



IBM System & Technology Group

Computing as a Service

General Session
Thursday, June 19, 2008
1:00 p.m. - 2:15 p.m.
Conrad Room B/C (2nd Floor)
Dave Gimpl, gimpl@us.ibm.com

June 19, 08

© 2008 IBM Corporation

Computing as a Service

Abstract

What tools and frameworks do we develop to make research computing into a service-oriented endeavor? The OGSA and several cloud computing vendors are developing standards to create a grid-like architecture based on web services. This session will explore the current state of cloud computing and how higher ed can use these services.

General Session

Thursday, June 19, 2008

1:00 p.m. - 2:15 p.m.

Conrad Room B/C (2nd Floor)

[http://net.educause.edu/CAMP083/Program/15680?PRO
DUCT_CODE=CAMP083/GS04](http://net.educause.edu/CAMP083/Program/15680?PRO
DUCT_CODE=CAMP083/GS04)

Agenda

- **Data Center Complexity, Challenges**
- **What is Blue Cloud, Cloud Computing**
- **Ensembles, as Pooled Resource Management**
- **Initial Activities**
- **Open Discussion**

Multiple forces are driving a transformation of the data center



Challenges

Costs & Service Delivery

- Rising costs of systems and networking operations
- Explosion in volume of data and information
- Difficulty in deploying new applications and services

Business Resiliency & Security

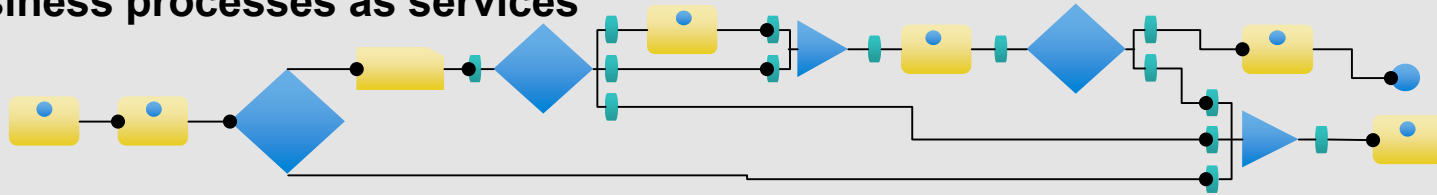
- Security of your assets & your clients' information
- Landslide of compliance requirements
- Systems and applications need to be available

Energy Requirements

- Rising energy costs & rising energy demand
- Power & thermal issues inhibit operations
- Environmental compliance & governance mandates

The IT Infrastructure Complexity and Cost Problem

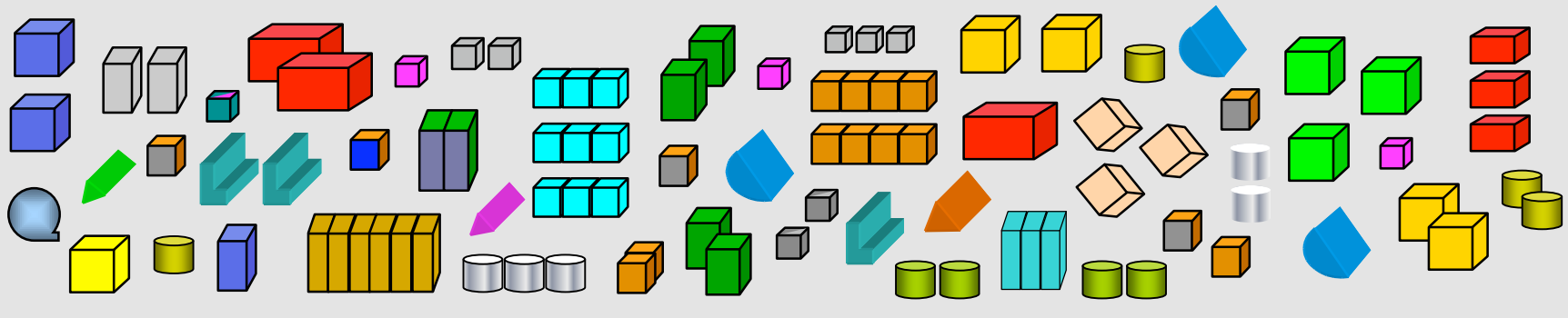
Business processes as services



Topologies of federated services must be mapped onto large numbers of diverse physical and virtual resources



