

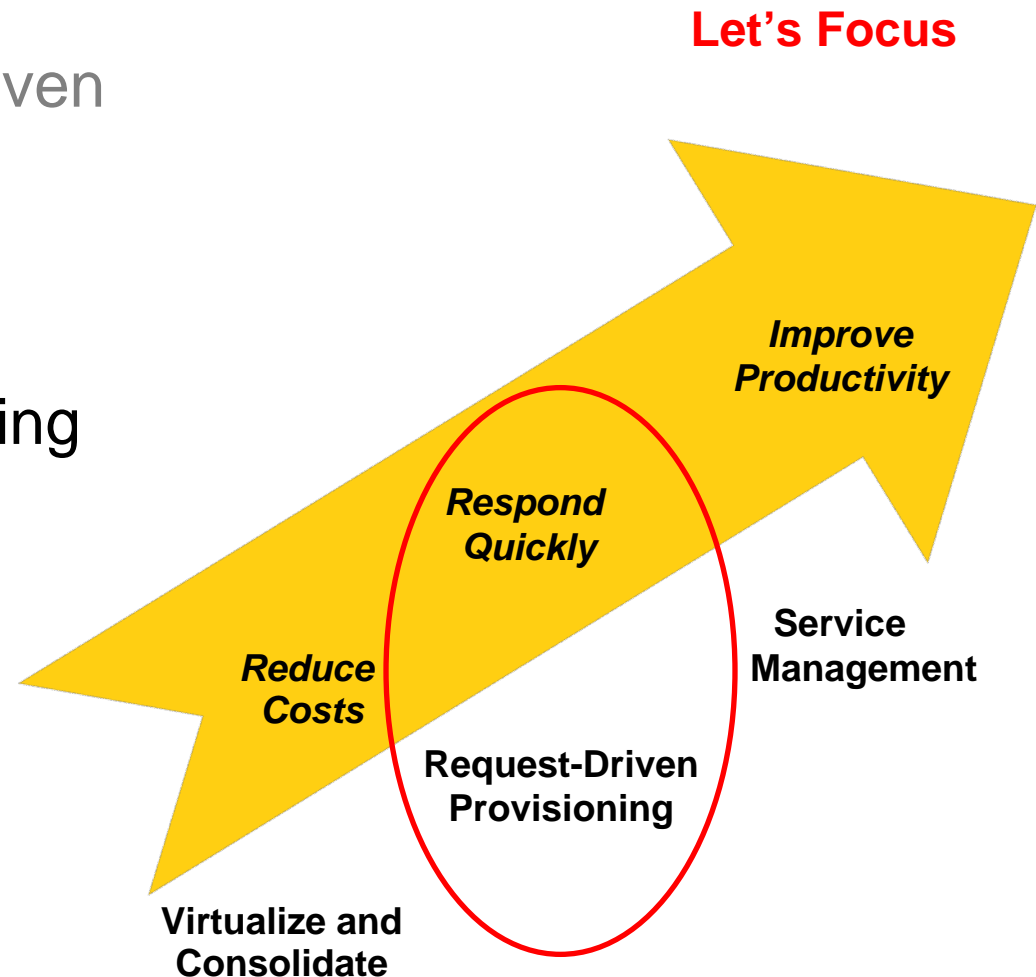


System z Enables Solutions For A Smarter Planet

Enterprise Systems Management

Dynamic Infrastructure For A Smarter Planet

- Virtualization and Consolidation is a proven way to save money
- Request Driven, or Automated, Provisioning increases agility and lowers labor costs

