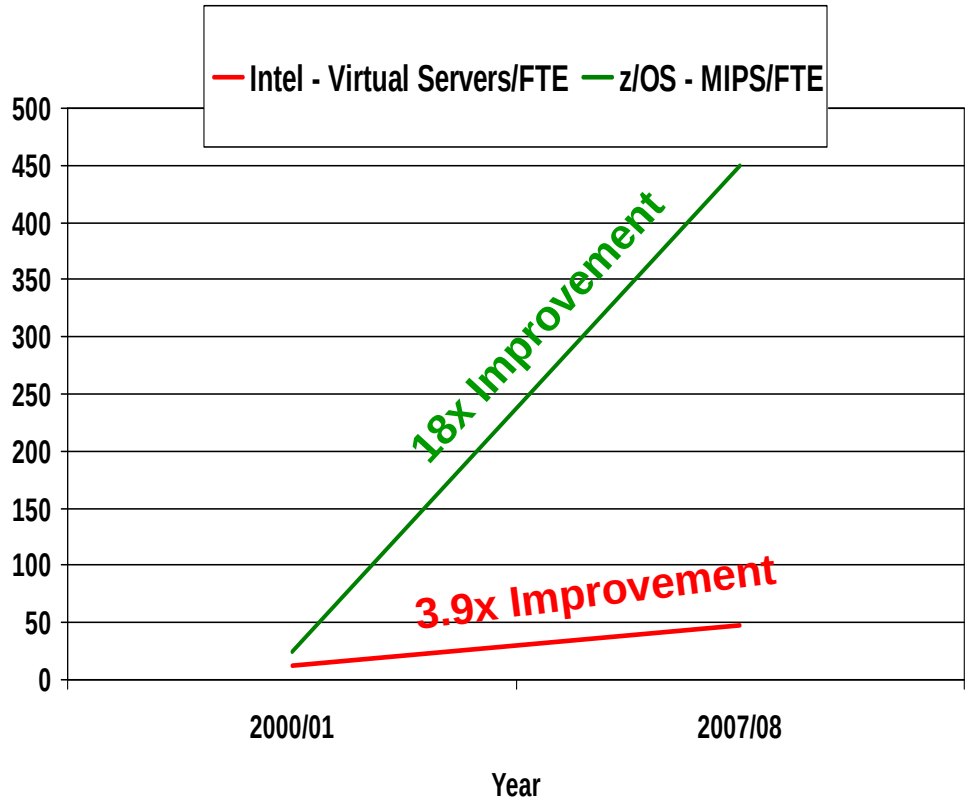
The New zEnterprise – A Smarter System For A Smarter Planet

Reduce Labor Costs With zEnterprise

System z Labor Cost Trends Favor A Centralized Approach To Management



Large scale consolidation and structured management practices drive increases in labor productivity

Small scale consolidation achieves lesser gains

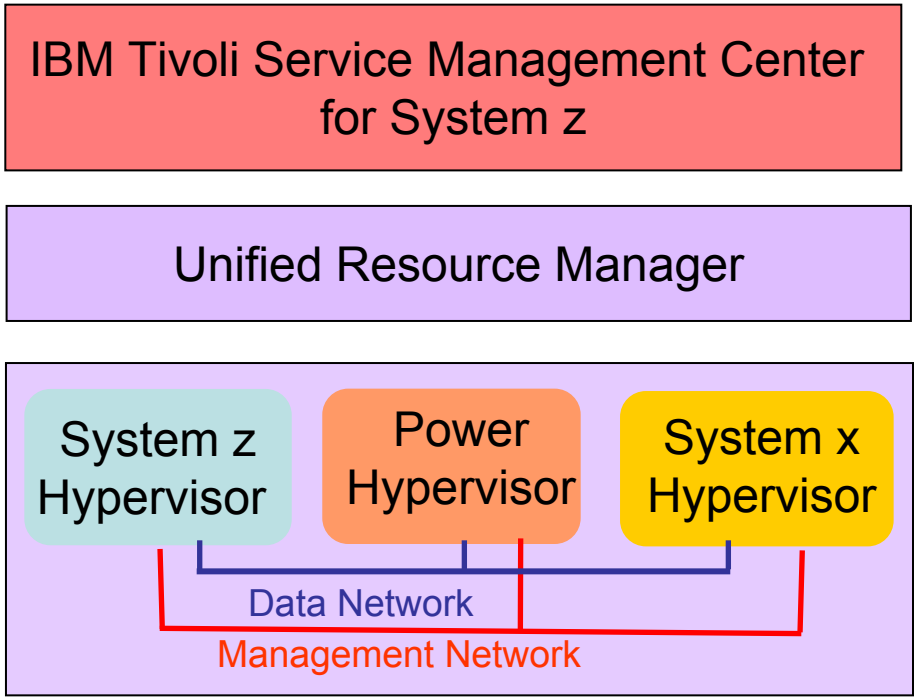
The more workloads you consolidate and manage with structured practices…
the lower the management labor cost

Source: IBM Scorpion Studies

Examples Of Structured Management Practices

Process	Typical Distributed Management Practices	Structured Management Practices
Validation and Testing	■ Applications released into production may trigger errors or downtime	■ Structured automated testing to ensure quality-driven software delivery
Deployment and Release Management	■ Manual, one at a time installation of software stacks	■ Automated deployment process with self-service/request-driven provisioning
Availability and Capacity Management	■ Memorized procedures for manual starting, stopping and failover ■ Manual scheduling of jobs	■ Automated start, stop and failover of composite applications ■ Automated job scheduling
Monitoring and Control	■ Passive monitoring	■ Active and continuous monitoring to fix problems quickly
Incident and Problem Management	■ Manual routing of incidents by established convention	■ Automated best practice problem resolution through integrated service desk and service catalog
Asset Management	■ Antiquated and inaccurate chargeback mechanisms	■ Structured chargeback model based on license entitlements, usage and costs of shared resources

