



System z – A Smart System For A Smarter Planet

Reduce Labor Costs With System
z In A Dynamic Infrastructure

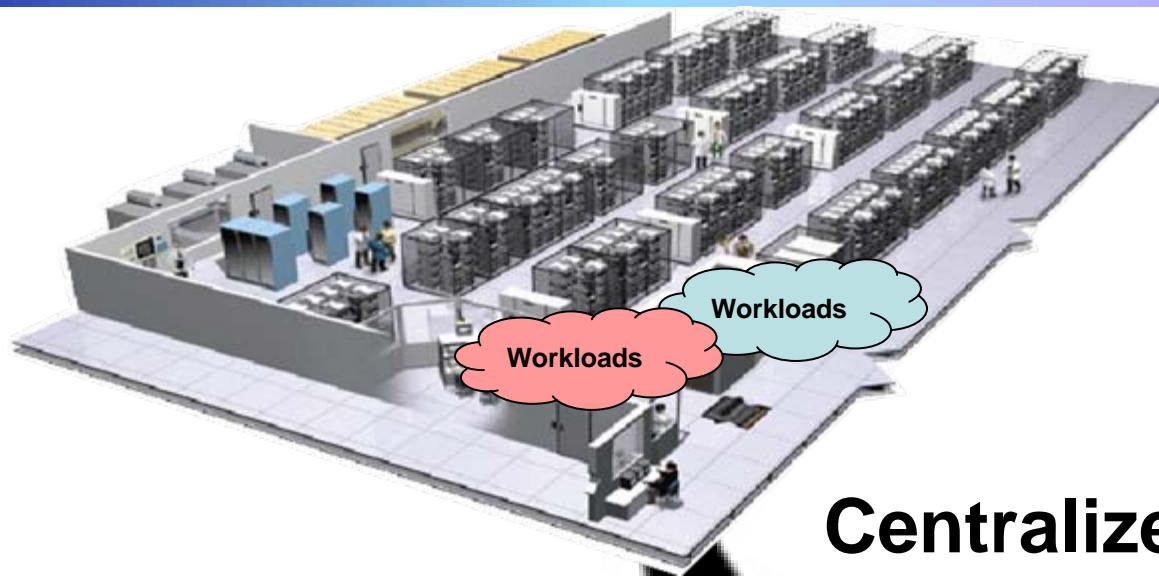
Reduce Labor Costs With System z

We learned how System z can reduce TCA costs. Now, let's focus on labor costs...



IBM

Reducing Labor Costs On System z



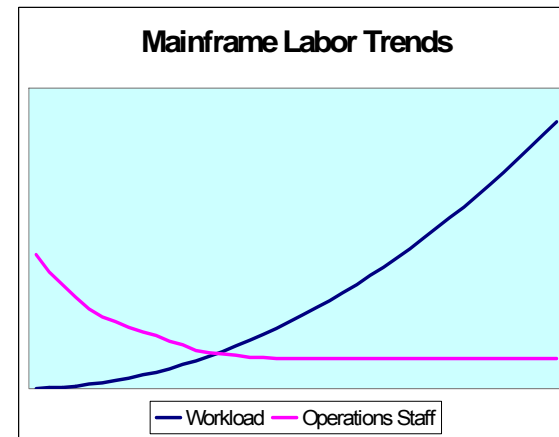
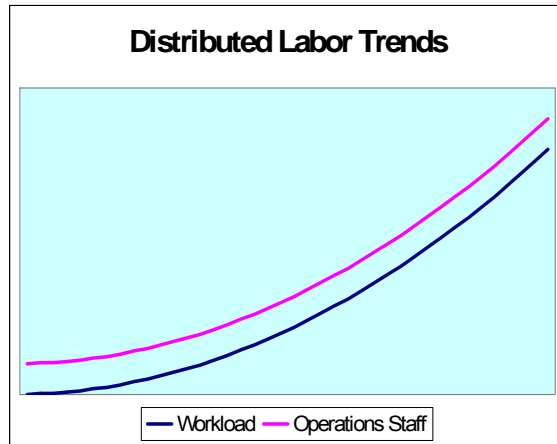
Centralized Platform

Heavy Processing
Heavy I/O
Quality of Service



IBM System z

Historic System z Labor Productivity



- Labor costs are proportional to the number of servers
 - ▶ 31 servers/FTE (Intel)
 - ▶ 15 servers/FTE (Unix/Linux)
- Consolidation and structured practices drive increases in labor productivity
 - ▶ Typical best practice 500 – 1000 MIPS per FTE
- System z labor costs stay flat while workload increases
- Distributed labor costs increase linearly with the number of servers
- Why?
 - ▶ Virtualization to run multiple workloads
 - ▶ Mainframe environments traditionally implements structured management processes

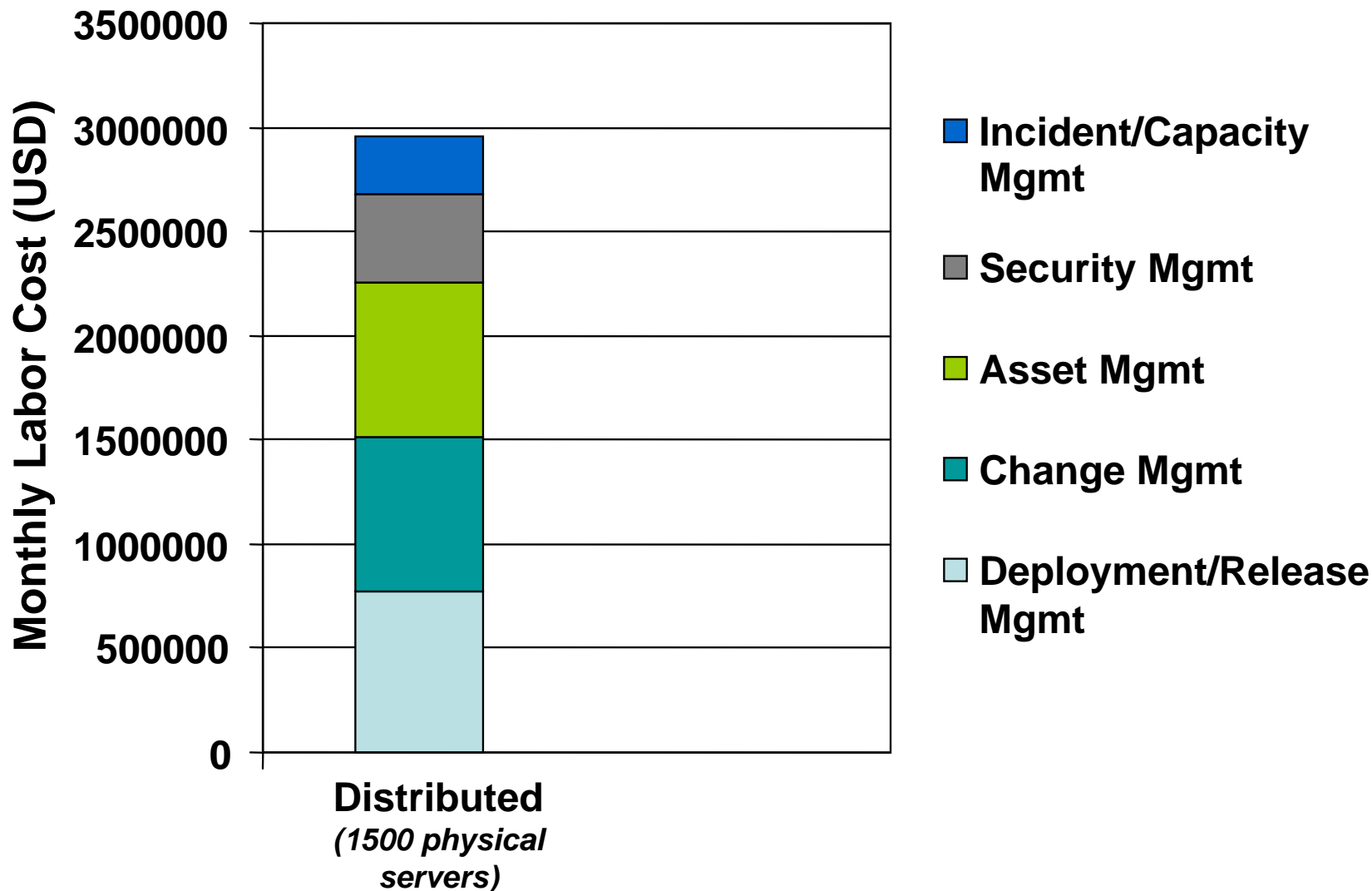
Information Technology Infrastructure Library (ITIL) Describes Structured Management Processes

