

Pulse2011



Integrated Service Management using Systems Director Editions for a Data Center

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Something Meaningful is Happening in the World

Today's IT Infrastructure Needs to Evolve

The digital and physical infrastructures of the planet are converging...

A Smarter Planet...



Demands...

Smarter Software

Smarter Hardware,

...Smarter Integration

...and we are infusing intelligence into the way our planet works.

Infrastructure needs to get Smarter

70%

Of companies in the global 1,000 will have to modify their data centers to meet increased power and cooling requirements

70¢ per \$1

70% on average is spent on maintaining current IT infrastructures versus adding new capabilities

78%

of CIO's want to improve the way they use and manage their data

*IT Infrastructure is under pressure
It's not built for what's coming*

10x

Digital data is projected to grow tenfold from 2007 to 2011

80%

Of digital data growth will be "unstructured" and requiring significant effort to "understand" and analyze

1 trillion

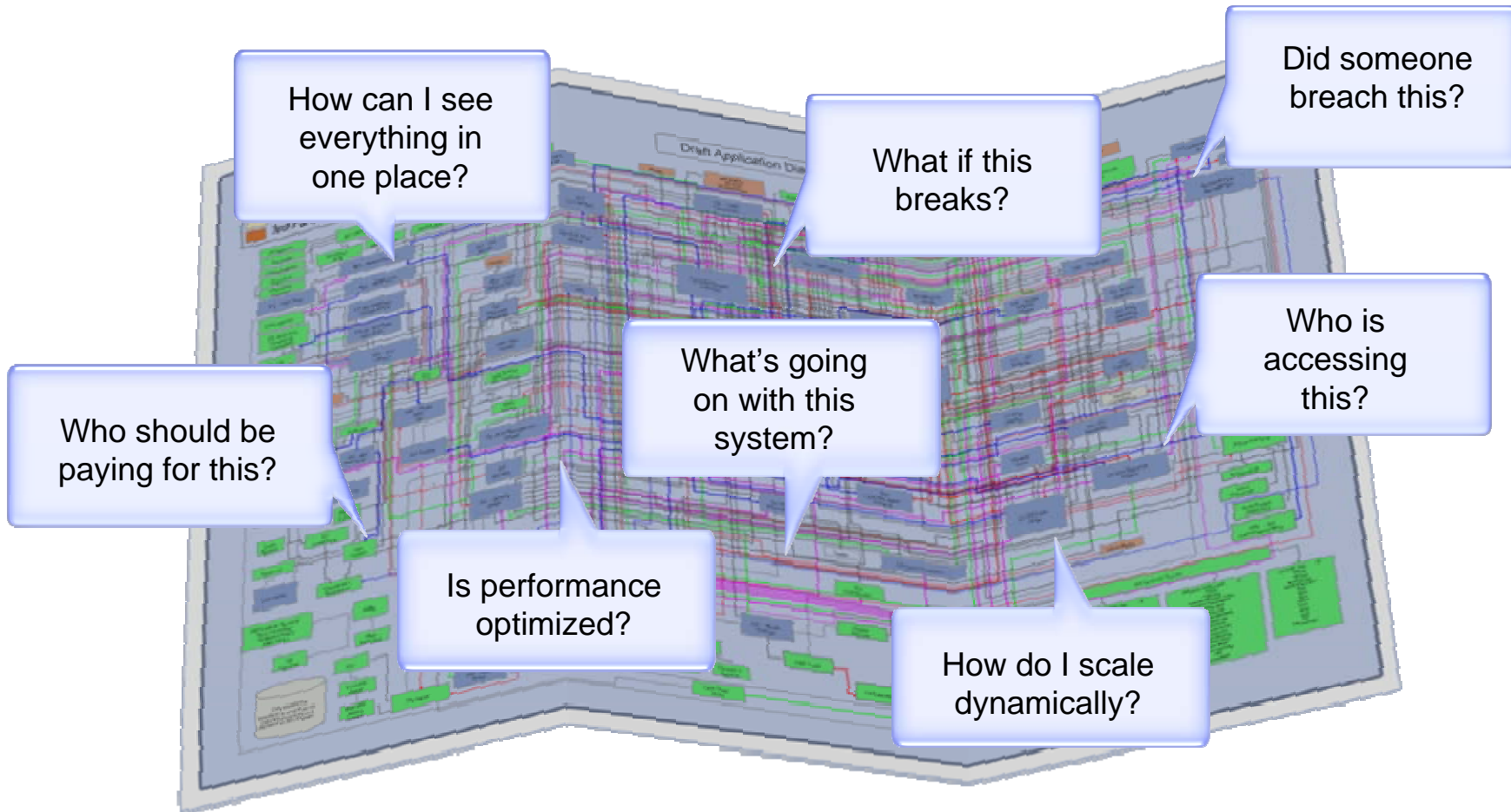
Devices will be connected to the internet by 2011

6 terabytes

of information is exchanged over the internet every second



Is this familiar?



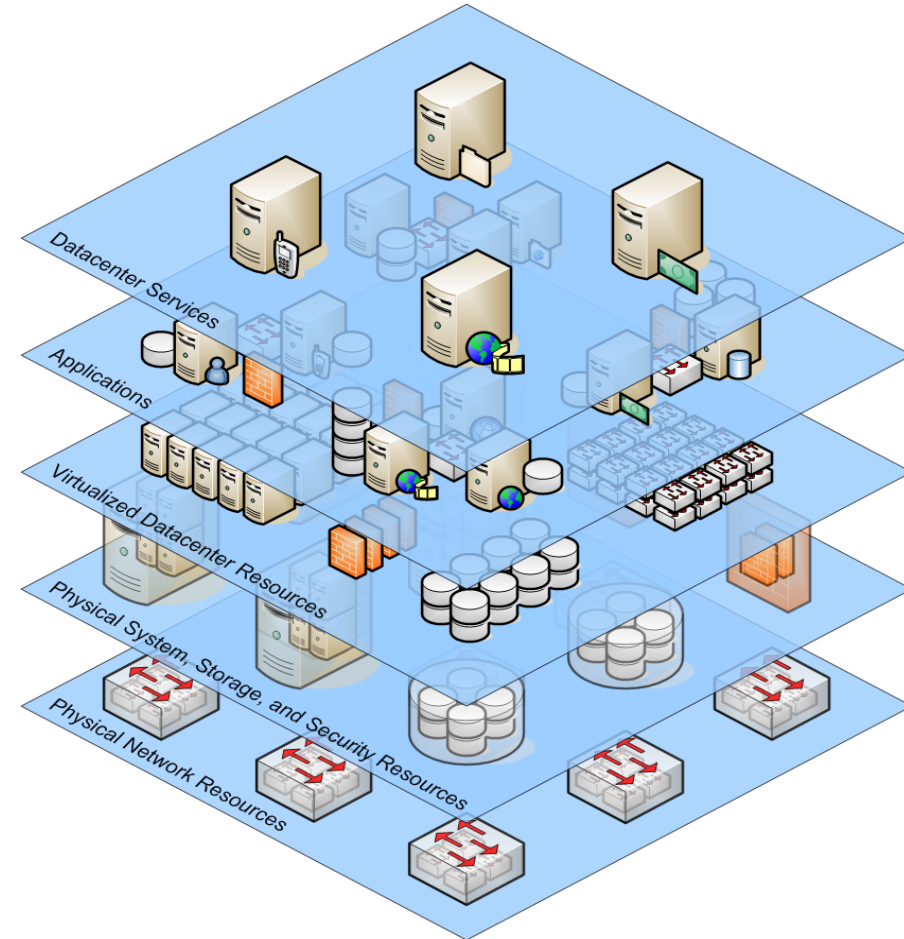
Source: IBM client engagement experience



Virtualization is the foundation

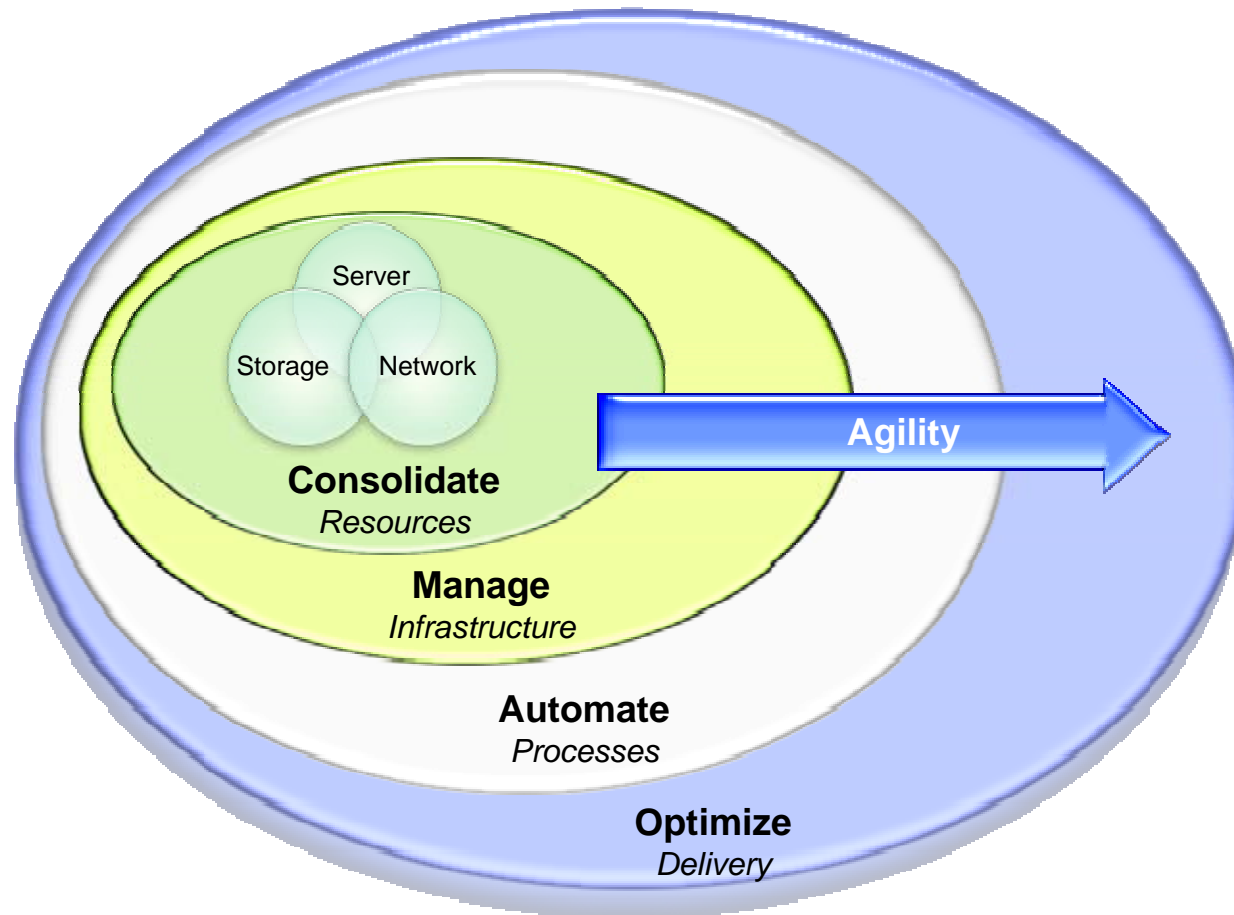
Offers maximum value when it is applied across the datacenter