Sea of heterogeneous servers, storage, networks and their virtualization



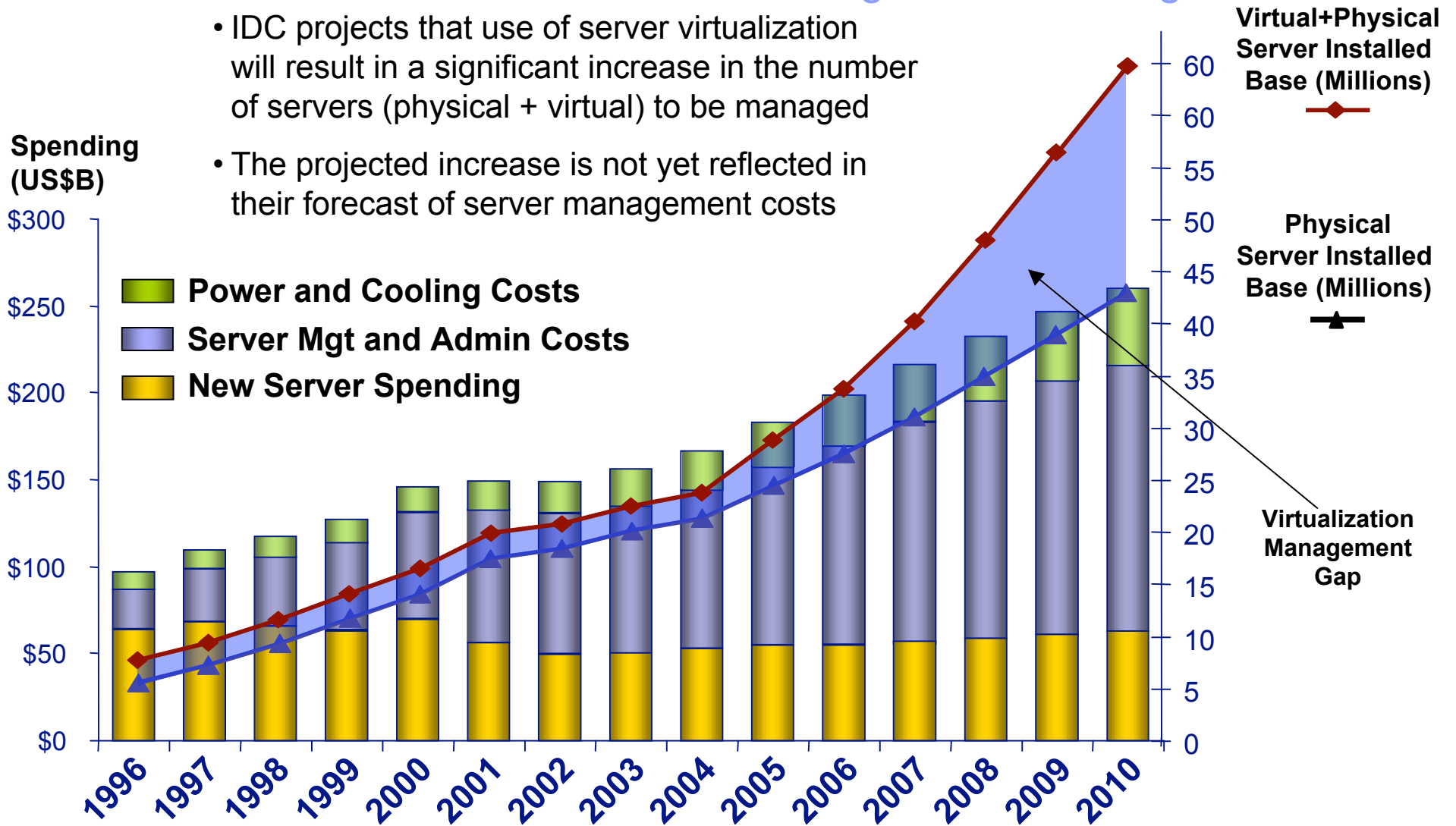
Businesses spend a large fraction of their IT budgets on data center resource management rather than on valuable applications and business processes