- Provides a cohesive set of best practice for IT Service Management
- Generic model of 42 processes to manage mainframe defined in “yellow books” were key inputs to industry standard ITIL*
- Examples of key processes identified:
 - ▶ Deployment/release management
 - ▶ Change management
 - ▶ Asset management
 - ▶ Security management
 - ▶ Incident/capacity management

<http://www.zjournal.com/pdfIssue/pdfArticle/Crosby.zJ.Apr-May07.pdf>

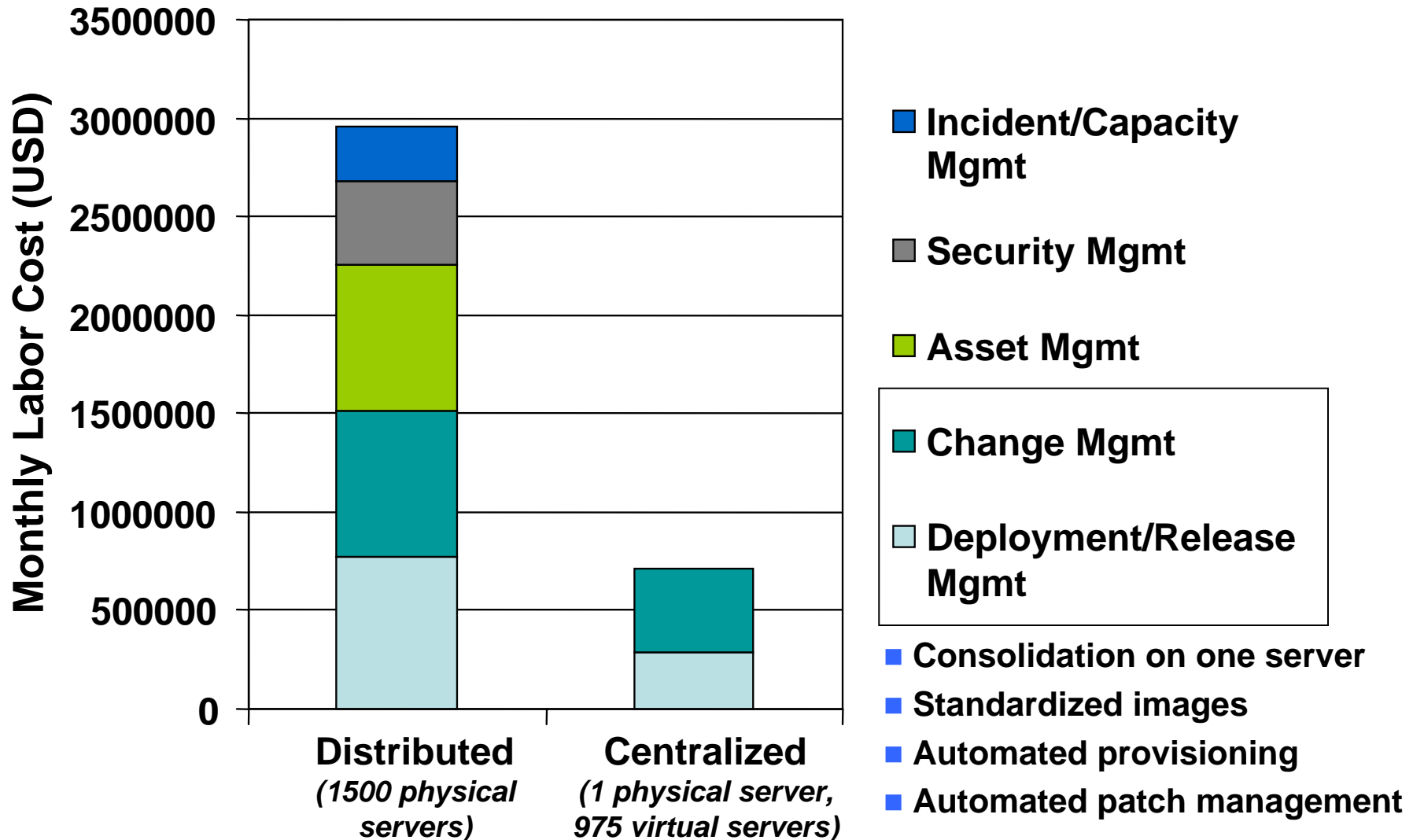
Case Study: Benefit Of Virtualization And Structured Management Processes