zEnterprise And Tivoli Support Structured Management Practices For All Workloads



End-to-End Service Management

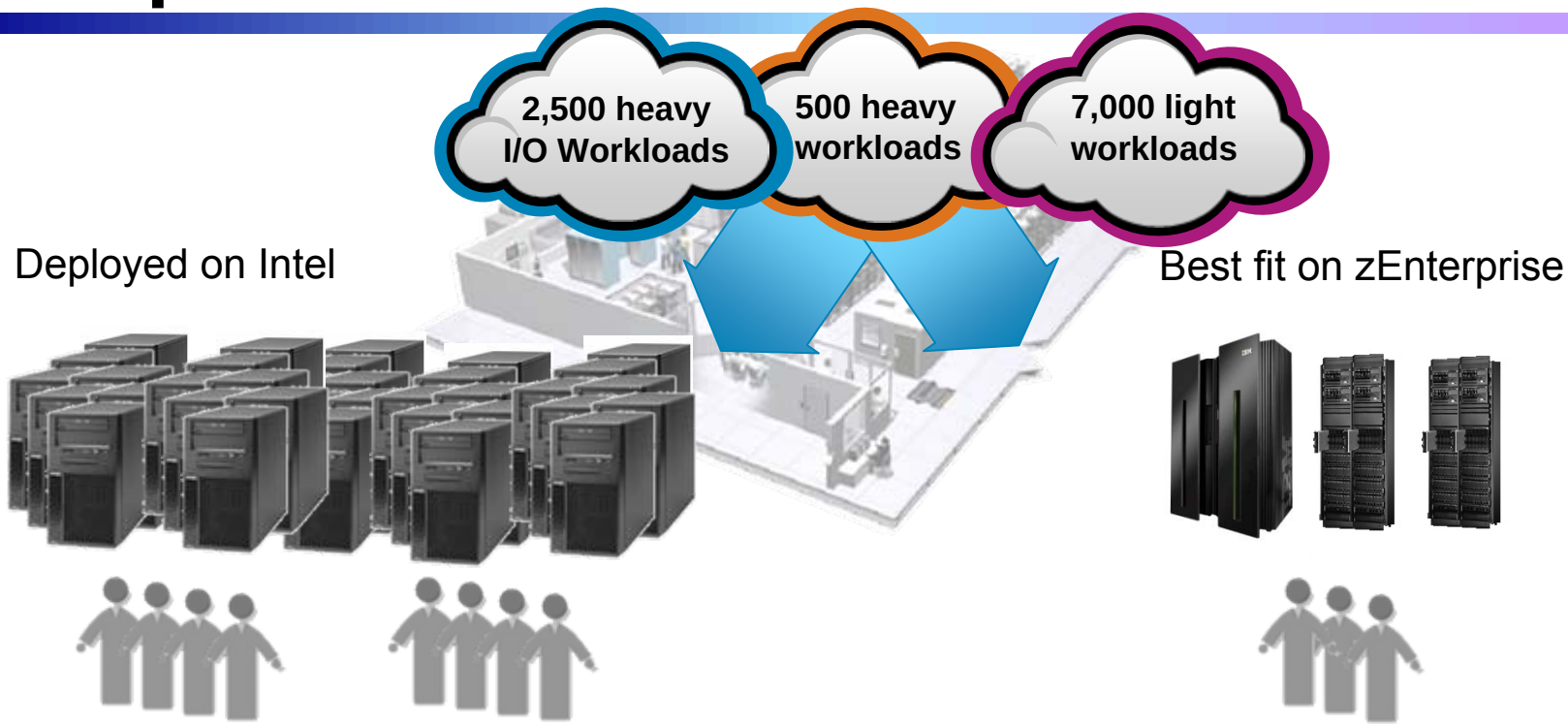
Integrated Platform Management

Integrated Fit-for-Purpose Platform

zEnterprise

Extends System z quality of service to all environments

Compare Server Infrastructure Labor Cost



411,296 labor hours/yr
198 administrators

$31.6M
3 years @ $159,000/yr

156,606 labor hours/yr
76 administrators

$12.0M
3 years @ $159,000/yr

62% less

Configuration based on IBM internal studies.
Labor model based on customer provided field data from IBM studies
Labor rates will vary by country

Labor Cost Model For Distributed Workloads

- Field data metrics typically stated in “servers per FTE”
- Allocate hours to
  - Tasks for each software image
  - Tasks for each physical server
- Further allocate hours to key ITIL processes
  - Hardware and software
- Assess how virtualization and standardization will reduce task hours required
- Use lab studies to estimate how automation will reduce task hours required

Accumulated Field Data For Labor Costs

- Average of quoted infrastructure labor costs
  - **30.7** servers per FTE (dedicated Intel servers)
    - **67.8** hours per year per server for hardware and software tasks
  - **52.5** Virtual Machines per FTE (virtualized Intel servers)
    - **39.6** hours per year per Virtual Machine for software tasks and amortized hardware tasks
    - Typical 8 Virtual Machines per physical server

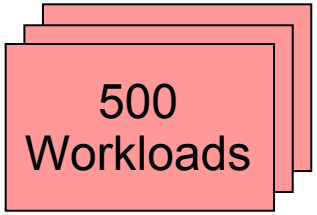
- Best fit data indicates
  - Software tasks are **36** hours per software image per year
    - Assume this applies to all distributed and zLinux software images
  - Hardware tasks are **32** hours per physical server per year
    - Assume this applies to Intel or Power servers
    - Internal IBM studies estimate 320 hours per CPF for zLinux scenarios

Labor model based on customer data from IBM studies

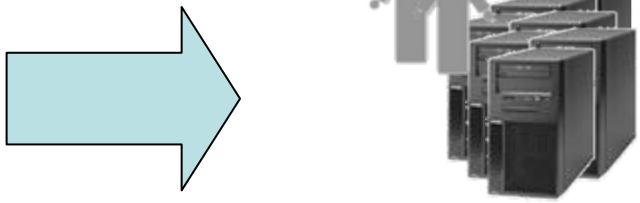
Distributed Infrastructure - Labor Costs Are Significant

Light workloads

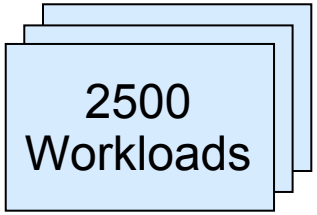
280,000 labor hours
(135 administrators, or $21.5M per year)
52.5 Virtual Machines per FTE



Heavy workloads



34,000 labor hours
(16 administrators, or $2.6M per year)
30.7 servers per FTE



Light workloads with heavy I/O

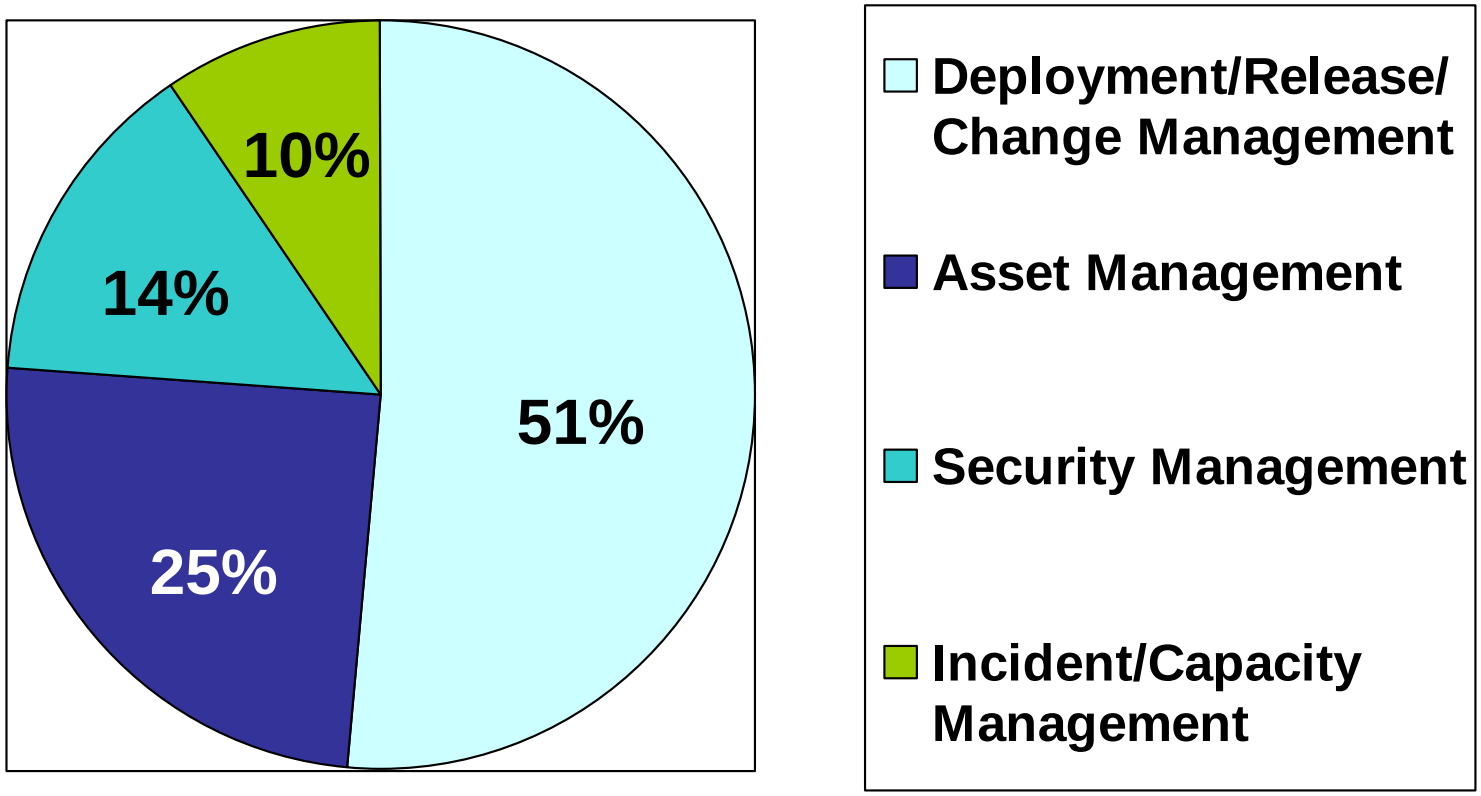
97,296 labor hours
(47 administrators, or $7.5M per year)
52.5 Virtual Machines per FTE

411,296 total labor hours, 198 administrators, or $31.6M per year cost

Based on fully-burdened rate of $159,600 per year for each FTE (2080 hrs/yr)

