Integrated Service Management

A Winning Combination for System x

IBM Software

PCTY2010

Pulse Comes to You

Benjamin Lim, System Software, IBM

13 April 2010, Singapore

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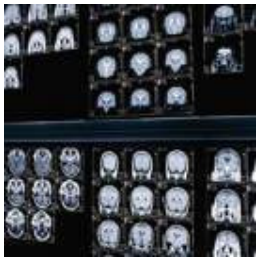
As the world gets smarter, demands on IT will grow

Smart traffic systems

Intelligent oil field technologies

Smart food systems



Smart healthcare

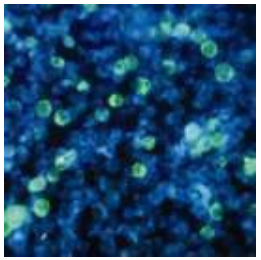
Smart energy grids

Smart retail

Smart water management

Smart supply chains

Smart countries



Smart weather

Smart regions

Smart cities

The World is Changing and Becoming More…

- Instrumented
- Interconnected
- Intelligent

The World is Changing… and Data Centers want more…

Rationalization

Consolidation

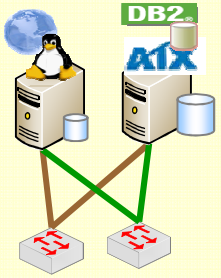
Virtualization

Automation

Optimization

IT is Undergoing a Transition…

1. Physical

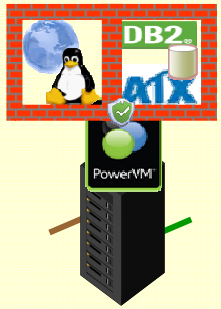


System Mgr

- OS
- Storage
- Servers

- Physical systems, storage and network
- Low resource utilization
- Low bandwidth links
- Manually intensive management

2. Virtual Systems



System Mgr

- OS → VM
- Hypervisor
- Storage
- Servers

- Virtual systems, storage and network
- Moderate resource utilization
- Low bandwidth links
- Manually intensive management

Legend

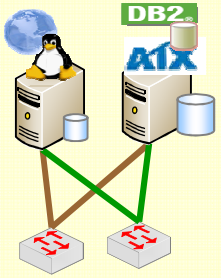
- Ethernet
- Fibre Channel
- Converged Fabric

…. to a Dynamic Infrastructure Model

Industry is transitioning from 1 & 2

To a Dynamic Infrastructure model (3 & 4)

1. Physical



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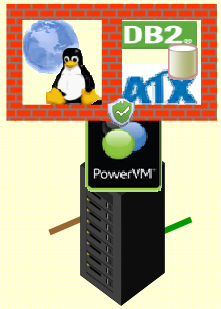

System Mgr: OS → VM, Hypervisor, Storage, Servers

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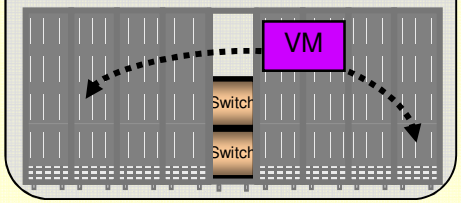
3. Cloud Building Block (CBB)



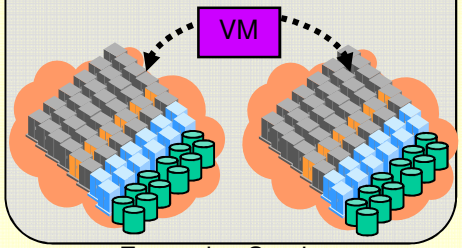
Service Management

Hypvsr Mgr: VM, Hypervisor

Platform Mgr: Storage, Servers, Network

- VMs automatically migrate with their network & storage state anywhere within a CBB.
- Automated, integrated management
- High bandwidth links, enable converged fabric
- High resource utilization

4. DC as a Virtual System



Enterprise Service Tools & Management

Hypvsr Mgr: Middleware, VM, Hypervisor

Platform Mgr: Storage, Servers, Network

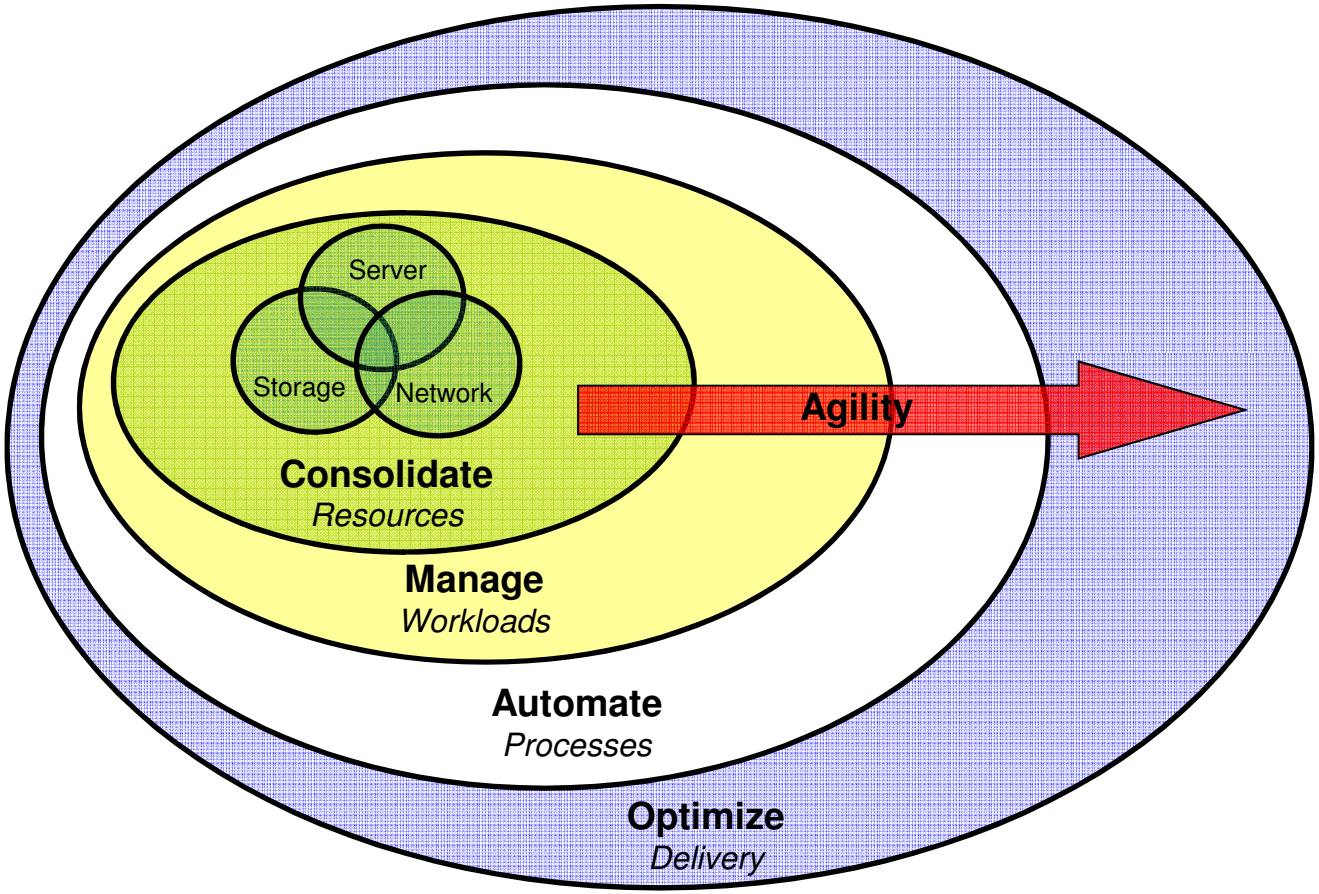
- Integrated DC wide, service management
- Cross DC VM migration, requires Core switch orchestration

Legend

- Ethernet
- Fibre Channel
- Converged Fabric

Virtualization Journey

with Integrated Service Management



Client Challenges with Enterprise Workloads

Database, Virtualization, Transaction processing

Memory Capacity	Do More With Less	Simplify
❑ More virtual machines	❑ Buy what they need when they need it	❑ Speed time from deployment to production
❑ Larger virtual machines	❑ License Fees	❑ Optimized performance for their workload needs
❑ Bigger databases	❑ Operational Expense	❑ Get more out of the people, IT, and spending they have
❑ Faster database performance	❑ Energy and mgmt expenses	❑ Flexibility to get the IT they need, the way they need it
❑ Greater server utilization	❑ Fit more into the datacenter they have today	
	❑ Reduce cost to qualify systems	

Difficult challenges create an opportunity for innovation.

eX5 Systems Overview

Maximize Memory
Minimize Cost
Simplify Deployment

The broadest portfolio of systems optimized for your most demanding workloads

The next generation of x86 is here!!

Maximize Memory

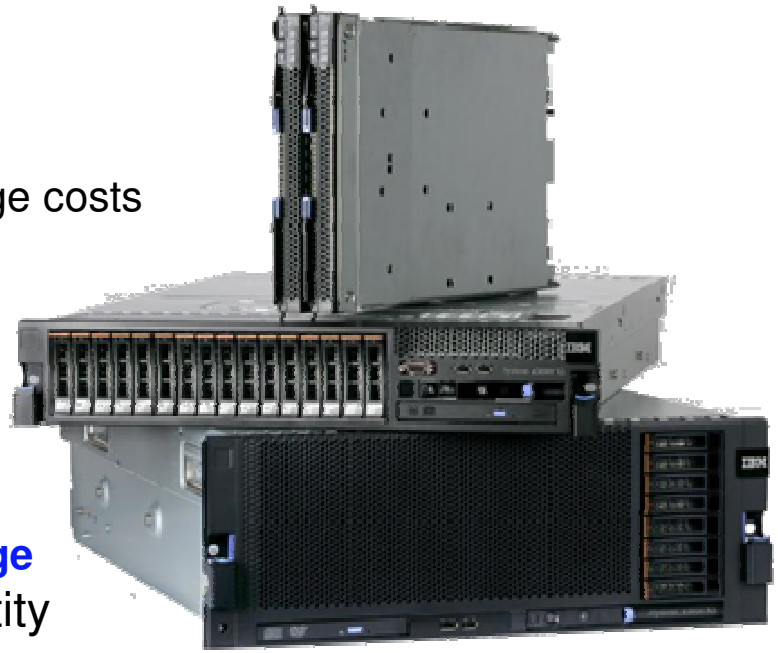
- Over **5x more memory** in 2 sockets than current x86 (Intel® Xeon® 5500 Series) systems
- Nearly **6x more memory** than any 4-socket x86 system available today
- More memory delivers **60% more** virtual machines for the same license cost

Minimize Cost

- **50% less** VMware license cost on eX5 for same number of virtual machines
- Save **over $1M** USD in external database storage costs

Simplify Deployment

- Leverage IBM Lab Services experts to configure and install hardware and software
- Workload Optimized solutions reduce deployment from **months to days**
- IBM Systems Director provides **automated image deployment** and pre-configured server identity



eX5 leadership for an evolving marketplace with increasing demands

5th Gen: Breakthrough performance, ultimate flexibility, simpler management

4th Gen: First x86 server to break 1 Million tpmC

3rd Gen: First x86 server with Hot-swap memory

2nd Gen: First x86 server with 100 #1 Benchmarks

1st Gen: First x86 server with scalable 16 processor design

2001
1st
Generation

2003
2nd
Generation

2005
3rd
Generation

2007
4th
Generation

2010
5th Generation

The new thinking from IBM… Introducing the eX5 Portfolio

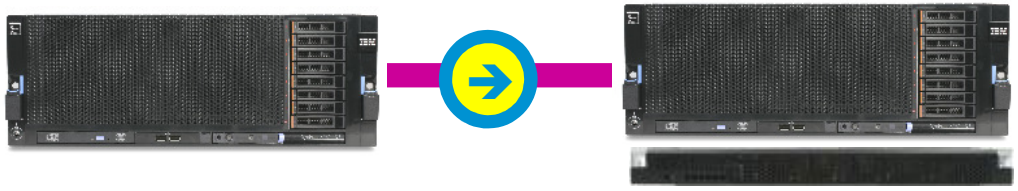
System x3850 X5

BladeCenter HX5

System x3690 X5

MAX5

Maximum memory scaling independent of processors



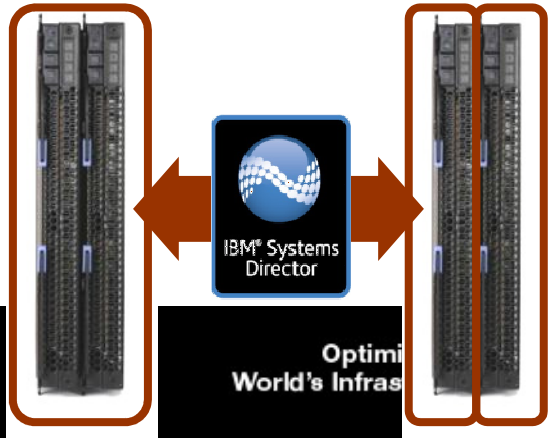
eXFlash

Extreme IOPs SSD storage

FlexNode

Scheduled provisioning

One 4-Socket System	Two 2-Socket Systems



Simplify Deployment

- **Deploy virtual or physical systems easily** by using Automated Image Deployment with Tivoli Provisioning Manager (TPM)
- NEW **Pre-configure server identity** for BladeCenter HX5 with Open Fabric Manager
- NEW **Remotely re-purpose eX5 systems** using Node Partitioning feature eX5 systems remotely
- NEW **Setup automatic recovery** parameters of an eX5 system
- **Automatic update** using hands-off retrieval of update package
- NEW **System guardian capability** with new Integrated Service Advisor for "call home" capabilities
- **Minimizing security-related** downtime with eX5 hardware security and available IBM solutions from Tivoli and/or IBM Virtual Server Security for VMware

* IBM Systems Director 6.1 can help save 34% in administrative costs.

