

Unlock the full potential of people



Virtualisation Unmatched - with IBM System x and Tivoli Software

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15th of September 2010



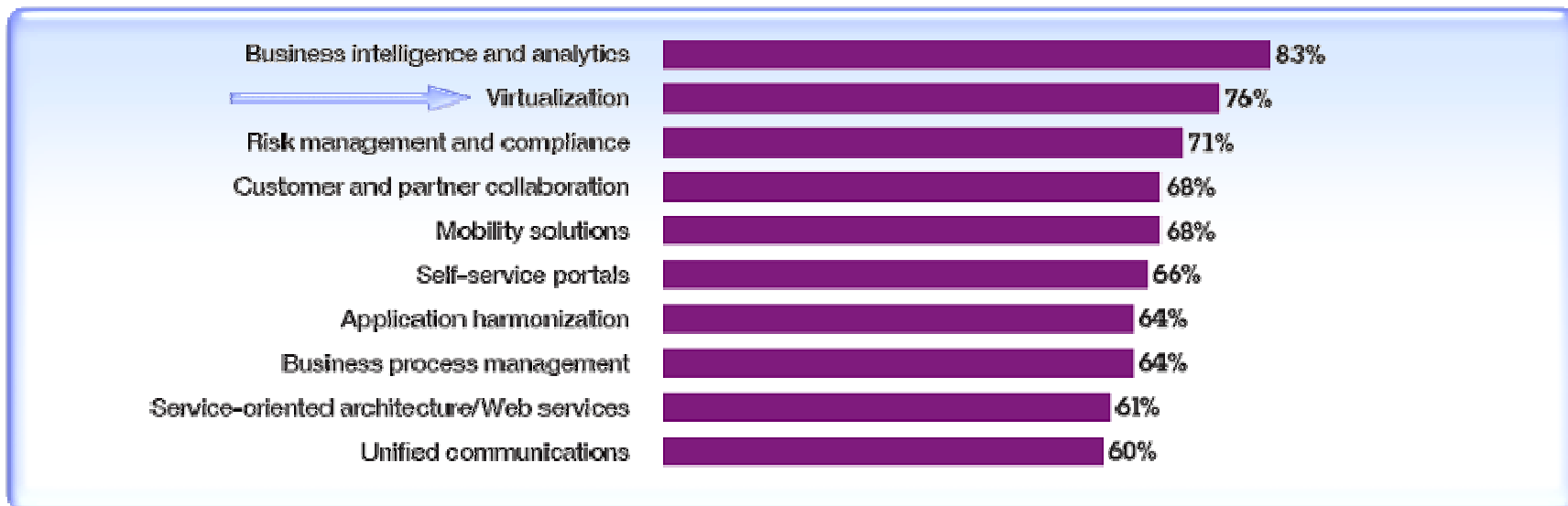
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CIOs select their ten most important visionary plan elements



76% of CIOs cited “implementing a virtualized computing environment” as part of their visionary plans to enhance competitiveness