Configuration based on IBM internal studies.
Labor model based on customer provided data from IBM studies
Labor rates will vary by country

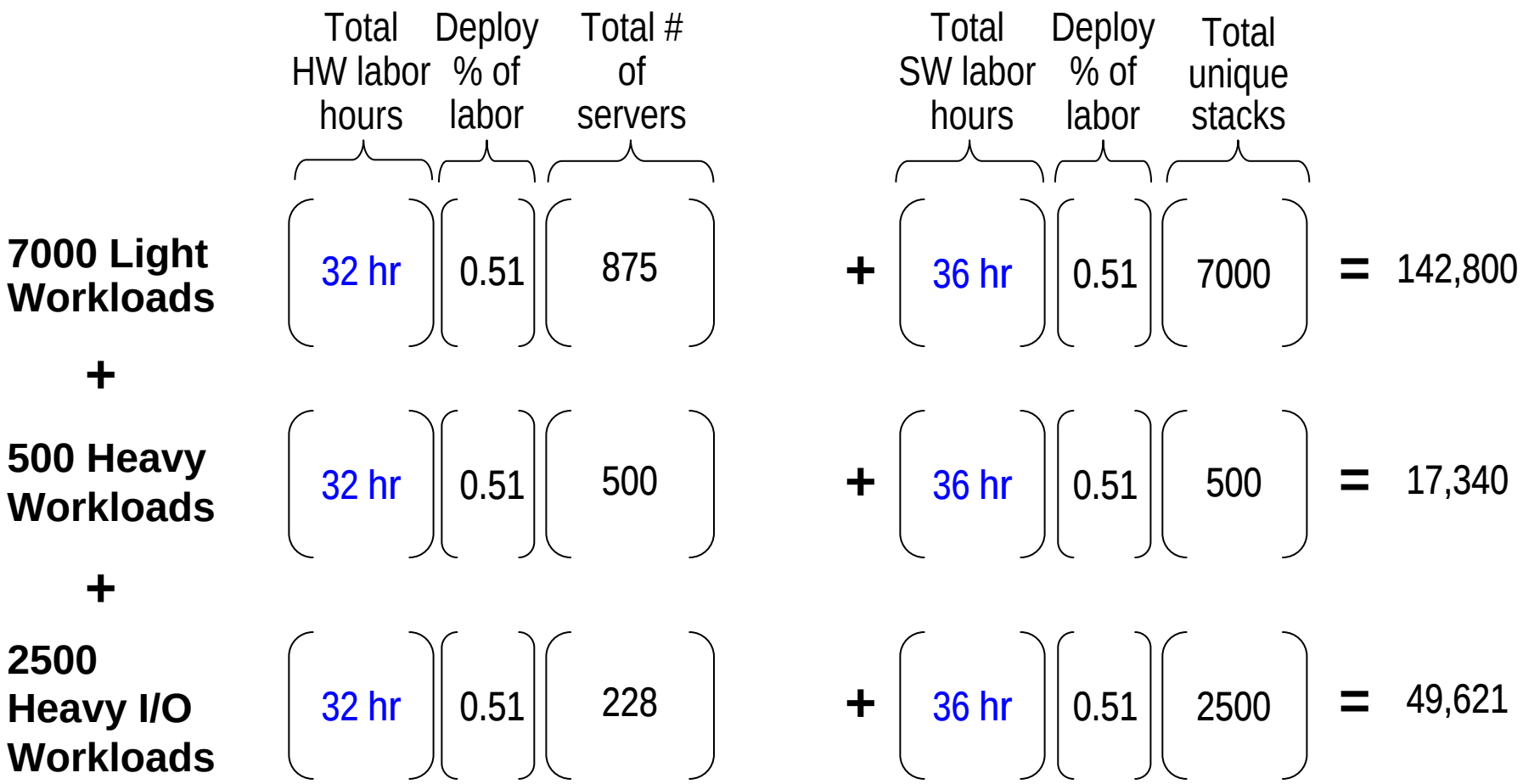
Four Key IT Processes For Infrastructure Administration



Fractional allocation of labor based on an in depth Eagle TCO study with a typical large financial services customer

Allocation based on customer data from IBM study

Distributed Infrastructure - Deployment Labor Costs

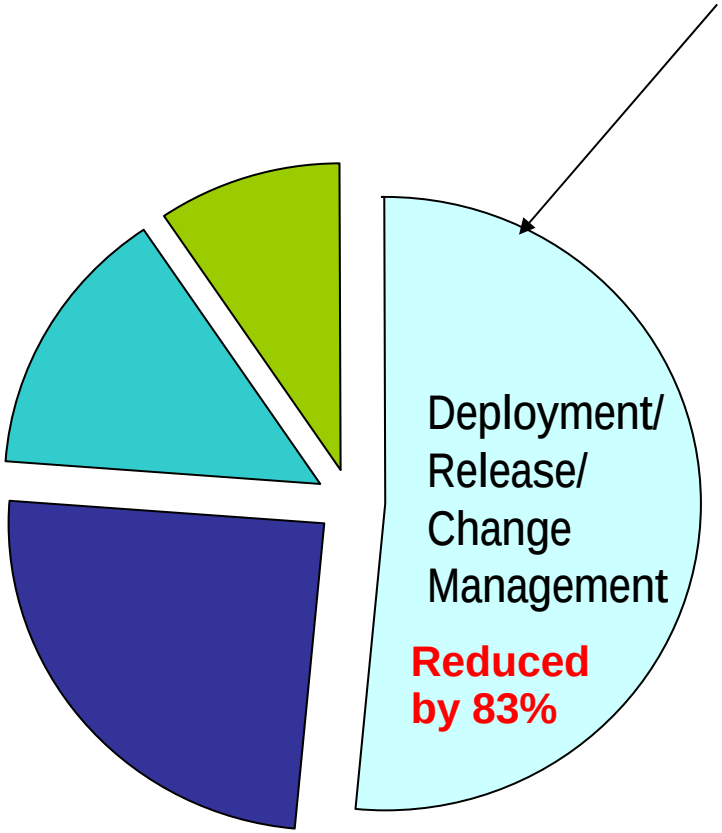


zEnterprise Server TOTAL

Based on IBM internal study.
Labor model based on customer provided data from IBM studies