Financial Services Firm Estimates Monthly Labor Savings Of 55%



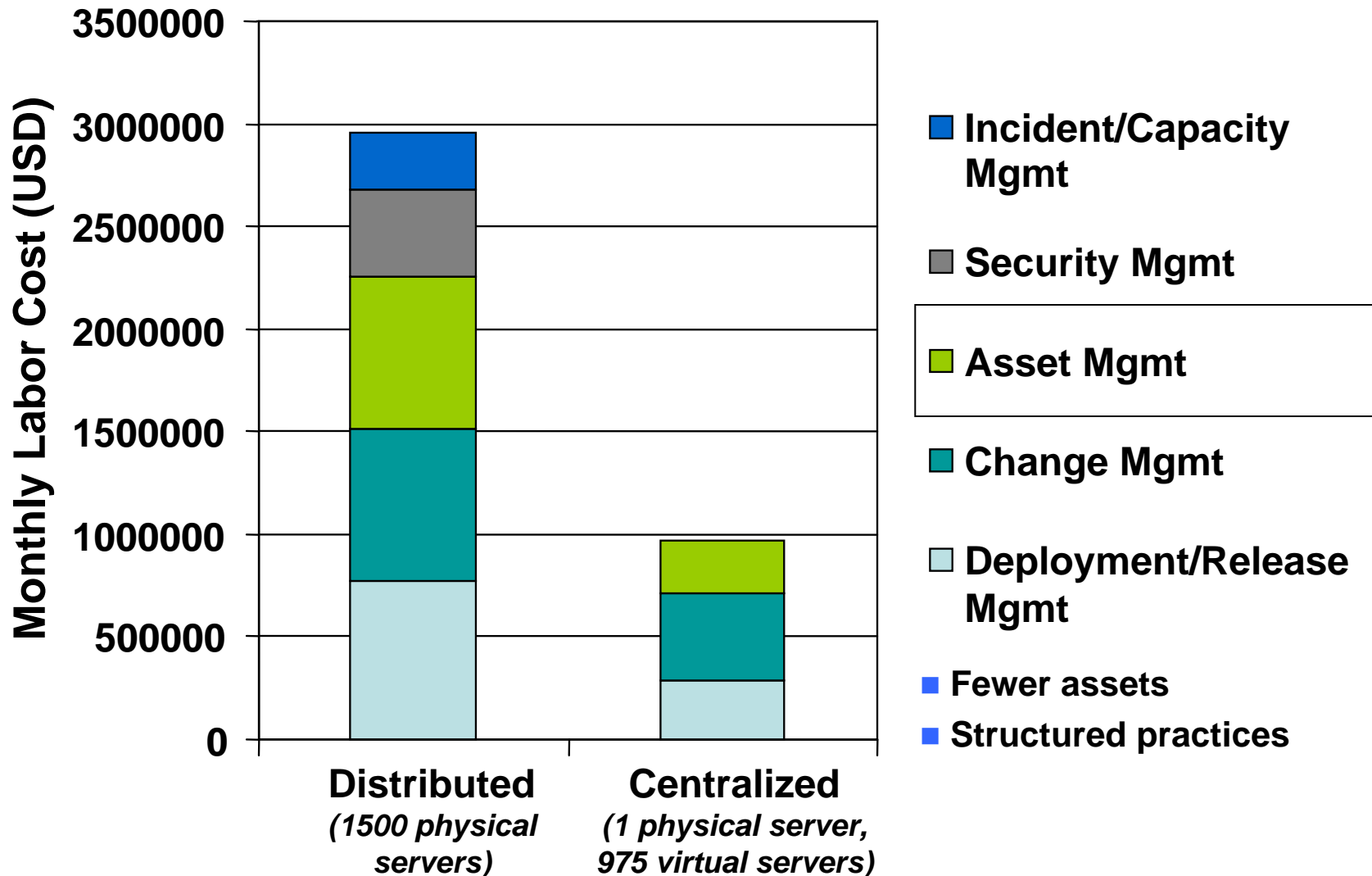
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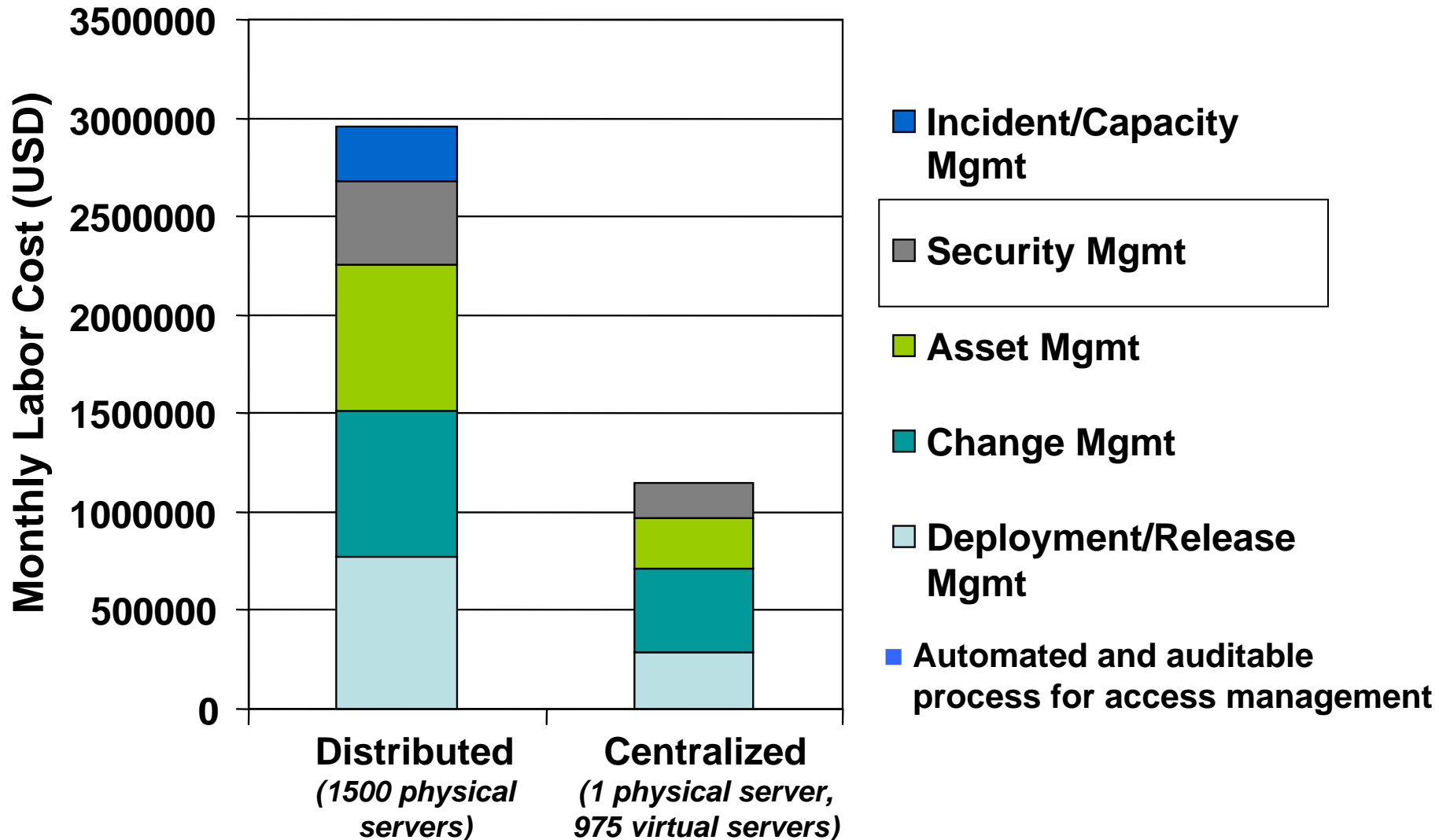
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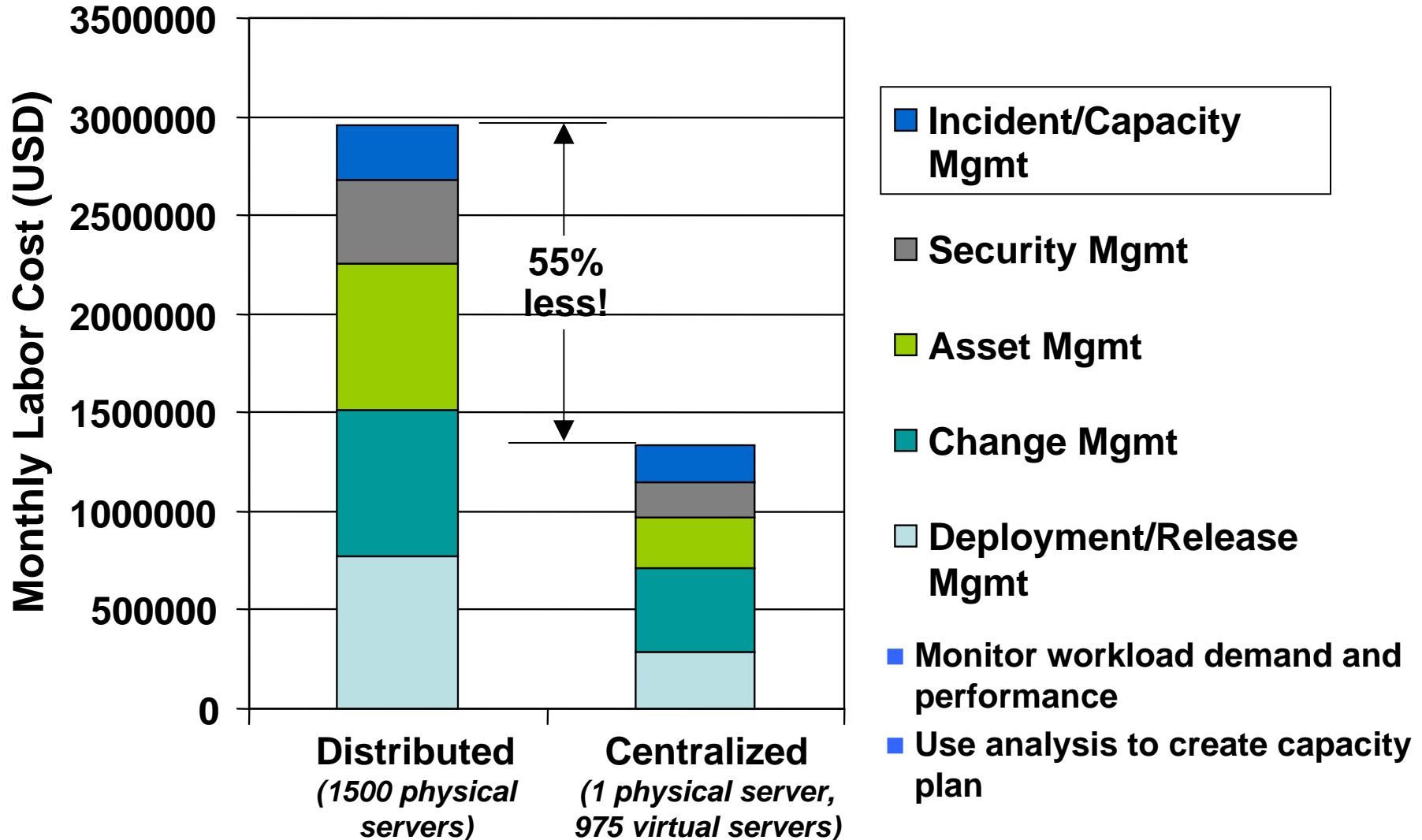
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Case Study: Benefit Of Virtualization And Structured Management Processes