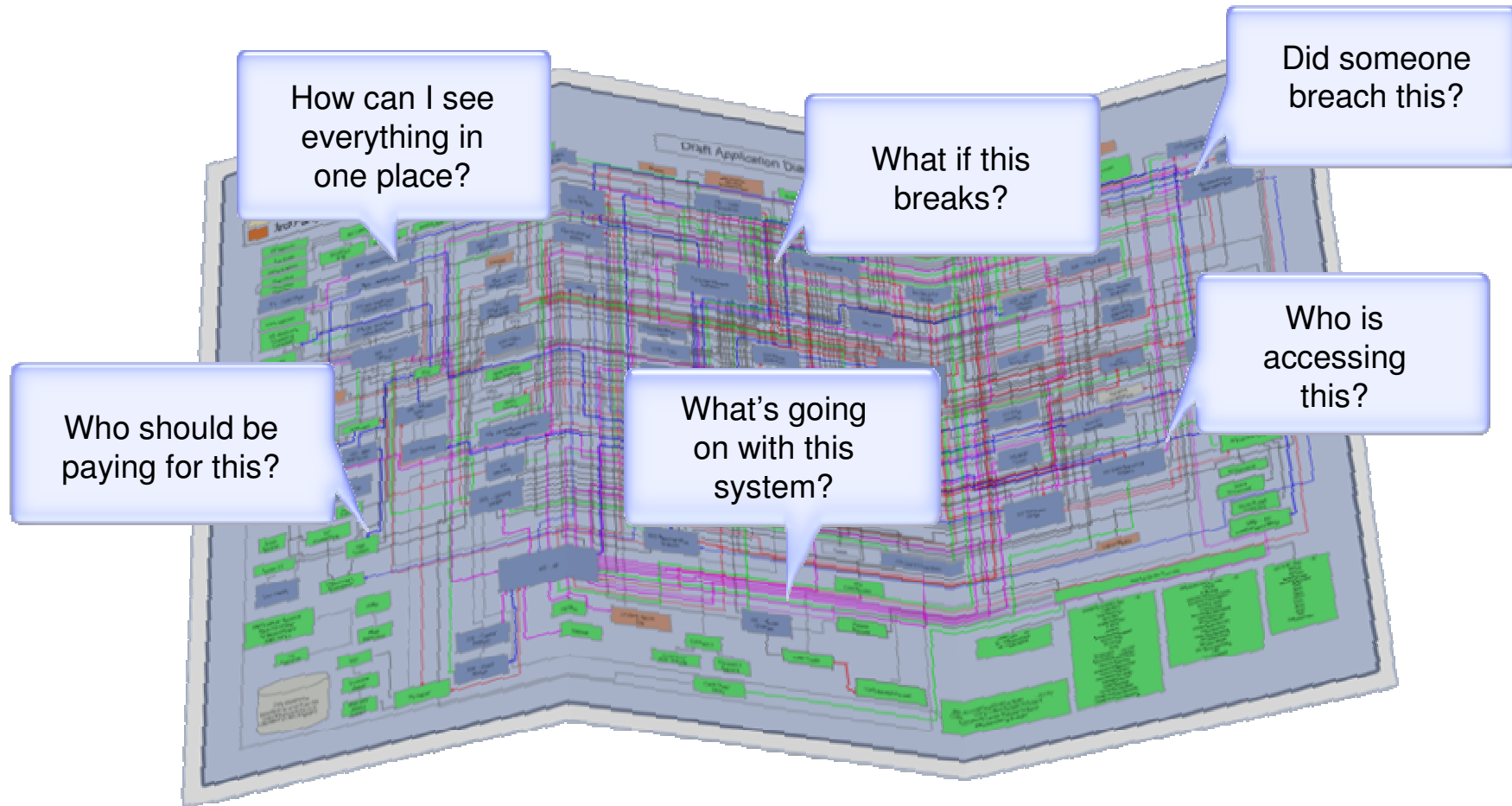


NOTE: CIOs were asked to select all applicable answers to the question, “What kind of visionary plans do you have for enhanced competitiveness?”



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Is this familiar?



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IBM and Virtualisation solutions

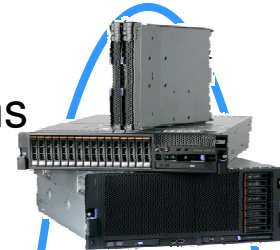


Innovations to uniquely meeting and exceed your requirements

IBM and Virtualisation

- Cost-reduced Infrastructure
- Flexibility and automation
- Rapid provisioning
- High Availability
- Affordable Disaster Recovery

Powerful systems designed for virtualization



System x
BladeCenter
System Storage

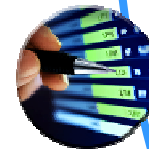
Expertise to virtualize the most critical applications