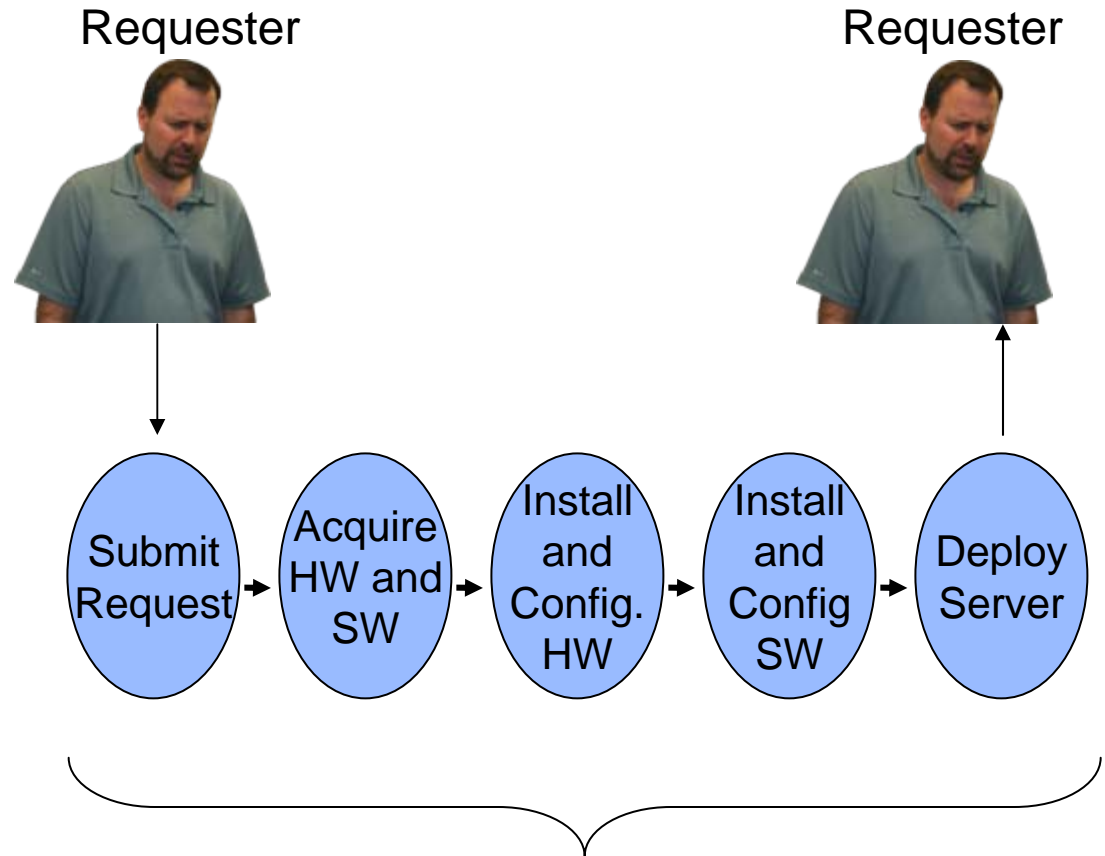


Deploying New Applications And Services Is Difficult And Time-Consuming

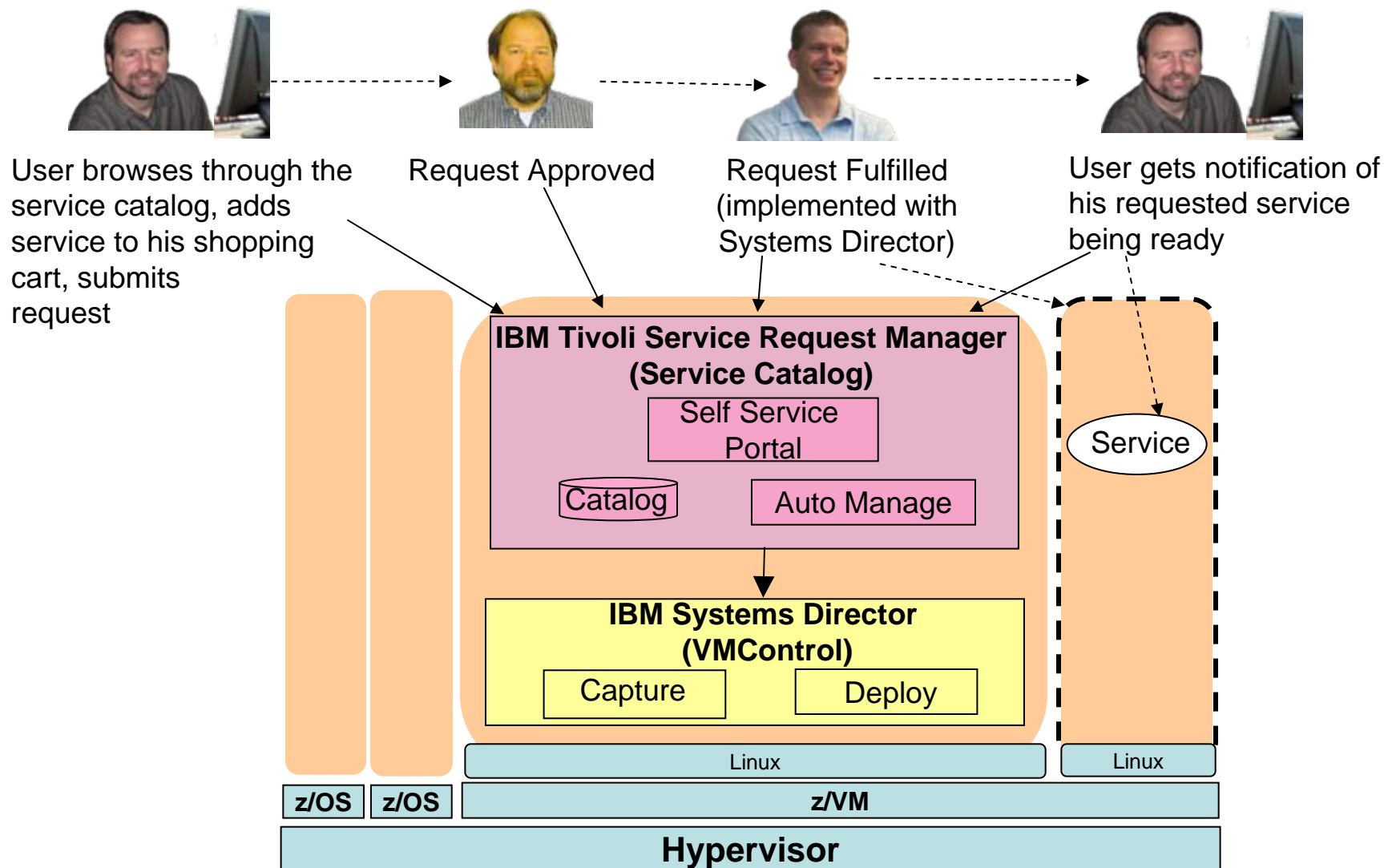
We need to be more responsive. It can take us up to **6 months** to provision a new server!



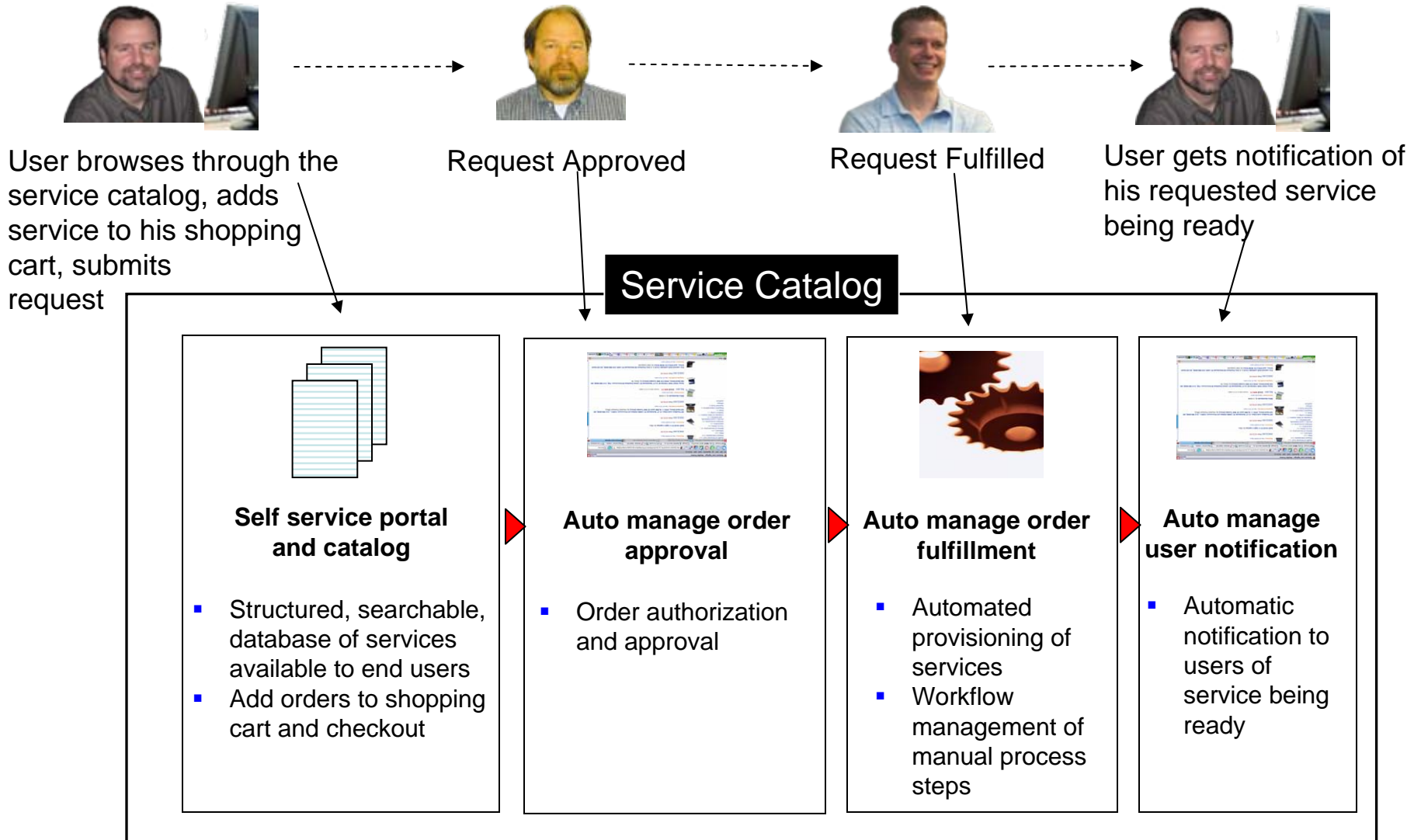
Service Oriented Finance
CIO



Example – User Requests New Virtual Image On System z To Test Loan Application



Tivoli Service Request Manager (Service Catalog)



