



# **Stepping Stones to the Cloud From Shared IT to Big Data**

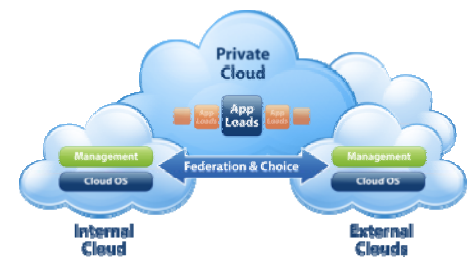
Val Bercovici

Chair, SNIA Cloud Storage Initiative

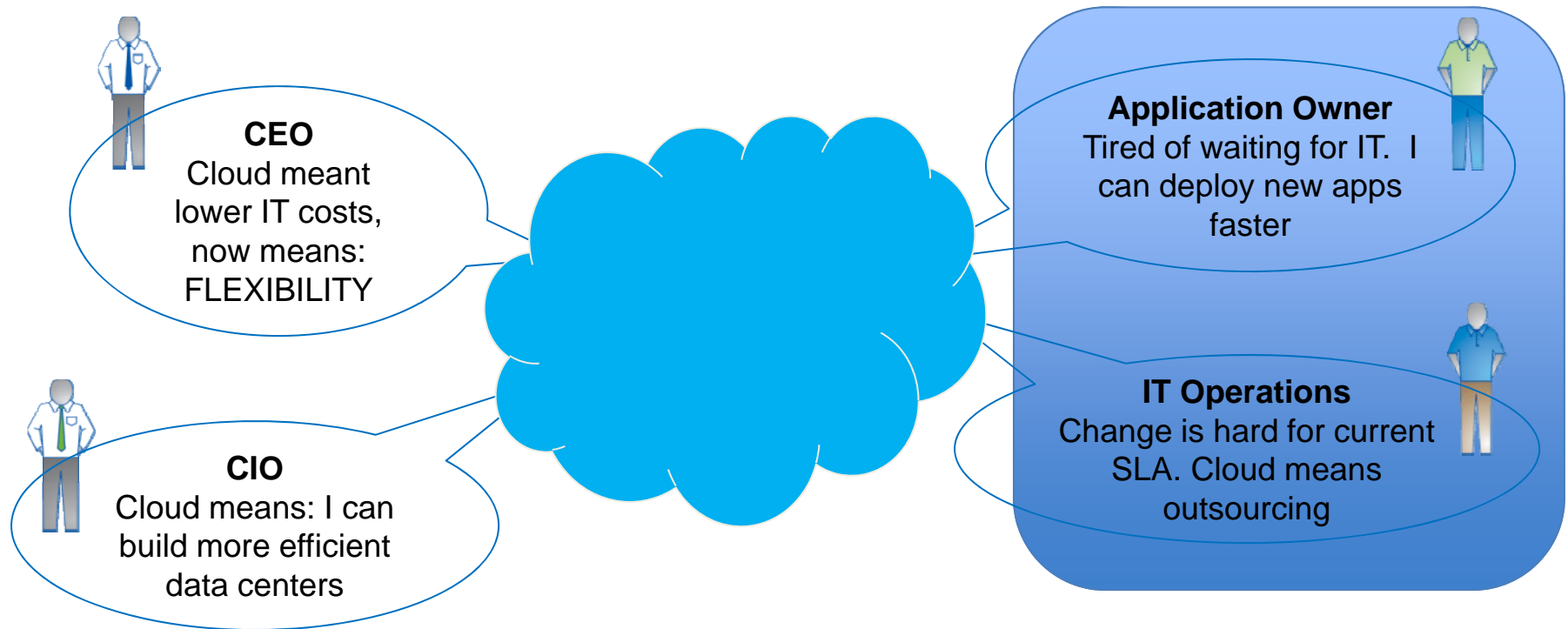
Cloud Czar, NetApp

# Agenda

- Business drivers for cloud services
- Roadmap to ITaaS (**Cloud 1**)
- Big Data & New Apps (**Cloud 2**)
- The Evolution of Shared Infrastructure