Innovative cloud computing solutions including IBM CloudBurst



Tivoli Service Management

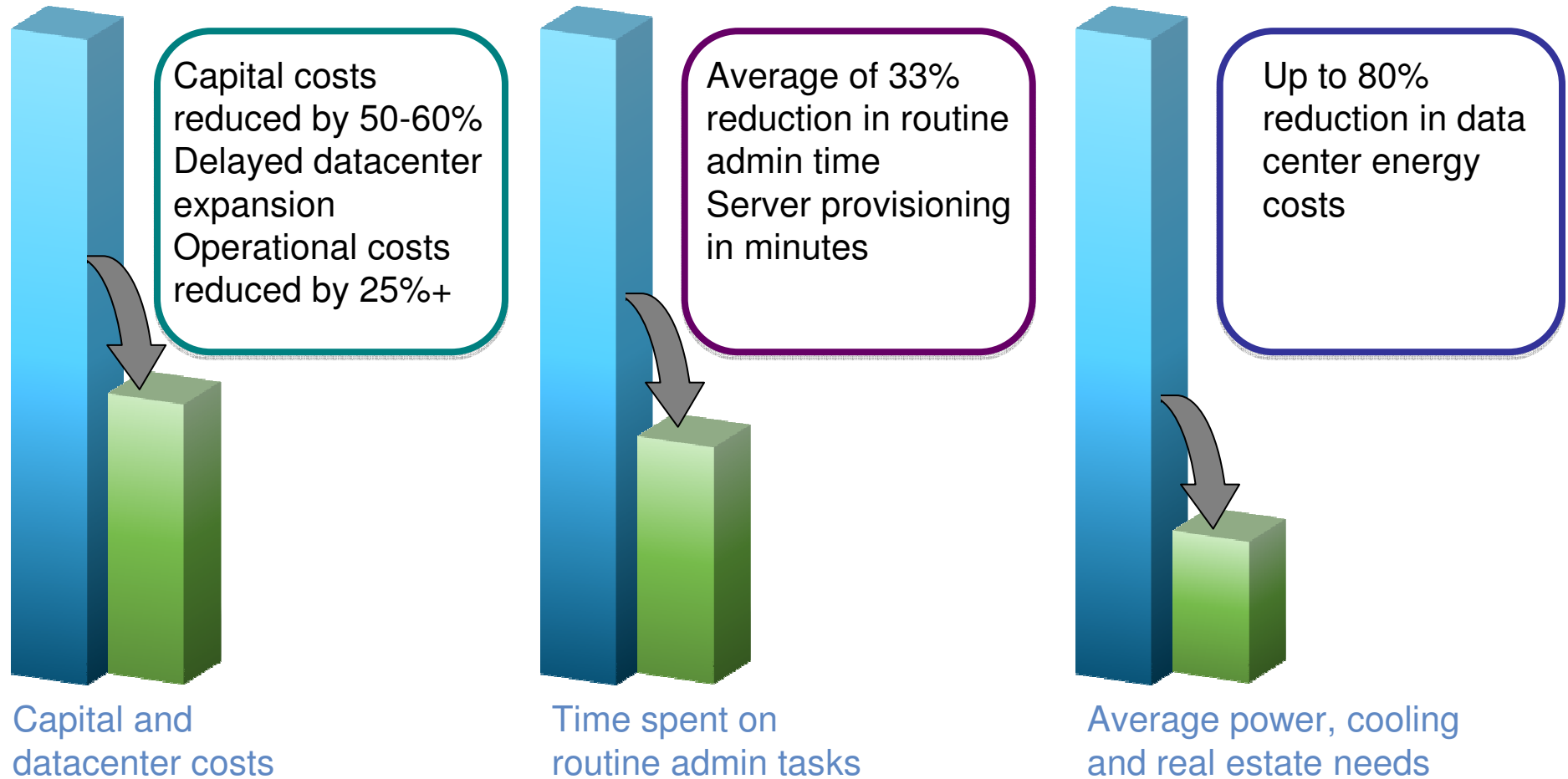


Managed desktop services



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IBM & Virtualisation deliver business value



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Systems to match your consolidation & virtualization needs

System z



System z

- Industry leading data server and platform standard for virtualization, resiliency, security, and workload integration and management


Power Systems



Power Systems

- Industry leading high performance server with fastest growing commercial UNIX


System x



System x

- Industry's original enterprise modular platforms – BladeCenter and eXA – for server, storage and network integration and consolidation

System Storage



System Storage

- Industry leading enterprise disk and tape performance, resiliency, and availability



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Consolidation boosts utilization and provides energy savings



Server Virtualization



Up to 30-70% TCO savings

Storage Virtualization



Up to 25% less capacity needed

Desktop Virtualization



Up to 40% overall TCO savings



Up to 33-50% floor space and facility costs

Up to \$50,000 power savings per 1,000TBs of installed storage

Up to 45% power savings

33-70% hardware costs

Up to 60% migration costs savings

Up to 90% deskside support

Up to 50% maintenance costs

Up to 300% increase in utilization

Up to 50% on helpdesk

Up to 33% support costs

Up to 75% in security and user administration



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In today's economy, we need dynamic infrastructures that drive down costs, and are intelligent and secure.

Reduce Cost

Not just containing operational cost and complexity, but achieving *breakthrough* productivity gains through virtualization, optimization, energy stewardship, and flexible sourcing.



Improve Service

Increasingly customer demand for quality service & continuous accessibility

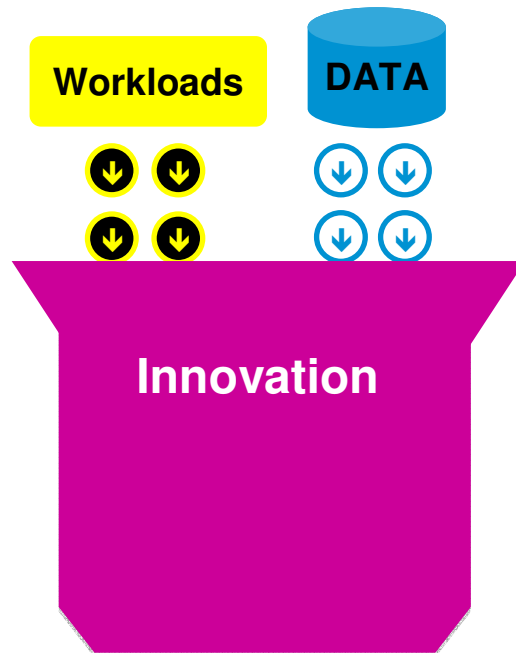


Manage Risks and Threats

Security, resiliency & compliance challenges are created by the accelerating pace of change.



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Clients need systems that:

- ➔ Scale quickly and efficiently.
- ➔ Remove memory bottlenecks.
- ➔ Maximize utilization.
- ➔ Are optimized for workloads.
- ➔ Provide rapid access to data.

The next generation x86 architectures must be able to keep up with the proliferation of workloads and explosion of data of a smarter, more interconnected planet.



Traditional server paradigms need to change



The x86-based PC architecture is now **29 years old**.

It has evolved through PCs, towers, racks and blades.

It holds **53 percent** of the server market and that number is growing.



New thinking is required.



eX5 leadership for an evolving marketplace

5th Generation of X-Architecture



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







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Announcing IBM System x



The new
thinking of x86



-  **5th generation** portfolio of IBM industry-leading technology in enterprise x86 computing.
-  Expansion of **Enterprise X-Architecture** to **IBM BladeCenter**.
-  **2X the memory capability of competitive** offerings resulting in up to **2/3 software costs**.
-  **Lowest costs of acquisition** and deployment for enterprise x86 computing in the industry.

