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

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.

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http://net.educause.edu/CAMP083/Program/15680?PRODUCT_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

Operational issues have IT at a breaking point

Accelerated pace of business and technology innovations

Challenges

	Rising costs of systems and networking operations
Costs & Service Delivery	Explosion in volume of data and information
	Difficulty in deploying new applications and services
	Security of your assets & your clients' information
Business Resiliency & Security	Landslide of compliance requirements
	Systems and applications need to be available
	Rising energy costs & rising energy demand
Energy Requirements	Power & thermal issues inhibit operations
	Environmental compliance & governance mandates

The IT Infrastructure Complexity and Cost Problem
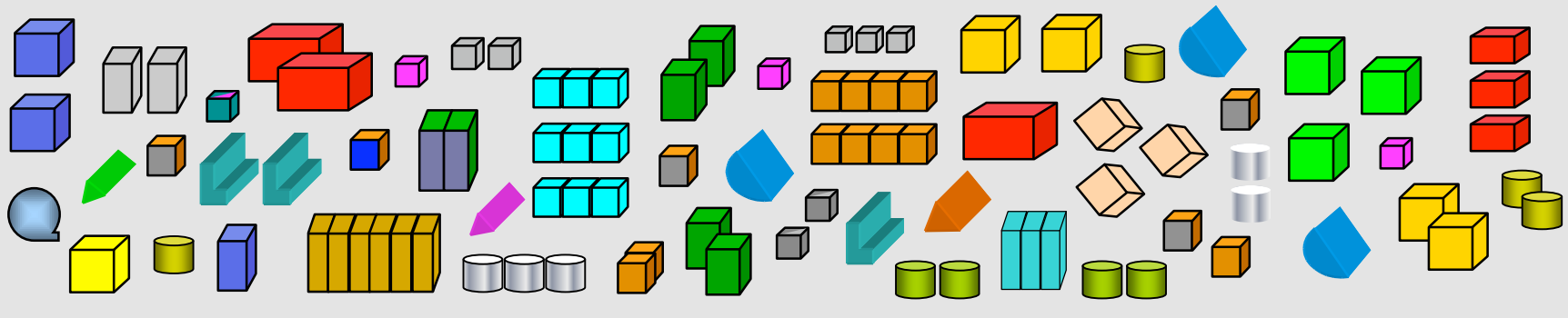
IBM

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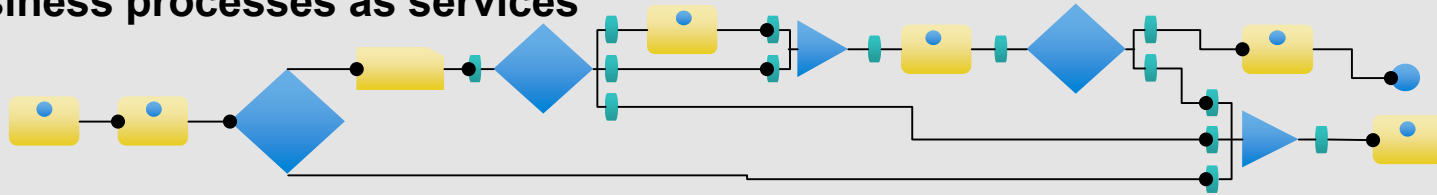
Topologies of federated services must be mapped onto large numbers of diverse physical and virtual resources