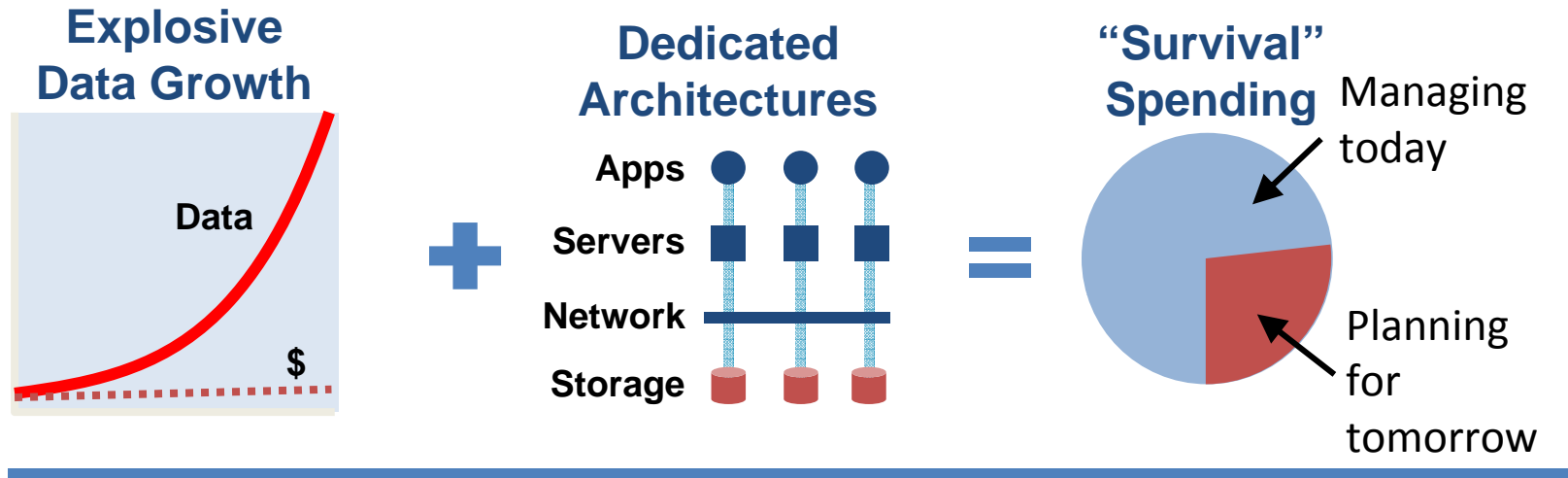


# Multiple perspectives when you say “cloud”



**Constant Tension between  
Applications ↔ Infrastructure**

# Rising Temperature in the Legacy Data Center

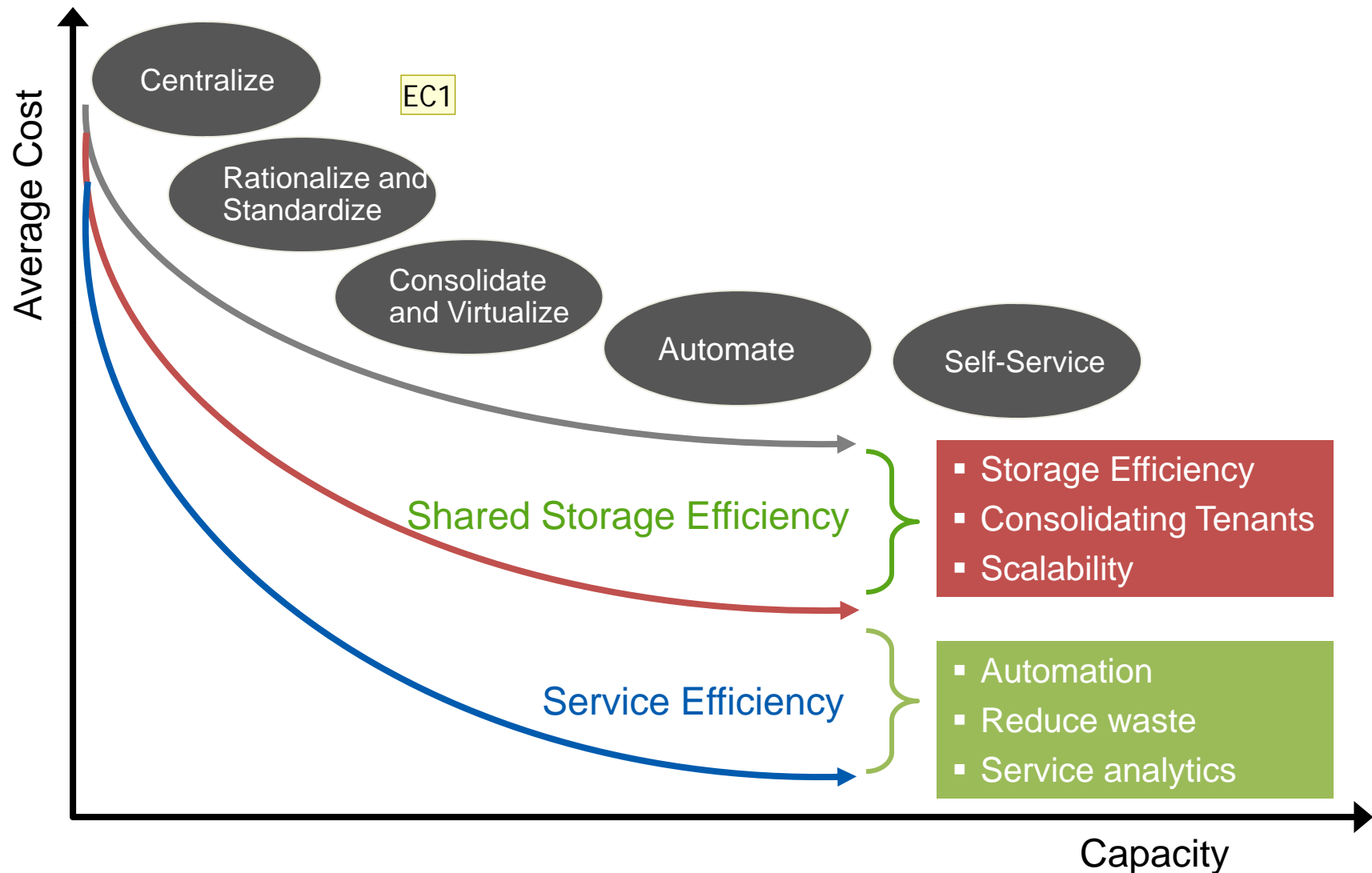


**10X  
Waste**

↓ **Utilization**  
**No Data reduction**  
↑ **Data copies**  
**Huge Waste**

**CIOs need to escape the tactical spending