"Challenges of Operational Management for Enterprise Server Installations," International Technology Group, © 2008

48 Cores

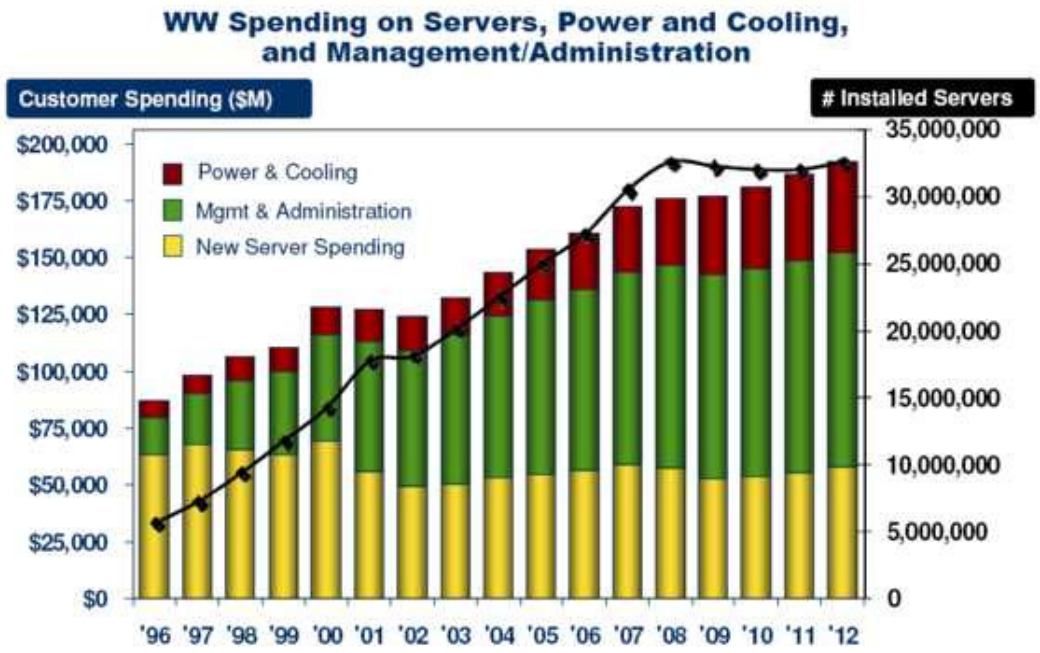
Submitter	System Description	VMmark Version & Score	Processors	Published Date
HP	HP ProLiant DL785 G6 VMware ESX v4.0	VMmark v1.1.1 **53.73 @ 35 tiles** View Disclosure	8 sockets 48 total cores 48 total threads	08/25/09
HP	HP ProLiant DL785 G6 VMware ESX v4.0	VMmark v1.1.1 **47.77 @ 30 tiles** View Disclosure	8 sockets 48 total cores 48 total threads	08/11/09
NEC	NEC Express5800/A1160 VMware ESX v4.0	VMmark v1.1.1 **34.05@24 tiles** View Disclosure	8 sockets 48 total cores 48 total threads	07/28/09
IBM	IBM System x3950 M2 VMware ESX v4.0	VMmark v1.1 **33.85@24 tiles** View Disclosure	8 sockets 48 total cores 48 total threads	06/16/09

32 Cores

Submitter	System Description	VMmark Version & Score	Processors	Published Date
IBM	IBM System x3850 X5 VMware ESXi v4.0 build 240223	VMmark v1.1.1 **70.78@48 tiles** View Disclosure	4 sockets 32 total cores 64 total threads	04/06/10
HP	HP ProLiant DL785 G5 VMware ESX v4.0	VMmark v1.1 **31.56@21 tiles** View Disclosure	8 sockets 32 total cores 32 total threads	06/02/09
Unisys	Unisys ES7000 Model 7405R	VMmark v1.1 30.86@20 tiles	8 sockets 32 total cores	05/19/09

Integrated Systems Management

Budgets are Consumed by Administration and Power Costs



Source: IDC, Virtualization 2.0: The Next Phase in Customer Adoption, Doc #204904, Dec 2006

Expenses for server management and administration are nearly *twice* the capital expense for server purchases

Energy costs have grown to *half* of hardware costs

Both administrative and energy costs continue to grow rapidly

IBM® Systems Director

- The innovative hardware, tools and systems management of the new generation servers can help you achieve *breakthrough productivity gains* through automation, optimization and energy management
- IBM Systems Director 6.1 can help *save 34% to 42%* in administrative costs when compared with unmanaged environments[1]

[1]"Challenges of Operational Management for Enterprise Server Installations," International Technology Group, © 2008

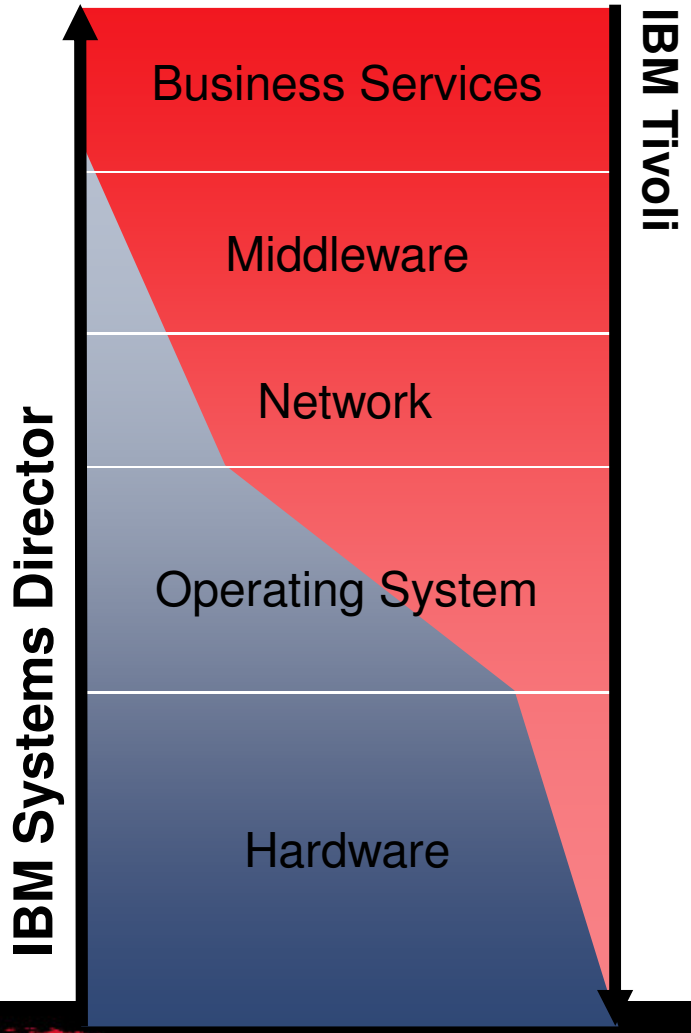
The New Strategy – Exploiting Tivoli and Systems Software Synergy

Collectively deliver a comprehensive Integrated Service Management solution

IBM® Systems Director

Detailed platform management of IBM systems

- ✓ *Consolidated management across systems*
- ✓ *Integrated physical and virtual management*
- ✓ *Automated physical and virtual provisioning*



IBM Tivoli®

Integrated visibility, control & automation across heterogeneous business and technology assets

- ✓ *Align IT operations with the business*
- ✓ *Govern and control the business*
- ✓ *Optimize the business*

Tivoli.