- Throughout the IT architecture
- and across the business infrastructure
- to virtualize everything
- where resources are balanced, elastic, and optimized for scale
- and pooled, enabling cloud services



Virtualization Journey

With Integrated Service Management



Consolidate Resources

- Improved efficiency and utilization of IT resources

Manage Workloads

- Improved IT staff productivity with integrated systems management dashboard

Automate Processes

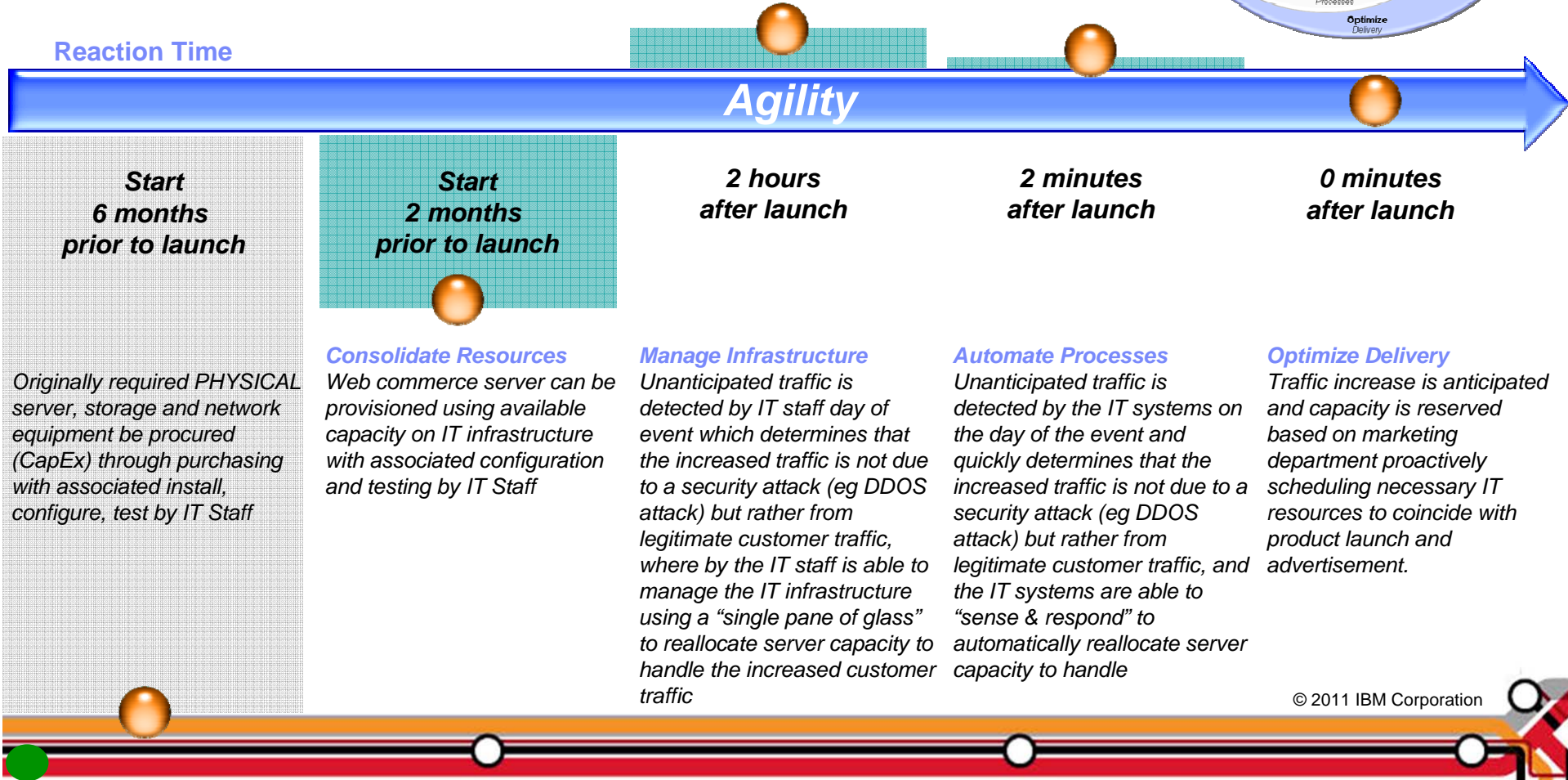
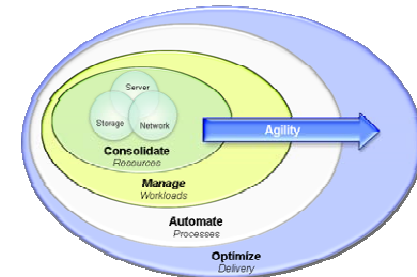
- Consistent and repeatable processes based on best practices, business priorities and service level agreements

Optimize Delivery

- Self provisioned by users based on business imperatives, unconstrained by physical barriers or location.

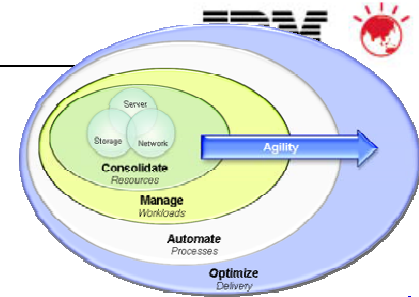
Virtualization helps deliver improved agility – Retail Example

The marketing department at a major retailer is rolling out a major marketing campaign culminating in a new television advertisement at the World Cup. This campaign requires a provisioned web commerce site to handle increased customer transaction volume



Client Virtualization Progression

Clients moving from native, manually managed environment to Highly virtualized and automated environment



Original Native Environment

Resources independently procured
 Large number of individual tools for specific hardware and or management tasks
 Low utilization of infrastructure
 Manual intervention to install, configure, maintain

- IBM ToolsCenter
- IBM Director
- HMC, iMM, aMM
- Tivoli Productivity Center

Consolidate Resources

Resources procured in groups
 Individual tools based on consolidation technology selections
 Higher utilization of infrastructure
 Automation of basic management tasks specific to individual technology selections

- VMware vCenter
- MS Systems Center
- IBM Systems Director
- IBM SD VMControl Express
- Tivoli Monitoring
- Tivoli Application DM

Manage Infrastructure

Resources procured collectively (server storage and network)
 Tools consolidated to simplify virtual management
 Automation of physical and virtual infrastructure to increase overall efficiency of the IT investment
 Administrators automate actions based on operating system and infrastructure changes

- IBM Systems Director
- IBM SD VMControl Standard and Enterprise
- Tivoli TPM for Images

Automate Processes

Resources described as available capacity
 Focus is not on tools or tasks but application availability and meeting service level agreements
 Administrators automate actions based on business policy and changes at the application level

- Tivoli Provisioning Manager
- Tivoli Usage and Accounting Manager
- Tivoli License and Compliance Manager
- ... and more

Optimize Delivery

Resources may be privately or publicly owned
 Focus moves from specific application and infrastructure to services, ie: IaaS, SaaS, PaaS
 Automation occurs based on user request, not administrator input

- Tivoli Asset Discovery
- Tivoli Usage and Accounting Manager
- Tivoli Business Services Manager
- Tivoli Systems Automation Manager
- ... and more

Leveraging virtualization for business agility

Business Improvements:

Reduce Cost

- Reduce complexity.
- Enhance resource utilization.
- Recapture floor space.
- More efficient power & cooling.



Improve Service

- Improve performance and optimize scalability.
- Improve service levels.
- Bring new services online quickly.



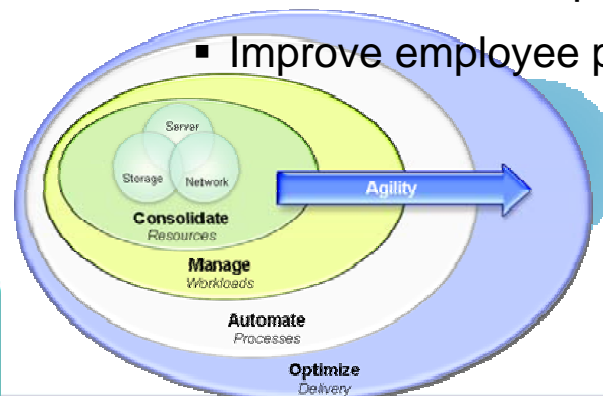
Manage Risk

- Improve uptime/availability and increase recoverability.