Out-Of-Box Service Catalog Content

Service Line	Service Line Component	Service Definition
Server Systems Management	Server Management	Build New Standard Server Image
		Build New Standard Server Image with Middleware
		Deploy Server to Floor
		Perform Initial Build Activities
		Server Lock Down
	DB Subsystem Support	DBMS Install and Configure
		Add Database to Server
		Remove Database from Server
	Middleware Support	Middleware Install and Configure
Distributed Client Services	IMAC	Office Move
		Minor Facility Request
Enterprise Security Management	Identity and Access	Lotus Notes ID - Change Password
		Lotus Notes ID - Change User Name or Certifier
		Lotus Notes ID – Create/Delete Account
		ID Request
Data Network Services	Operations	Firewall Service Request
Fixed Cost Service Requests		Minor Site Enhancement
		I&S Network Consulting
		Bandwidth Analysis Assessment
Composite Service Examples		Build New Server
		Build New Server with Middleware

DEMO: Tivoli Service Request Manager

- User browses through Service Catalog
- Adds services to shopping cart
- Submits request

The screenshot shows the 'Shopping Cart' page in the Tivoli Service Request Manager. The page header includes navigation links like 'Bulletins: (1)', 'Go To', 'Reports', 'Start Center', 'Profile', 'Sign Out', and 'Help'. The main content area is titled 'Shopping Cart' and contains several form fields for request details. The 'Cart' number is 1025, and the selected item is 'Build New Server with Middleware'. The 'Requested By' field is empty, and the 'Requested For' field is 'SRMSELFSEV'. The 'Priority' is set to 1, and the 'Total Price' is 1,125.00. Below these fields, a message prompts the user to enter shipping and charge information. The 'Shipping Information' section includes fields for 'Ship to' (PMSCRTPMAIN), 'Address', 'City', 'State/Province', 'ZIP/Postal Code', and 'Drop Point'. The 'Charge Information' section includes fields for 'GL Debit Account', 'Location', 'Asset', 'Card Type', 'Card #', 'Card Verification Value', and 'Expiration Date'. At the bottom, the 'Items in Cart' table shows one item: 'PMSC_0021A Build New Server with Middleware' with a quantity of 1.00 and a line price of 1,125.00. The 'Submit' button is highlighted with a mouse cursor.

Shopping Cart

Cart: 1025
Build New Server with Middleware
Requested By: [Empty]
Requested For: SRMSELFSEV
Priority: 1
Total Price: 1,125.00

Please enter Shipping and Charge Information, and then submit your request.

Shipping Information
Ship to: PMSCRTPMAIN
Address: [Empty]
City: [Empty]
State/Province: [Empty]
ZIP/Postal Code: [Empty]
Drop Point: [Empty]

Charge Information
GL Debit Account: [Empty]
Location: [Empty]
Asset: [Empty]
Card Type: [Empty]
Card #: [Empty]
Card Verification Value: [Empty]
Expiration Date: [Empty]

Items in Cart: 1 - 1 of 1

Line	Quantity	Required Date	Item	Description	Line Price
1	1.00	2008-10-03 08:00:00	PMSC_0021A	Build New Server with Middleware	1,125.00

Continue Shopping Submit Save Cancel

Value Of Automated Provisioning

- Automation reduces the labor (time and effort) required
- Time to initial deployment is reduced
- Better image control yields improved stability of systems
- Consistent configurations between test and production minimizes differences across environment
- Critical updates (security, stability, performance) can be automated and scheduled across all systems
- Changes to systems can be automated and scheduled by the support team

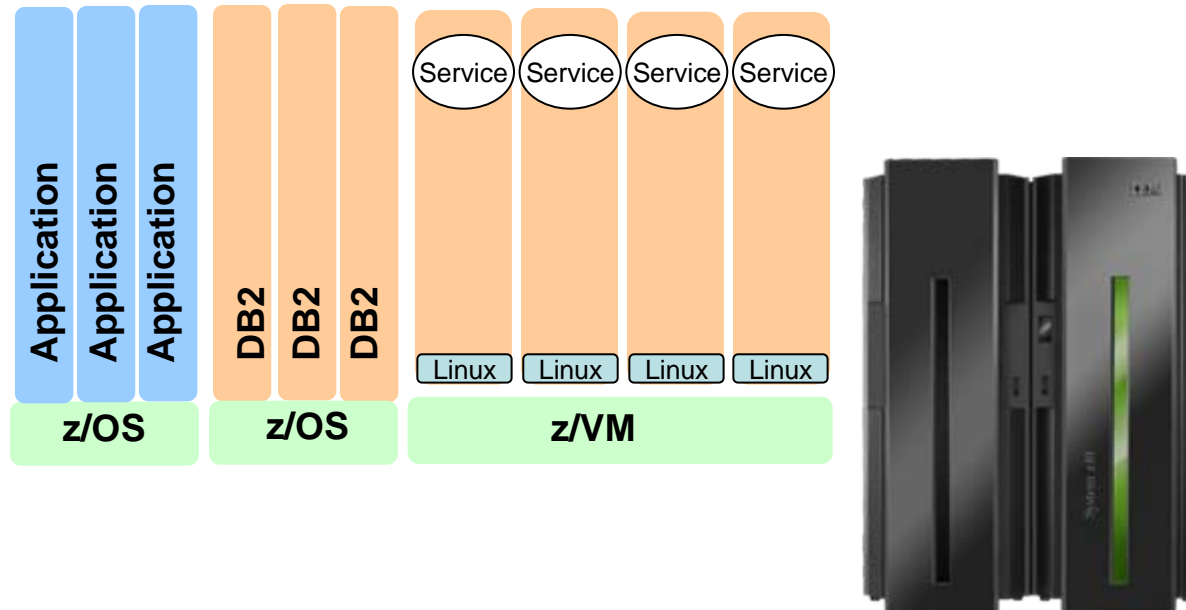
Techniques For Automated Provisioning

- Clone pre-configured image templates using disk copy
 - ▶ Systems Director VMControl
 - ▶ Very fast

- Install and configure environments based on pre-built workflows
 - ▶ Tivoli Provisioning Manager (TPM)

DEMO: Provisioning Using Systems Director

Create a new Virtual Server quickly from existing template using disk cloning



IBM Systems Director

- IBM Systems Director provides base platform management
 - ▶ Included with purchase of IBM Systems
 - ▶ Provides common management tools for System z, Power Systems, System x, and BladeCenter
- IBM Systems Director Extensions for System z include VMControl
 - ▶ Deploy virtual images with ready-to-run workloads (complete virtual servers with the operating system and software stack)
 - ▶ Capture custom created virtual images for later use
 - ▶ Import external OVF-compliant virtual images for use in the data center

Tivoli Provisioning Manager

- Automates manual tasks of installing and configuring environments
 - ▶ Operating systems
 - ▶ Patches
 - ▶ Middleware
 - ▶ Applications
 - ▶ Storage and network devices
 - ▶ Virtual environments
- Tasks automated through best practice automation workflows
 - ▶ Pre-built workflows describe provisioning steps
 - ▶ Automation package developer environment to customize for data center best practices and procedures
 - ▶ Automatic workflow execution with verification at each step