“Enterprises report that IT operational overhead = up to 70% of IT budget and growing . . . leaving precious few resources for new initiatives.”

– Forrester, 2007

IDC: Virtualization Creates New Management Challenges

- IDC projects that use of server virtualization will result in a significant increase in the number of servers (physical + virtual) to be managed
- The projected increase is not yet reflected in their forecast of server management costs



Source: IDC, May 2006

What is Blue Cloud™

- **(Big Blue) IBM's entry into Cloud Computing**
- **Cloud Computing is holistic systems management**
 - Market Landscape: Google™, Amazon™
- **Has similar characteristics of, but is not same as**
 - Grid
 - Cluster

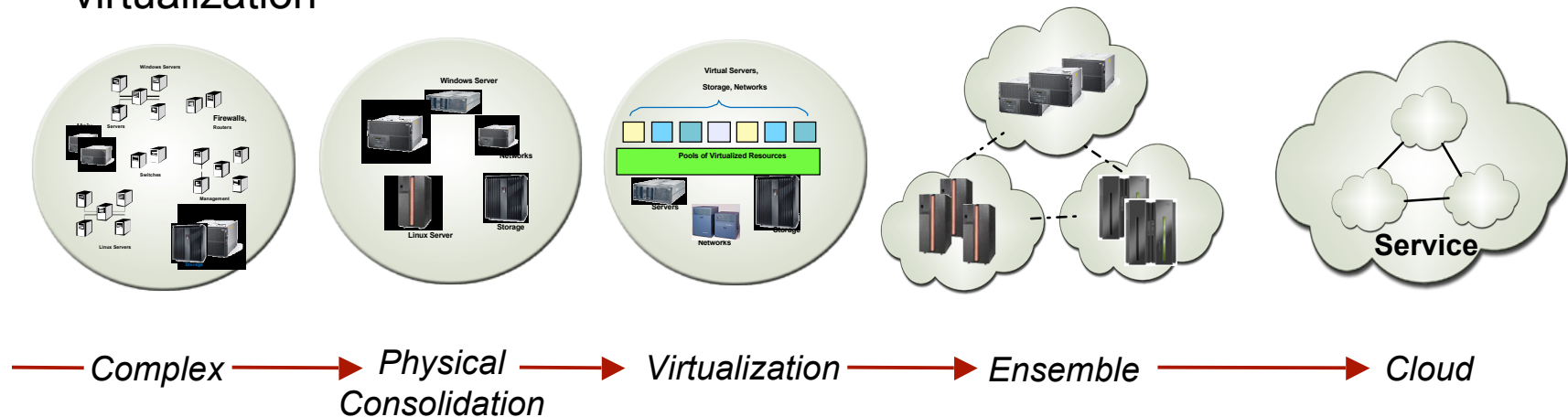
The IBM Blue Cloud™ Initiative

Perspective

Virtualization technologies and new virtualization-based management software will profoundly transform IT, providing major new benefits and major new opportunities

Objective

Create, maintain and evolve the architectural vision and integrity of the IBM cloud computing strategy to deliver on the promise of IT simplification and virtualization