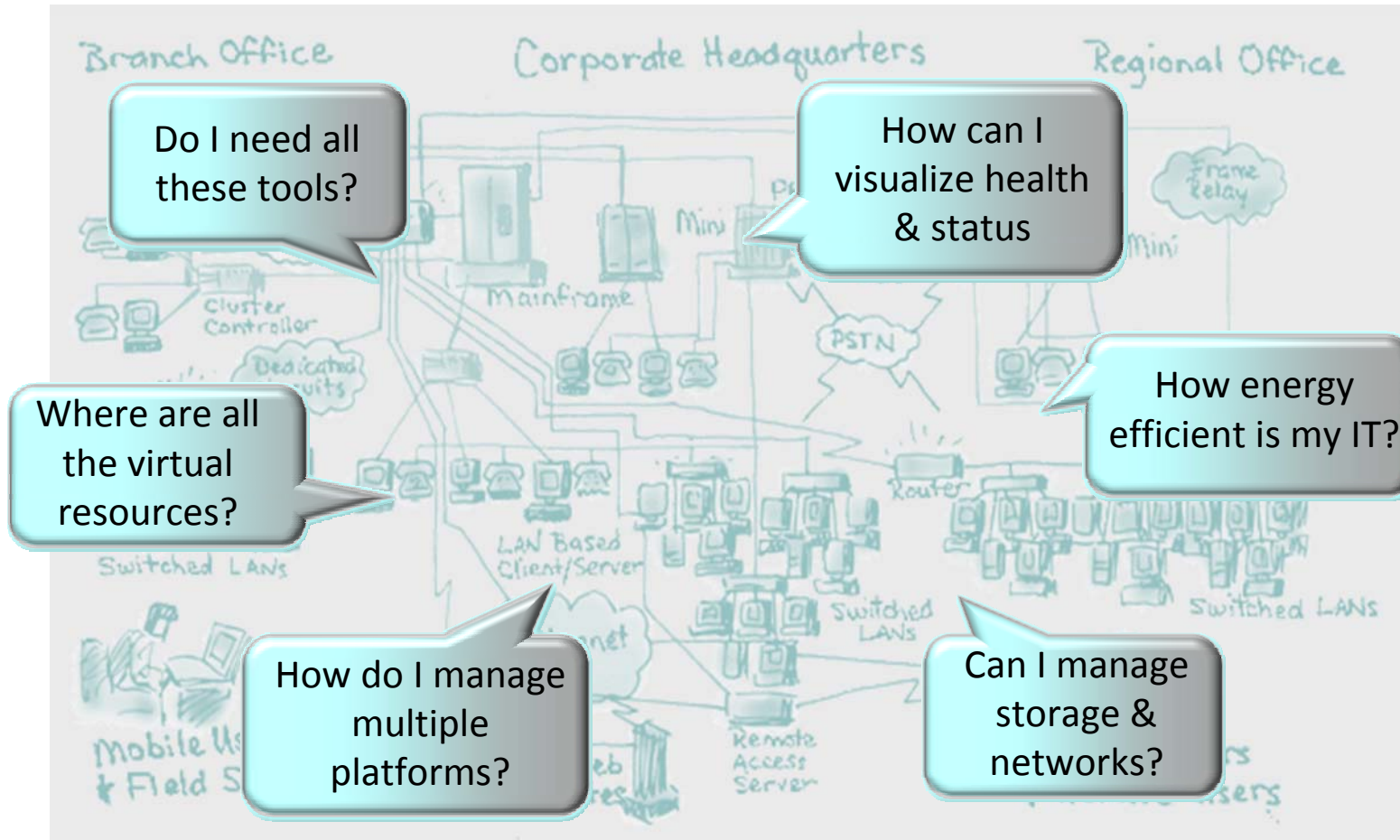


Agility Results:

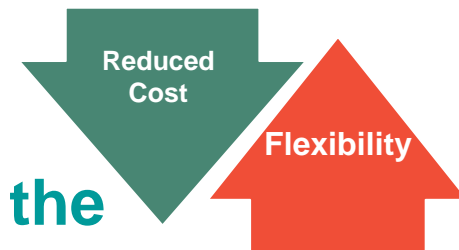
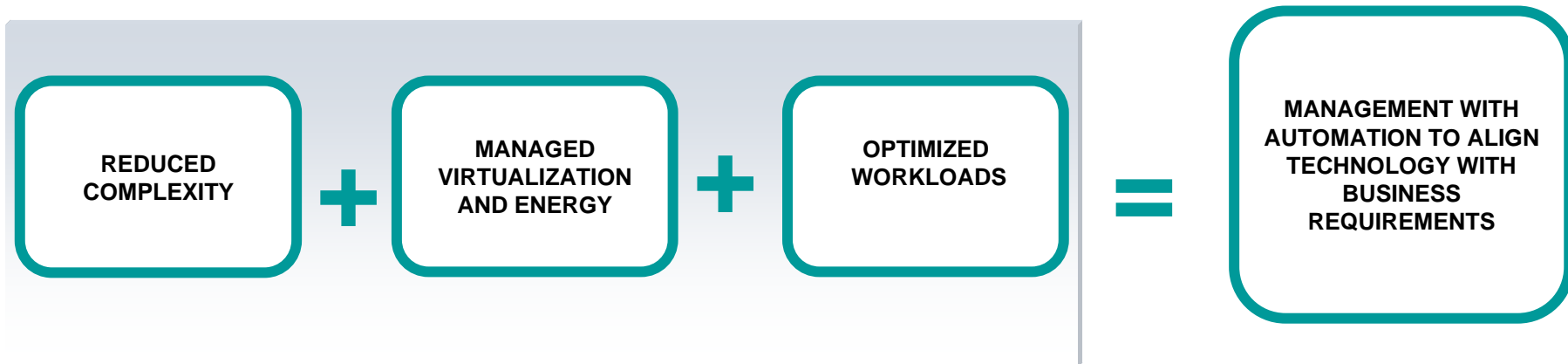
- Respond to new business opportunities quickly by establishing a foundation for growth.
- Process more information in real-time to make better business decisions.
- Consolidate operations and overall systems control.
- Reduce or eliminate redundancy in infrastructure and personnel.
- Improve employee productivity.



Management complexities continues to be a concern



Management with automation for a Smarter Planet



... reduce operational complexity, improve the efficiency of IT staff and systems and help control costs while meeting business requirements for service delivery



Systems Director Editions that provide increasing levels of customer value

Systems Director Enterprise Edition

- Reduced TCO increase system utilization and business agility thru pooling of virtual resources
- Improved productivity through monitoring performance and availability of the OS hardware stack,
- Automated image placement to optimize energy use, performance
- Improved service quality through advanced dependency discovery capabilities that identify changes to configuration and help optimize workloads
- Improved predictive planning through effective capacity and performance reporting

Systems Director Standard Edition

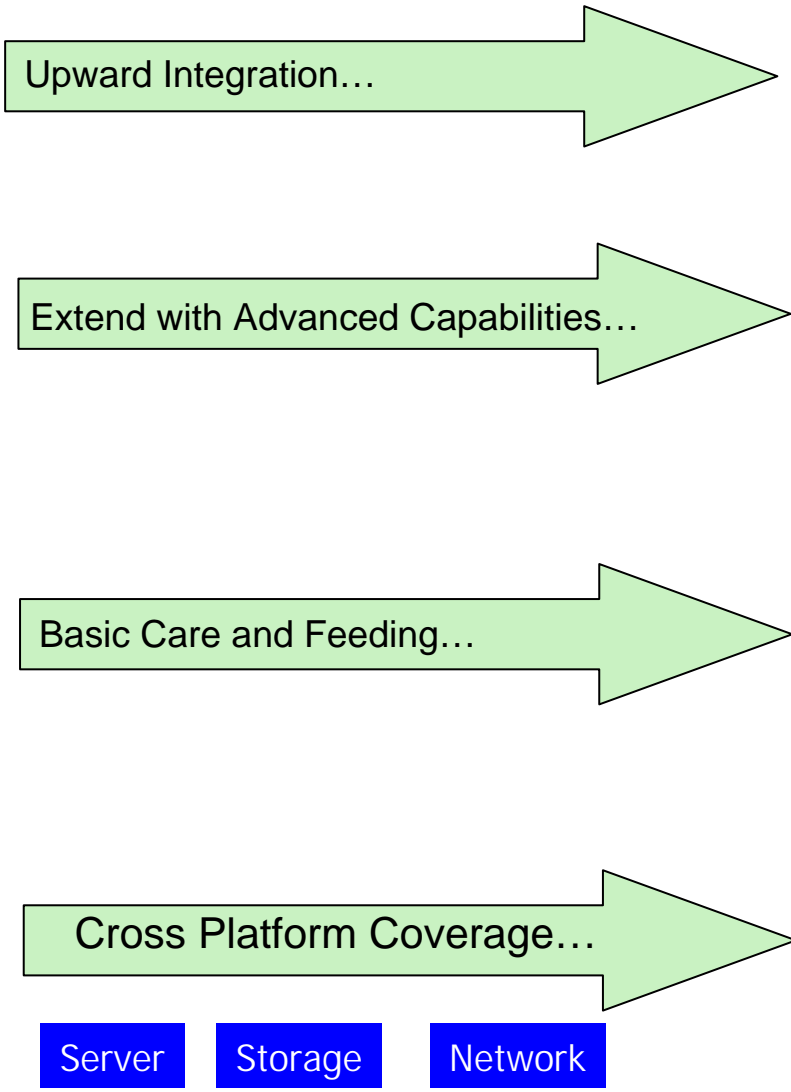
- Improve operations staff efficiency and better root cause analysis with a system view of Server, Network, and Storage
- Reduced cost thru Energy Management for IBM Servers
- Improved productivity with Faster troubleshooting
- Increase response to business with central creation and management of virtual images

Systems Director Express Edition

- Reduced TCO and Improved productivity managing IBM Servers thru cross platform management
- Configuration discovery, automated OS and firmware updates
- Unified way to create/delete/relocate virtual machines for IBM servers
- Increase system availability and rapid problem determination thru monitoring of the hardware



IBM Systems Director



Tivoli software

ITM, TPM, TSAM, SRM, ITNM, TADDM.

Other ISV Service Management Software

VMControl	Storage Control	Network Control	Active Energy Manager	Security Control	WPAR Manager	...	Power HA System Mirror	AIX Profile Manager	Additional Plug-Ins
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<p>Discovery</p> <p>Inventory</p> <p>Status</p> <p>Monitoring</p>	<p>Service and Support</p> <p>Update</p> <p>Configuration</p> <p>Automation</p>
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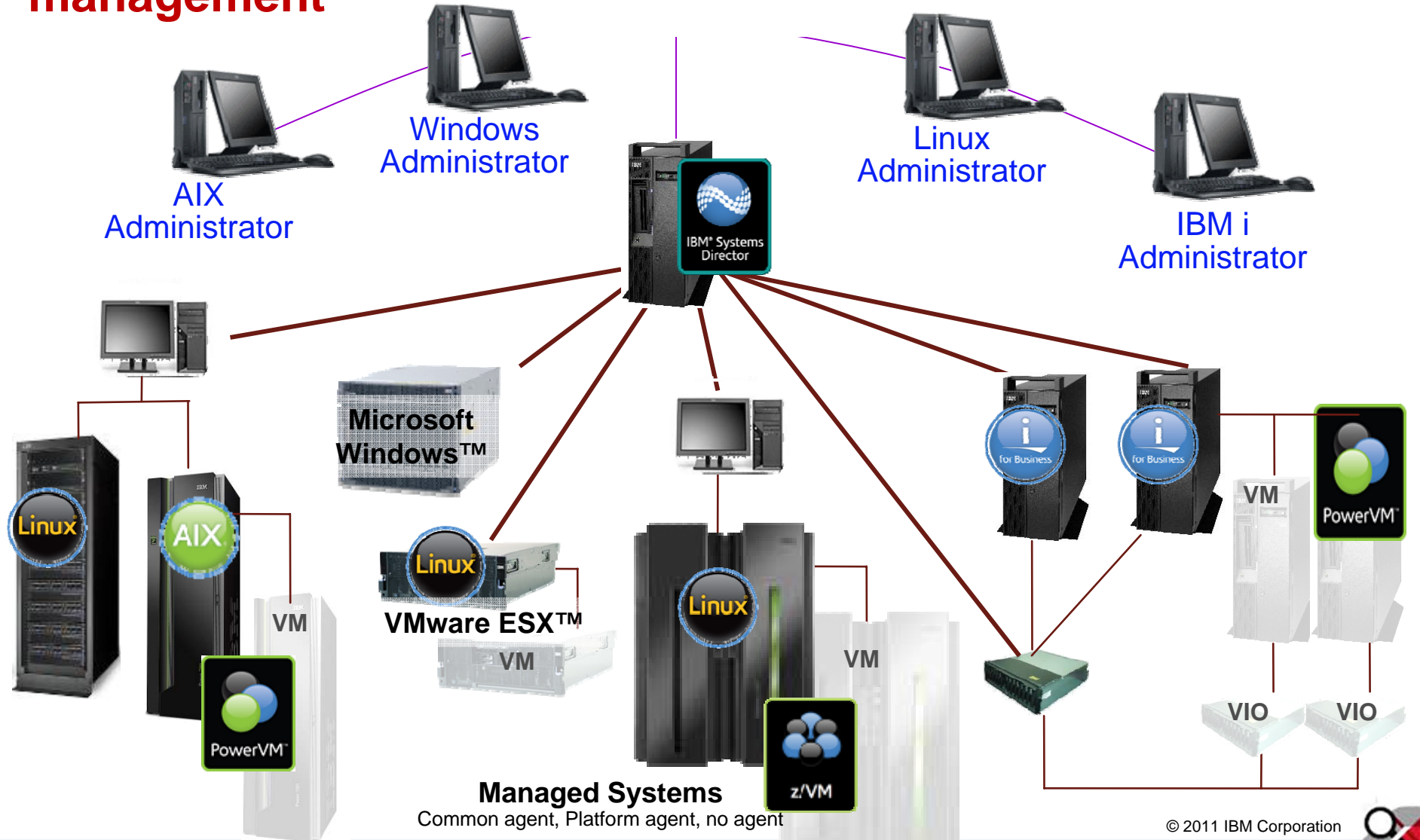