Maximize memory, minimize cost, simplify deployment



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Introducing the eX5 System x Portfolio



System x3850 X5



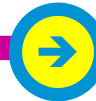
BladeCenter HX5



System x3690 X5

MAX5

Maximum memory scaling independent of processors



eXFlash

Extreme IOPs SSD storage



of people

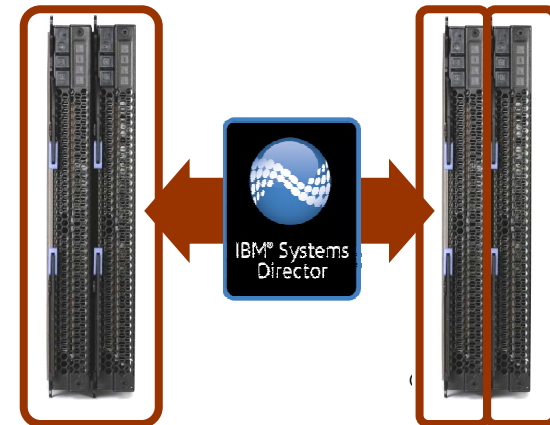
potential

FlexNode

Scheduled provisioning

One 4-Socket System

Two 2-Socket Systems



poration

MAX5 eliminates memory bottleneck and minimizes VMware licensing costs in 2 different ways



1. 78% more Virtual Machines on eX5 for the same license cost

Competition server



x3690 X5



VMware Enterprise Plus Cost: € 3.500 / processor – Memory constrained before processors are fully utilized

2 processor: € 7.000

2 processors: € 7.000

16 DIMMs: 158 Virtual Machines

32 DIMMs: 281 Virtual Machines

2. 50% of license cost on eX5 to support same number of virtual machines

Competition server



x3690 X5 with MAX5



VMware Enterprise Plus Cost: € 3.500 / processor – Memory constrained before processors are fully utilized

4 processor: €14.000

2 processors: € 7.000

64 DIMMs: 320 Virtual Machines

64 DIMMs: 320 Virtual Machines

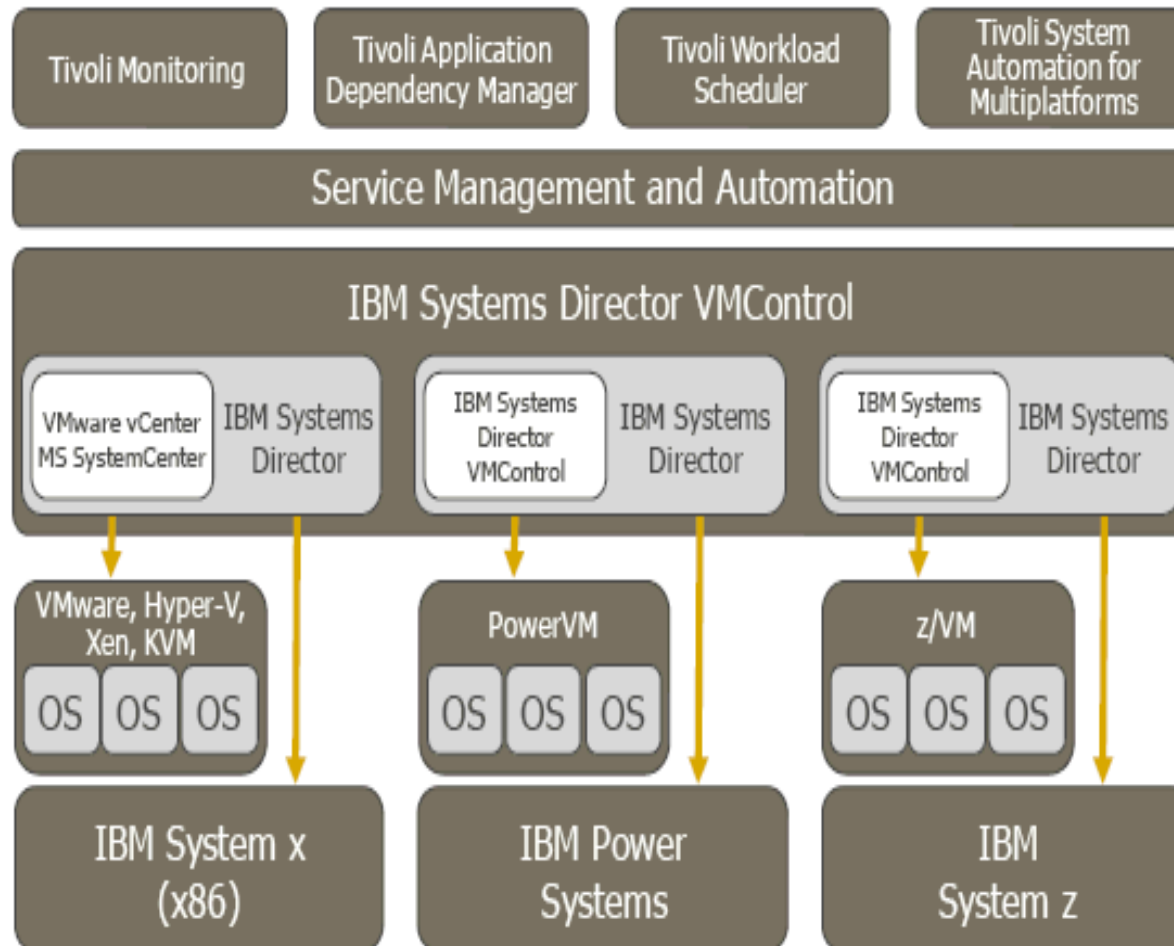


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IBM Virtualisation Management