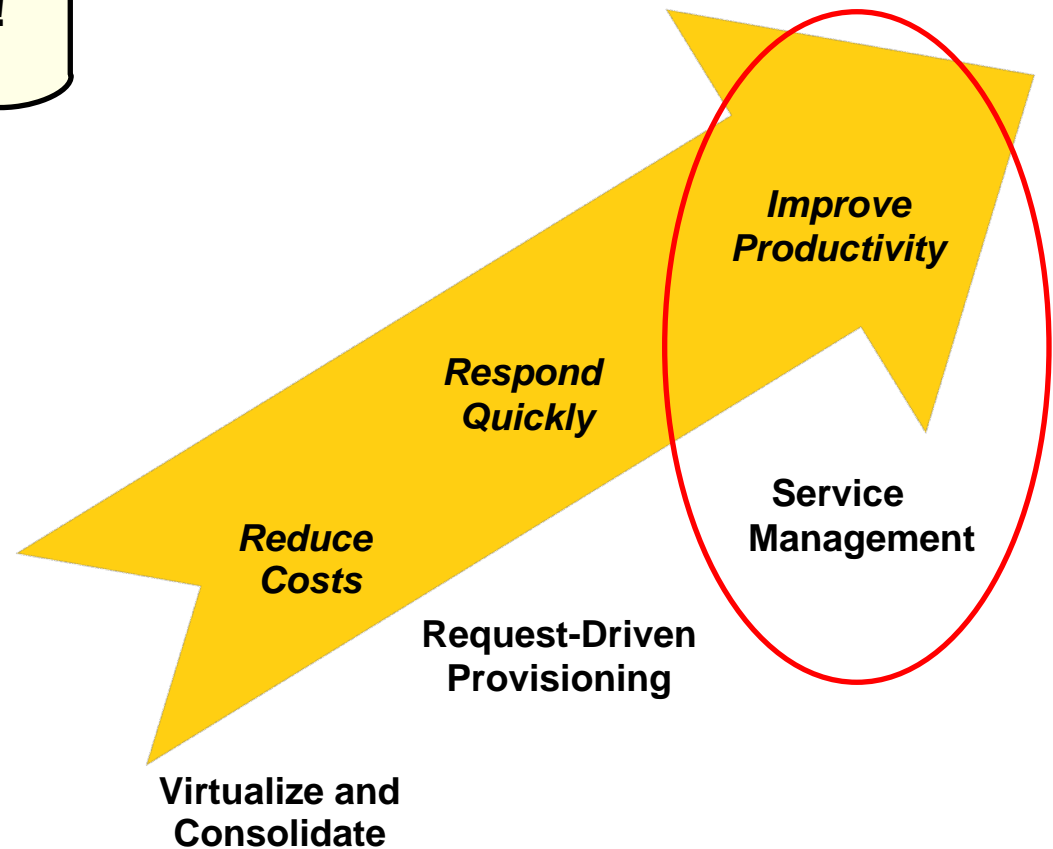
Dynamic Infrastructure For A Smarter Planet

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

See issues end-to-end in business context

Respond faster and make better decisions

Control

Standardize IT processes and provide self-service

Improve quality and reduce mistakes

Automation

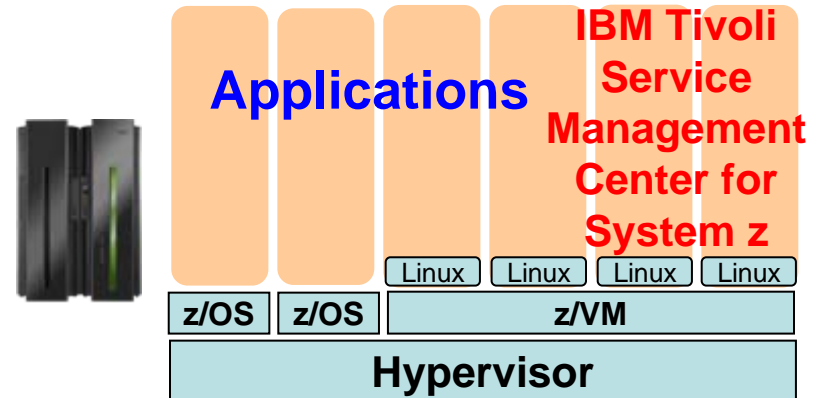
Automate repeating tasks to simplify

Lower costs and build agility

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

Mainframe As A Service Management Hub

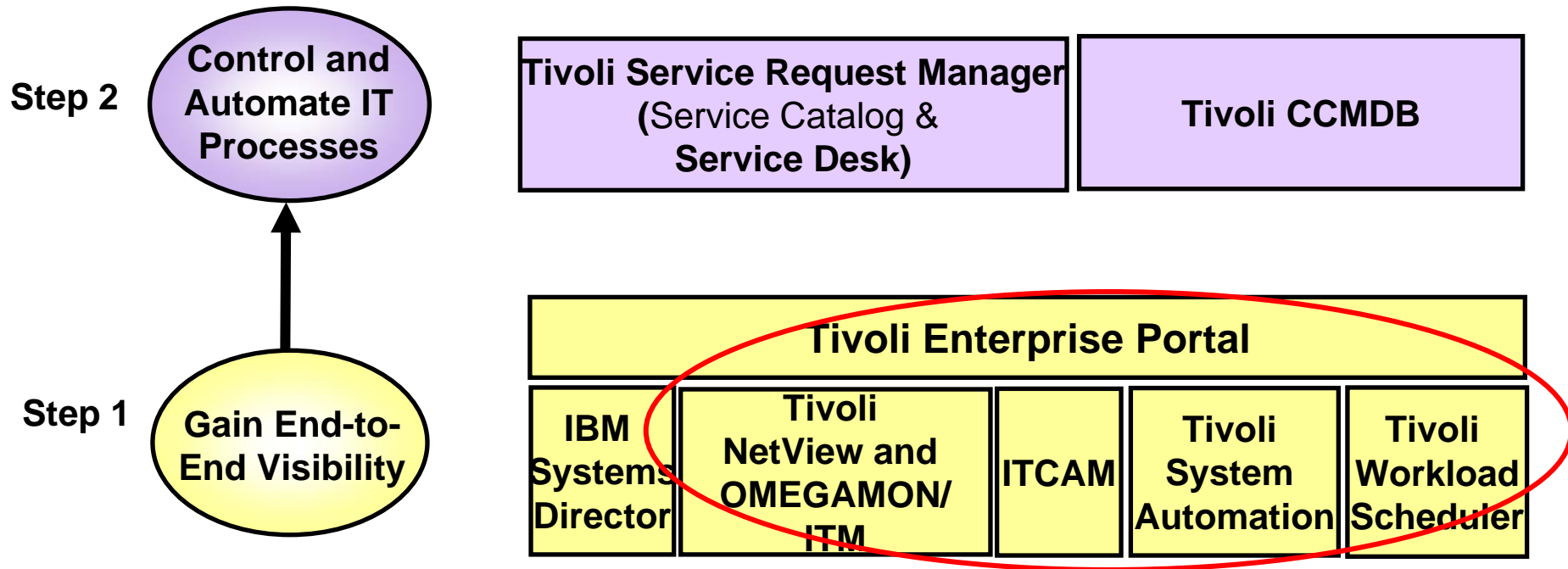
- Consolidate management on the mainframe
 - ▶ Service Management hub on Linux on z
 - ▶ z/OS supported as a managed system
- Manage the Dynamic Infrastructure
 - ▶ Best practices
 - ▶ Productivity
 - ▶ Lowest Cost