209,761 hrs

Example – zEnterprise Labor Cost Reduction Strategies

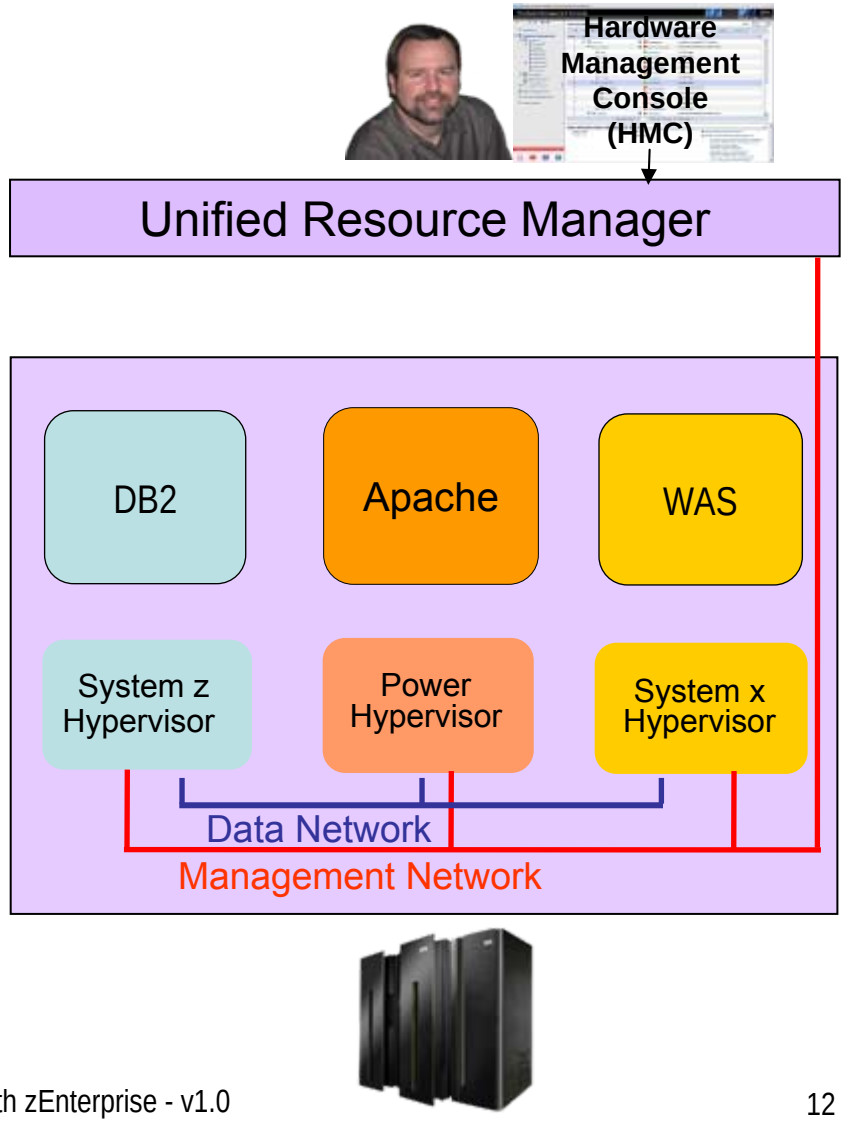


- **Reduce deployment costs**
  - Best fit virtualization and **consolidation** on zEnterprise
    - Consolidation minimizes hardware labor
    - Unified Resource Manage reduces labor for virtualization management and network setup
  - **Standardization** of deployed images
    - TSAM standard offerings reduce software labor
  - **Automation** of repetitive tasks
    - TSAM/TPM automated provisioning eliminates repetitive software labor

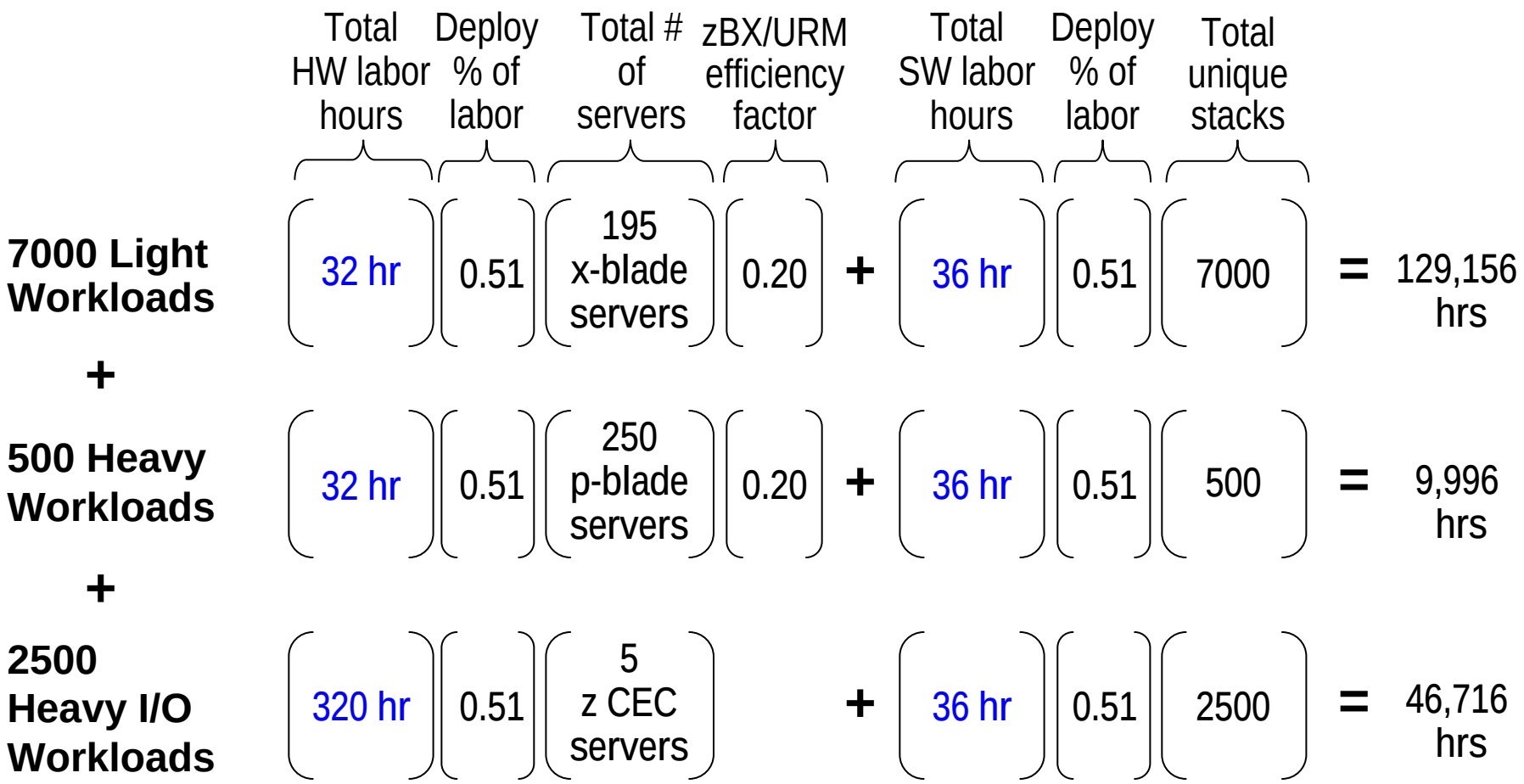
Based on IBM internal study.
Labor model based on customer provided data from IBM studies

Automated Tasks By Unified Resource Manager Reduces Virtualization Management Labor

- Automatic inventory of all elements
- Update configuration and service
- Create virtual machines across all hypervisors from one console
- Manage performance of virtual machines as a group for a business workload



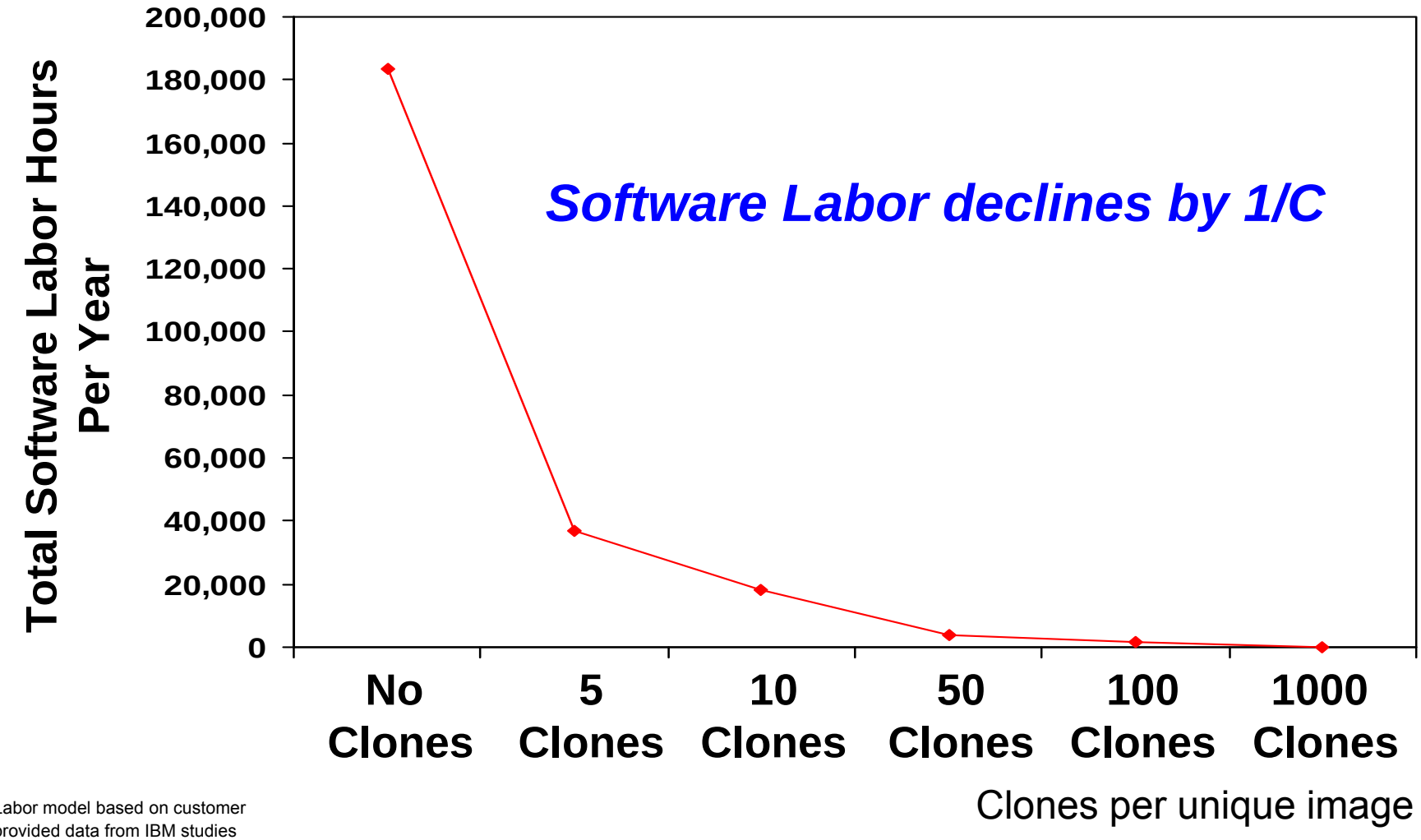
zEnterprise - Virtualization Impact on Deployment Labor Costs