Figure 6 – IBM Virtualization Management Solution



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IBM Systems Director VMControl™



See and act on all of the virtualized resources

A plug-in option for IBM Systems Director (available for no additional charge) to **enhance virtualization management** and **simplify virtual appliance deployment** across heterogeneous platforms



The screenshot displays the IBM Systems Director VMControl interface. The main window shows a network topology map with various components and their connections. The components include:

- hci031_520 (top left)
- 07F2FD.4:SLOT (top left)
- hci062.pdl.pok.ibm.com (top left)
- vlan:1, vlan:2, vlan:9 (top left)
- root:0 (top left)
- ddjLpar 1 (top center)
- newVM2 (top center)
- Trix (top center)
- vio_svr_1 (top center)
- vio_svr_2 (top center)
- hci030_520 (middle left)
- vlan:1, vlan:3, vlan:4 (middle left)
- 9406520.107F2FD.2: (middle right)
- 9406520.107F2FD.2:rootvg (middle right)
- 9406520.107F2FD.2:lv1, 2, 3, 9 (bottom right)

The interface includes a navigation pane on the left, a toolbar at the top, and a right-hand sidebar with sections for Overview, Details, Favorites, and Filter. The Filter section shows a list of status items with checkboxes for OK, Warning, Critical, Locked, Not Active, Unknown, and Maintenance Mode. The bottom status bar indicates the root is hci031_520, the description is Topology Map, the depth is 3, and there are 29 resources and 70 relationships.

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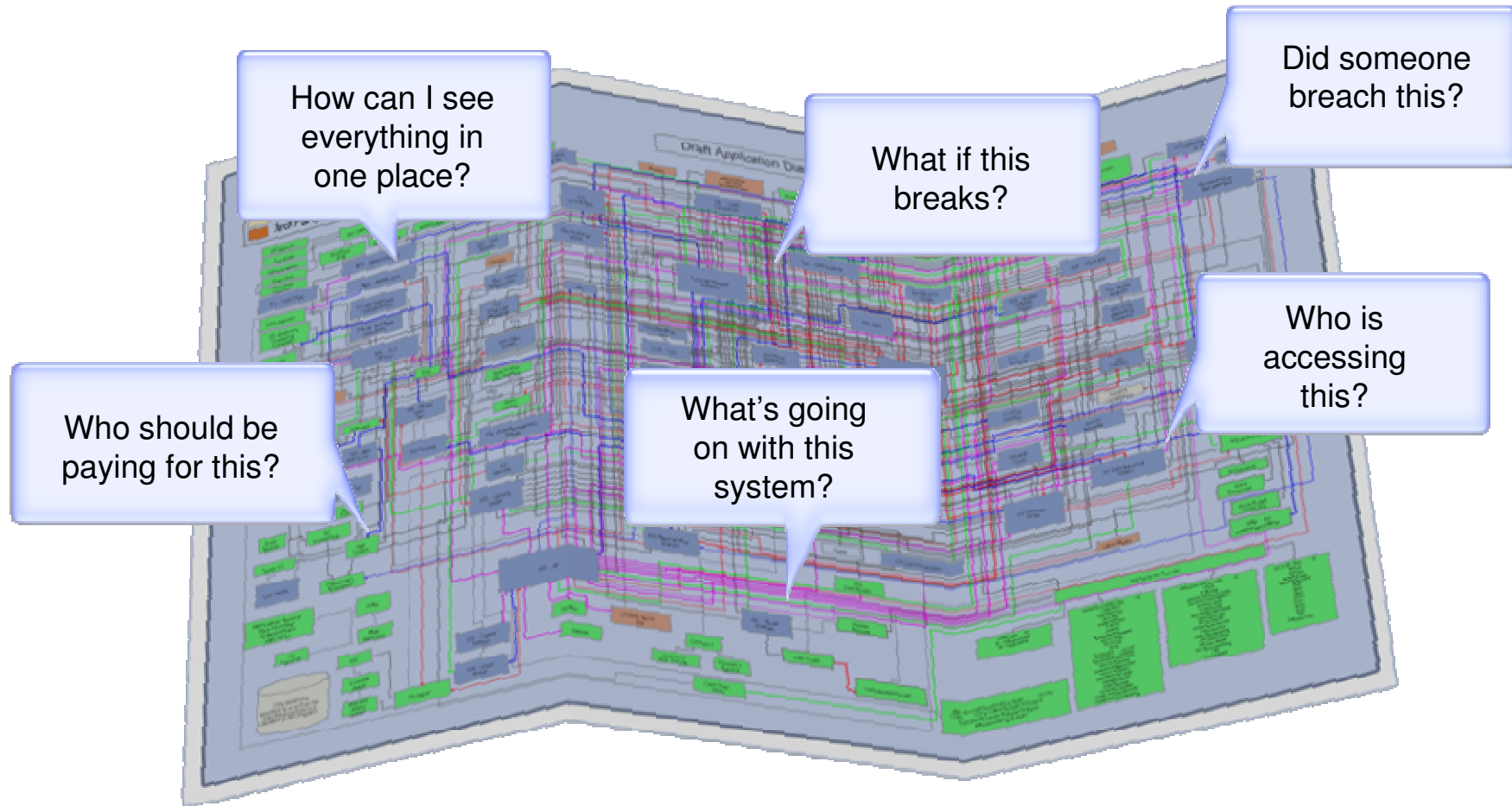
Tivoli and a Virtualized Environments