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**Let's focus on the deployment,
release and change management
processes.**



IBM

Virtualization, Standardization And Automation Reduce Labor Costs

Reduce Labor Costs
Improve Service

The labor costs are driven
by three strategies . . .



Automate

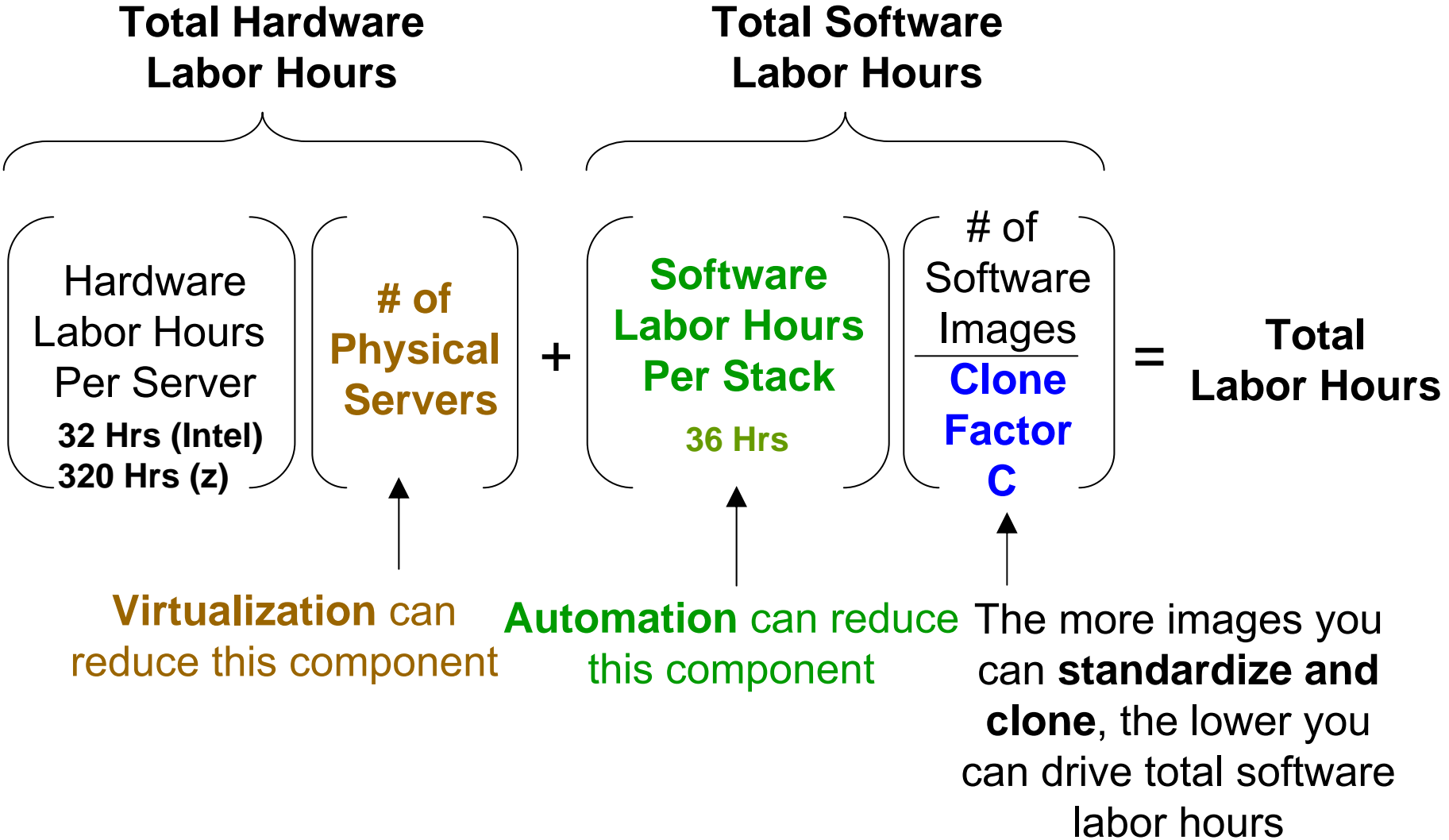
Reduce Labor Costs
Enable Automation

Reduce Hardware,
Software, Power, and
Labor Costs

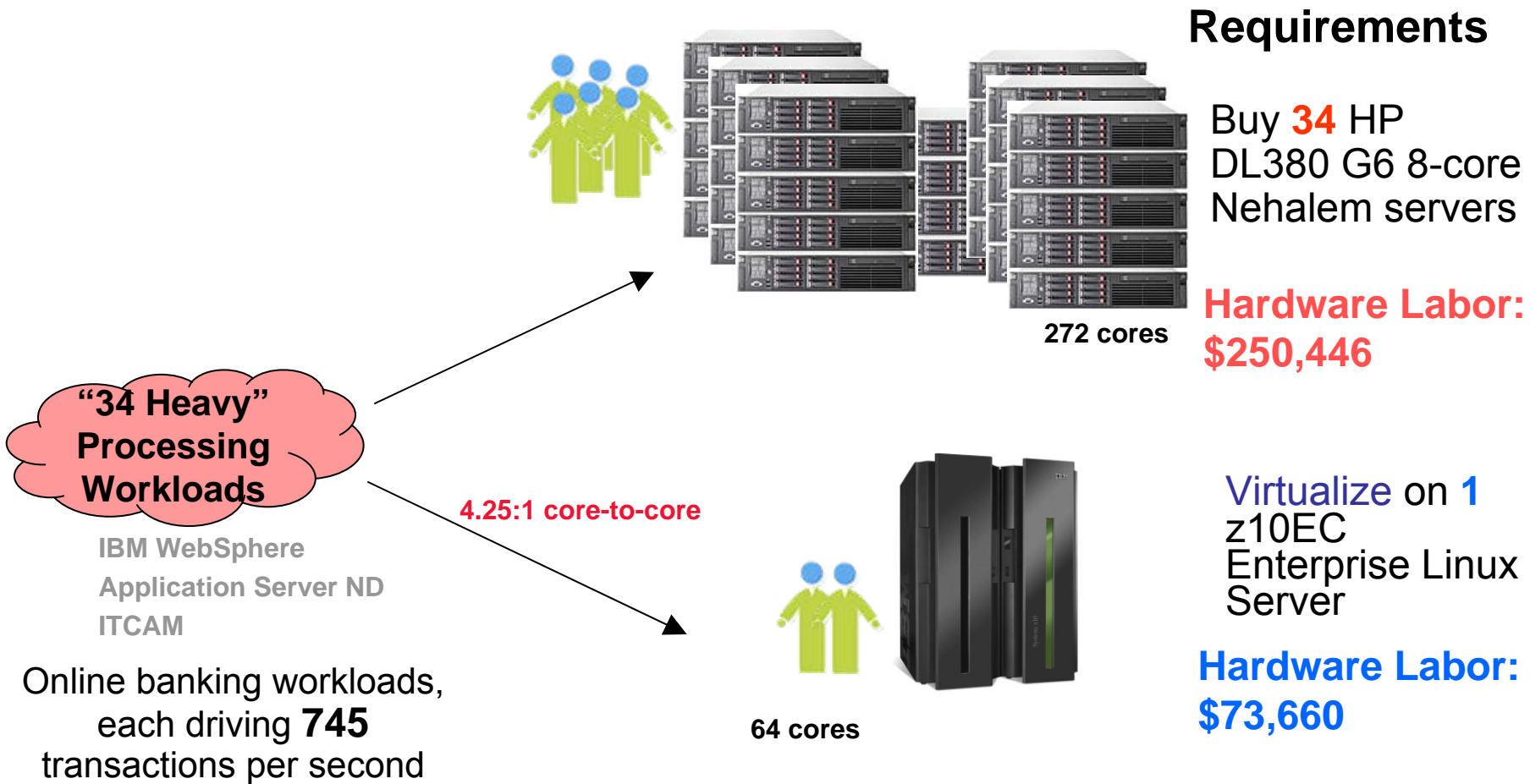
Virtualize

Standardize

Labor Model For Deployment, Release And Change Management



Example: Compare Hardware Labor For Heavy Processing Workloads (3 years)



70% Labor Savings with Virtualization on System z

Standardization And Automation Can Reduce Costs

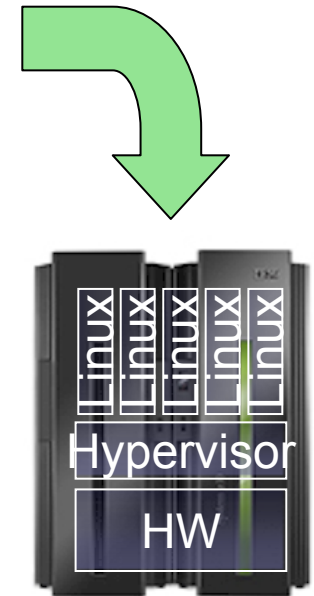
- A virtual server needs a “software stack” to run
 - ▶ Operating System, Middleware, Applications
 - ▶ Patches, configuration specifications
- Without controls, the variety of software stacks tends to proliferate, driving up labor costs