zEnterprise Server TOTAL **185,868 hrs**

Based on IBM internal study.
Labor model based on customer provided data from IBM studies

Reuse Of Standardized Software Images Reduces Software Labor Hours



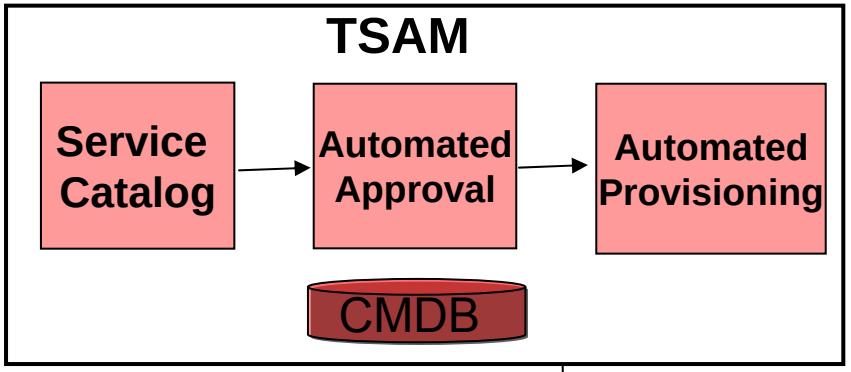
Labor model based on customer provided data from IBM studies

Automated Tasks By Tivoli Service Automation Manager (TSAM) Reduces Software Labor Hours

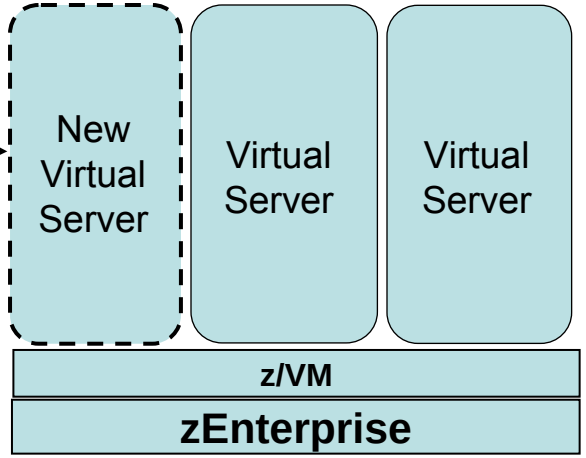
User browses service catalog

Adds service to shopping cart

Submits request



TSAM starts the deployment process via **IBM Tivoli Provisioning Manager** workflow



TSAM enables **standardization** via a catalog of service offerings

TSAM provides **automated** approval

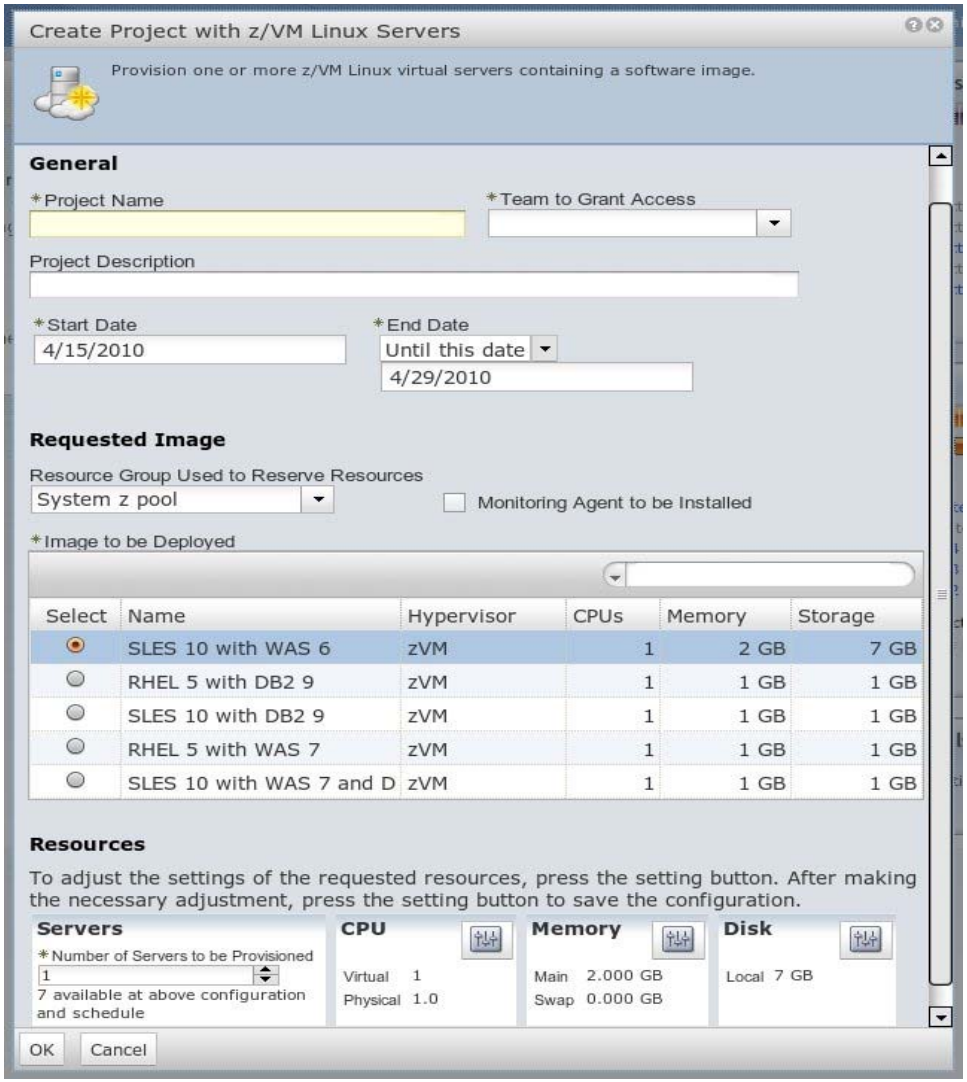
TSAM uses Tivoli Provisioning Manager to provide **automated** provisioning*