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Is this familiar?



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Exploiting Tivoli and Systems Software Synergy

Collectively deliver a comprehensive Integrated Service Management solution



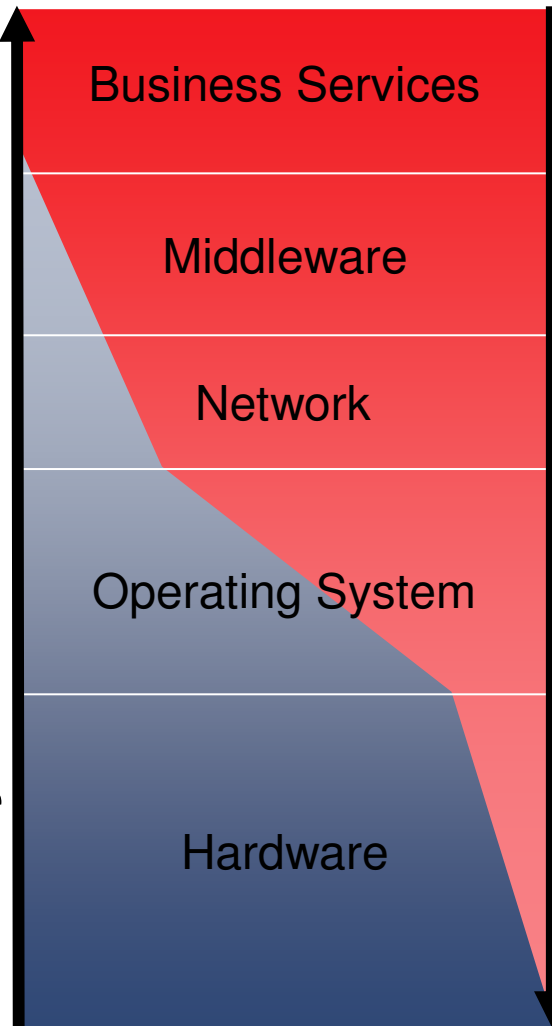
IBM® Systems Director

Detailed platform management of IBM systems

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



IBM Systems Director



IBM Tivoli®

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

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



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Consolidation of Resources – Getting Started

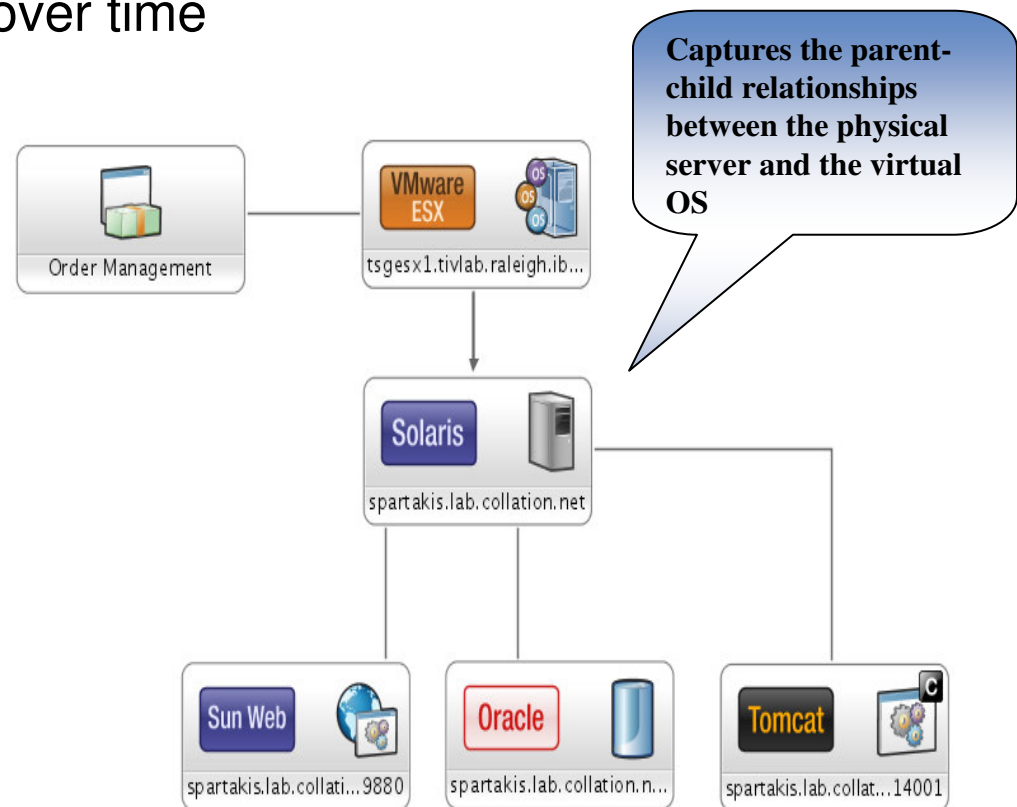
What are the critical virtualized components of my services?