IBM Systems Director – Basic Care and Feeding...

- Discovery and inventory
- Visualize server, storage and network infrastructure
- Dashboard with health and status
- Monitoring and automation plans
- Manage physical and virtual
- Integrated service, support and update management
- Common cross-platform tasks, navigation and look and feel

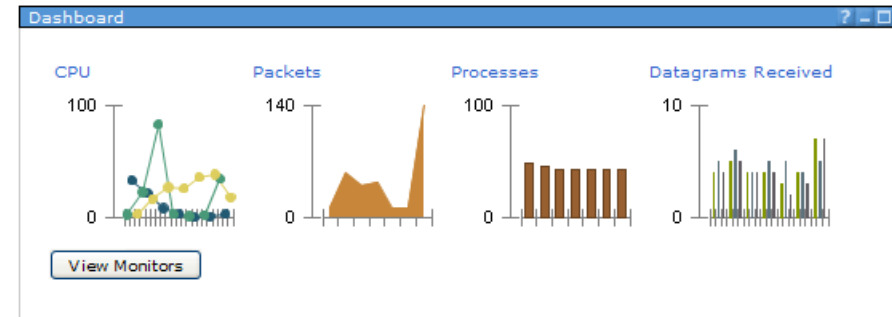
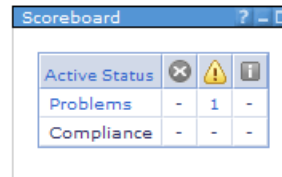


IBM provides a common tool for cross-platform management

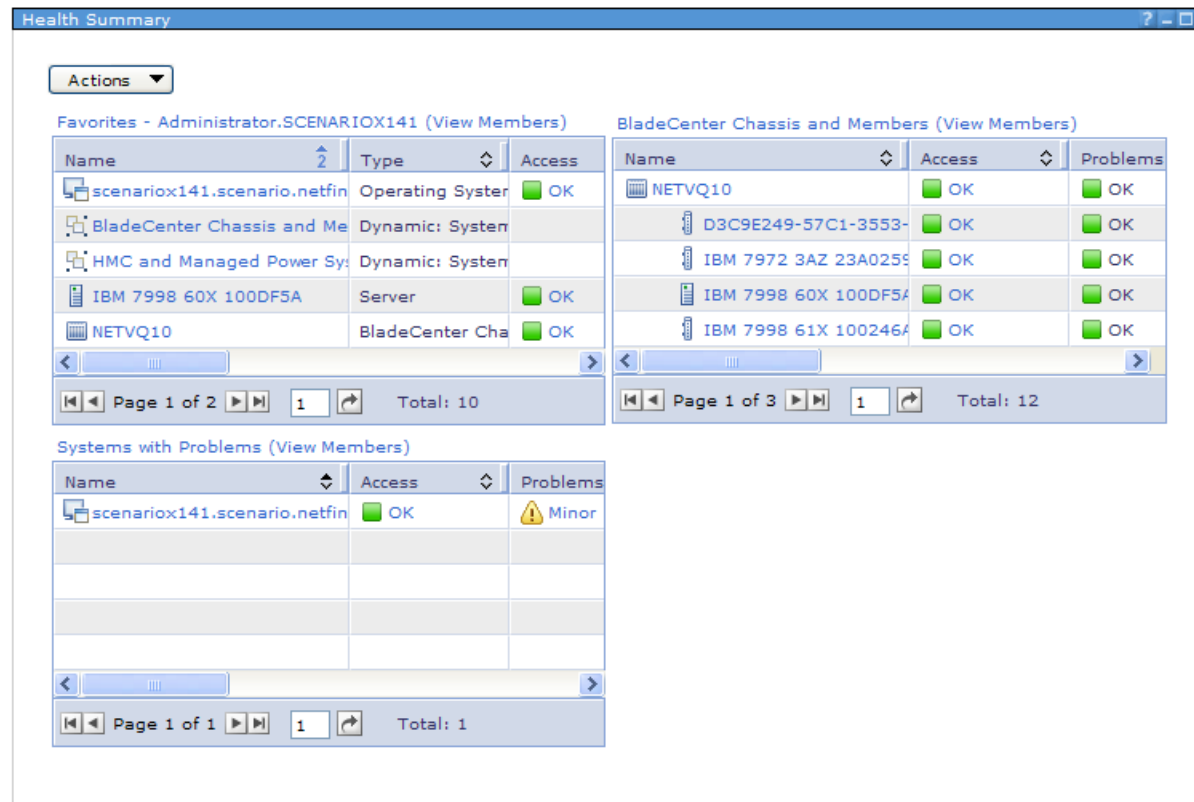


Focus on Health, Status, Automation

- Health summary
 - Favorite systems
 - Critical monitors
 - Group thumbnails



- Monitoring
 - Monitor resources
 - HMC, LPAR, VIOS, OS, Switches, Storage
 - Thresholds
 - Events
 - Update Compliance



- Automation Plans
 - Notify
 - Run commands
 - Trigger tasks

Update Servers

Firmware and Fixes for IBM AIX and IBM i. OS updates for Linux

Update Manager
You are ready to manage the updates in your environment
Set up connection to IBM
Recommended Thresholds and automation

Systems (monitoring 73 out of 291 total)
Update compliance summary:
6 systems (red X)
12 systems (yellow triangle)
2 systems (blue square)
53 systems (green checkmark)
20 systems have not passed their update compliance checks

Updates
3 update groups
4 update compliance reports

Settings
You are ready to manage updates.

Summary page for single view

Compliance
Specify the compliance checks to use when monitoring this system's compliance

Use the following compliance checks to monitor this system

Select	Name	Type	Version	Compliant
<input type="checkbox"/>	Brian's Group (32)	Update Group	-	Yes
<input type="checkbox"/>	Management Module.FX	Update	1.2.1	No

Selected: 0 Total: 2 Shown: 2 Filtered: 0 Page 1 of 1

Identify updates which are tested and should be deployed

ProfileNavigatorPortlet
Use update profiles to manage updates and monitor update profiles stay current.

Update Profiles > brian01

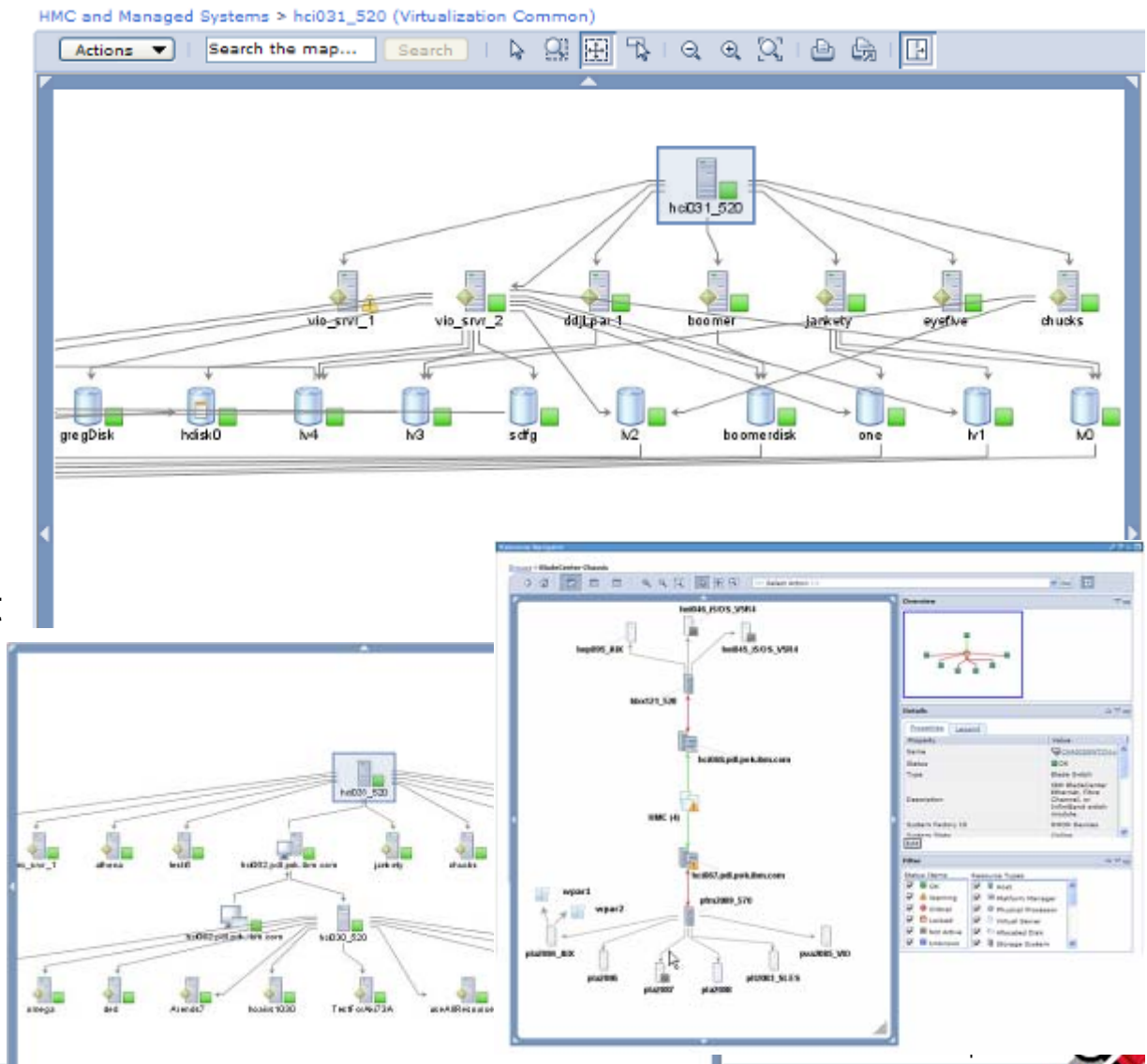
Select	Name	Actions	Softw
<input checked="" type="checkbox"/>	Broadcom (tq3) NetXtreme Driver	Create Group... TemporaryFix Topology Map	50
<input type="checkbox"/>	i5/OS PTF SF12345	Install... Uninstall... Distribute... Download...	50
<input type="checkbox"/>	Core Agent Feature	Add to update profile...	50
<input type="checkbox"/>	IBM Preboot Diagnostics Flash Update	Locations... Properties	50
<input type="checkbox"/>	HMC Driver SQ7_0616A (0502) Rev 1.0		50
<input type="checkbox"/>	IBM BIOS Flash		50