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:

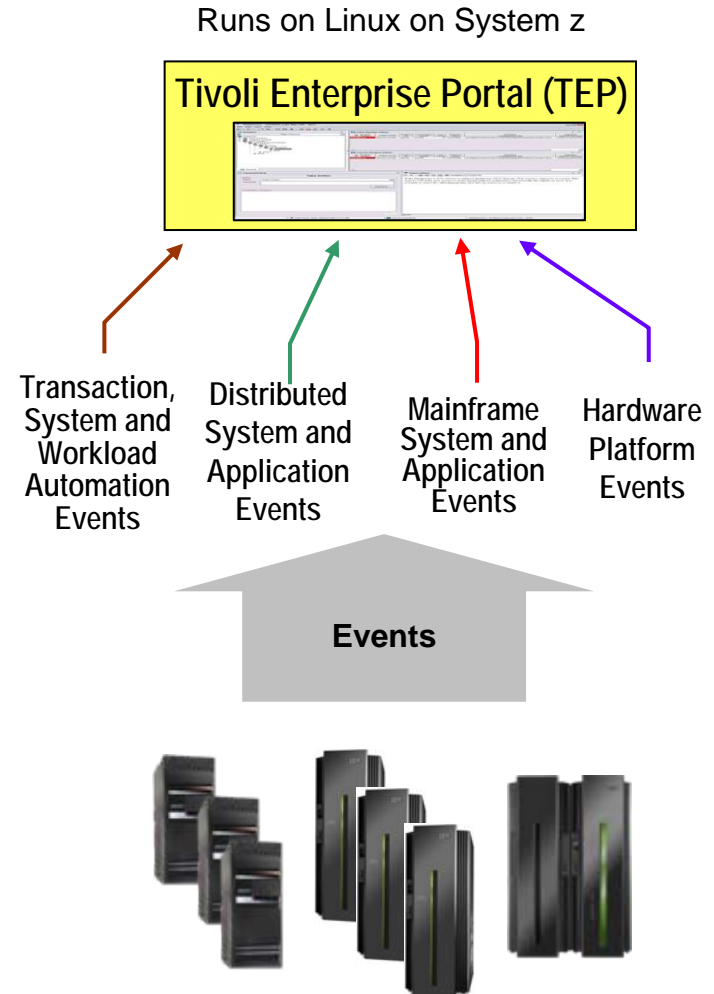
- ▶ Hardware events from **IBM Director**
- ▶ Mainframe events from **Tivoli OMEGAMON**
- ▶ Distributed events from **Tivoli Monitoring (ITM)**
- ▶ Transaction events from **Tivoli Composite Application Manager (ITCAM)**
- ▶ System automation events from **Tivoli System Automation (TSA)**
- ▶ Batch workload 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

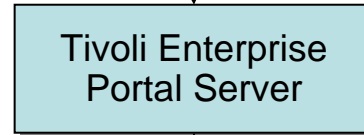
Tivoli Enterprise Portal (TEP)

Single interface for management



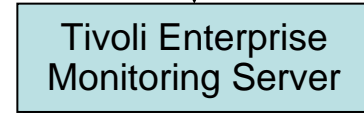
Runs on Linux on System z

Retrieval, manipulation and analysis of data



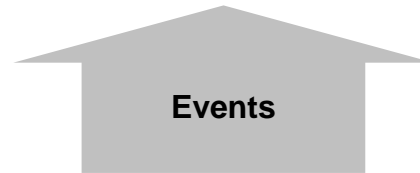
Runs on Linux on System z

Collect and correlate monitoring data



Runs on Linux on System z and z/OS

Intelligent monitoring agents on systems send events



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

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 on the left showing the hierarchy of monitored resources, including Linux Systems, z/10 Items, z/9ccmdb, DB2, Linux OS, Web Server Agent - Primary, WebSphere Agent - Primary, z/inos, z/inosmaps, Windows Systems, and z/OS Systems. A red arrow points from the "Enterprise" root node to the "Situation Event Console" pane.
- Situation Event Console:** A table displaying active situations. Three critical situations are highlighted in red:

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 open situations for various categories. The categories include 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. A red arrow points from the "CICSplex_RTAGroup_Warning" bar to the "CICS application not responding" bullet point in the list.
- My Acknowledged Events:** A table showing a list of acknowledged events with columns for Severity, Status, Owner, Situation Name, Display Item, Source, Impact, Opened, Local Timestamp, Type, and Reference ID.
- Message Log:** A table showing a log of messages with columns for Status, Name, Display Item, Origin Node, and Global Timestamp.

The bottom status bar shows the Hub Time as "Mon, 09/08/2008 10:21 PM", the server is "Available", and the user is "Enterprise Status - 192.169.1.54 - SYSADMIN *ADMIN MODE*". The taskbar at the bottom includes icons for Start, IBM Tivoli Net..., MAXIMO - Start..., Netcool/OMNIB..., Netcool/OMNIB..., Mozilla Firefox, and Enterprise St...

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

Tivoli NetView And Tivoli OMEGAMON XE – Monitor Mainframe Resources

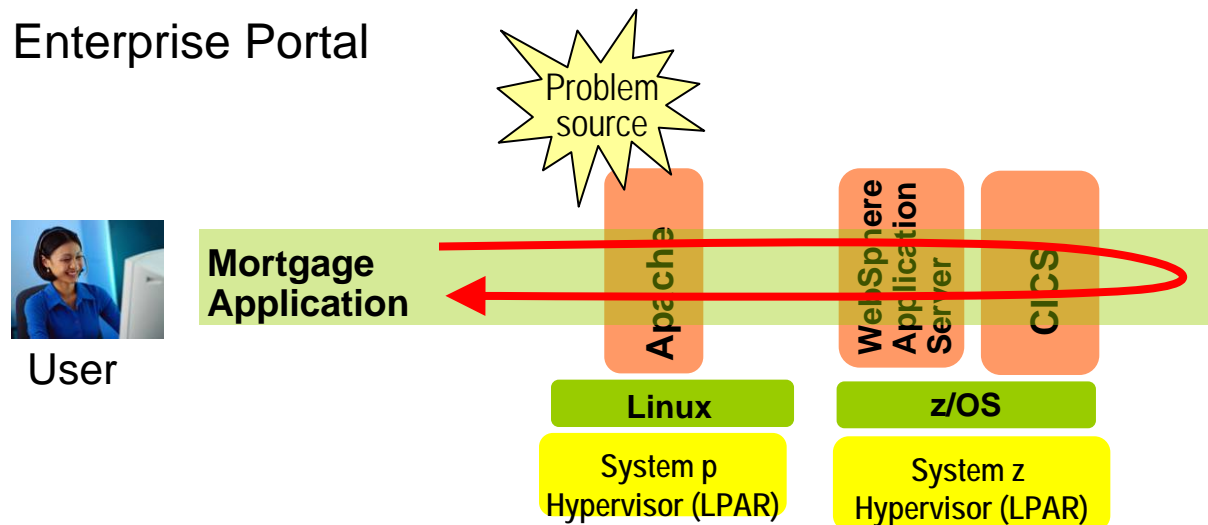
- Tivoli NetView and Tivoli OMEGAMON XE agents for mainframe servers
 - ▶ *NetView on z/OS* – monitor and control TCP/IP and SNA networks to help maintain high availability
 - ▶ *OMEGAMON XE on z/OS* – monitor key resources such as CPU, LPARs, I/O, network, enqueue, paging, zIIP, zAAP, Cryptoprocessors
 - ▶ *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
 - ▶ *OMEGAMON XE for CICS on z/OS* – manage CICS systems