Visualize Resources, Configurations, Relationships and Changes

A single pane of glass to see all the resources in **both a physical and a virtualized environment**, their configurations, their relationships and changes that have occurred over time

Details	
Name:	nc045234.kraklab.pl.ibm.com
Fully qualified domain name:	nc045234.kraklab.pl.ibm.com
Last Modified Time:	7/6/09 13:25 CEST
Object Type:	VMware ESX Computer System
Manufacturer:	IBM
Model:	IBM 3850 M2 / x3950 M2 -[71414RG]-
Architecture:	i686
CPU Speed:	2931 MHz
CPU Type:	Intel(R) Xeon(R)
Number of CPUs:	8
Memory Size:	79.99 GB
Available Memory For All Virtual Machines:	65.76 GB
Current Memory For All Virtual Machines:	99.24 GB
Max Virtual Machine Memory Size:	
Swap Memory Size:	
Service Console Memory Size:	800.00 MB



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Anticipating Virtualization Management Challenges

Where did the virtual environment problem originate?



The are no “virtual performance problems”, only very real performance problems manifested in a very complex consolidated, virtual environment.

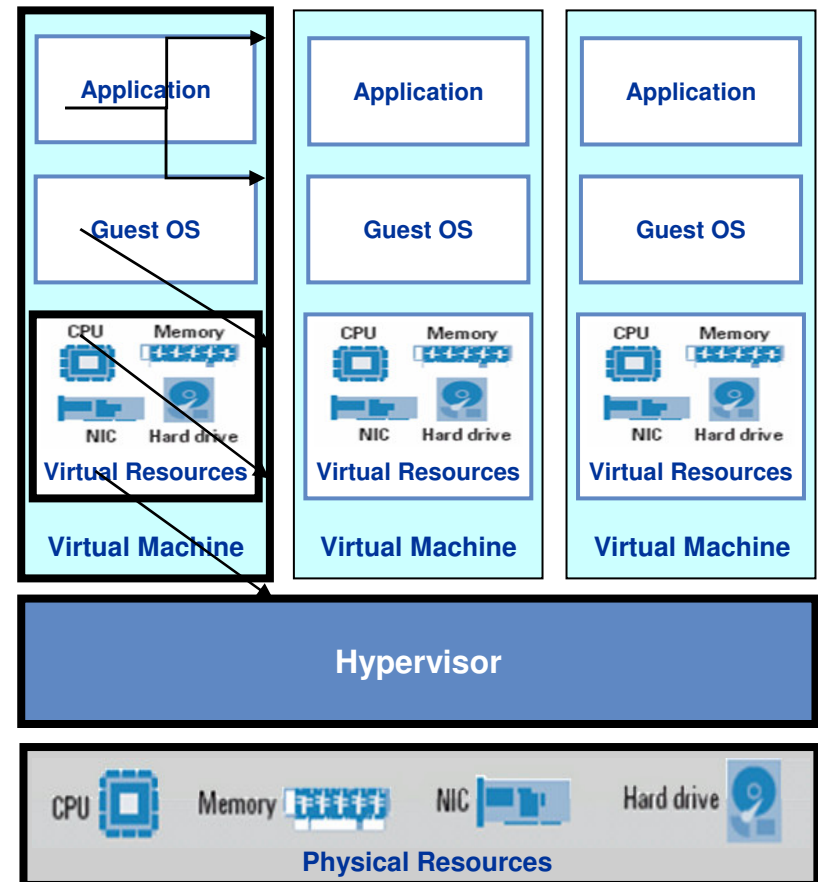
In the APPLICATION or GUEST OPERATING SYSTEM?

In the VIRTUAL RESOURCE?

In the VIRTUAL MACHINE sharing the same physical resource?

In the HYPERVISOR?

Or in the PHYSICAL RESOURCE?