Integrated actions for download, distribute, install and uninstall



Topology views give a quick view of status and easier drill-down

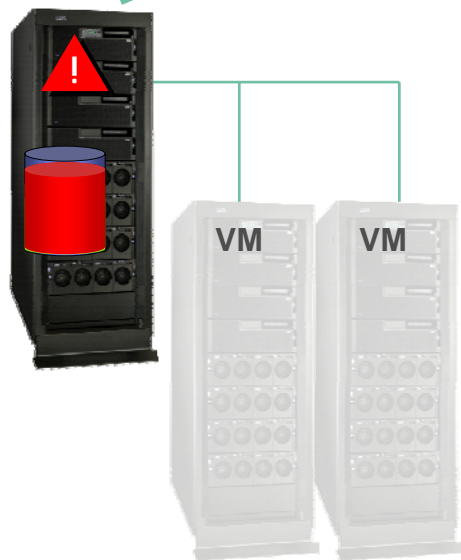
- Resource Topology Map
 - Relationships
 - Dependencies
 - Physical & Virtual
- Contextual Task Launch
 - Launch point
 - Contextual tasks
 - Create virtual server
 - Relocate virtual server
 - Server, OS Management
- Resource Health Status
- Resource Drill Down
 - Detailed Properties
 - Event logs
 - Finger-tip troubleshooting



Automate notification alerts and fixes based on warning thresholds



Monitoring
Event thresholds
Automation



IBM Systems Director functions:

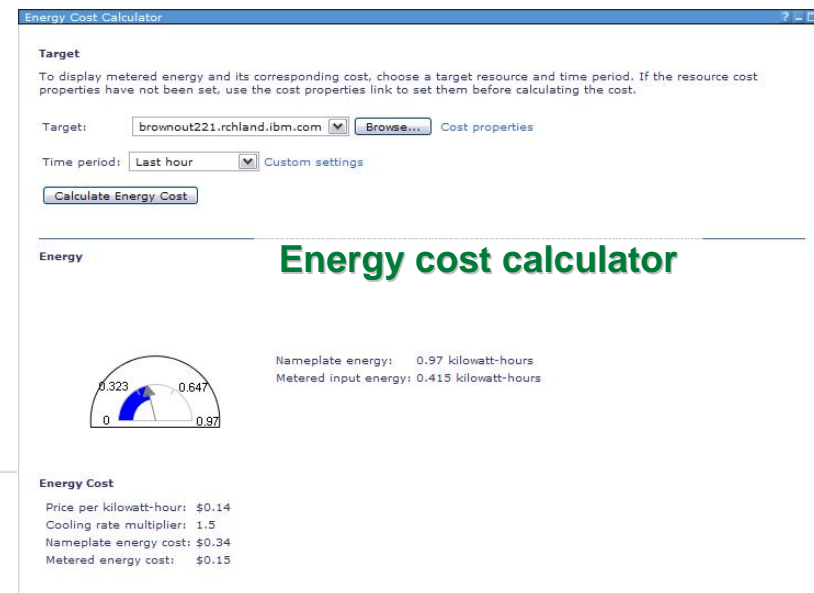
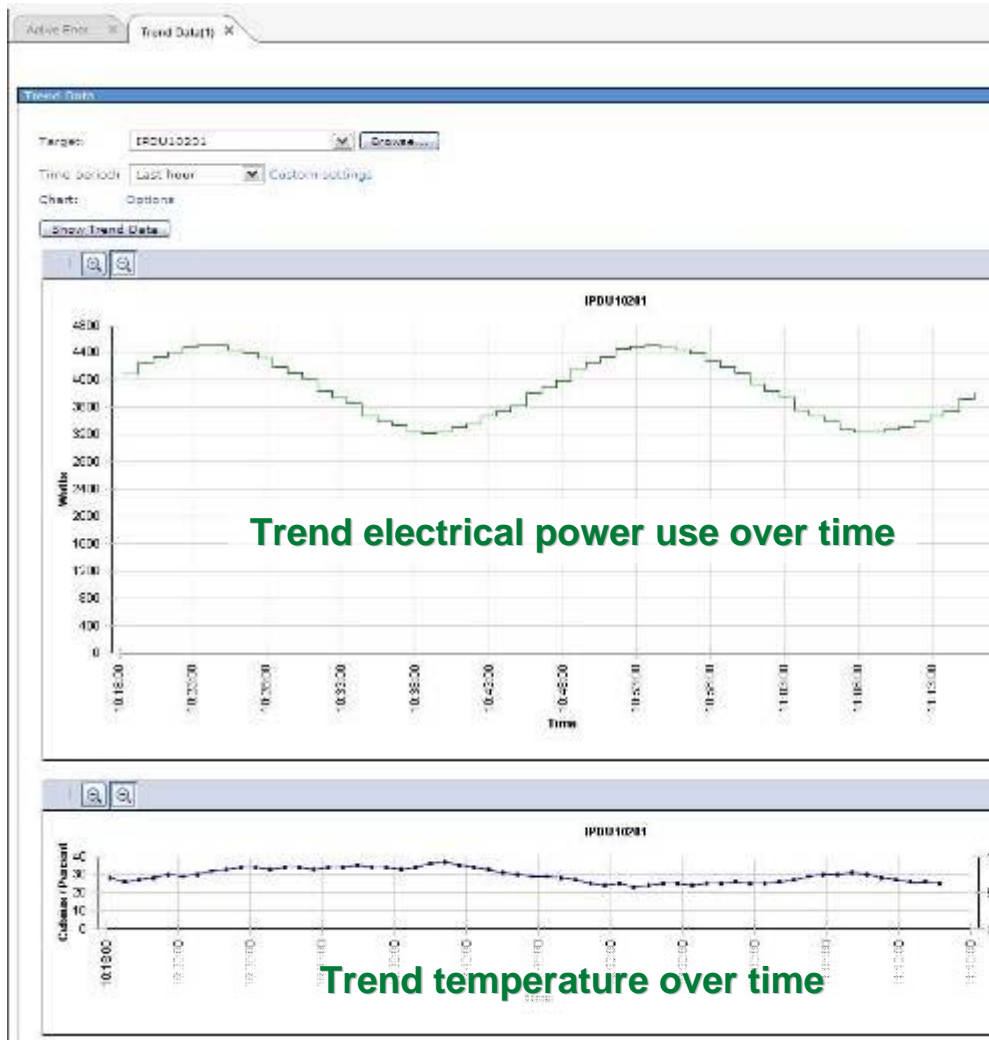
1. Monitor disk capacity.
2. If the disk is $\geq 90\%$:
 - a. Execute command to back-up and delete non-critical files
 - b. Log the back-up
 - c. Send an e-mail to the administrator