Tivoli Monitoring and Tivoli Composite Application Manager (ITCAM) – Monitor Distributed Resources

- Tivoli Monitoring and ITCAM agents for distributed servers
 - ▶ *Tivoli Monitoring* (base) – monitor system resources such as CPU, I/O, network
 - ▶ *ITCAM for Applications* – monitor system resources and virtual servers; monitors availability and performance of distributed databases such as DB2, Oracle, Sybase, IBM Domino, web servers and application servers, IBM WebSphere MQ and WebSphere Message Broker, SAP, Siebel and PeopleSoft
 - ▶ *Tivoli Monitoring for Microsoft Applications* – monitors Microsoft environment

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

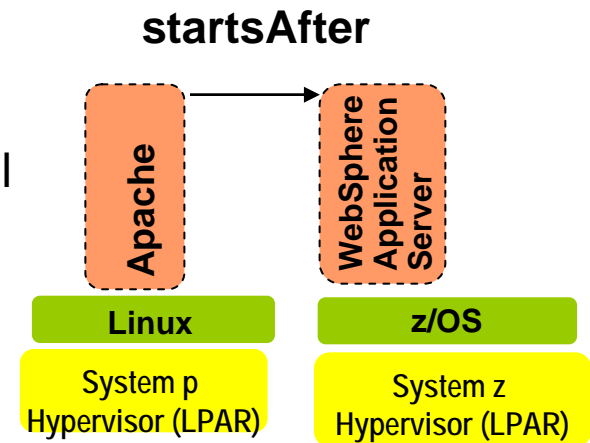
- Tracks transaction performance end-to-end across multiple physical and/or virtual systems to isolate bottlenecks quickly
 - ▶ Isolate source of performance problem across web servers, WebSphere and WebLogic application servers, CICS, IMS and DB2 subsystems, as well as ERP environments
- Monitors and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

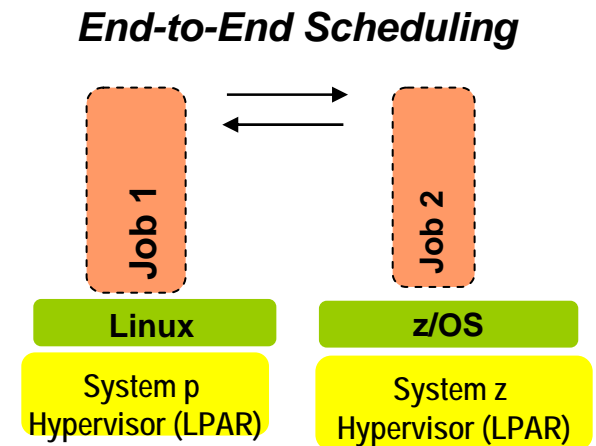
- Automate operations on hardware, I/O and applications
- No Scripts, policy-based automation
- Can manage relationship between resources and grouping of resources to automate at application level
- Includes out-of-the-box automation modules for middleware such as IMS, CICS, DB2, mySAP, WebSphere
- Can 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.

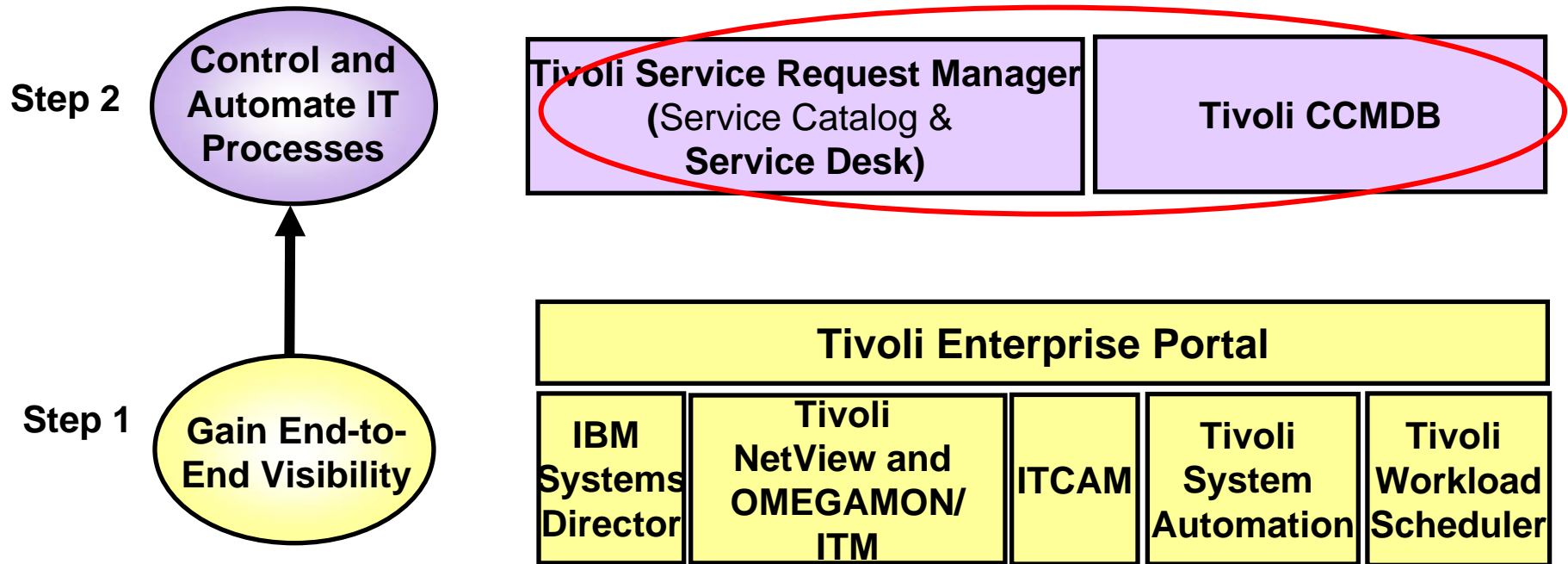


Data Center Manager



New Employee

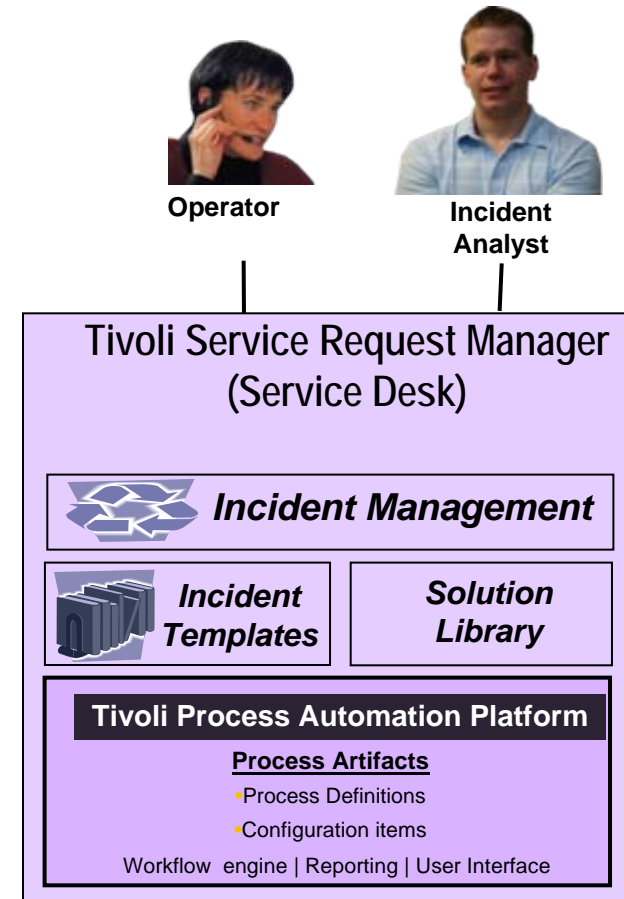
A Step By Step Approach To Implementing Tivoli Service Management Center For System z