IBM Service Management

Enabling quality service delivery and business innovation

Visibility:
See your Business

Respond faster and make better decisions

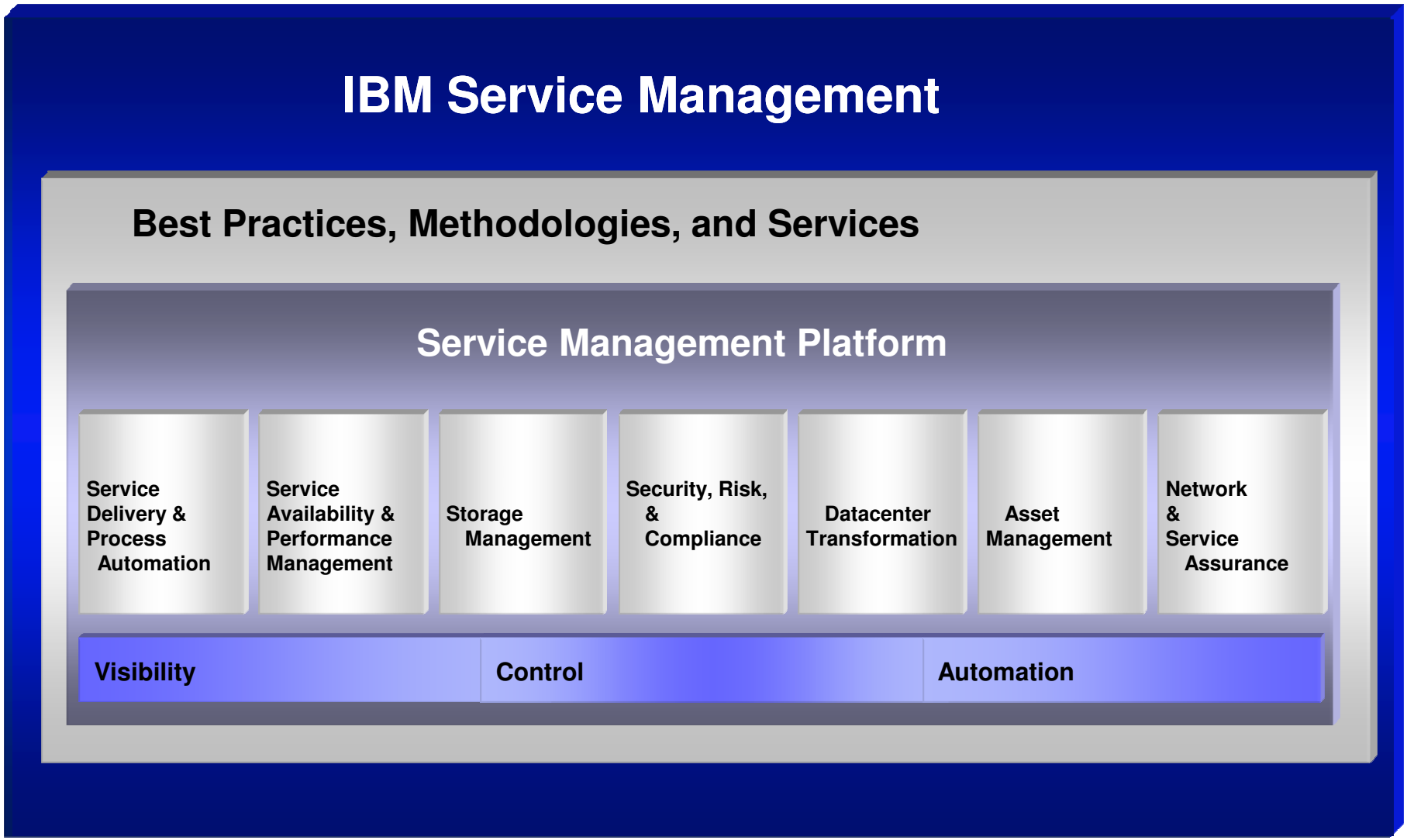
Control:
Manage your Business

Manage risk and compliance

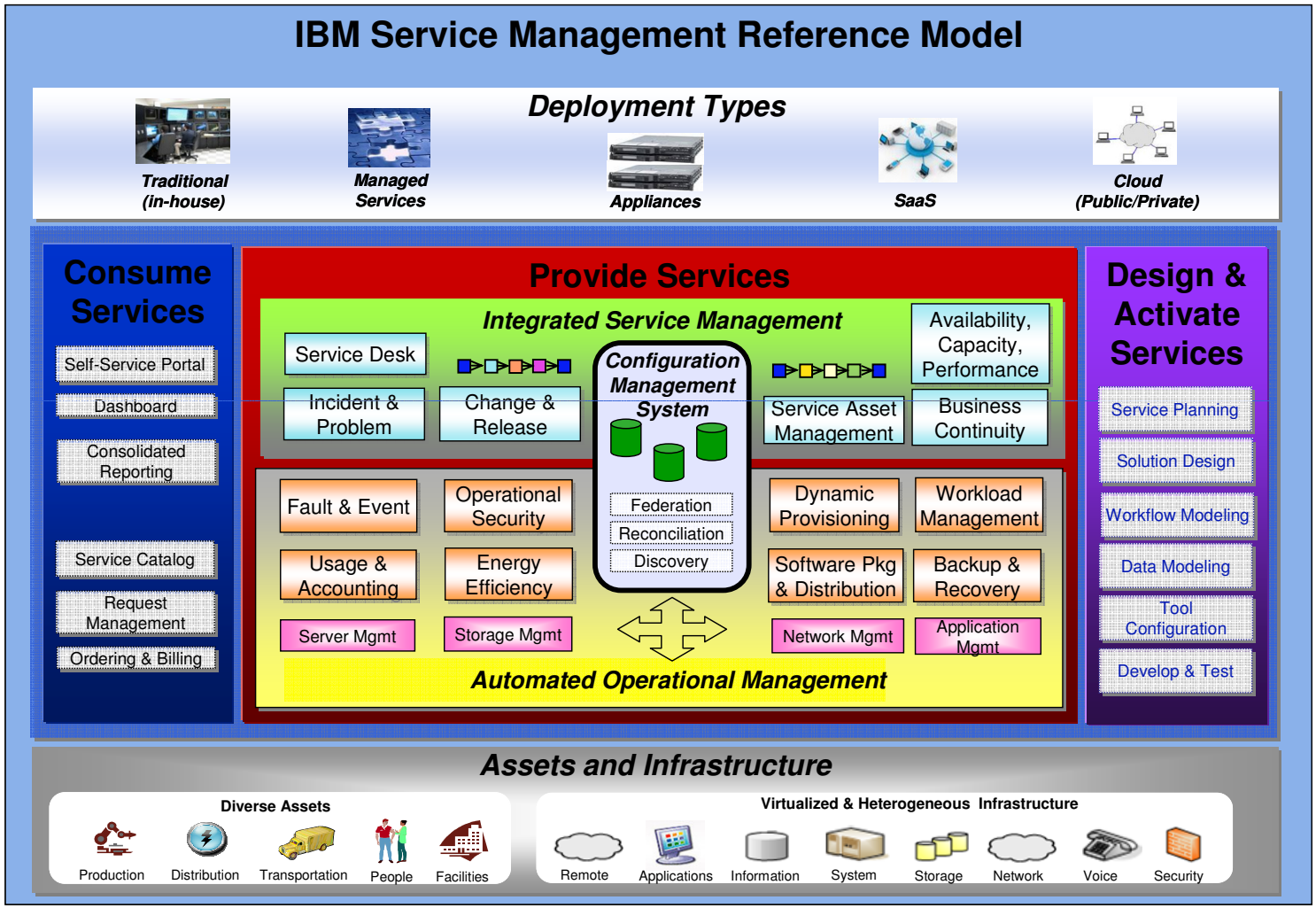
Automation:
Improve your Business

Lower costs and build agility

Comprehensive Capabilities, Built on Best Practices



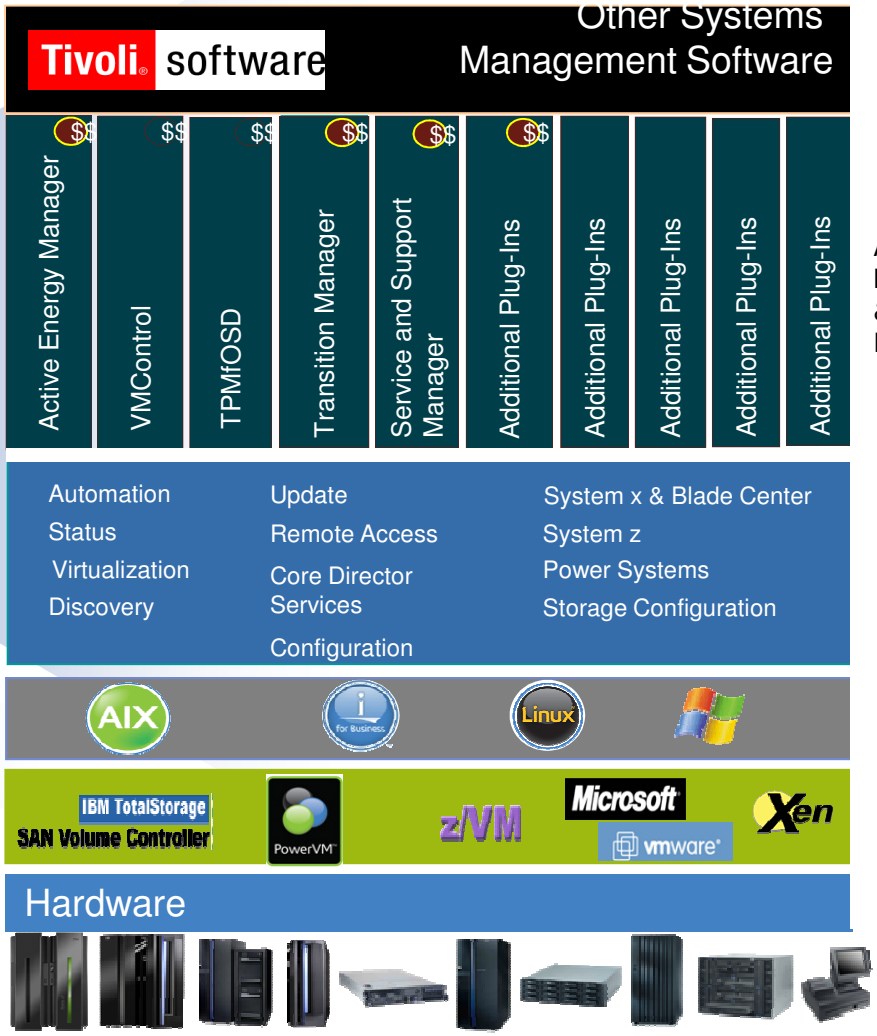
A Comprehensive Solution



IBM Systems Director Overview

End-to-end Management

Platform Management
- Navigator for IBM i
- AIX web console
- HMC web console
- Remote Access



Enterprise Service Management

Advanced Managers & Priced Plug-Ins

Base Systems Director Managers & Hardware Platform Managers Resource Management

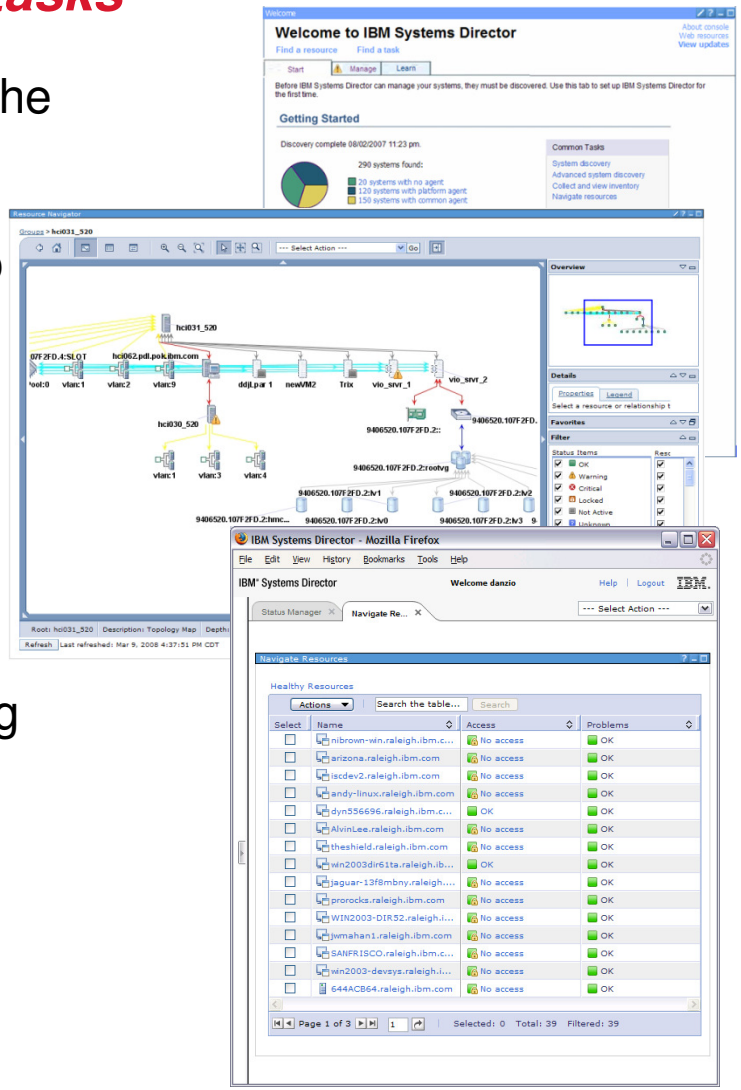
Managed virtual and physical environments

IBM and non-IBM hardware

IBM Systems Director Overview

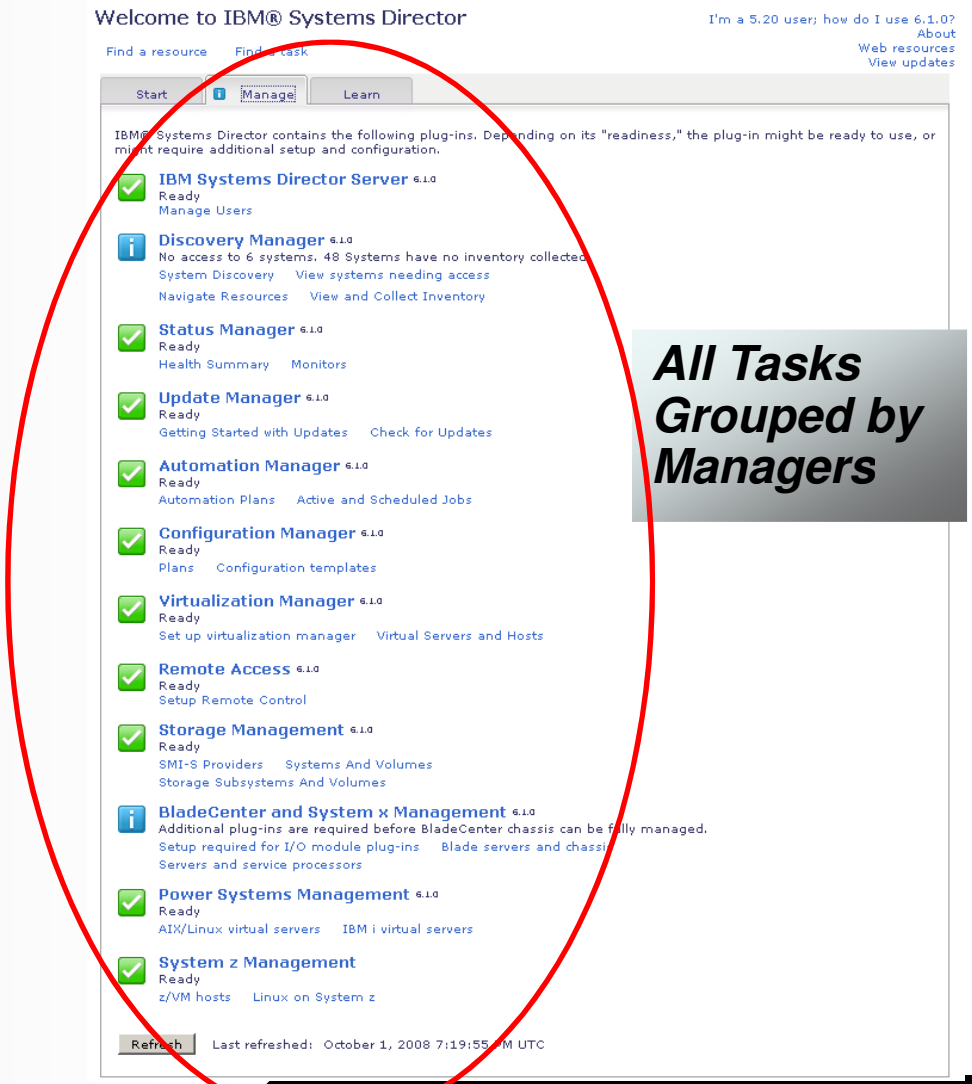
Consistent user experience with common tasks

- Discover, navigate and illustrate systems on the network, visualize detailed inventory and relationships
- Identify problematic systems and drill down to the root cause
- Update firmware, drivers, and operating systems, and orchestrate the installation process
- Update plug-ins to add new functions to the base capabilities
- Monitor systems in real time and set critical thresholds to notify administrators of emerging problems
- Configure settings of a target system and create a configuration plan to deploy these settings to similar systems
- Reduce virtualization complexity
- Manage energy