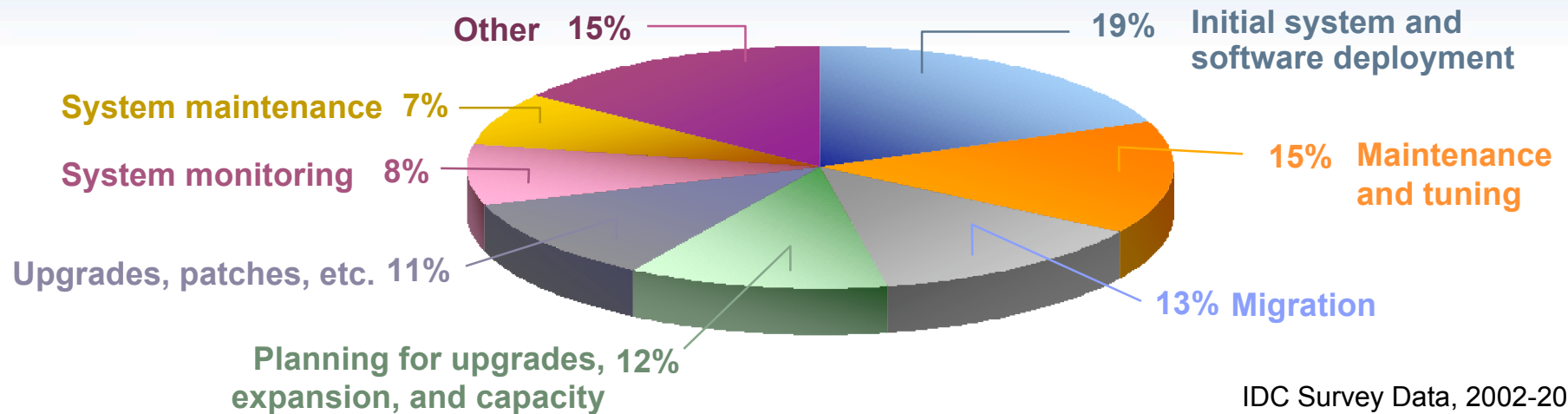
A Combination of

- **Pervasive Virtualization**
 - Server
 - Storage
- **On Demand**
- **Autonomic**
- **Utility Computing**

Virtualization changes everything

- Deployment, maintenance, and migration of IT resources are top contributors to cost today
- With the right tools, virtualized resources can be easier to create, adjust, move, clone, checkpoint
- **New complexities can emerge**
 - Rapid growth of virtualized resources across multiple environments
 - Relationship of virtualized resources to underlying physical infrastructure
 - Health monitoring and problem determination across a physical and virtualized infrastructure

Server Management and Administration Costs



IDC Survey Data, 2002-2004

Blue Cloud™ is Systems Management

- **Focus on “VM”, or more so, the solution it provides**
 - The master image, its deployed clones, and the rest of their life cycle
 - Paradigm shifts in:
 - Install
 - Management
 - Platform economics

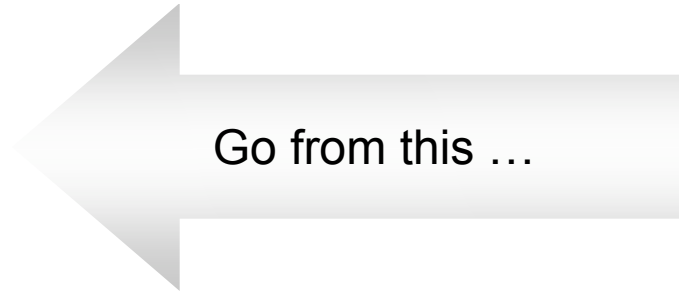
Blue Cloud™ related to

- **HiPods**
 - High Performance On Demand Computing
 - Wuxi
- **[New Enterprise Data Center](#)**
- **Virtual Computing Initiative**
- **Virtual Computing Lab**

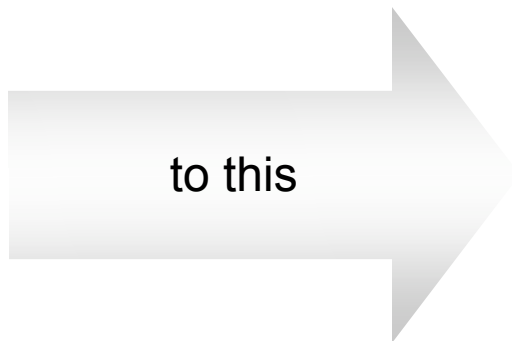
What if you could ...