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

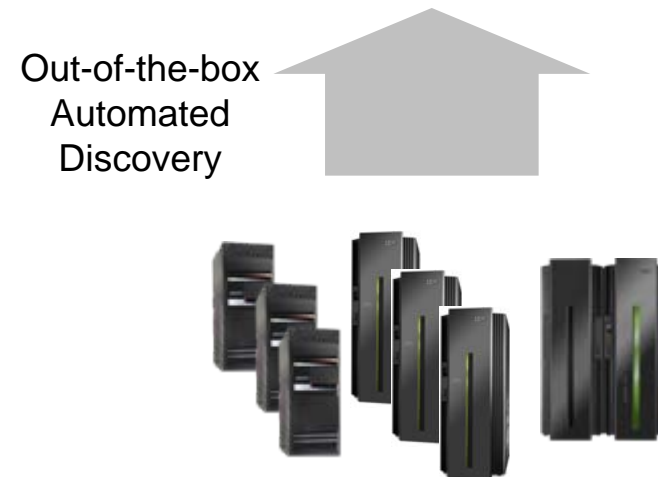
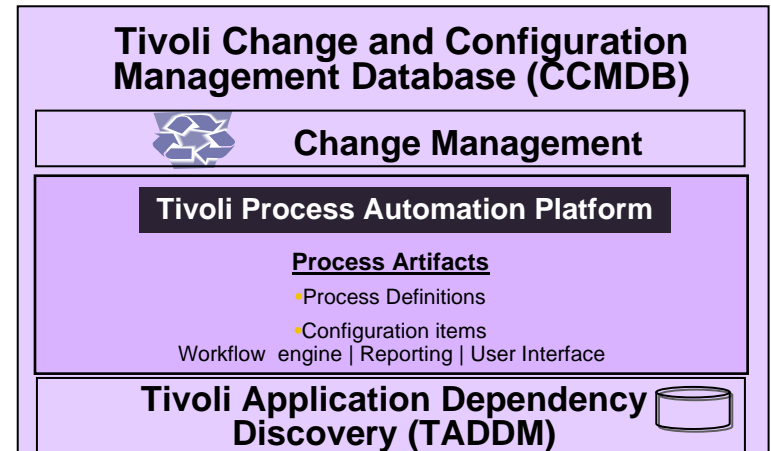


Runs on Linux on System z

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

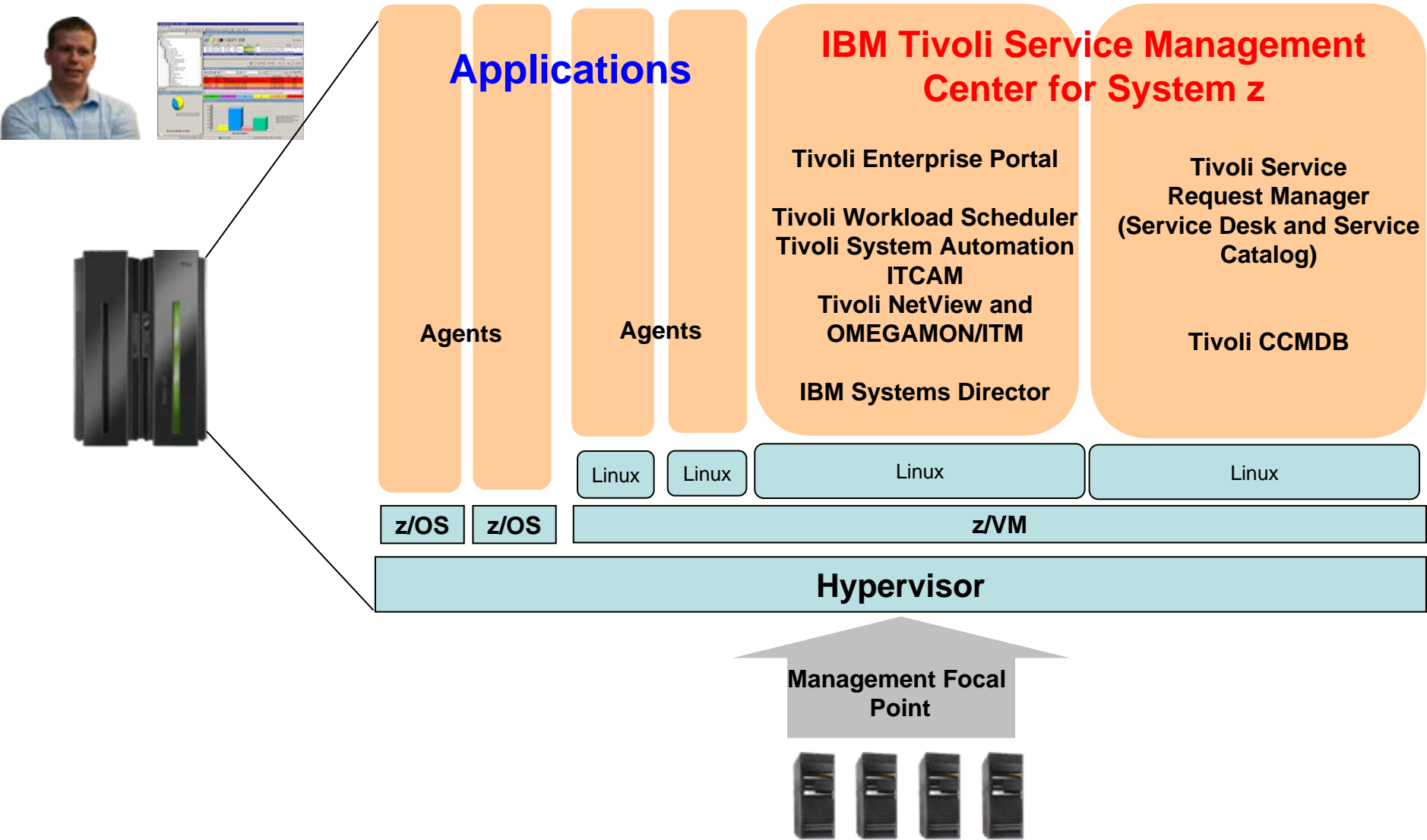


Auto Discover New Assets

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



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 CA Solution Used To Manage 100 Distributed Linux Servers