IBM Tivoli Provisioning Manager Automates Provisioning

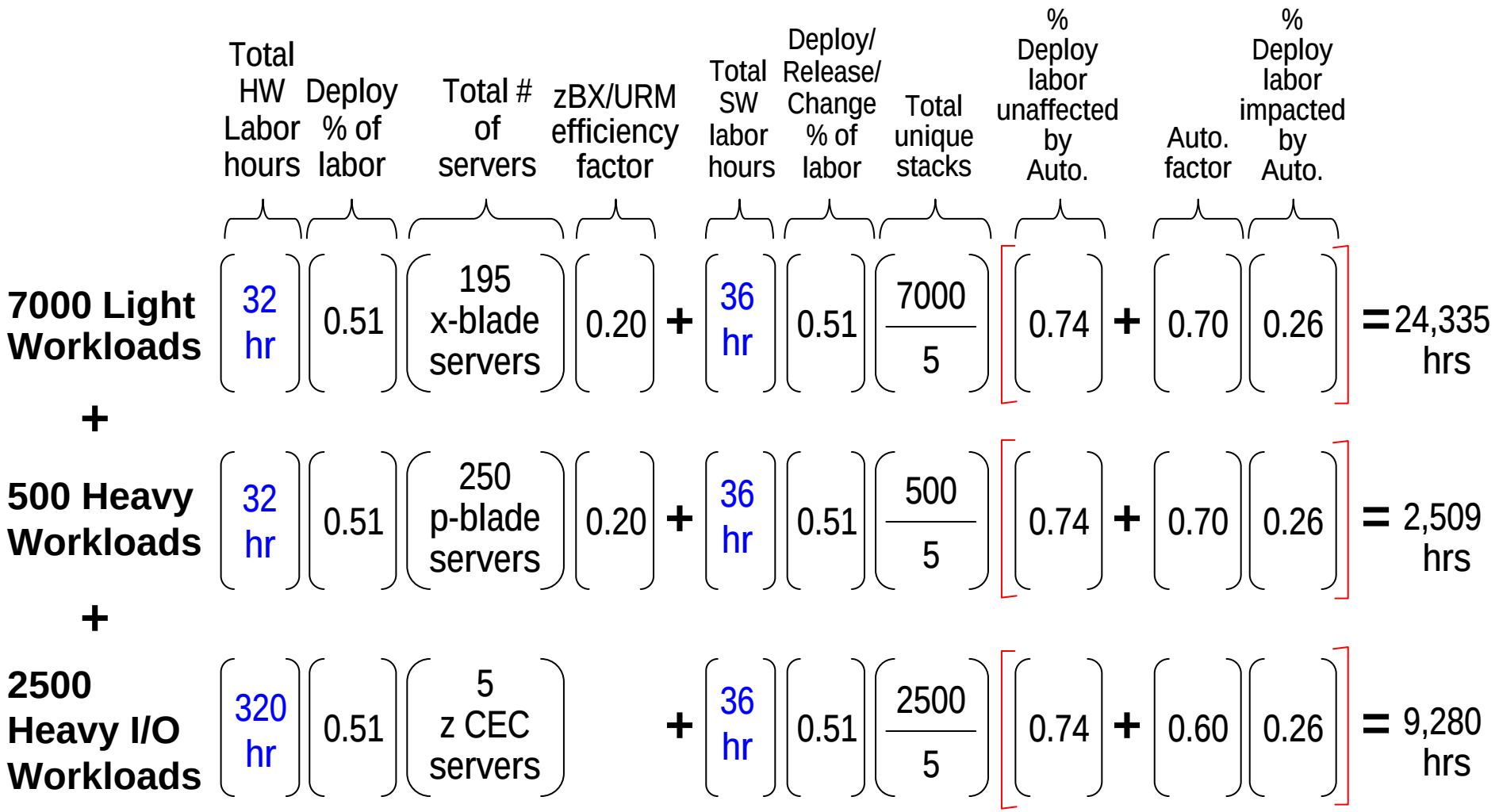
- Repository to centralize and standardize on provisioning materials
  - Images, installation packages, configuration properties
- Automates the tasks of installing and configuring software environments on virtual machines
  - Pre-built customizable best practices workflows describe provisioning steps
  - Automatic workflow execution with verification at each step
- Automates creation of virtual machines via cloning for Linux on z/VM

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, customer application and Tivoli Monitoring agent) installed
- Requester is notified via email when the request is completed



zEnterprise - Automation Impact On Deployment Labor Costs

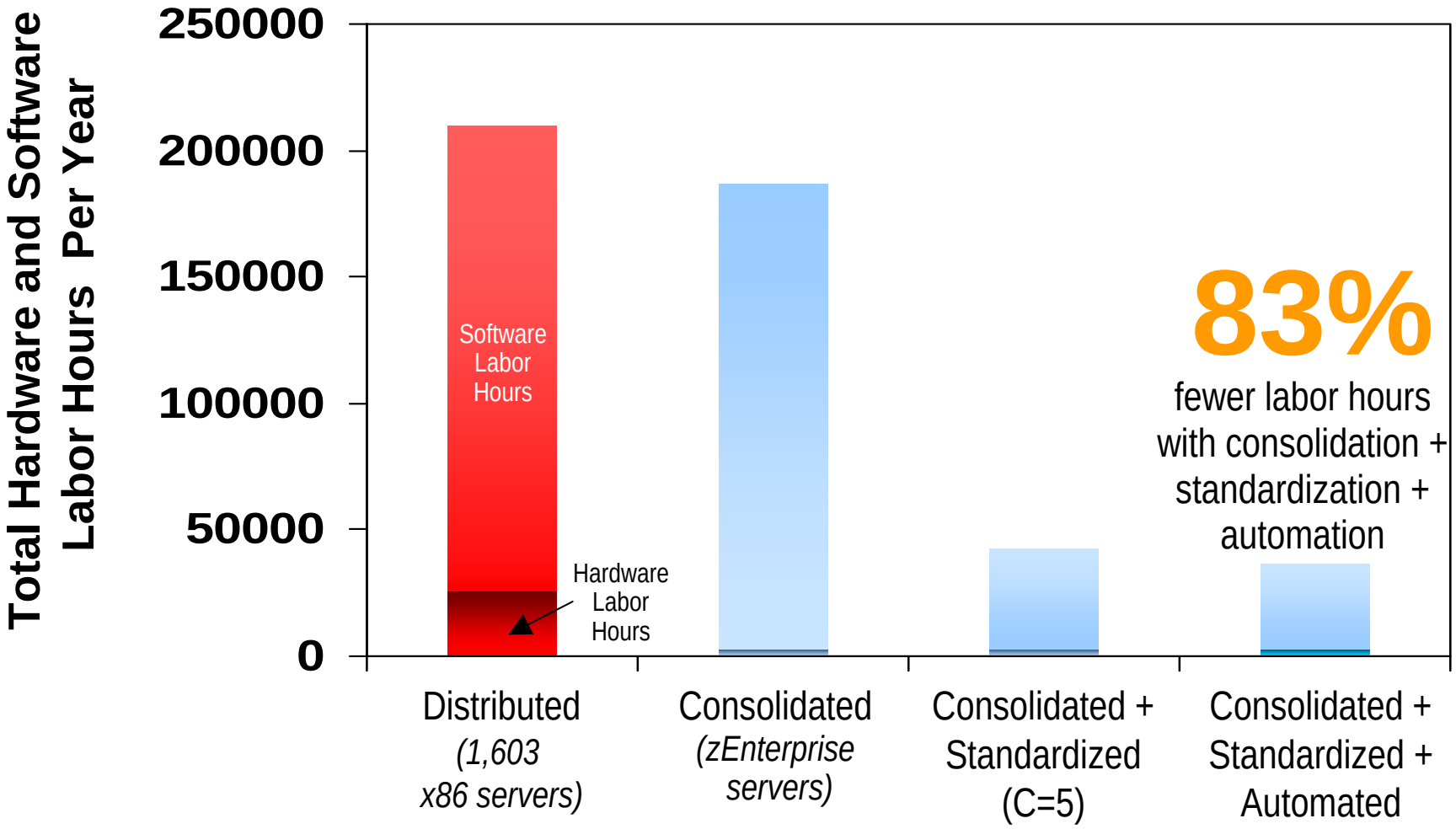


zEnterprise Server TOTAL

Based on IBM internal study.
Labor model based on customer provided data from IBM studies