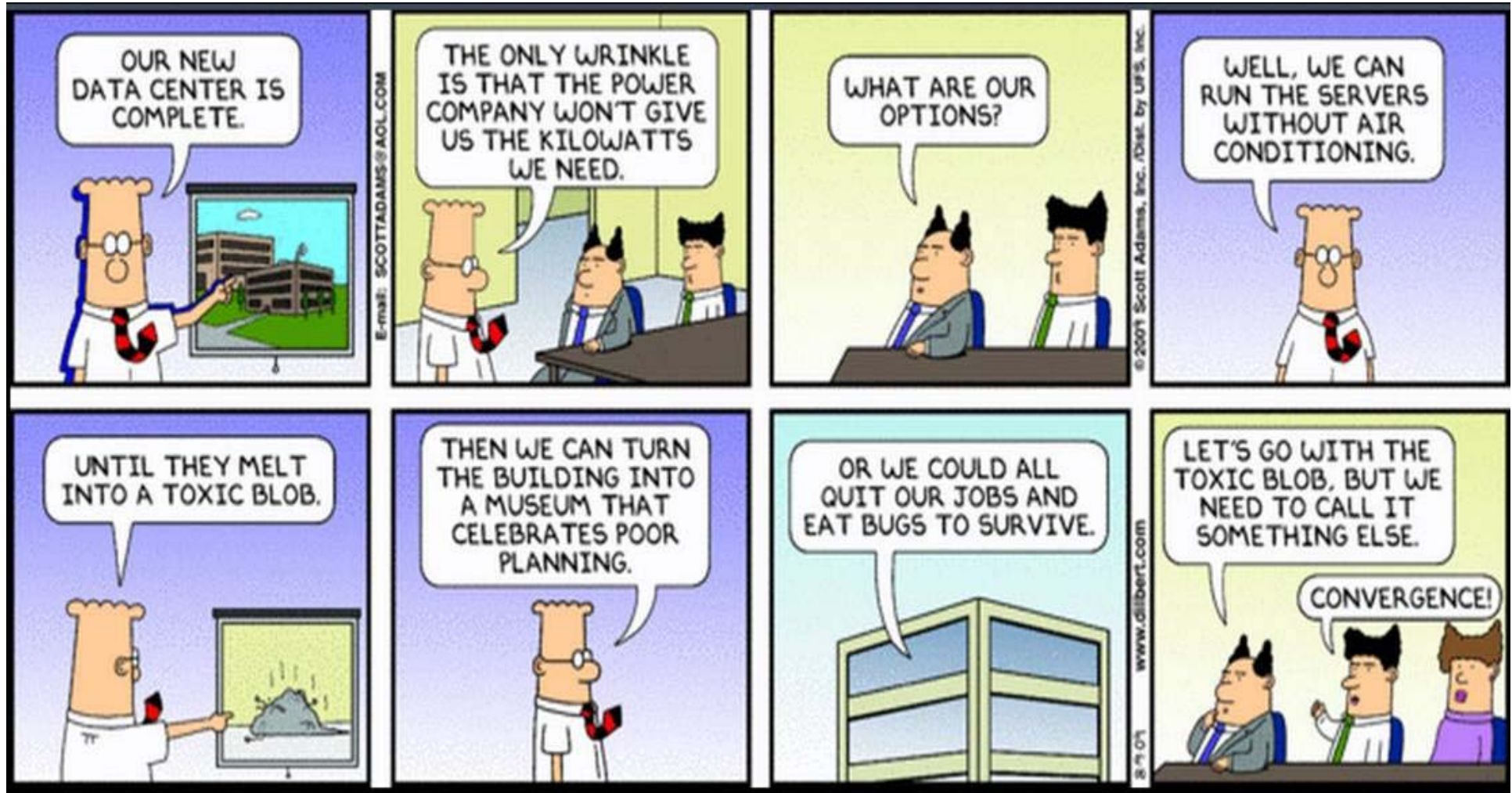


Save energy costs with Active Energy Manager

- Report electrical power at the rack and server level
- Manage thermal energy at the rack and server level
- Manage power capping and power saving
- Performance per watt display
- Calculate energy costs for targeted resources

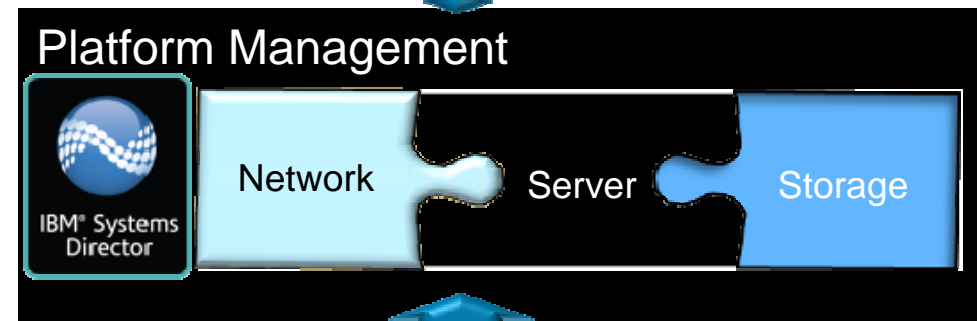
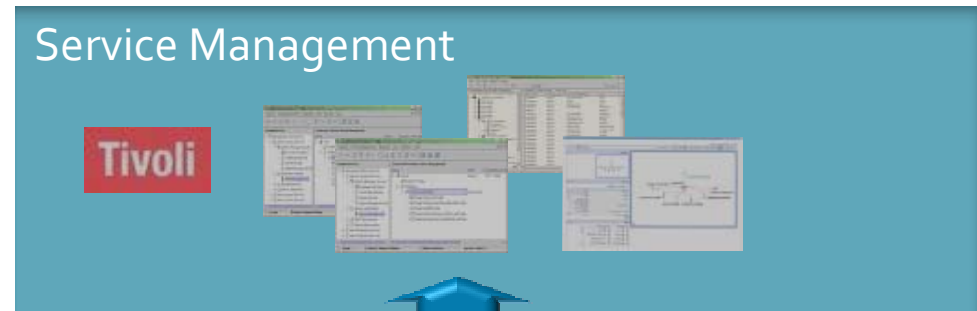


Energy Management

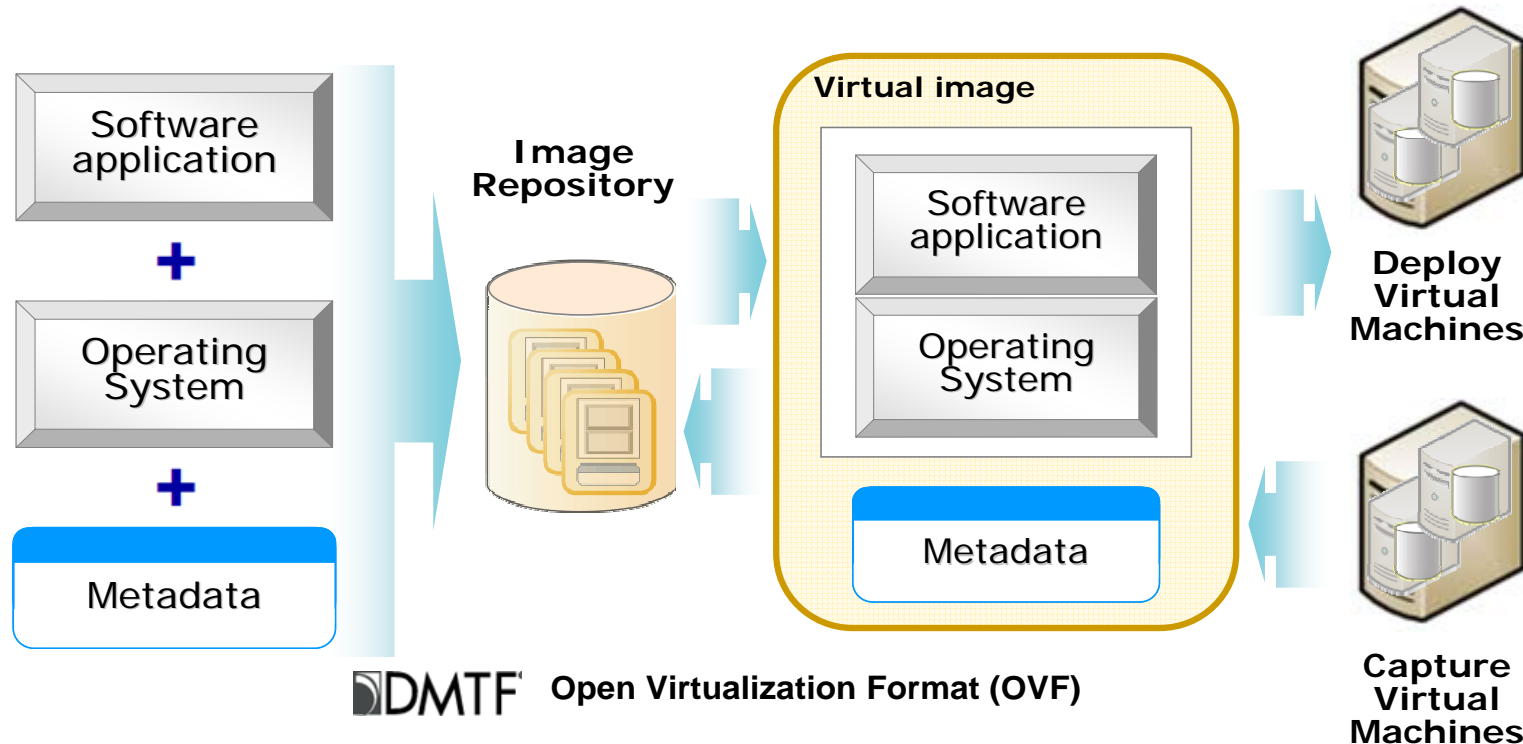


Integrated network management and monitoring

- Unified view of servers, storage, and network devices
- Basic lifecycle management of network switches
- Network device topology collection and visualization
- Integrated single sign on launch of vendor - based device management tools
- Converged Ethernet network device support (FCoCEE) via native support and vendor tools

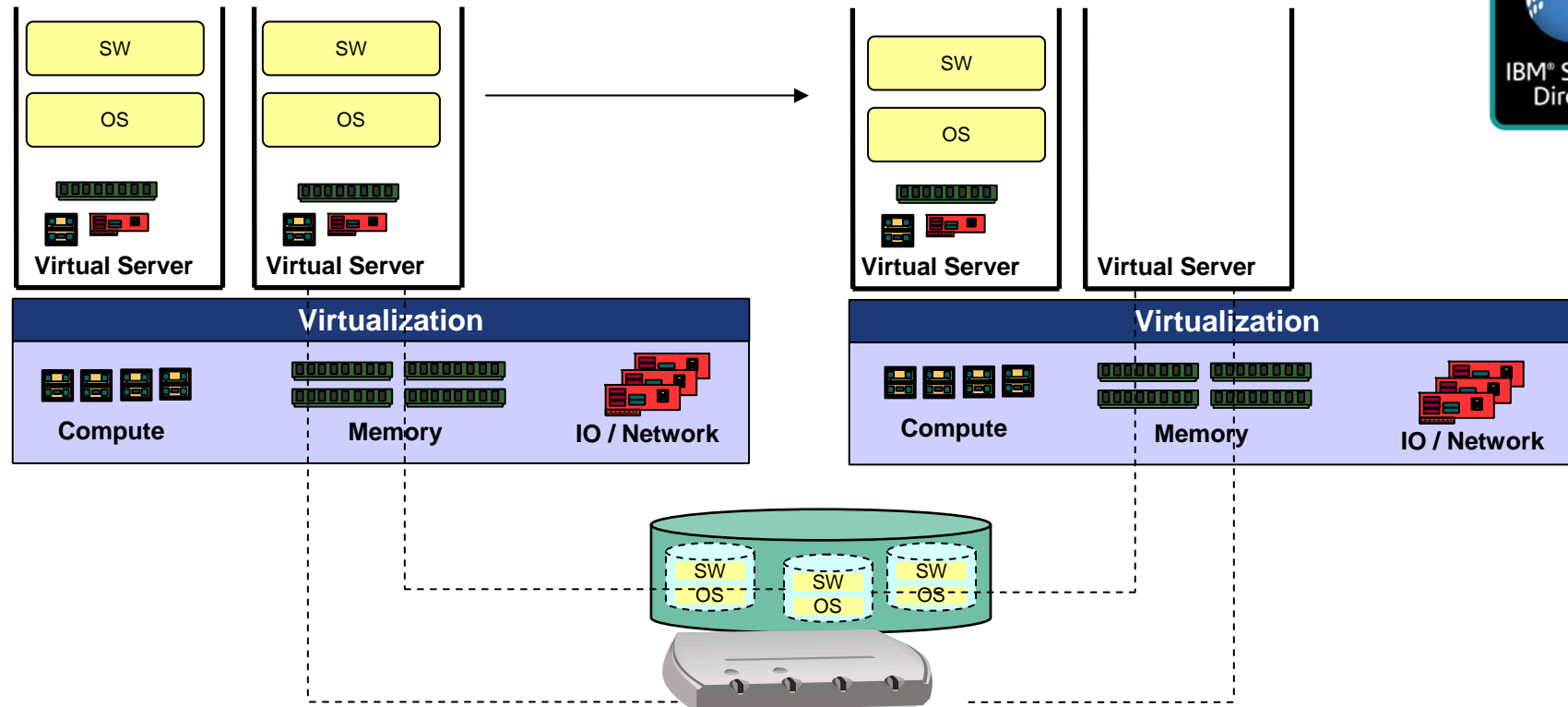


Reduce the time to deploy workloads using virtual images



- Discover and manage heterogeneous AIX image repositories
- Import, capture and catalog virtual images from existing systems
- Dynamically provision virtual server, storage and network resources