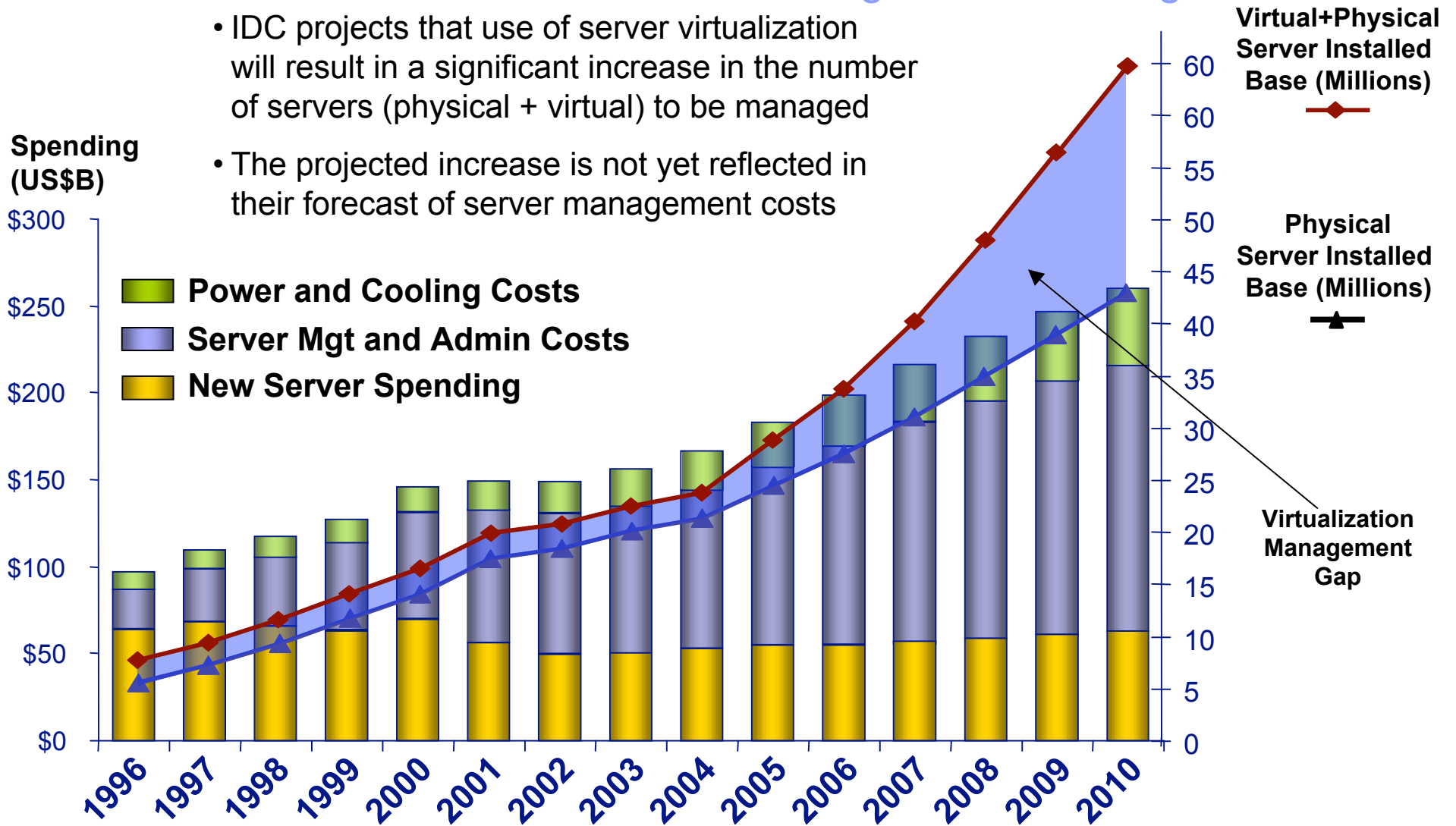**Sea of heterogeneous servers, storage, networks and their virtualization**

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

Spending (US$B)

Virtual+Physical Server Installed Base (Millions)

Physical Server Installed Base (Millions)

■ **Power and Cooling Costs**
■ **Server Mgt and Admin Costs**
■ **New Server Spending**

Virtualization Management Gap

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

Complex → *Physical Consolidation* → *Virtualization* → *Ensemble* → *Cloud*
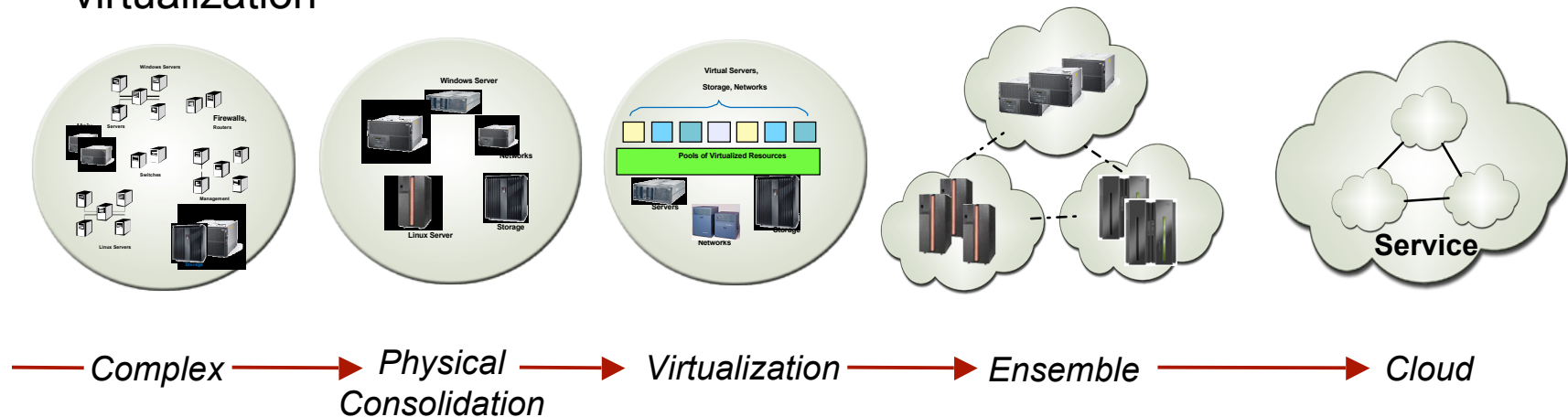
A Combination of