 - ▶ Different levels, patches, product selections, etc
- Standardization and automated provisioning of software stacks can reduce labor costs
 - ▶ Uniformity reduces the number of unique stacks to manage
 - ▶ Re-using a standard software stack is called “cloning”

IBM System z Solution Edition For Cloud Computing Enables Standardization And Automation

Builds on the IBM System z Solution Editions For Linux

Adds package of software and services to automate cloud provisioning and monitoring

- IBM Tivoli software (runs on zLinux)
 - ▶ Tivoli Service Automation Manager (TSAM)
 - ▶ TSAM WAS component
 - ▶ Tivoli OMEGAMON XE on z/VM and Linux
 - ▶ Tivoli Monitoring for Virtual Servers
- IBM Lab Services
 - ▶ Planning , installation, configuring, testing services
- Significant package discounts



IBM System z Solution Editions For Linux

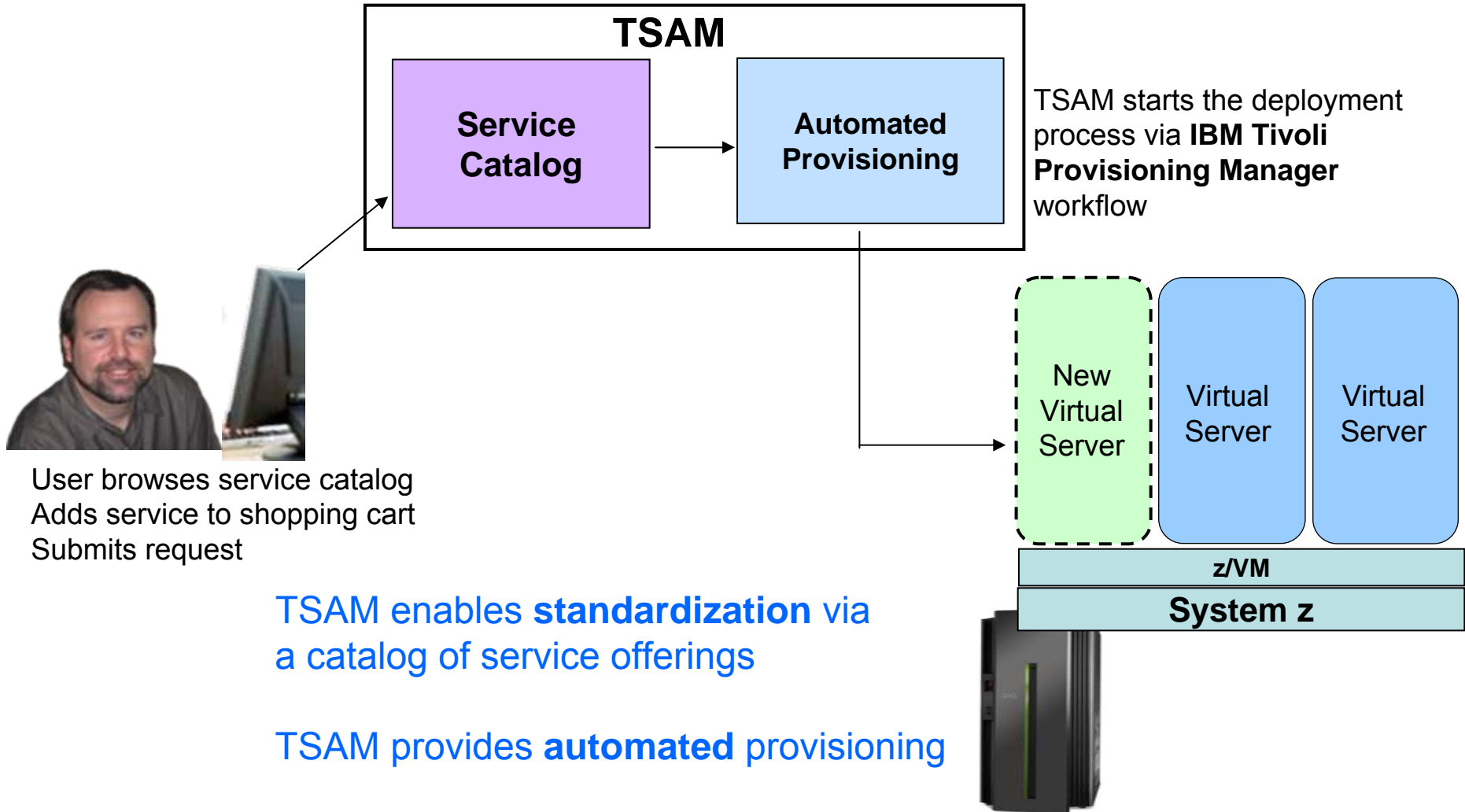
IBM Tivoli Service Automation Manager (TSAM)