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Visibility into Server utilization

Show Top 5 / Bottom 5 ESX Servers



Top & Bottom 10 ESX Serves CPU & Memory Utilization - 9.42.49.125 - SYSADMIN *ADMIN MODE*

File Edit View Help

Navigator View: Virtualization2

- Virtualization2
 - Solaris Global Zones
 - System p
 - VMware
 - ESX Group 1
 - ESX Group 2
 - Performance Analyzer
 - VC: Adtech1
 - VMware CPU Utilization Forecast
 - VM: adtech-VC-adtechd1:ESX
 - VM: adtech-VC-adtechd2:ESX
 - VM: adtech-VC-adtechd3:ESX
 - VM: adtech-VC-adtechd4:ESX
 - VM: adtech-VC-adtechesx1:ESX
 - VM: adtech-VC-adtechesx2:ESX
 - VC: Adtech2

Physical Virtualization2

Situation Event Console

Severity	Status	Owner	Situation Name
Critical	Open		KVM_VM_CPU_Util_High
Warning	Open		NT_Log_Space_Low
Warning	Open		NT_Log_Space_Low
Warning	Open		NT_Log_Space_Low
Warning	Open		NT_Log_Space_Low
Critical	Open		ESX_CPU_Trend_Crit

Hub Time: Thu, 02/28/2008 07:02 PM Server Available Top & Bottom 10 ESX Serves CPU & Memory Utilization - 9.42.49.125 - SYSADMIN *ADMIN MODE*

start Ben Ster... Virtual... Cannot... Comman... AT&T Ne... Tivoli Ap... Top & ... 100% 7:09 PM

ESX Top 5 CPU Utilization

ESX Server	Overall CPU Util (%)
adtechd4.tivlab.raleigh.ibm.com	~13
adtechd1.tivlab.raleigh.ibm.com	~12
adtechd2.tivlab.raleigh.ibm.com	~10
adtechesx1.tivlab.raleigh.ibm.com	~7
adtechd3.tivlab.raleigh.ibm.com	~6

ESX Bottom 5 CPU Utilization

ESX Server	Overall CPU Util (%)
adtechd3.tivlab.raleigh.ibm.com	~5
adtechesx1.tivlab.raleigh.ibm.com	~8
adtechd2.tivlab.raleigh.ibm.com	~10
adtechd1.tivlab.raleigh.ibm.com	~12
adteches2.tivlab.raleigh.ibm.com	~35

ESX Top 5 Memory Usage

ESX Server	Overall Memory Util (%)
adtechd2.tivlab.raleigh.ibm.com	~55
adtechesx1.tivlab.raleigh.ibm.com	~50
adtechd4.tivlab.raleigh.ibm.com	~45
adtechd1.tivlab.raleigh.ibm.com	~40
adteches2.tivlab.raleigh.ibm.com	~35

ESX Bottom 5 Memory Usage

ESX Server	Overall Memory Util (%)
adtechd3.tivlab.raleigh.ibm.com	~15
adteches2.tivlab.raleigh.ibm.com	~35
adtechd1.tivlab.raleigh.ibm.com	~45
adtechd4.tivlab.raleigh.ibm.com	~55
adtechesx1.tivlab.raleigh.ibm.com	~65

Business Services Management: CEO Dashboard



Tivoli Integrated Portal - Mozilla Firefox: IBM Edition

File Edit View History Bookmarks Tools Help

https://rxrtravel:16316/ibm/console/login.do?action=secure

Getting Started Latest Headlines IBM franfurt festivals june TCR_Chart The NETCOOL Suite

Tivoli. View: All tasks Welcome tipadmin Help Logout IBM.

CEO Dashboard -- Select Action --

RxR Travel

- Online Ordering ●
- Phone Orders ●
- Mobile Integration ●
- Travel Insurance ●
- Customer Service ●

Booking Map

Locations

Top Locations Booked:

- Rome, Italy
- Nice, France
- Anchorage, Alaska
- Orlando, Florida

Bottom Locations Booked:

- Brussels, Belgium
- Dallas, Texas
- Nassau, Bahamas

Top Vendor Kickbacks:

- Disney WorldLine (25%)
- Coliseum Hotel, Rome (9.5%)

Booking Types

Booking Locations	Booking Type	Booking Method	Insurance Invocation
• Cozumel, Mexico	Air / Hotel	Phone	100% (+ 1000% Y2Y)
• Eastern Carribean	Cruise	Phone	15% (- 5% Y2Y)
• Rome, Italy	Air / Hotel / Tour	Online	5% (+ 1% Y2Y)
• Brussels, Belgium	Air / Hotel / Auto	Mobile	0% (.0% Y2Y)
• Dallas, Texas	Hotel	Customer Service	0% (.0% Y2Y)

Insurance Profit

Profit

Sales Loss Analysis

Sales Loss Analysis (Month to Month)

Technical Difficulty	-5% (.10%)
Location Not Offered	-15% (.15%)
Better Competitor Offering	+3% (.30%)

RXR Stock Price

Wrap-up and next steps



System x and Tivoli.....

- Risk reduction
- Improved service levels
- Cost reduction

- **Next steps.....**
 - 60 days free testing of Systems Director VMControl
 - System x & Tivoli White Papers
 - **Staged Virtualisation Management**
 - **eX5 with MAX5 white paper**
 - **Tivoli Whitepapers:** <http://www-01.ibm.com/software/tivoli/sw-library/#White%20papers>
 - Tivoli Demo software: <http://www14.software.ibm.com/webapp/download/brand.jsp?b=Tivoli>
 - Tivoli Movies: <http://www-01.ibm.com/software/tivoli/library/demos/>
 - ROI Study: <http://www.servicemanagementcenter.com/main/pages/IBMRBMS/OMSA/showcollateral.aspx?oid=77751&sf=1>



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Questions?



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Thank you!



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