IBM Systems Director Managers

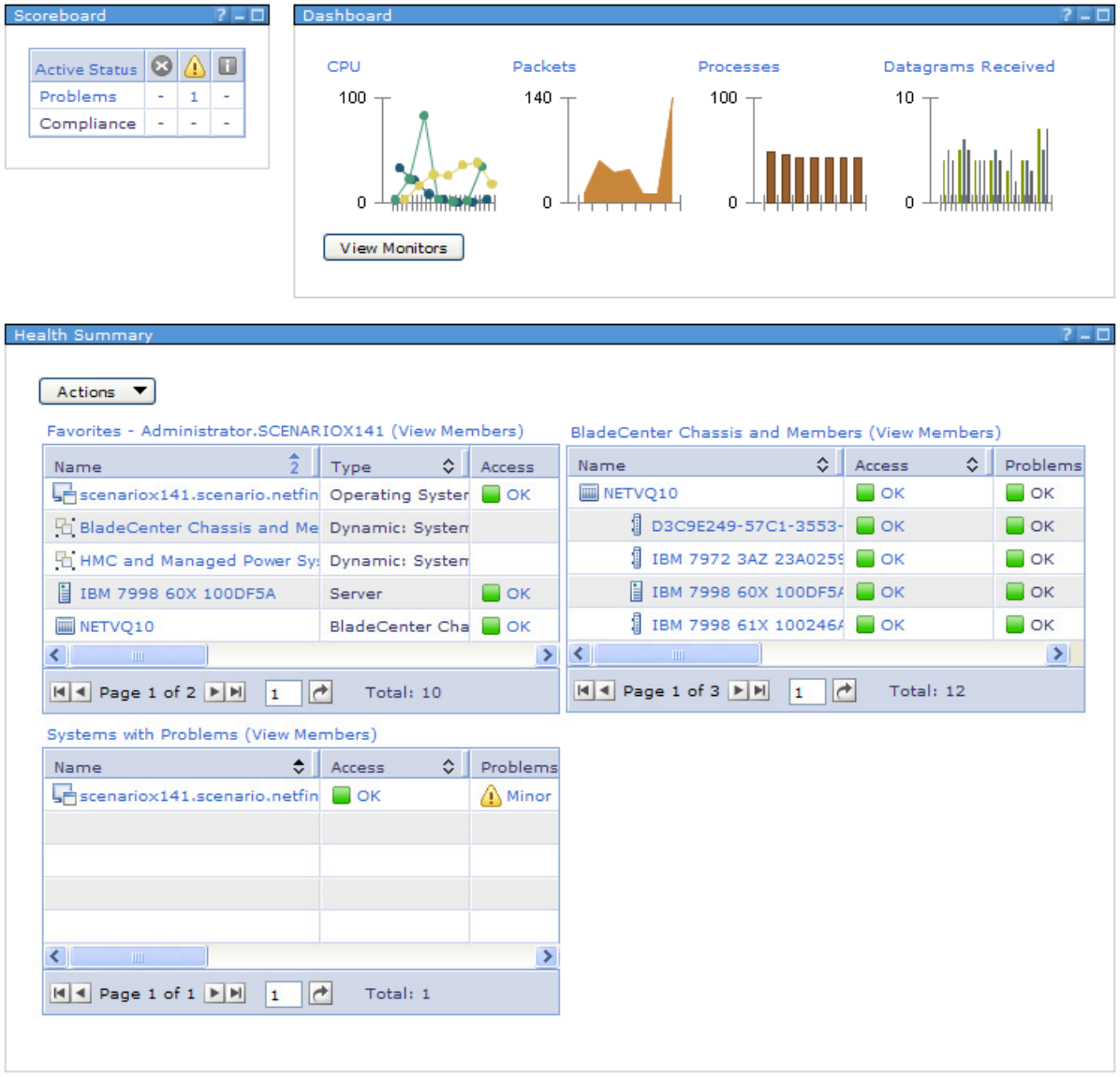
- IBM Systems Director Server
- Discovery
- Status
- Update
- Automation
- Configuration
- Virtualization
- Remote Access
- Storage
- BladeCenter and System x
- Power Systems
- System z
- Various plugins ***



All Tasks Grouped by Managers

Focus on Health, Status, Automation

- **Health summary**
  - Favorite systems
  - Critical monitors
  - Group thumbnails
- Monitoring
  - Monitor resources
  - Thresholds
  - Events
  - Update Compliance
- Automation Plans
  - Notify
  - Run commands
  - Trigger tasks



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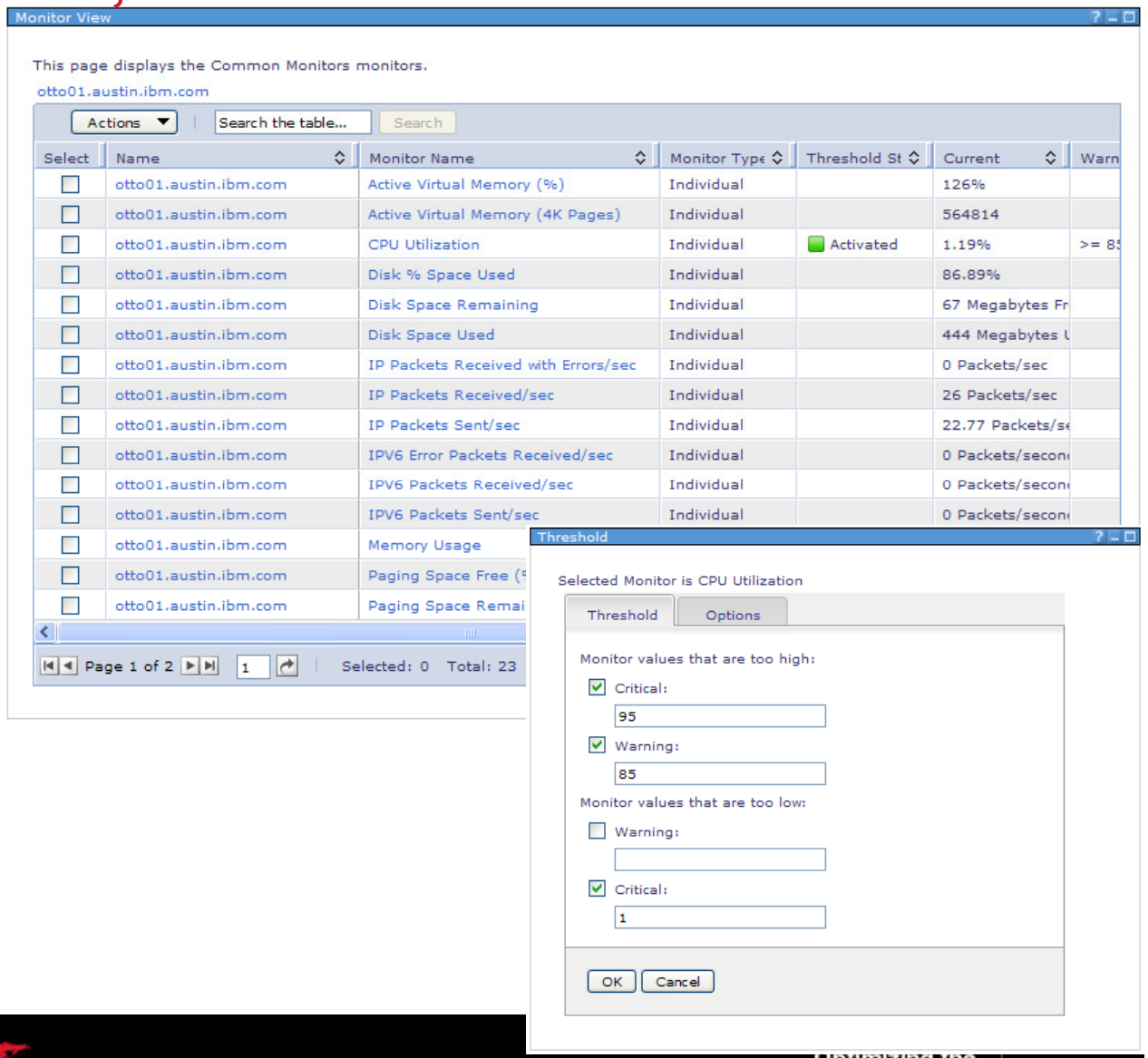

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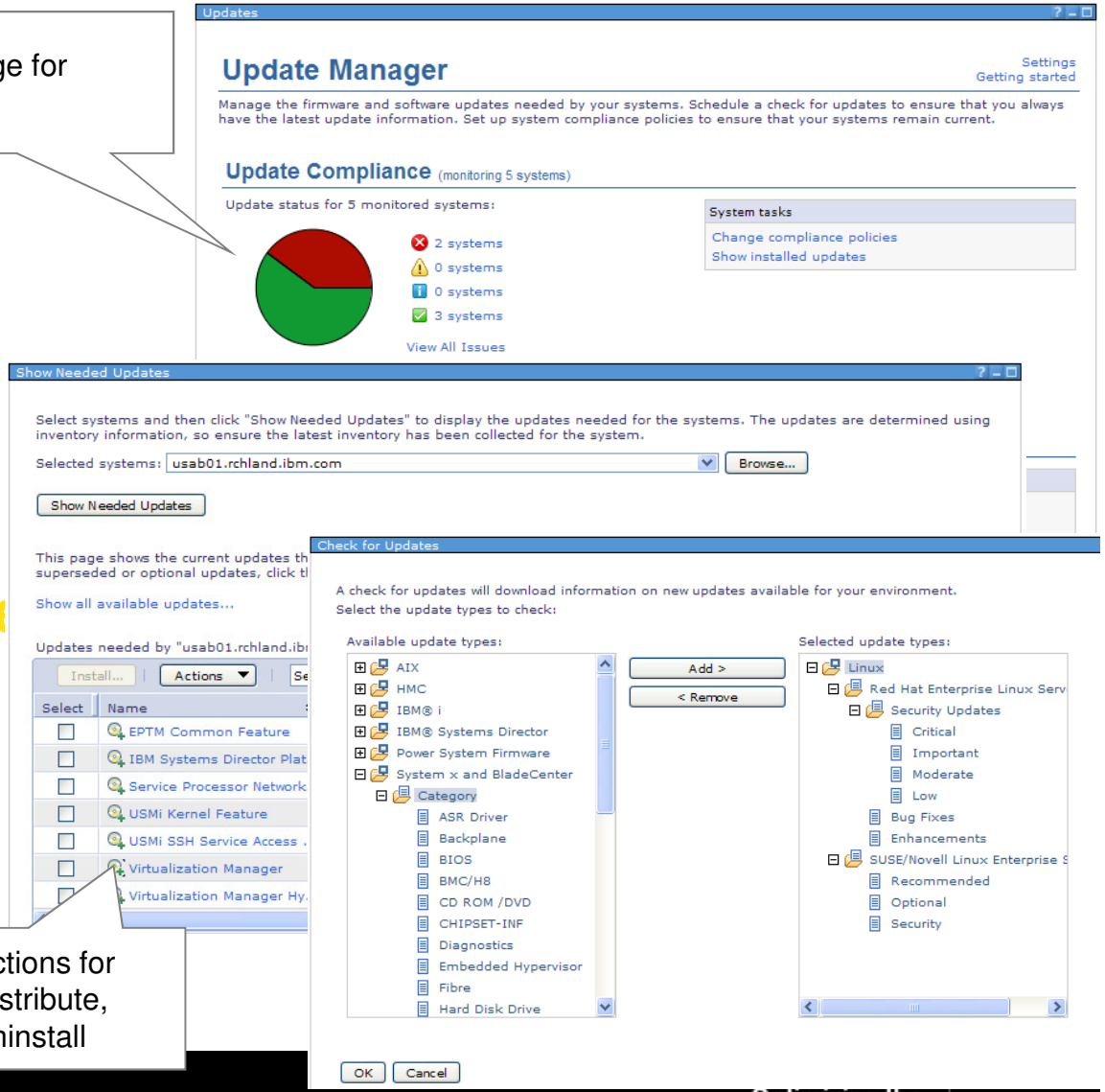
Summary page for single view