- Simplify user interaction with IT
 - ▶ **Self-service web interface** to request IT services

- Enable standardization
 - ▶ **Service catalog** provides menu of standard offerings which reduces costs and drives consistent service delivery
 - Virtual machines
 - Routine tasks

- Automate
 - ▶ **Automated provisioning** and de-provisioning of virtual machines speeds service delivery

Example: IBM Tivoli Service Automation Manager (TSAM) Delivers Fast Self-Service Provisioning



IBM Tivoli Provisioning Manager Automates Provisioning

- Virtual image repository to centralize and standardize on provisioning materials
 - ▶ Images, application packages, configuration properties
- Automates provisioning of virtual machines via cloning
- Automates the tasks of installing and configuring software environments on cloned images
- Tasks automated through automation workflows
 - ▶ Pre-built customizable best practices workflows describe provisioning steps
 - ▶ Automatic workflow execution with verification at each step

DEMO: Self-Service Provisioning With IBM Tivoli Service Automation Manager (TSAM)

- Submit a request to add a new virtual machine (VM) under z/VM to an existing project
- VM created with a complete software stack (zLinux, WebSphere, Service Oriented Finance application and Tivoli Monitoring agent) installed
- Requester is notified via email when the request is completed

Provision one or more z/VM Linux virtual servers containing a software image.

General

*Project Name: *Team to Grant Access:

Project Description:

*Start Date: *End Date: (Until this date)

Requested Image

Resource Group Used to Reserve Resources: Monitoring Agent to be Installed

*Image to be Deployed:

Select	Name	Hypervisor	CPUs	Memory	Storage
<input checked="" type="radio"/>	SLES 10 with WAS 6	zVM	1	2 GB	7 GB
<input type="radio"/>	RHEL 5 with DB2 9	zVM	1	1 GB	1 GB
<input type="radio"/>	SLES 10 with DB2 9	zVM	1	1 GB	1 GB
<input type="radio"/>	RHEL 5 with WAS 7	zVM	1	1 GB	1 GB
<input type="radio"/>	SLES 10 with WAS 7 and D	zVM	1	1 GB	1 GB

Resources

To adjust the settings of the requested resources, press the setting button. After making the necessary adjustment, press the setting button to save the configuration.

Servers

*Number of Servers to be Provisioned: (7 available at above configuration and schedule)