36,124 hrs

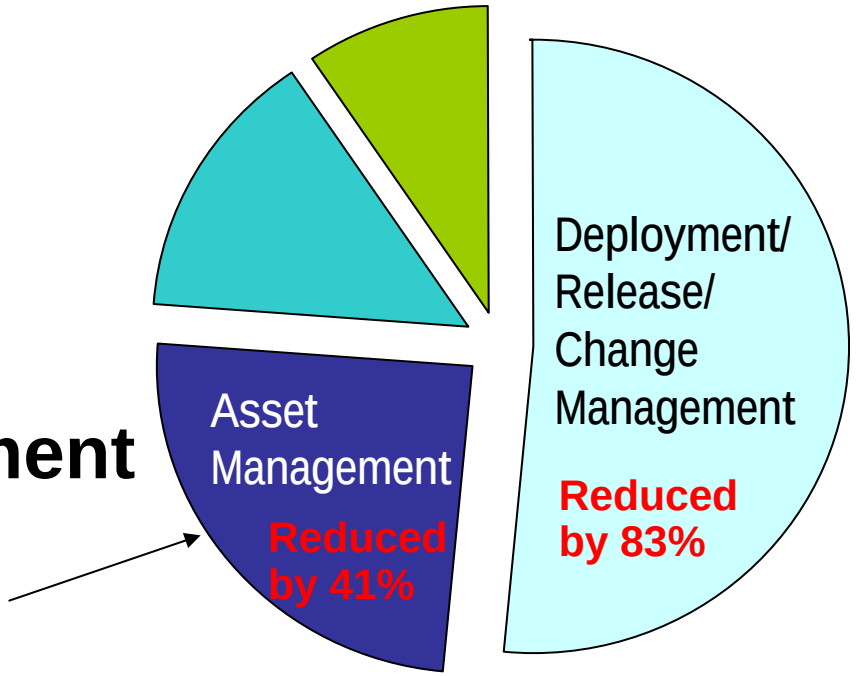
Consolidation + Standardization + Automation On zEnterprise Delivers Deployment Labor Savings



Based on IBM internal study.
Labor model based on customer provided data from IBM studies

Example – Labor Cost Reduction Strategies

- **Reduce asset management costs**

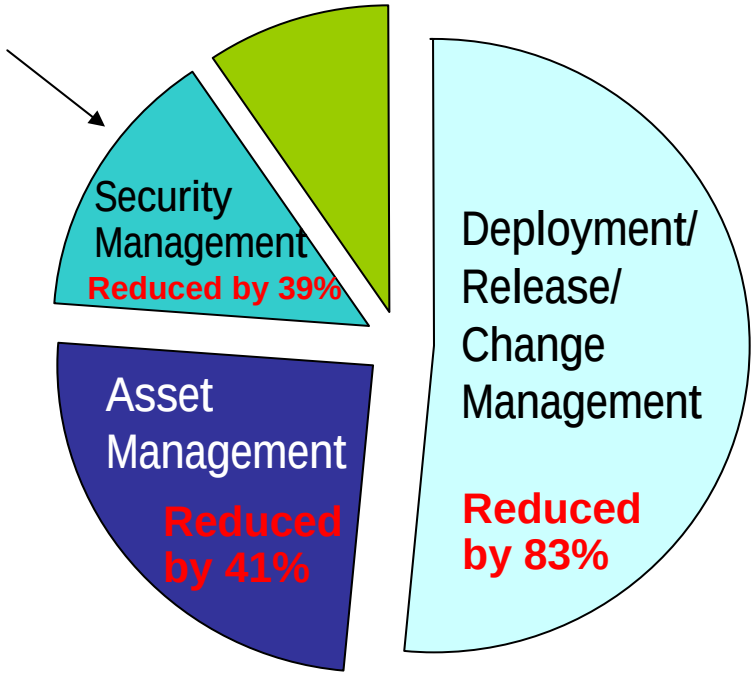


  - Consolidation on zEnterprise reduces the number of assets
  - Automation of asset management
    - IBM Tivoli Asset And Financial Management For zEnterprise

Based on IBM internal study.
Labor model based on customer provided data from IBM studies

Example – Labor Cost Reduction Strategies

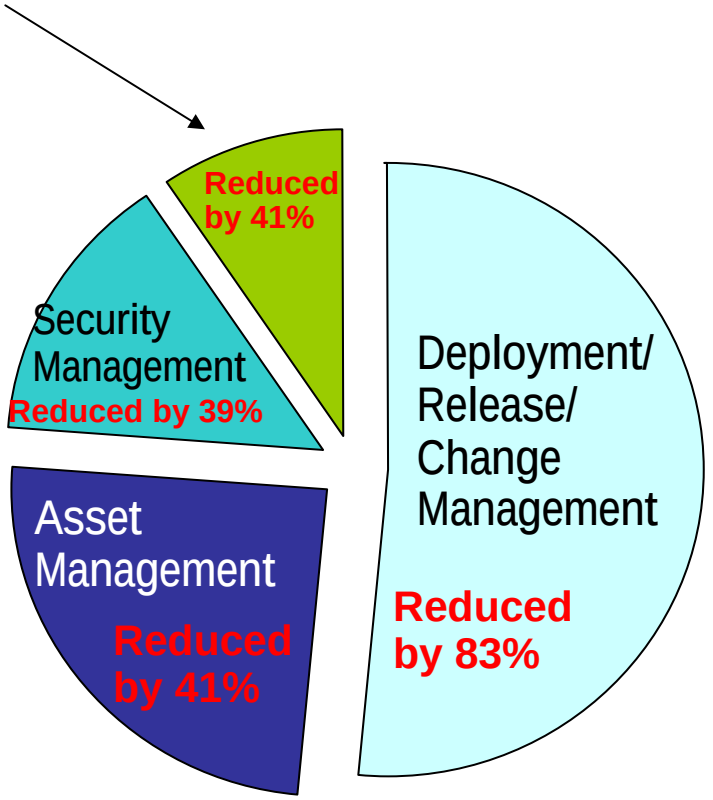
- **Reduce security management costs**
  - Consolidation on zEnterprise reduces the number security mechanisms
  - Self service and automation improve productivity
    - Tivoli zSecure, Tivoli Identity Manager, Tivoli Access Manager



Based on IBM internal study.
Labor model based on customer provided data from IBM studies

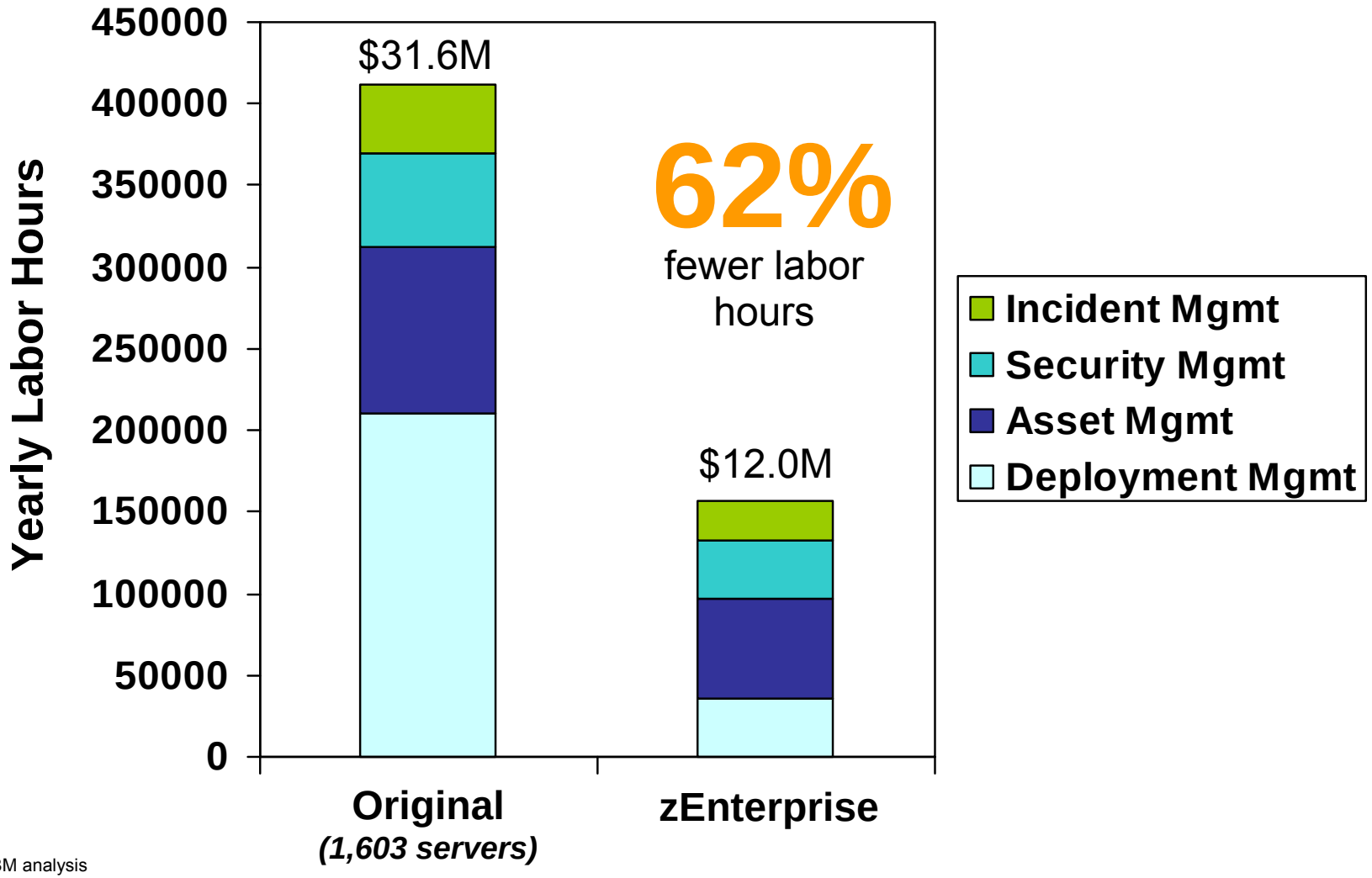
Example – Labor Cost Reduction Strategies