Integrated actions for download, distribute, install and uninstall

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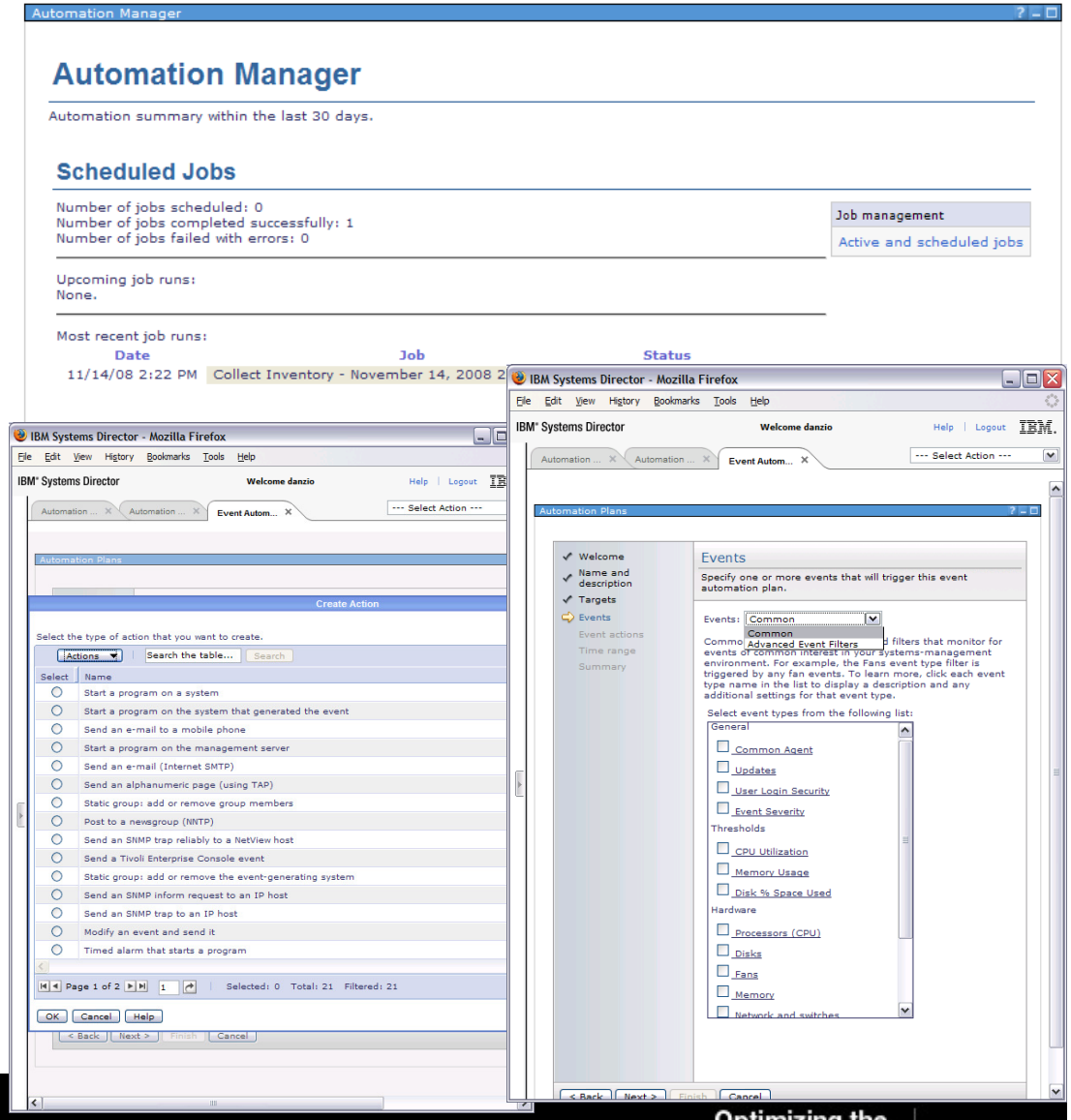
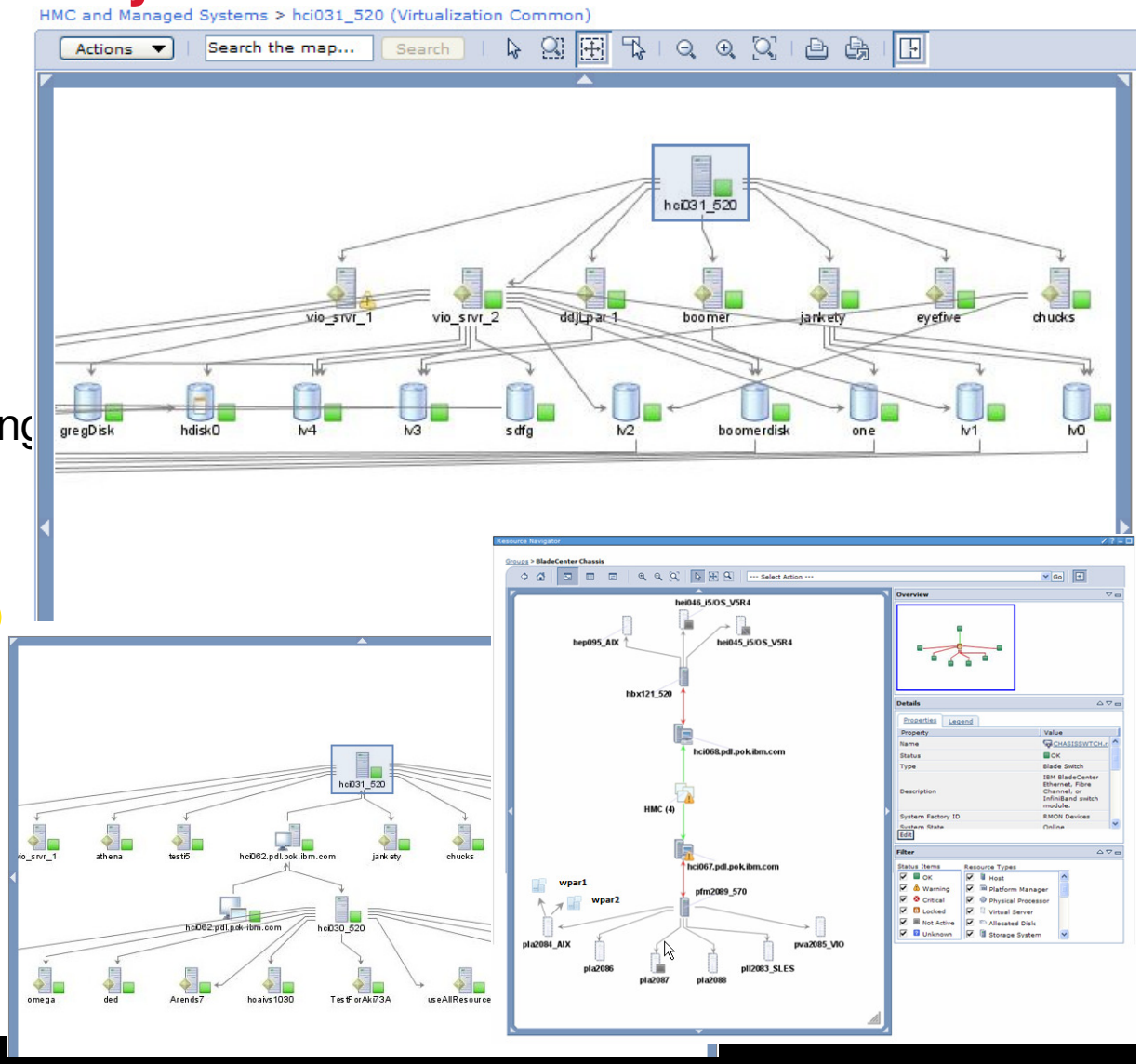


Easy to Navigate Power Systems

- Power Systems summary
  - Launch-point
  - Familiar
  - Intuitive groups
- Drilldown to properties
  - Search
  - Finger-tip troubleshooting
  - Contextual tasks
  - Inventory
- **View topology map**
  - Relationships
  - Dependencies
- Launch embedded tasks



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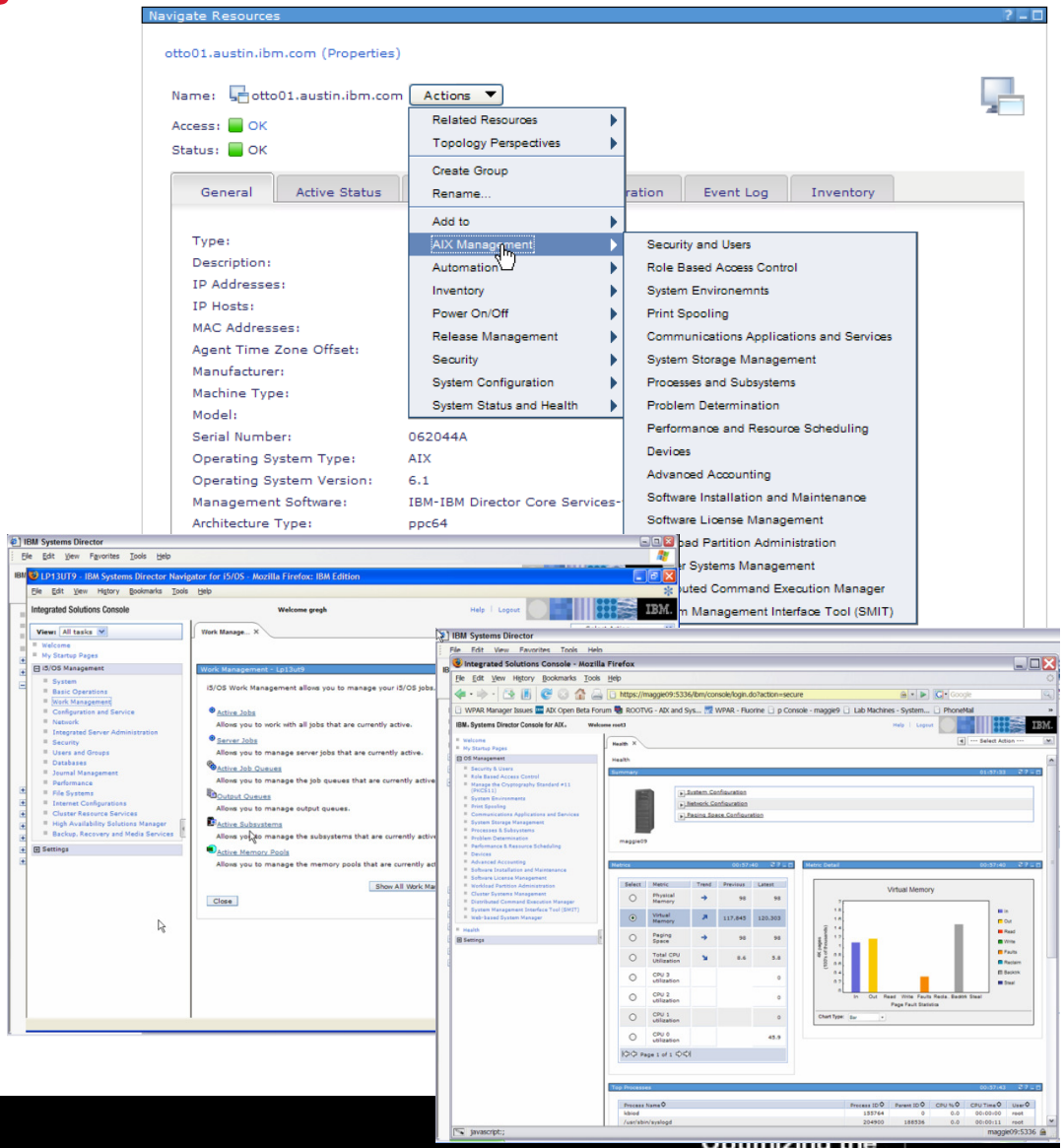
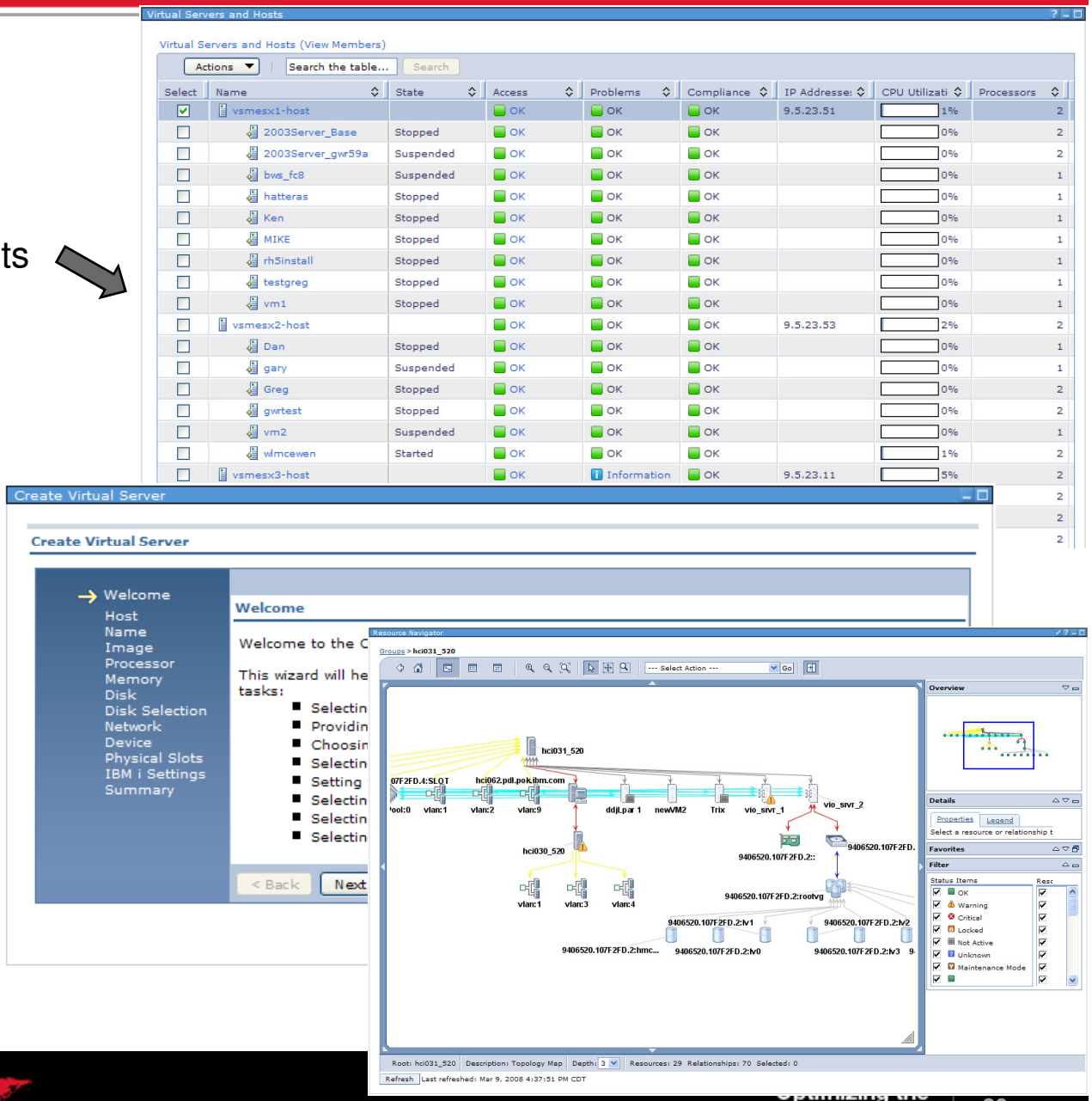
- **Launch embedded tasks**
  - IBM i, HMC, AIX



Simply Virtual

- **Multi-Platform Management**
  - Virtual Servers and Hosts
  - HMC and Systems
  - Life-cycle management
  - Topology Maps
- Edit virtual resources
  - Edit Hosts
  - Edit Virtual Servers
  - GUI or command line
- Relocate
  - Live relocation
  - Plan for relocation
- Deploy
  - Virtual Appliances
  - AIX, Linux on z
- Configure