CPU

Virtual 1
Physical 1.0

Memory

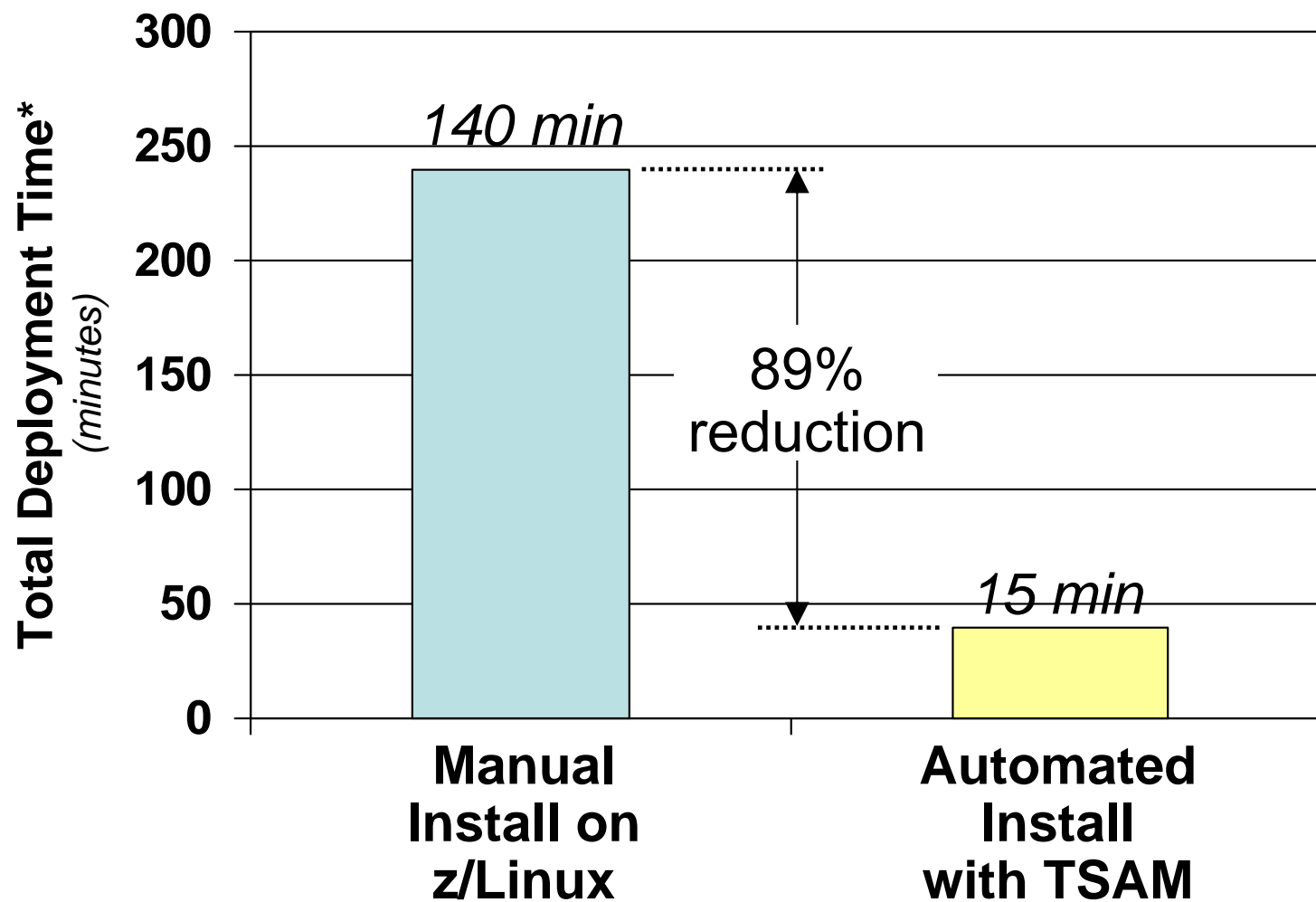
Main 2.000 GB
Swap 0.000 GB

Disk

Local 7 GB

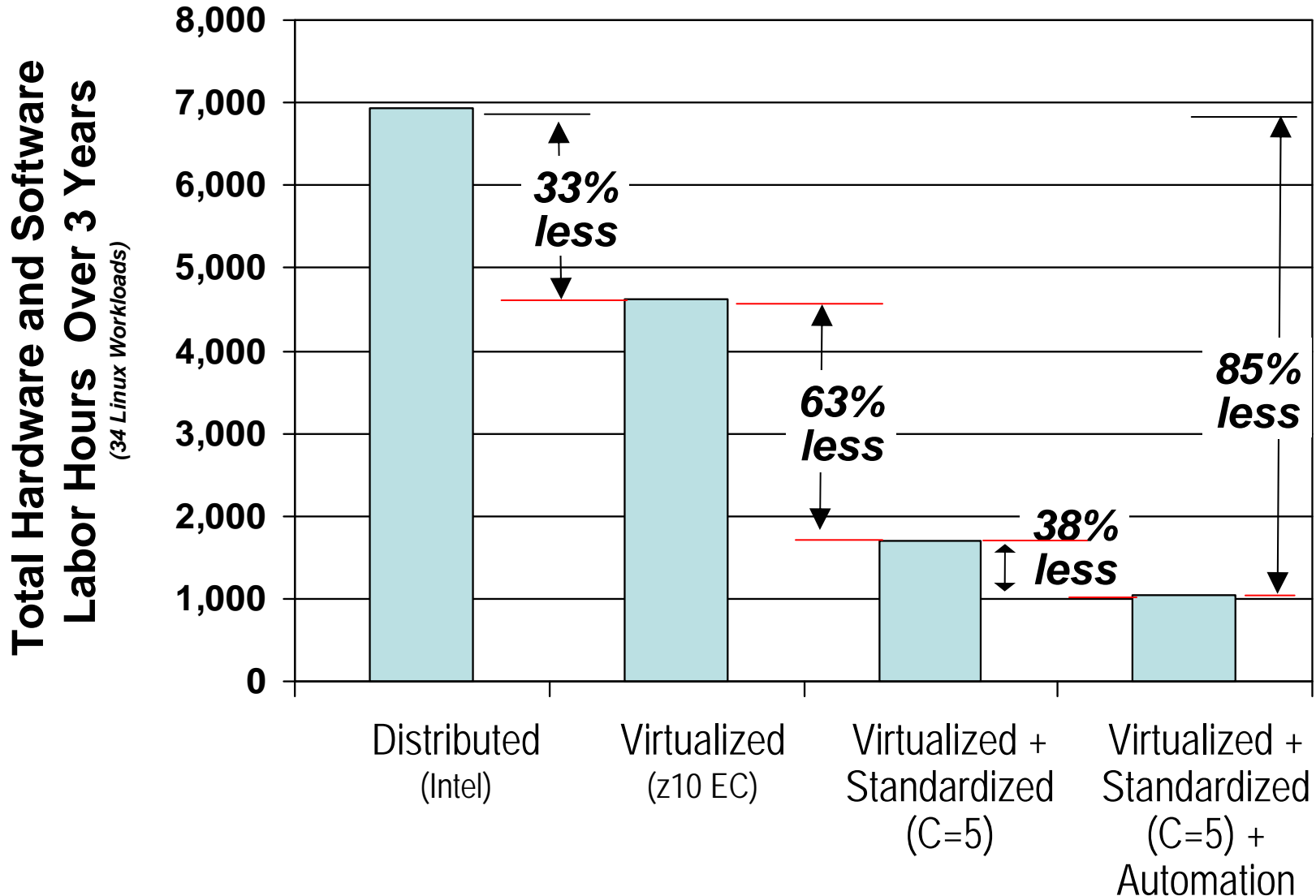
OK Cancel

Benefit Of Automated, Self Provisioning On Labor Costs



* Excluding network transmission time

Total Hardware And Software Labor Hours For 34 Heavy Processing Linux Workloads Over 3 Years

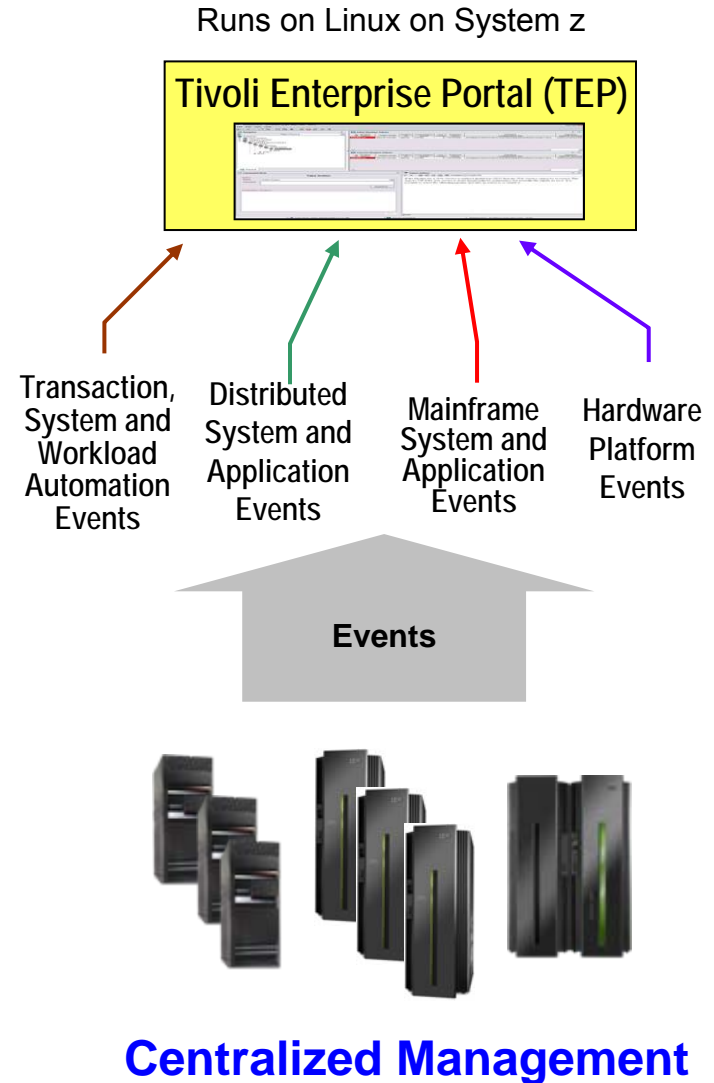


Additional Management Facilities For Standardization And Automation

- Tivoli Enterprise Portal provides a user dashboard for these system management facilities:
 - ▶ Tivoli OMEGAMON, IBM Tivoli Monitoring, IBM Tivoli Composite Application Manager
 - Standardize and Automate resolution of issues (incidents)
 - ▶ Tivoli System Automation
 - Standardize and Automate starting/stopping of resources/applications
 - ▶ Tivoli Workload Scheduler
 - Standardize and Automate batch workload scheduling

Tivoli Enterprise Portal (TEP) – A Centralized Management Dashboard On System z

- Resource status/health from various event sources
- Detect incidents with standardized *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



DEMO: Tivoli Enterprise Portal (TEP)

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

The screenshot displays the Tivoli Enterprise Portal (TEP) interface. The top window is titled "Enterprise Status - 192.169.1.54 - SYSADMIN *ADMIN MODE*". The interface is divided into several panes:

- Navigator:** A tree view showing the hierarchy of resources, including Linux Systems, z10Items, z9ccmdb, DB2, Linux OS, Web Server Agent - Primary, WebSphere Agent - Primary, zlnxdirs, zlnxmaps, Windows Systems, and MS Systems. A red arrow points from the "Enterprise" root node to the "Situation Event Console" pane.
- Situation Event Console:** A table displaying active situations. The table has columns for Severity, Status, Owner, Situation Name, Display Item, and Source. Three critical situations are listed:

Severity	Status	Owner	Situation Name	Display Item	Source
Critical	Open		WebServicePipeline_Critical		ADCD.CICSA
Critical	Open		WASNotConnected	MXServer	Primary:z9ccmdb:KYNA
Critical	Open		UDB_Status_Warning		db2inst1:z9ccmdb:UD
- Open Situation Counts - La...:** A bar chart showing the count of various situations. The Y-axis lists situations like WebServicePipeline_Critical, WASNotConnected, WASError, UDB_Status_Warning, MS_Offline, Linux_Process_High_Cpu, Linux_Low_percent_space, Linux_High_CPU_Overload, KSY_TEPS_Connectivity_Fail, and CICSplex_RTAGroup_Warning. The X-axis represents the count. A red arrow points from the "WASNotConnected" bar to the "Situation Event Console" table.
- My Acknowledged Events:** A table displaying a list of events. The table has columns for Severity, Status, Owner, Situation Name, Display Item, Source, Impact, Opened, Local Timestamp, Type, and Reference ID. The table shows several open events, including WebServicePipeline_Critical, Linux_Low_percent_space, MS_Offline, WASNotConnected, and UDB_Status_Warning.
- Message Log:** A table displaying a log of messages. The table has columns for Status, Name, Display Item, Origin Node, and Global Timestamp. The log shows several open events, including WebServicePipeline_Critical, Linux_Low_percent_space, MS_Offline, WASNotConnected, and UDB_Status_Warning.

The bottom status bar shows the Hub Time: Mon, 09/08/2008 10:21 PM, Server Available, and Enterprise Status - 192.169.1.54 - SYSADMIN *ADMIN MODE*. The taskbar at the bottom shows the Start button and several open applications, including IBM Tivoli Net..., MAXIMO - Start..., Netcool/OMNIB..., Netcool/OMNIB..., Mozilla Firefox, and Enterprise St...

A Dynamic Role-based Portal for Centralized Management!

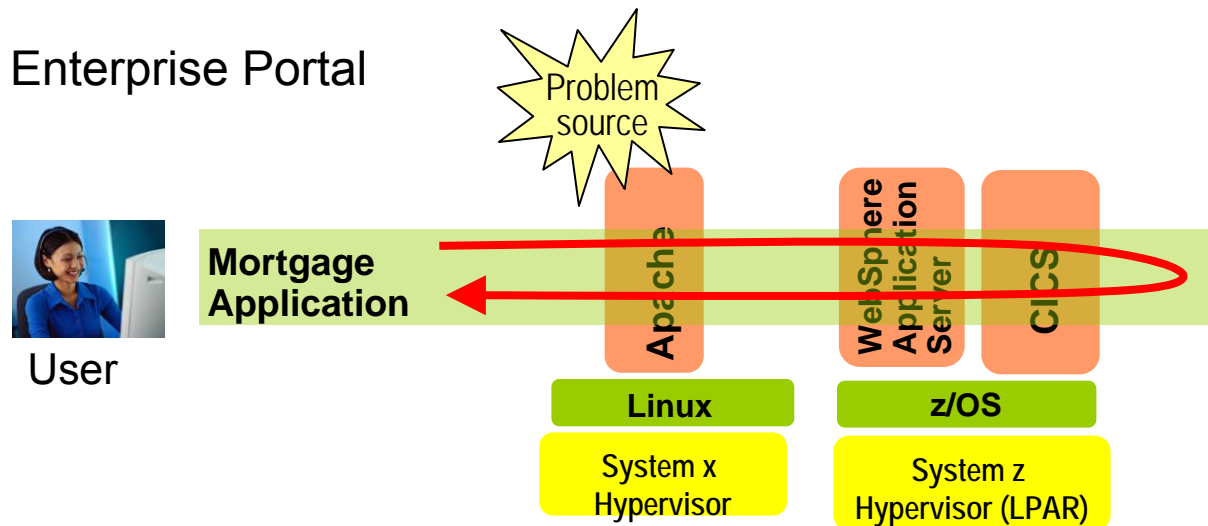
Monitor Resources With IBM Tivoli

- *Tivoli OMEGAMON XE and Tivoli NetView on z/OS – for mainframe*
 - ▶ Monitor key resources such as CPU, LPARs, I/O, network, enqueue, paging, zIIP, zAAP, Cryptoprocessors, z/VM and Linux resources
 - ▶ Monitor performance of DB2, IMS, CICS
 - ▶ Monitor and control TCP/IP and SNA networks to help maintain high availability
- *Tivoli Monitoring and ITCAM - for distributed*
 - ▶ Monitor system resources such as CPU, I/O, network
 - ▶ Monitor distributed virtual server resources including Citrix, VMware ESX, Microsoft Virtual Server
 - ▶ Monitor databases and middleware including DB2, SQL, Oracle, Sybase, IBM Domino, IBM WebSphere, SAP, Siebel and PeopleSoft
- All the above send events to Tivoli Enterprise Portal

Centrally Monitor System z and Distributed Resources

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

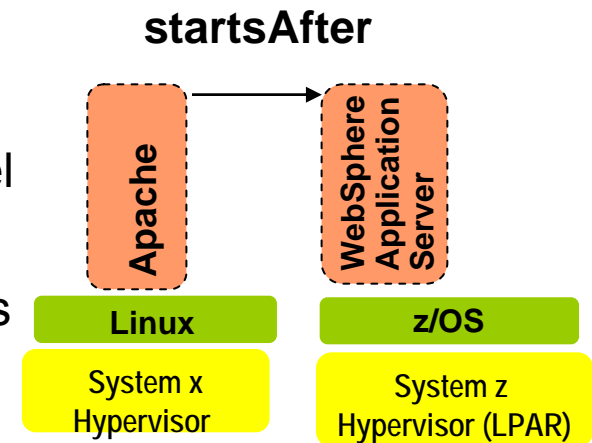
- Tracks transaction performance end-to-end across multiple physical and/or virtual systems to isolate bottlenecks quickly
 - ▶ Isolate source of performance problem across web servers, WebSphere and WebLogic application servers, CICS, IMS and DB2 subsystems, as well as ERP environments
- Monitors and 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



Track End-To-End Transactions

Automate System Operations With Tivoli System Automation (TSA)

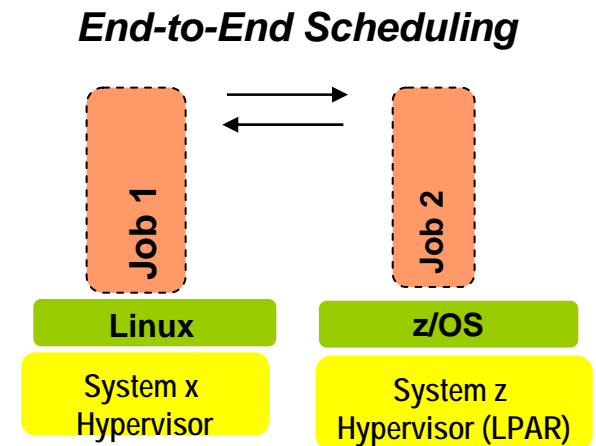
- Automate operations on hardware, I/O and applications
- No Scripts, policy-based automation
- Can manage relationship between resources and grouping of resources to automate at application level
- Includes out-of-the-box standard automation modules for middleware such as IMS, CICS, DB2, mySAP, WebSphere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



Standardize and Automate Routine Operations

Batch Workload Automation With Tivoli Workload Scheduler (TWS)

- 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



Standardize and Automate Job Scheduling



Service Oriented Finance CIO

Implementing these labor saving strategies, evolves your environment to become a private cloud!



IBM