Manage your business, not your technology.

Classic Complexity



New Simplicity



Thank you for your time.

What shapes do you see in the clouds?

(open discussion, Q&A)

Andy Rindos III, rindos@us.ibm.com

IBM Center for Advanced Studies, Virtual Computing Initiative (VCI)

<http://vcl.ncsu.edu/>

Dave Doria, davidd@us.ibm.com

IBM STG Systems Software

Mark VanderWiele, markv@us.ibm.com

IBM Research Cloud Computing Initiatives

Dave Gimpl, gimpl@us.ibm.com

IBM STG, kStart, Emerging Technologies

New Enterprise Data Center <http://www-03.ibm.com/systems/optimizeit/datacenter/>

Nephelococcygia <http://en.wiktionary.org/wiki/nephelococcygia>

Trademarks and disclaimers

© IBM Corporation 1994-2008. All rights reserved.

References in this document to IBM products or services do not imply that IBM intends to make them available in every country.

Trademarks of International Business Machines Corporation in the United States, other countries, or both can be found on the World Wide Web at <http://www.ibm.com/legal/copytrade.shtml>.

Intel, Intel logo, Intel Inside, Intel Inside logo, Intel Centrino, Intel Centrino logo, Celeron, Intel Xeon, Intel SpeedStep, Itanium, and Pentium are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries.

Linux is a registered trademark of Linus Torvalds in the United States, other countries, or both.

Microsoft, Windows, Windows NT, and the Windows logo are trademarks of Microsoft Corporation in the United States, other countries, or both.

IT Infrastructure Library is a registered trademark of the Central Computer and Telecommunications Agency which is now part of the Office of Government Commerce.

ITIL is a registered trademark, and a registered community trademark of the Office of Government Commerce, and is registered in the U.S. Patent and Trademark Office.

UNIX is a registered trademark of The Open Group in the United States and other countries.

Java and all Java-based trademarks are trademarks of Sun Microsystems, Inc. in the United States, other countries, or both.

Other company, product, or service names may be trademarks or service marks of others.

Information is provided "AS IS" without warranty of any kind.

The customer examples described are presented as illustrations of how those customers have used IBM products and the results they may have achieved. Actual environmental costs and performance characteristics may vary by customer.

Information concerning non-IBM products was obtained from a supplier of these products, published announcement material, or other publicly available sources and does not constitute an endorsement of such products by IBM. Sources for non-IBM list prices and performance numbers are taken from publicly available information, including vendor announcements and vendor worldwide homepages. IBM has not tested these products and cannot confirm the accuracy of performance, capability, or any other claims related to non-IBM products. Questions on the capability of non-IBM products should be addressed to the supplier of those products.

All statements regarding IBM future direction and intent are subject to change or withdrawal without notice, and represent goals and objectives only.

Some information addresses anticipated future capabilities. Such information is not intended as a definitive statement of a commitment to specific levels of performance, function or delivery schedules with respect to any future products. Such commitments are only made in IBM product announcements. The information is presented here to communicate IBM's current investment and development activities as a good faith effort to help with our customers' future planning.

Performance is based on measurements and projections using standard IBM benchmarks in a controlled environment. The actual throughput or performance that any user will experience will vary depending upon considerations such as the amount of multiprogramming in the user's job stream, the I/O configuration, the storage configuration, and the workload processed. Therefore, no assurance can be given that an individual user will achieve throughput or performance improvements equivalent to the ratios stated here.

Prices are suggested U.S. list prices and are subject to change without notice. Starting price may not include a hard drive, operating system or other features. Contact your IBM representative or Business Partner for the most current pricing in your geography.

Photographs shown may be engineering prototypes. Changes may be incorporated in production models.