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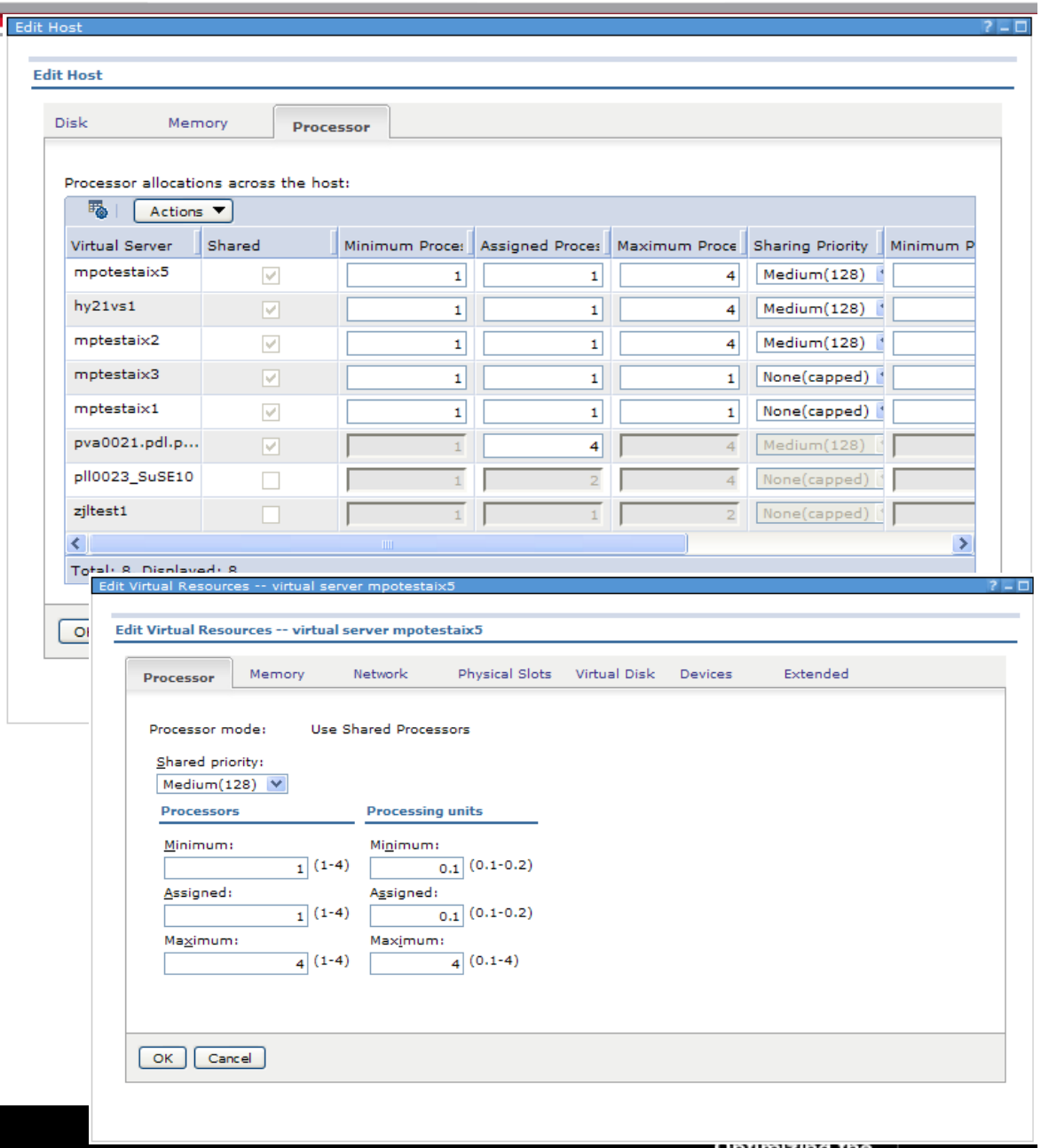
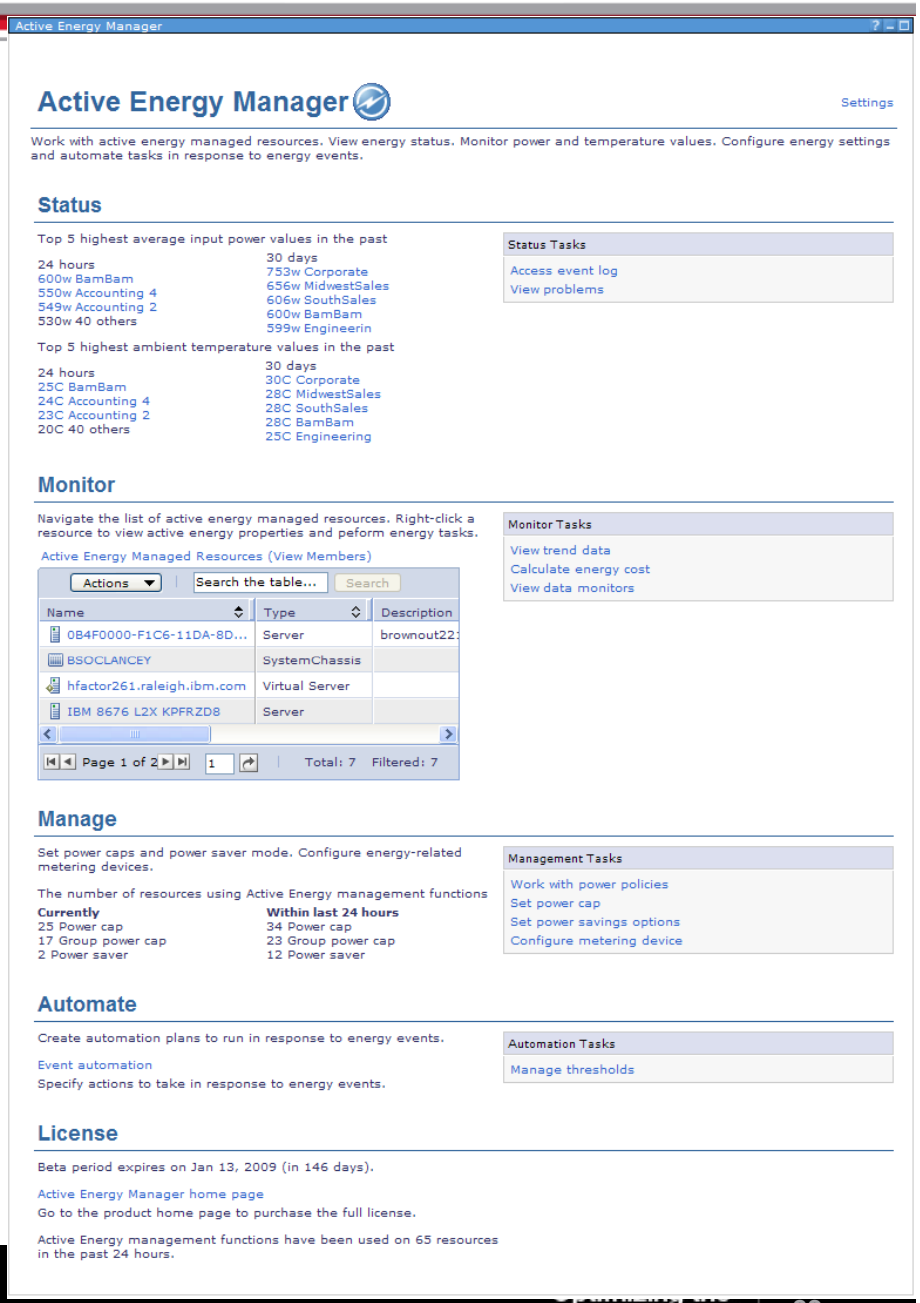


Energy Management

- **Energy Usage Summary**
- Monitoring, automation
  - power and temperature values
  - Trend Data
  - Watt-Hour Meter
- Configuring Energy
  - Power capping
  - Power savings mode
  - Configure PDU
- Update PDU firmware
- Topology Map
  - System “plugged into” PDU



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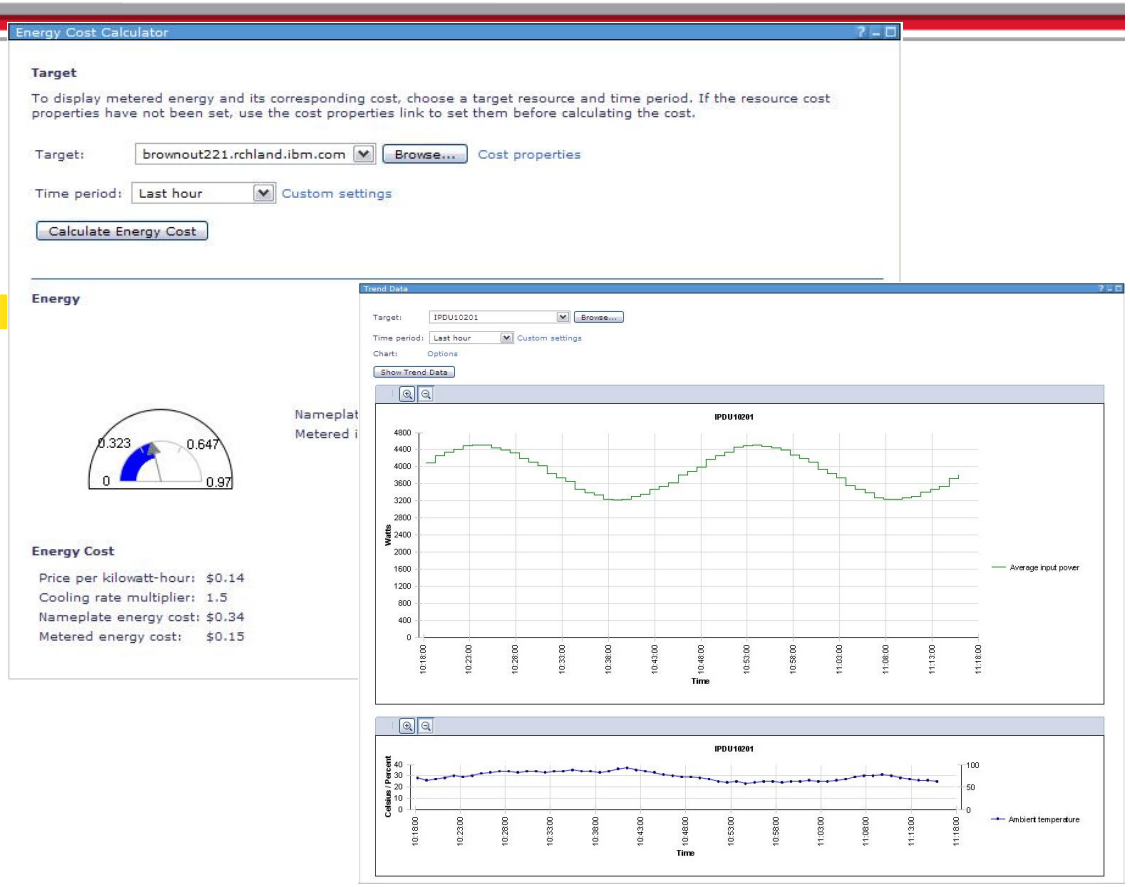

This page displays the Active Energy Monitors monitors.

0B4F0000-F1C6-11DA-8D44-0...

Actions | Search the table... | Search

Select	Name	Monitor Name	Monitor Type	Threshold St	Current
☐	0B4F0000-F1C6-	Ambient Temperature	Individual		25.00
☐	0B4F0000-F1C6-	Average Input Power	Individual		449.40
☐	0B4F0000-F1C6-	Average Output Power	Individual		428.00
☐	0B4F0000-F1C6-	Effective CPU Speed	Individual		100.00
☐	0B4F0000-F1C6-	Exhaust Temperature	Individual		40.00

