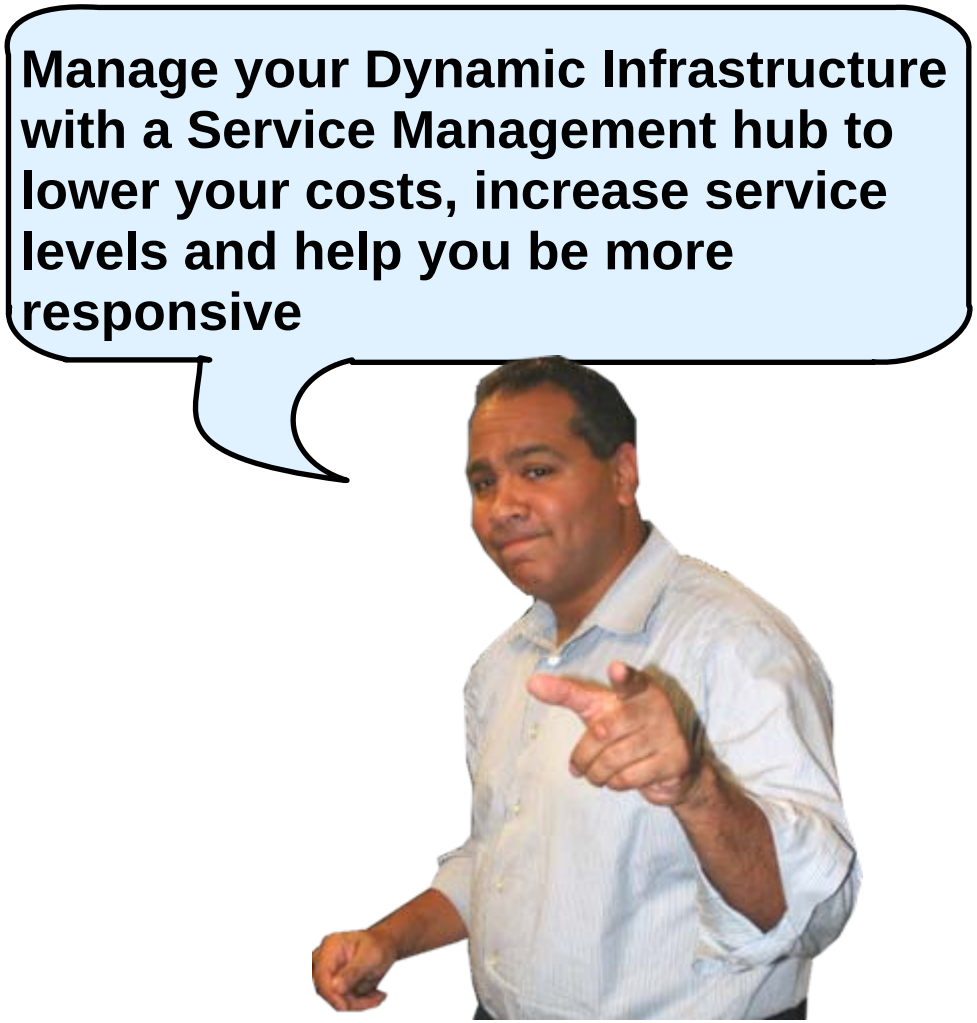
Tivoli Workload Scheduler

5 year Tivoli software total on System z BC : $450,850

5 year Tivoli software total on System z EC : $367,906

Parts	1st Year	2nd-5th Year (Maint)
Tivoli CCMDB (base)	$83,600	$66,800
Tivoli CCMDB (VU)	$3,500	$2,800
Tivoli CCMDB (authorized user)	$1,050	$840
Tivoli CCMDB (concurrent user)	$2,630	$2,100
TSRM (authorized user)	$2,750	$2,200
TSRM (concurrent user)	$6,880	$5,520
ITCAM for Applications (PVU)	$52,080	$41,664
Tivoli System Automation (PVU)	$24,192	$19,404
Tivoli Workload Scheduler (PVU)	$27,720	$22,176
TOTAL (EC)	$204,402	$163,504

Summary


Manage your Dynamic Infrastructure with a Service Management hub to lower your costs, increase service levels and help you be more responsive
IBM