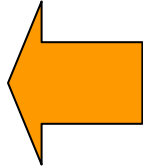


WAS/DB2

100 Servers (200 PVU or Quad-core for each server)

3 authorized administrator licenses; 8 concurrent administrator licenses*

manage



Tivoli CCMDB
Tivoli Service Request Manager
ITCAM for Applications

**Tivoli software
total (5 yr):
\$1,567,960**

OR



CA CMDB
CA Change Manager
CA Service Desk
*CA Unicenter
(WebSphere, DB2)*

**CA software
total (5 yr):
\$4,883,993**

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

Tivoli Or CA Software (Distributed) Pricing

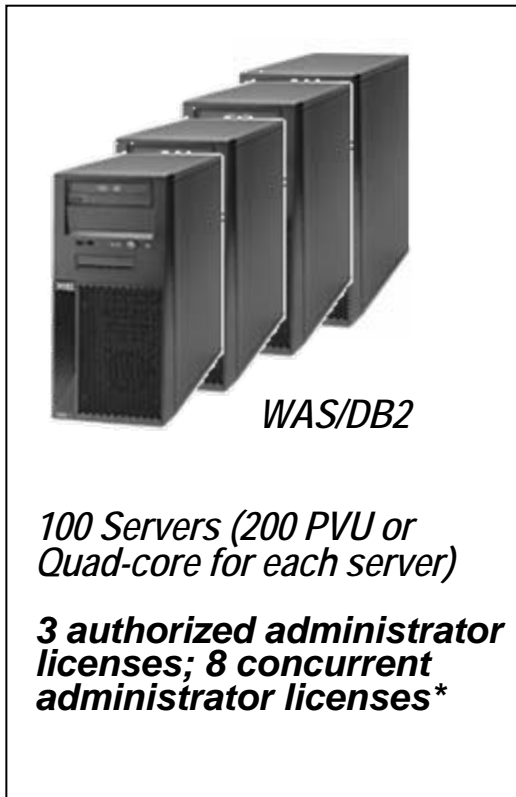
Parts	1st Year	2nd- 5th Year Maintenance
Tivoli CCMDB (base)	\$83,600	\$66,800
Tivoli CCMDB (VU)	\$50,000	\$40,000
Tivoli CCMDB (authorized user)	\$3,150	\$2520
Tivoli CCMDB (concurrent user)	\$21,040	\$16,800
TSRM (authorized user)	\$8,250	\$6,600
TSRM (concurrent user)	\$55,040	\$44,160
ITCAM for Applications (PVU)	\$650,000	\$520,000
TOTAL	\$871,080	\$696,880

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 (WebSphere, DB2)	\$2,509,400	\$2,007,600
TOTAL	\$2,713,285	\$2,170,708

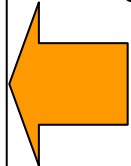
5 year Tivoli Total: \$1,567,960

5 year CA Total: \$4,883,993

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



manage



Tivoli CCMDB

Tivoli Service Request Manager

ITCAM for Applications

Tivoli System Automation

Tivoli Workload Scheduler

**Tivoli software total (5 yr):
\$3,793,960**

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	\$2,520
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)	\$650,000	\$520,000
Tivoli System Automation (PVU)	\$660,000	\$528,000
Tivoli Workload Scheduler (PVU)	\$576,000	\$462,000
TOTAL	\$2,107,080	\$1,686,880

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

Tivoli Solution Used To Manage Consolidated Environment On VMware

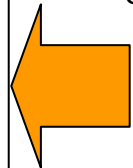


WAS/DB2

13 physical servers to consolidate (400 PVU or 8-core for each server)

1 authorized administrator licenses; 1 concurrent administrator licenses*

manage



Tivoli CCMDB

Tivoli Service Request Manager

ITCAM for Applications

Tivoli System Automation

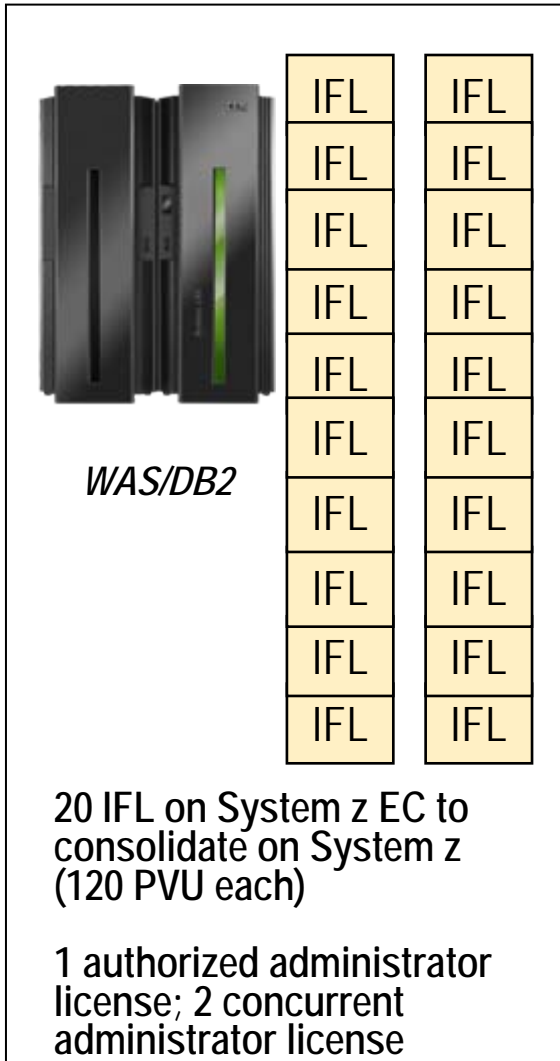
Tivoli Workload Scheduler

**Tivoli software total (5 yr):
\$1,086,160**

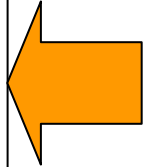
Parts	1st Year	2nd- 5th Year Maintenance
Tivoli CCMDB (base)	\$83,600	\$66,800
Tivoli CCMDB (VU)	\$6,500	\$5,200
Tivoli CCMDB (authorized user)	\$1,050	\$840
Tivoli CCMDB (concurrent user)	\$5,260	\$4,200
TSRM (authorized user)	\$2,750	\$2,200
TSRM (concurrent user)	\$13,760	\$11,040
ITCAM for Applications (PVU)	\$169,000	\$135,200
Tivoli System Automation (PVU)	\$149,760	\$120,120
Tivoli Workload Scheduler (PVU)	\$171,600	\$137,280
TOTAL	\$603,280	\$482,880

*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



manage



Tivoli CCMDB

Tivoli Service Request Manager

ITCAM for Applications

Tivoli System Automation

Tivoli Workload Scheduler

5 year Tivoli software total on System z: \$617,020

Parts	1st Year	2nd- 5th Year (Maint)
Tivoli CCMDB (base)	\$83,600	\$66,800
Tivoli CCMDB (VU)	\$10,000	\$8,000
Tivoli CCMDB (authorized user)	\$1,050	\$840
Tivoli CCMDB (concurrent user)	\$5,260	\$4,200
TSRM (authorized user)	\$2,750	\$2,200
TSRM (concurrent user)	\$13,760	\$11,040
ITCAM for Applications (PVU)	\$78,000	\$62,400
Tivoli System Automation (PVU)	\$69,120	\$55,440
Tivoli Workload Scheduler (PVU)	\$79,200	\$63,360
TOTAL	\$342,740	\$274,280

Summary

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



IBM