Energy Management

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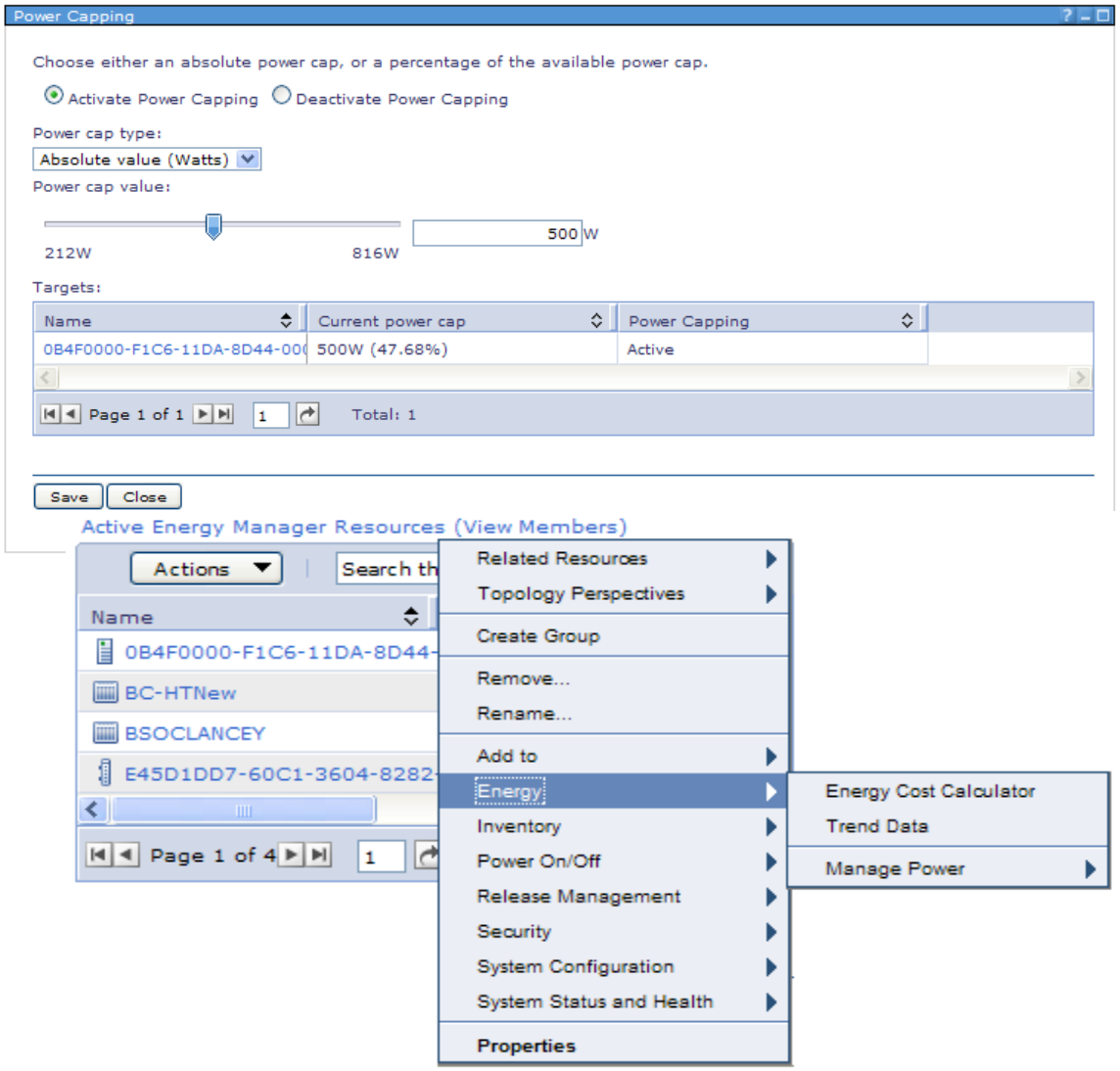
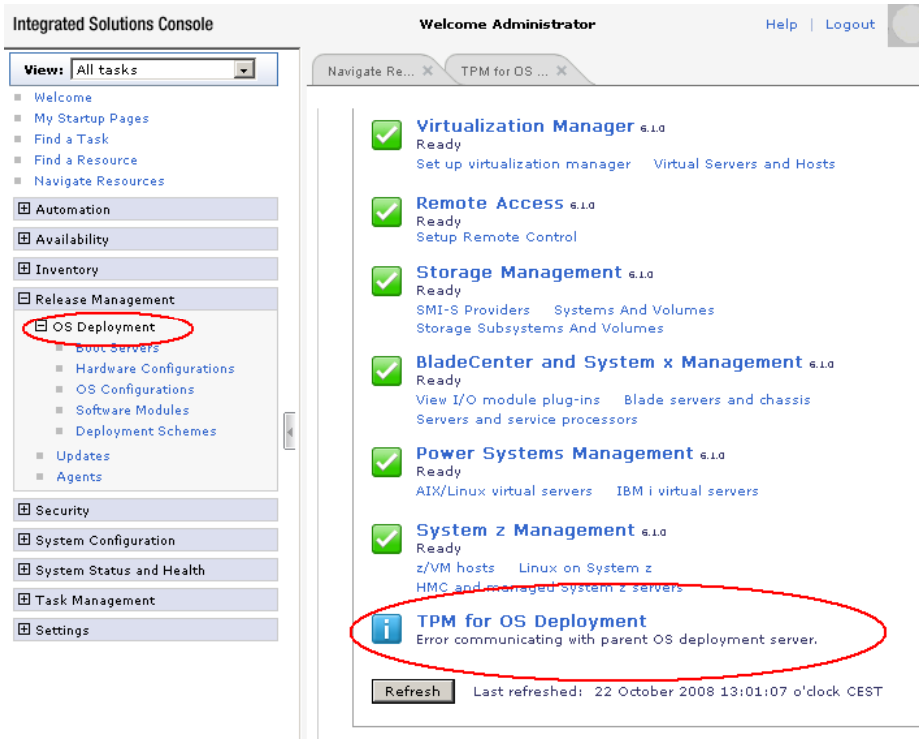
- Topology Map
  - System “plugged into” PDU



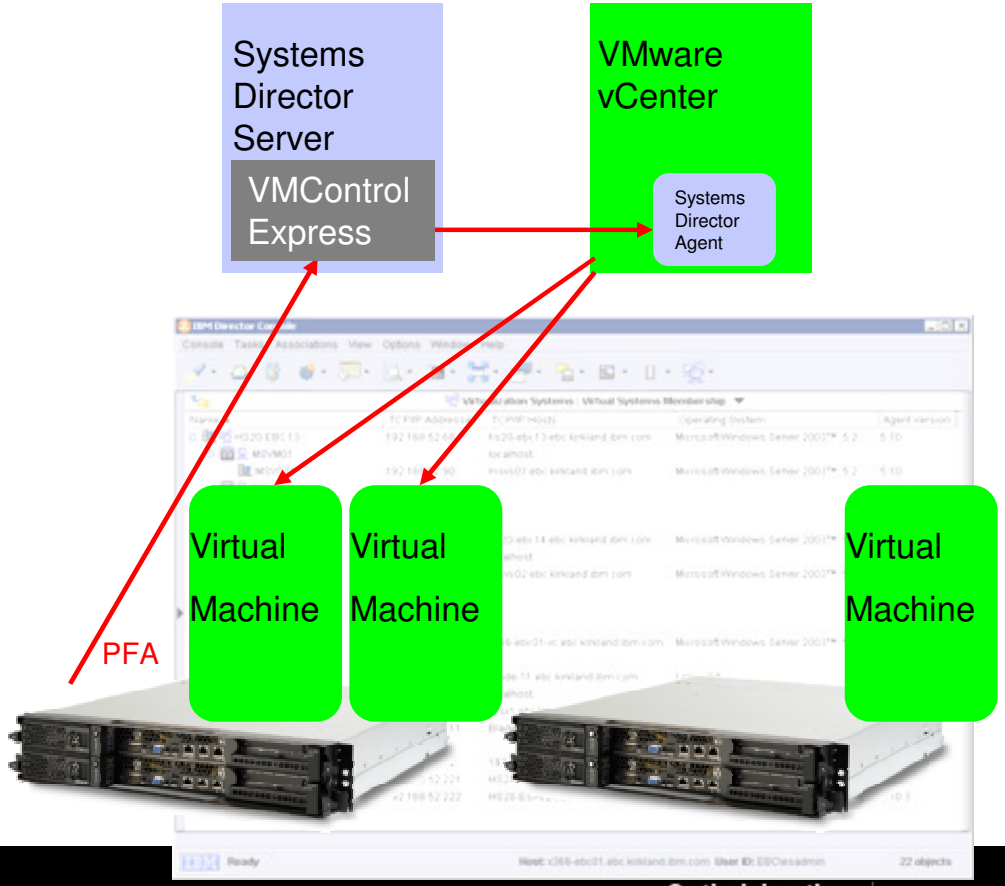
Tivoli Provisioning Manager for OS Deployment
- IBM Systems Director Edition
OS Deployment for System x and BladeCenter servers



- Systems Director 6.1 plug-in to rapidly and confidently deploy Operating Systems and images on PCs or servers
- Delivers the ability to automate bare metal provisioning, from firmware and driver updates to operating system deployment
- Reduces image administration and network deployment costs
- Minimizes local and remote image storage costs
- Hardware configuration (BIOS update, RAID, firmware updates, etc.)

Systems Director VMControl Express for x86

- VMControl Express is a free Systems Director plug-in available for download
- VMControl Express extends the virtualization management of Systems Director, combining with base Systems Director to provide virtual server life cycle management for
  - VMware ESX
  - VMware ESXi with vCenter
  - Microsoft Hyper-V
  - SLES 10 with Xen
  - RHEL 5.2 with Xen
- Provide linkage between Systems Director server and VMware VirtualCenter 2.5 or vCenter 4.0 to
  - Use a single tool--Systems Director--to manage both physical and VMware virtual servers
  - Use System Director automation to link physical alerts to VMware advanced functions such as VMotion™



Enhancing IBM Systems Director Value with Module Plug-Ins

- IBM Systems Director **Active Energy Manager** to monitor and manage energy usage
- BladeCenter **Open Fabric Manager** to preconfigure blade servers and provide automated failover
- **Tivoli Provisioning Manager** for OS Deployment – IBM Systems Director Edition for bare-metal provisioning
- IBM Systems Director **VMControl Express** for virtual server lifecycle management and integration with VMware vCenter
- IBM Systems Director **Network Control** to monitor and manage network hardware devices and effectively manage your computing environment with a single integrated management tool
- IBM Systems Director **Service and Support Manager** to capture service information and report electronically to IBM support
- IBM Systems Director **Transition Manager for HP® SIM** to leverage knowledge of HP SIM to quickly learn to manage with Systems Director

IBM Systems Director Strategy – in a Nutshell

Putting It All Together

IBM delivers an end-to-end solution

Integrated Service Management

will enable a fully virtualized infrastructure providing rapid deployment and lower cost

Smarter Systems for a smarter planet

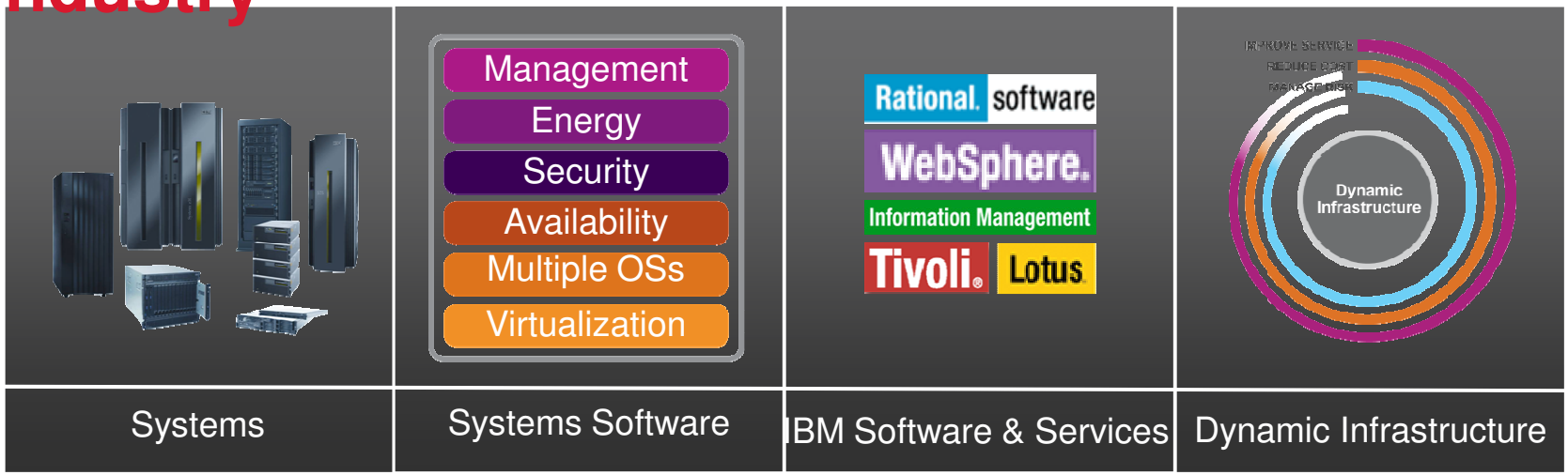
New Delivery Models

will offer multiple delivery options: managed services, outsourcing, cloud & system offerings

Workload Optimized Systems

will deliver hardware optimized for specific client workloads

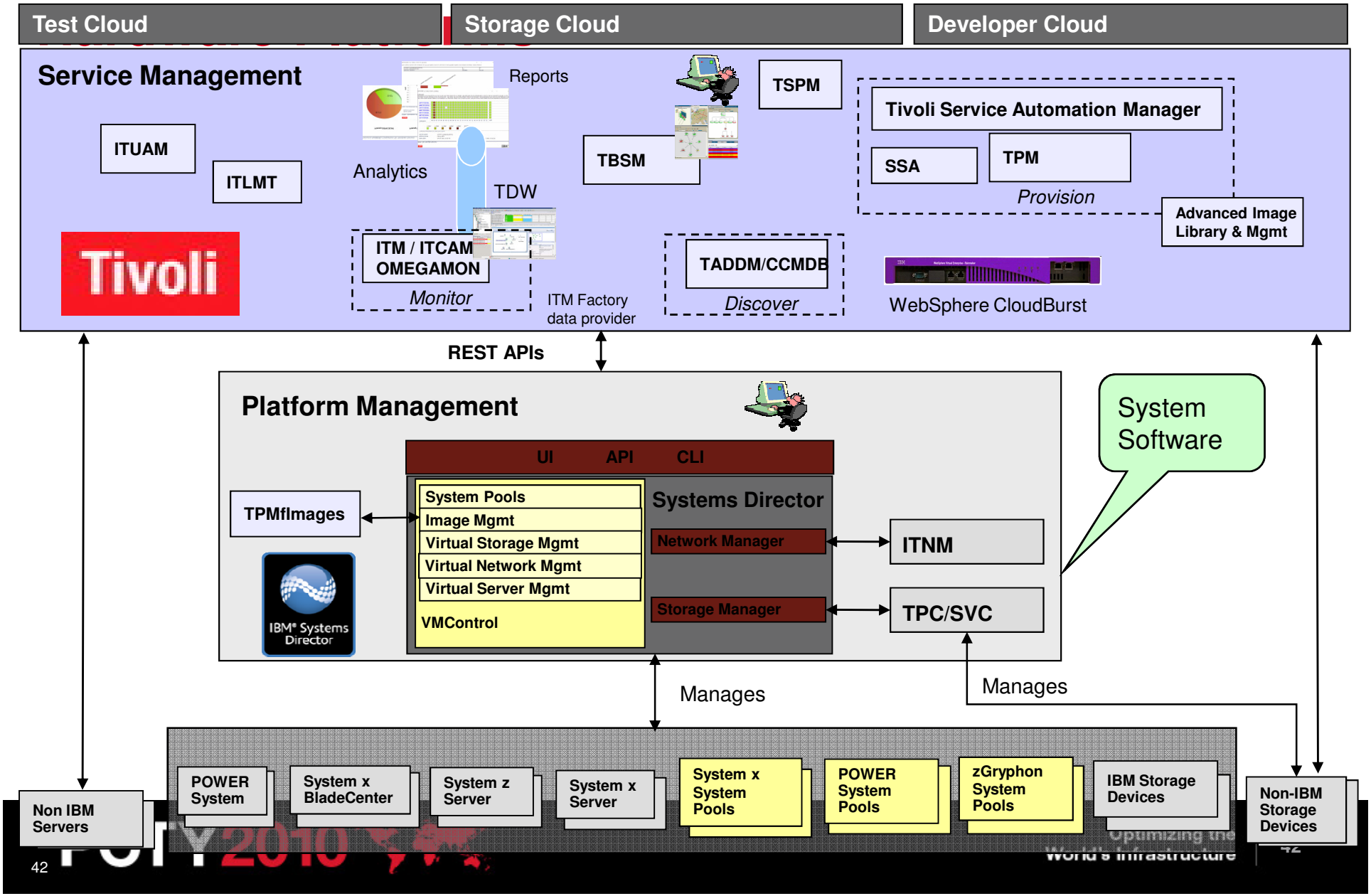
IBM is Setting the Infrastructure Agenda for the Industry