- **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

Other 15%
System maintenance 7%
System monitoring 8%
Upgrades, patches, etc. 11%
Planning for upgrades, 12% expansion, and capacity
19% Initial system and software deployment
15% Maintenance and tuning
13% Migration
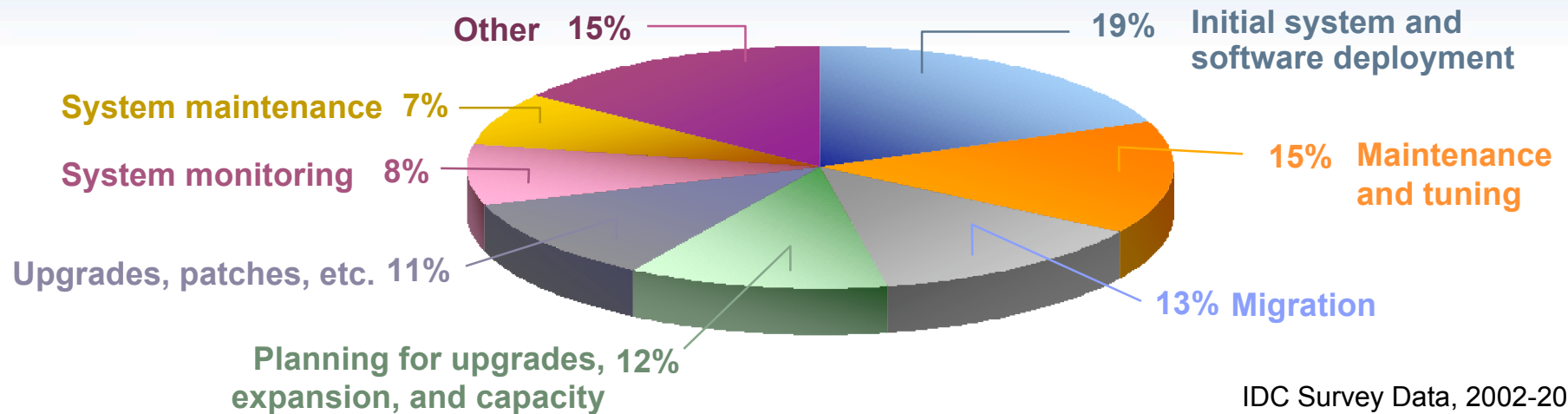
IDC Survey Data, 2002-2004

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

Go from this …

New Simplicity

to this
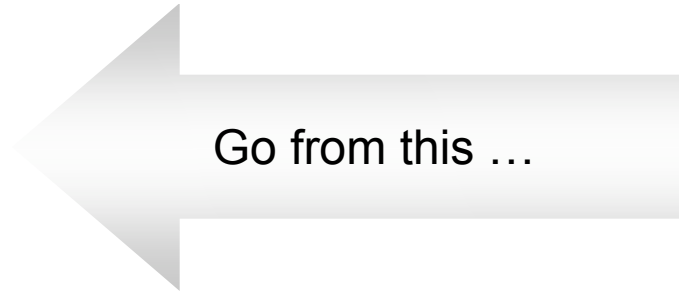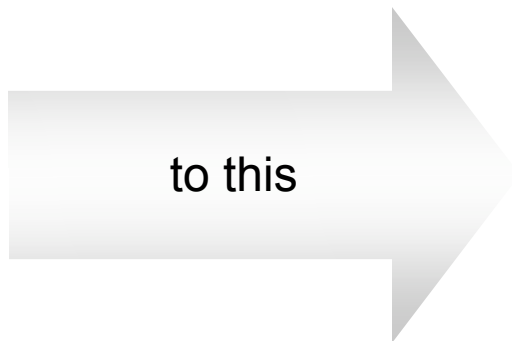
Thank you for your time.

What shapes do you see in the clouds?

(open discussion, Q&A)

Reference Material

Andy Rindos III, rindos@us.ibm.com

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

http://vcl.ncsu.edu/

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  IBM STG, kStart, Emerging Technologies

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

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

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