Automating VM relocation (mobility)

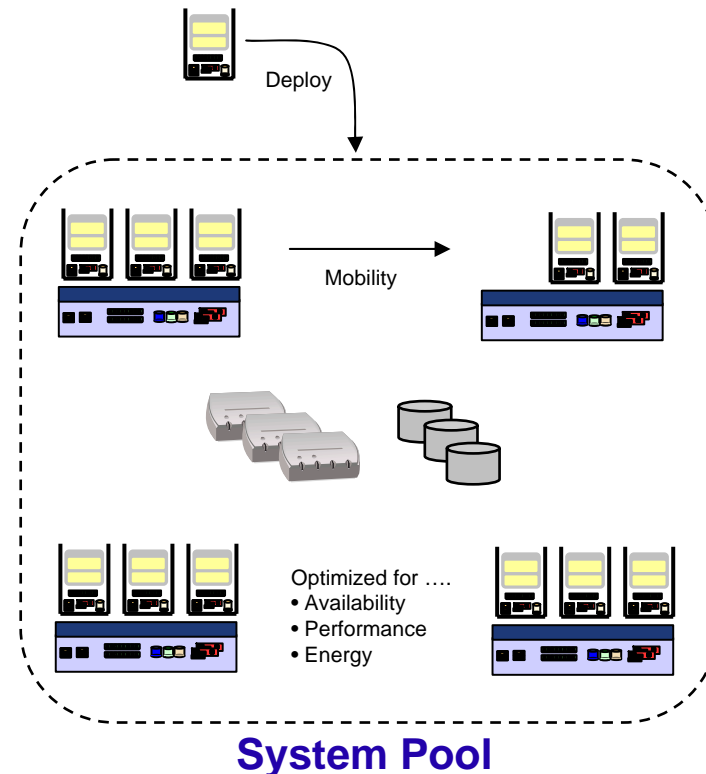


- There is significant value in the tight integration of server, storage and network aspects
 - Allocate resources on the target host.
 - Provide access (re-zone/re-mask) to the virtual server storage on the target host
 - Move the virtual server in-memory state to target host.
 - De-allocating resources on the source host.

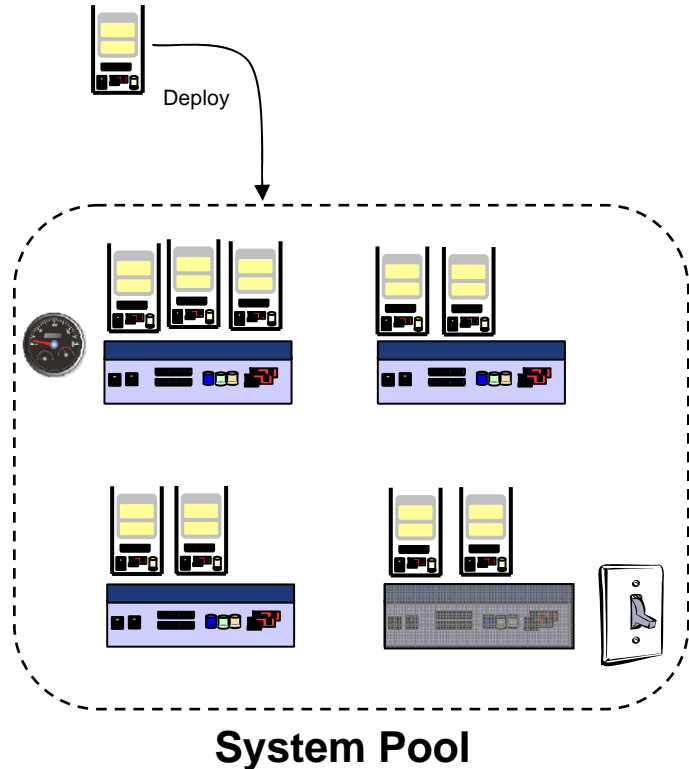
System pools enable dynamic workload placement



- What is the most appropriate host within the pool to run a given VM?
 - When deploying a VM
 - When moving or relocating a VM
 - When restarting a VM
- Need to consider...
 - Capacity requirements for each VM
 - Current and historical resource utilization
 - Workload constraints
 - security, co-location, licensing
 - Workload goals
 - performance, availability, energy, etc.
- Placement services help to provide optimized placement for the VM within the pool.



Optimization/rebalancing and resilience in system pool



- **User-initiated or scheduled optimization / re-balancing**
 - New placement plan calculated favoring performance
 - Virtual servers moved away from areas of resource contention
 - Host and virtual server CPU and memory utilization considered
- **Re-balancing placement during deployment**
 - New placement plan calculated
 - Existing virtual servers may move to make room new virtual server
 - Virtual server capacity and existing virtual server and host utilization
- **User-initiated relocation of VMs between hosts**
 - User-selected VM or host system for relocation
 - Placement services determine best host placement within the pool
- **Move virtual servers away from a failing host**
 - Monitoring and detection of predicated host failures
 - Automated host evacuation using virtual server relocation
 - Dynamic placement of virtual servers within the pool



VMControl allows definition of system pool policies



- **Resilience policy associated with a workload**
 - Provide workload resilience – yes/no
 - Enables host system monitoring for failures and predictive failures
 - Automates recovery action based on desire level of automation
- **Automation policy associated with a workload**
 - Automate = Advise / Automate
 - **Advise** – Recommends actions and requires confirmation
 - **Automate** – Automates and logs actions
- **Optimization policy associated with a pool**
 - Optimization = Manual | Automatic
 - **Manual** – User initiated
 - **Automatic** – Scheduled and automatic

Edit Workload

Name Resilience

The resilience policy can identify problems on the hosting systems and take appropriate action to maintain the resilience of the workload. The policy can perform actions immediately, or ask for your approval before they are performed.

Activate resilience policy?

Require approval before policy-based actions are performed?
 Yes, require approval
 No, immediately perform policy-based actions without approval

Create Server System Pool

- ✓ Welcome
- ✓ Name
- ✓ Pooling Criteria
- ✓ Initial Host
- ✓ Shared Storage
- ✓ Additional Hosts
- ➔ **Optimization**

Optimization

Configure the optimization settings for the server system pool.

Dynamic placement optimization analyzes your server system pool and can periodically optimize for performance.

Specify how optimizations are to be started:

Only allow manual optimization
 Allow optimizations to occur automatically

Optimization interval: 30 Minutes

[Learn more about server system pool optimization](#)

< Back Next > Finish Cancel

Clients get business-level views and management of service availability

IBM Tivoli Monitoring

Consolidated monitoring of physical and virtual resources

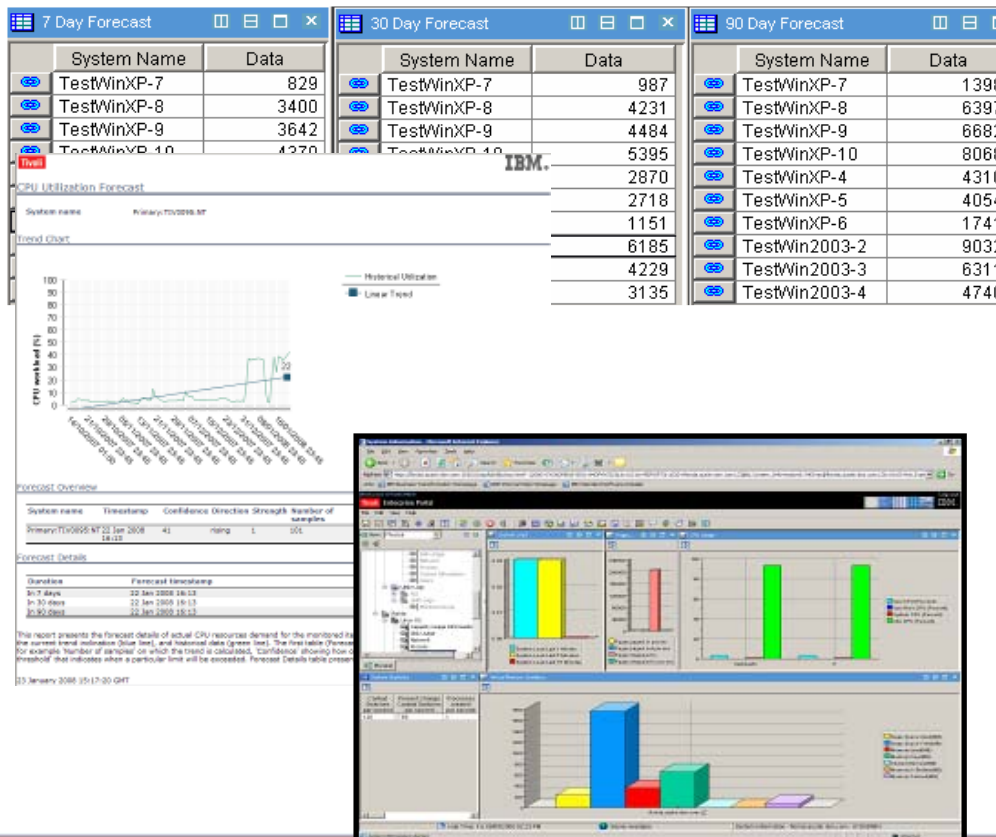
- Designed to improve mean-time-to-recovery by relating virtual to physical resources
- Data warehouse provides Side-by-side real-time and historical data to assist problem determination and planning
- Out-of-the-box reporting allows clients to quickly provide executive level reports and identify resource bottlenecks



Advanced Performance Analytics

What It Does

- Provide capacity monitoring through the data collected by Tivoli Monitoring
- Automates Performance analysis and reporting
- Enables prediction of application bottlenecks and creation of alerts for potential service threats.