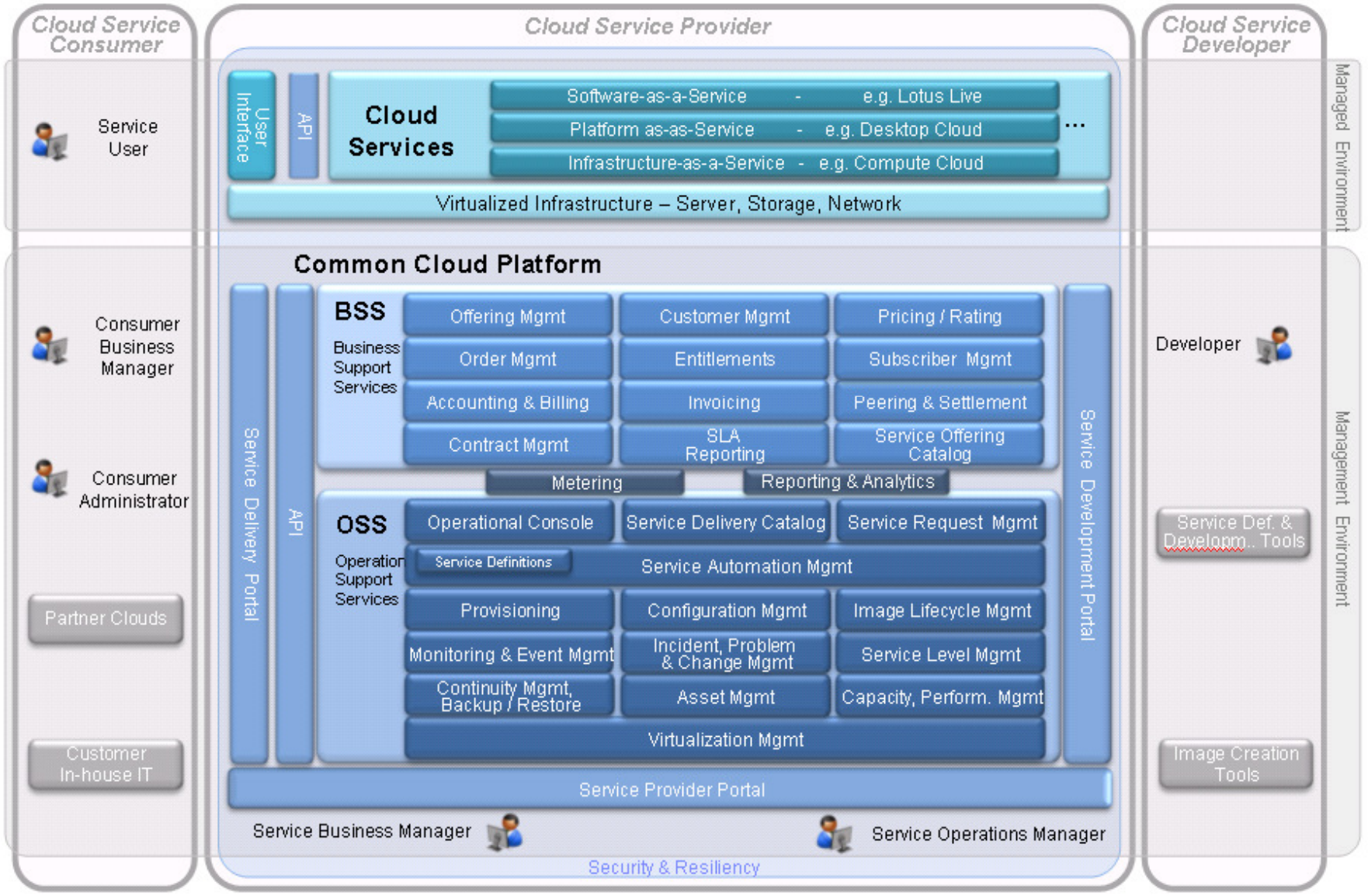
Delivering business value by helping clients improve service, reduce cost and manage risk

- Systems that are fit for purpose
- Technology and expertise to drive business advantage
- Leading management, energy, security, resiliency and virtualization and consolidation capabilities
- Breadth of IBM to provide end-to-end business solutions

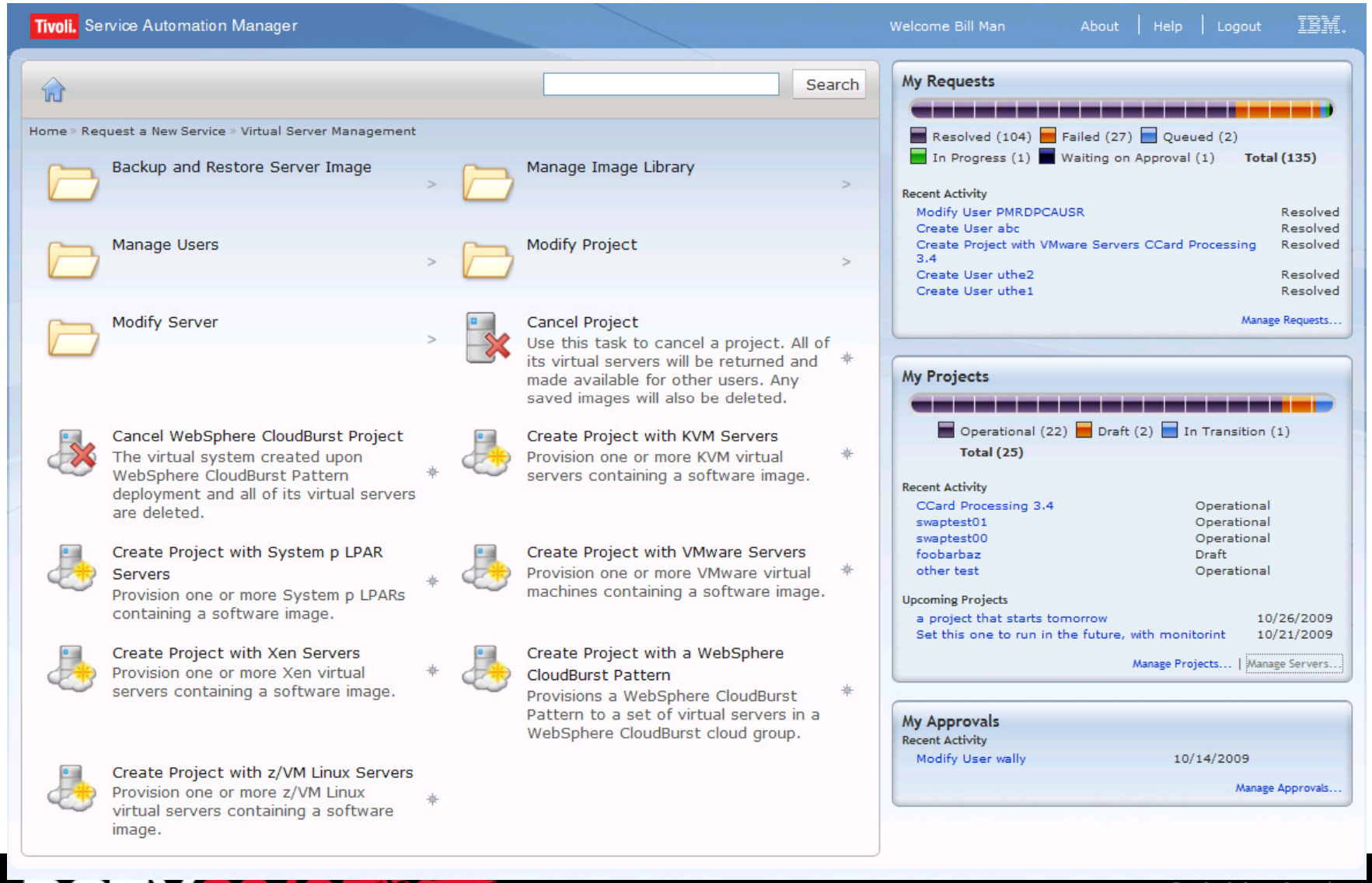
IBM's Goal: Single Software Stack across



Cloud Computing Functional Architecture



Masking the Complexities with a Simple Web Front UI



Deliver a spectrum of offerings optimized to address the requirements of different workloads while providing choice to our clients

General Purpose Platforms

System z

DS8000 XIV

POWER7-based systems
System x eX5

A choice of architectures – servers and storage – each fit for a particular need

System Optimizers

IBM Smart Analytics Optimizer for DB2 for z/OS

POWER7 Memory Expansion

System technology enhancements that hone capabilities for specific workloads

Pre-integrated Solutions

CloudBurst
SONAS

Smart Analytics Systems

Integrated HW and SW solutions, deeply tuned for specific workloads

Integrated Heterogeneous Systems

VMControl

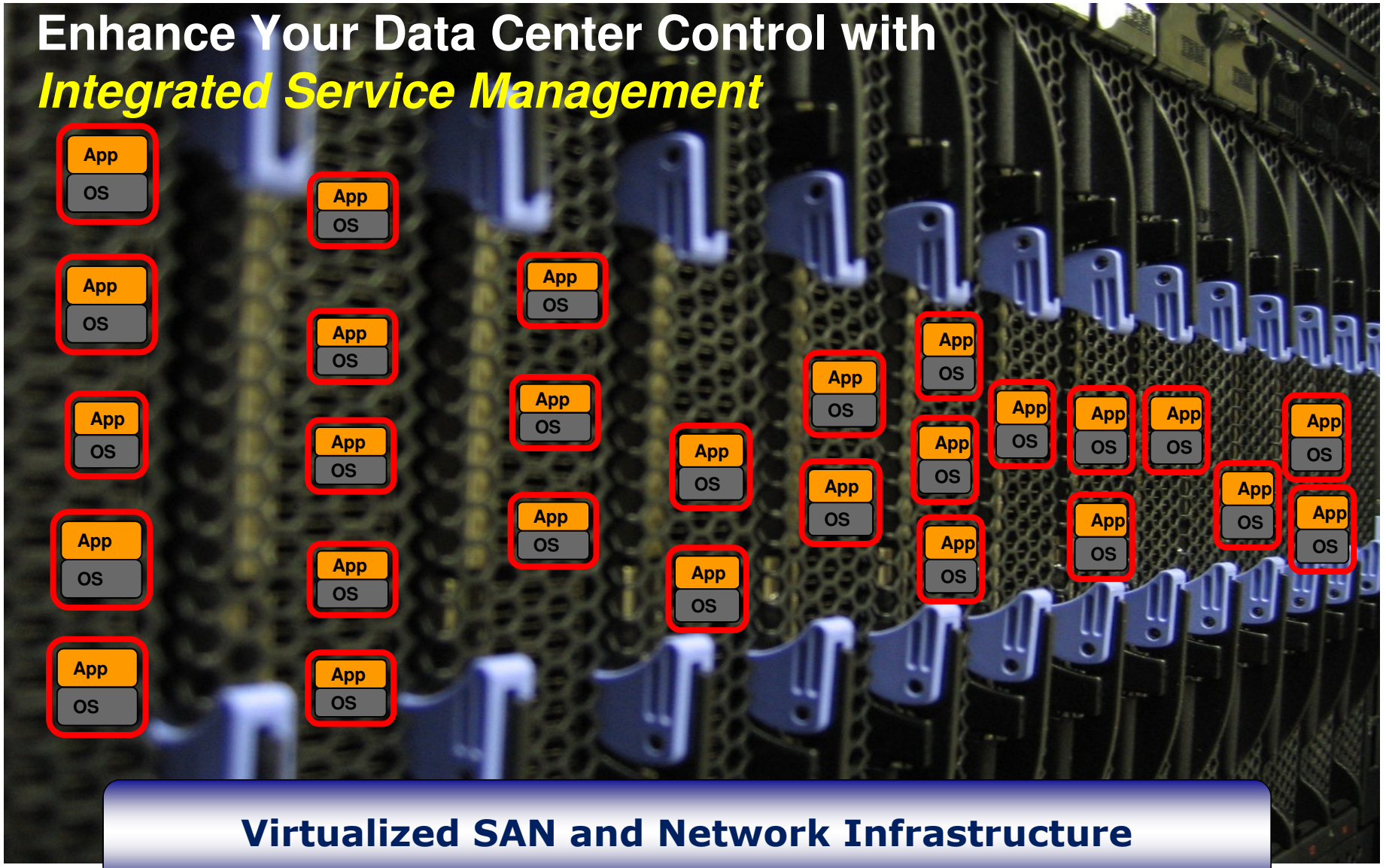
System x future

Power Systems future

System z future

A single multi-architecture solution, optimized for multiple workloads

Enhance Your Data Center Control with *Integrated Service Management*



Thank You

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