- **Reduce incident and capacity management costs**
  - Consolidation on zEnterprise reduces the number of platforms for incident management and capacity planning
  - Automation improves productivity
    - IBM Tivoli Service Request Manager
    - IBM Tivoli Application Management for zEnterprise
    - IBM Tivoli Application Resilience for zEnterprise



Based on IBM internal study.
Labor model based on customer provided data from IBM studies

Centralized, Structured Management With zEnterprise And Tivoli Cuts Infrastructure Labor Hours Dramatically



Based on IBM analysis
Labor model based on customer provided data from IBM studies
Labor rates will vary by country

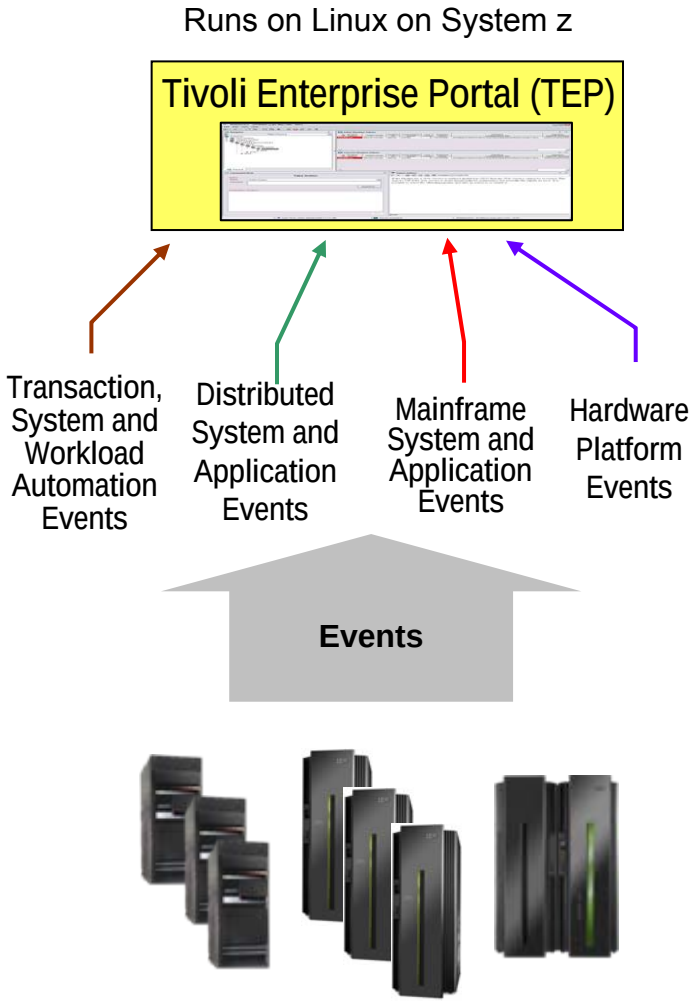
Streamline Monitoring, Capacity And Availability Management With IBM Tivoli

- IBM Tivoli Application Management for zEnterprise
  - Monitor composite applications and resolve issues with automated best practices scripts
- IBM Tivoli Application Resilience for zEnterprise
  - Best practices to automate start, stop and failover of composite applications
  - Automate job scheduling of batch and event-based workloads while maintaining dependencies
- Tivoli Enterprise Portal provides a common user dashboard

* Based on results from Alinean Business Value Assessment tool

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

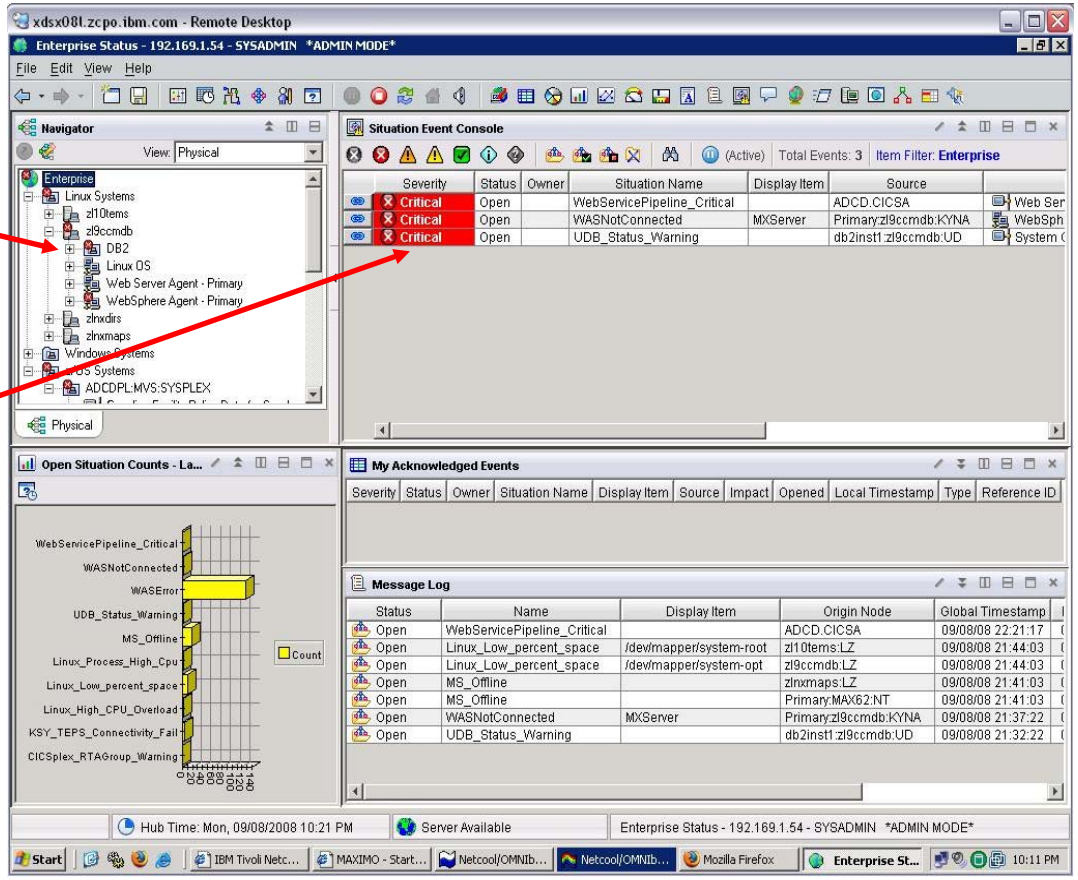
- Resource status/health from various event sources
- Detect incidents with standardized *situations*
  - Out-of-the-box supplied *situations* include combination of metrics and thresholds
  - Built-in situation editor allows to customize
- *Expert advice* helps obtain detailed explanation and recommendation for resolution
- *Take action* to automatically resolve recurring problems with existing or customized best practices scripts



Centralized Management

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



A Dynamic Role-based Portal for Centralized Management!

A Side Benefit

IBM