- Use existing ITM agents and data that are stored in the Tivoli Data Warehouse
- Create new metrics based on combining existing data
- Predictive trending and forecast reports
- Pre-configured reports
- Extensible

Scenarios

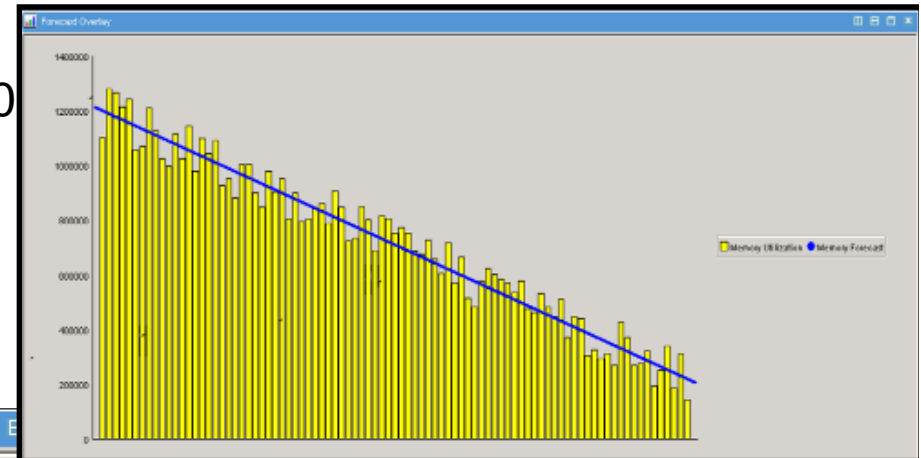
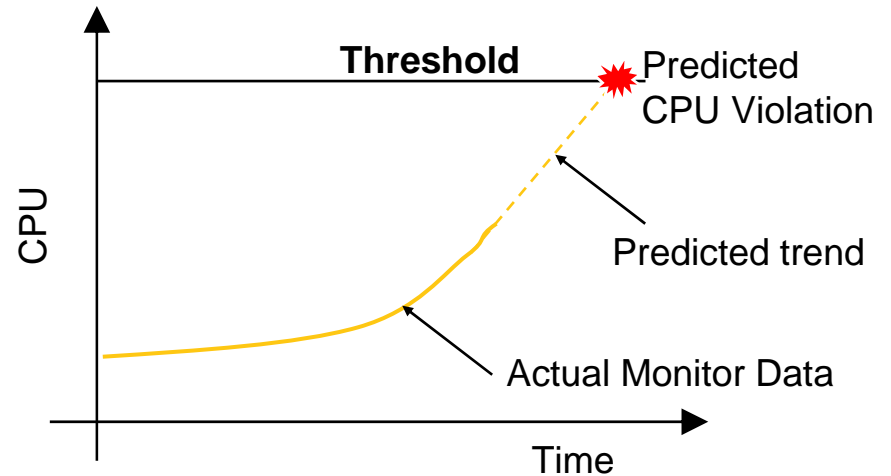
“What will my resources look like tomorrow, next week and next month?”

“What IT resources should I worry about?”

“Will I have enough capacity to get me through Monday?”

Predictive Trending

- Predictive trending on key performance indicators
 - Linear trending model
 - Configurable
 - Simple, open and predictable
- New Tivoli Monitoring attributes for use in charts and situations
 - Trend strength, trend direction
 - Time to threshold, value in 7 days, 30 days and 90 days
- Use trend information in situations
 - “I predict I have 2 weeks before I hit 95% Disk Utilization and I am 70%



Forecast Status				7 Day Forecast		7 Day Forecast		7 Day Forecast	
System Name	Confidence	Strength	Number Of Samples	System Name	Data	System Name	Data	System Name	Data
TestWinXP-7	48	1	89	TestWinXP-7	829	TestWinXP-7	987	TestWinXP-7	1398
TestWinXP-8	83	3	89	TestWinXP-8	3400	TestWinXP-8	4231	TestWinXP-8	6397
TestWinXP-9	87	3	89	TestWinXP-9	3642	TestWinXP-9	4484	TestWinXP-9	6682
TestWinXP-10	90	3	89	TestWinXP-10	4370	TestWinXP-10	5395	TestWinXP-10	8068
TestWinXP-4	100	3	89	TestWinXP-4	2318	TestWinXP-4	2870	TestWinXP-4	4310
TestWinXP-5	89	3	89	TestWinXP-5	2206	TestWinXP-5	2718	TestWinXP-5	4054
TestWinXP-6	86	3	89	TestWinXP-6	925	TestWinXP-6	1151	TestWinXP-6	1741
TestWin2003-2	82	3	89	TestWin2003-2	5094	TestWin2003-2	6185	TestWin2003-2	9032
TestWin2003-3	89	3	89	TestWin2003-3	3430	TestWin2003-3	4229	TestWin2003-3	6311
TestWin2003-4	73	3	89	TestWin2003-4	2519	TestWin2003-4	3135	TestWin2003-4	4740

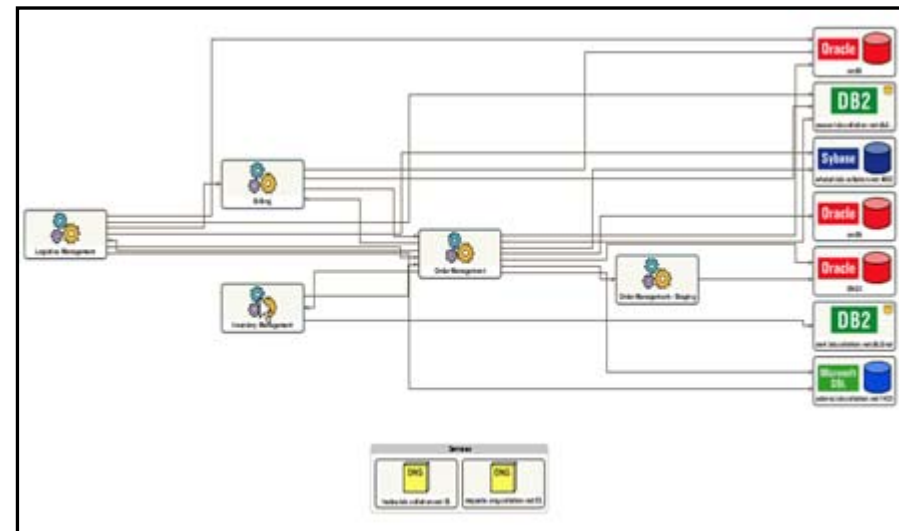


Application discovery complements platform component asset data

IBM Tivoli Application Dependency Discovery Manager (TADDM)

Better management through better information

- Discovers the system and application data center resources
- Discovers the relationships and dependencies between the system and application resources
- Visually depict the dependencies between Data Center between the application and system resources
- Discovers and tracks changes to data center resources



Simplified WPAR Management

Workload Partitions and Hosts

Workload Partitions and Hosts (View Members)

Actions | Search the table... Search

Select	Name	Access	CPU Utiliza
<input type="checkbox"/>	griller04.austin.ibm.com	OK	
<input type="checkbox"/>	deep_clone	OK	
<input type="checkbox"/>	deepa_wpar	OK	
<input type="checkbox"/>	p_clone	OK	
<input type="checkbox"/>	griller07.austin.ibm.com	OK	
<input type="checkbox"/>	lithium.austin.ibm.com	OK	
<input type="checkbox"/>	better	OK	
<input type="checkbox"/>	bet	OK	
<input type="checkbox"/>	pressure	OK	
<input type="checkbox"/>	syno1	Unknown	
<input type="checkbox"/>	synonyms	Unknown	
<input type="checkbox"/>	efs_exclude	Offline	

Page 1 of 1 | 1 | Selected: 0 Total: 13

WPASummary

IBM PowerVM Workload Partitions Manager for AIX

Create, manage and relocate workload partitions (WPARs). Discover systems capable of supporting WPARs.

Workload Partitions Resource Status

10 Workload partitions and their problem severity

Common views
View WPAR capable systems
View Power Systems Summary
Health summary

Workload Partitions and Hosts

Workload Partitions a... > griller04.austin.ibm.com (WPAR Topology Map)

Actions | Search the map... Search

Overview

Details

Filter

Filter Results

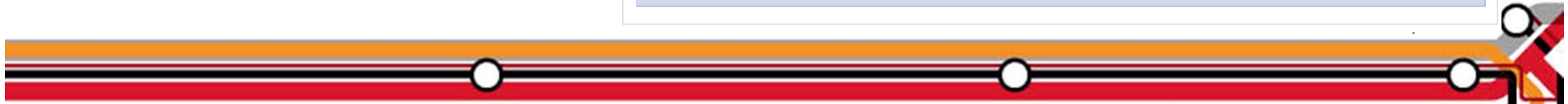
Status Items:

- Fatal
- Critical
- Minor
- Warning
- Information
- Unknown
- OK
- No access
- Offline
- Partial access
- Offline

Resource Types:

- AIX WPAR Settings
- File System
- IP Interface
- Logical Module
- Operating System
- Resource Allocation Settings
- WPAR

Depth: 3 | Selected: 0 Resources: 116 Relationships: 163 Filtered: 116



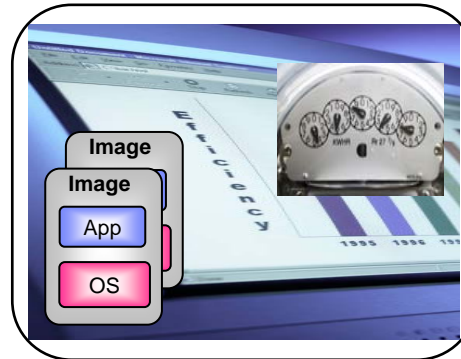
IBM® Systems Director Editions for improved IT operations



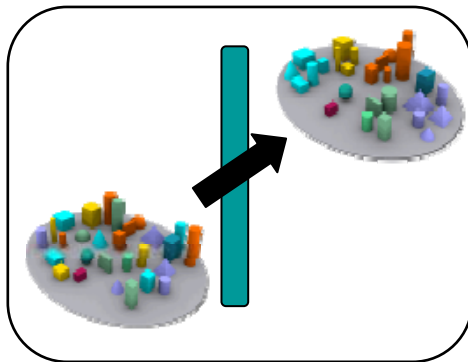
Systems Director Enterprise Edition



Systems Director Standard Edition



Systems Director Express Edition



System pools deployment

Network management

Energy Management

Virtual image deployment



Advanced energy reporting

Advanced discovery and monitoring

Basic monitoring and updates



IBM helps you address operational management challenges



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*



Detailed platform management of IBM systems

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

Successful operational management in these areas enables the delivery of critical business services transforming client datacenters to realize the vision of dynamic infrastructure

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