treadmill**

# Changing Data Center Economics: Share Storage Efficiency and Service Efficiency are Additive



## Slide 5

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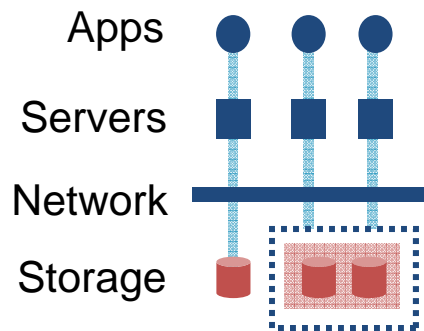
EC1

Unsure what Rationalize and Standardize mean?

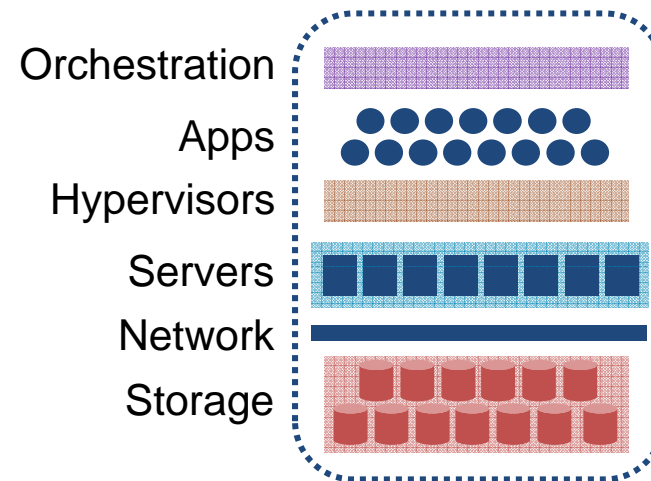
Ed Chow, 10/29/2010

# Virtualization → ITaaS → “Cloud1”

## Application-Based Silos



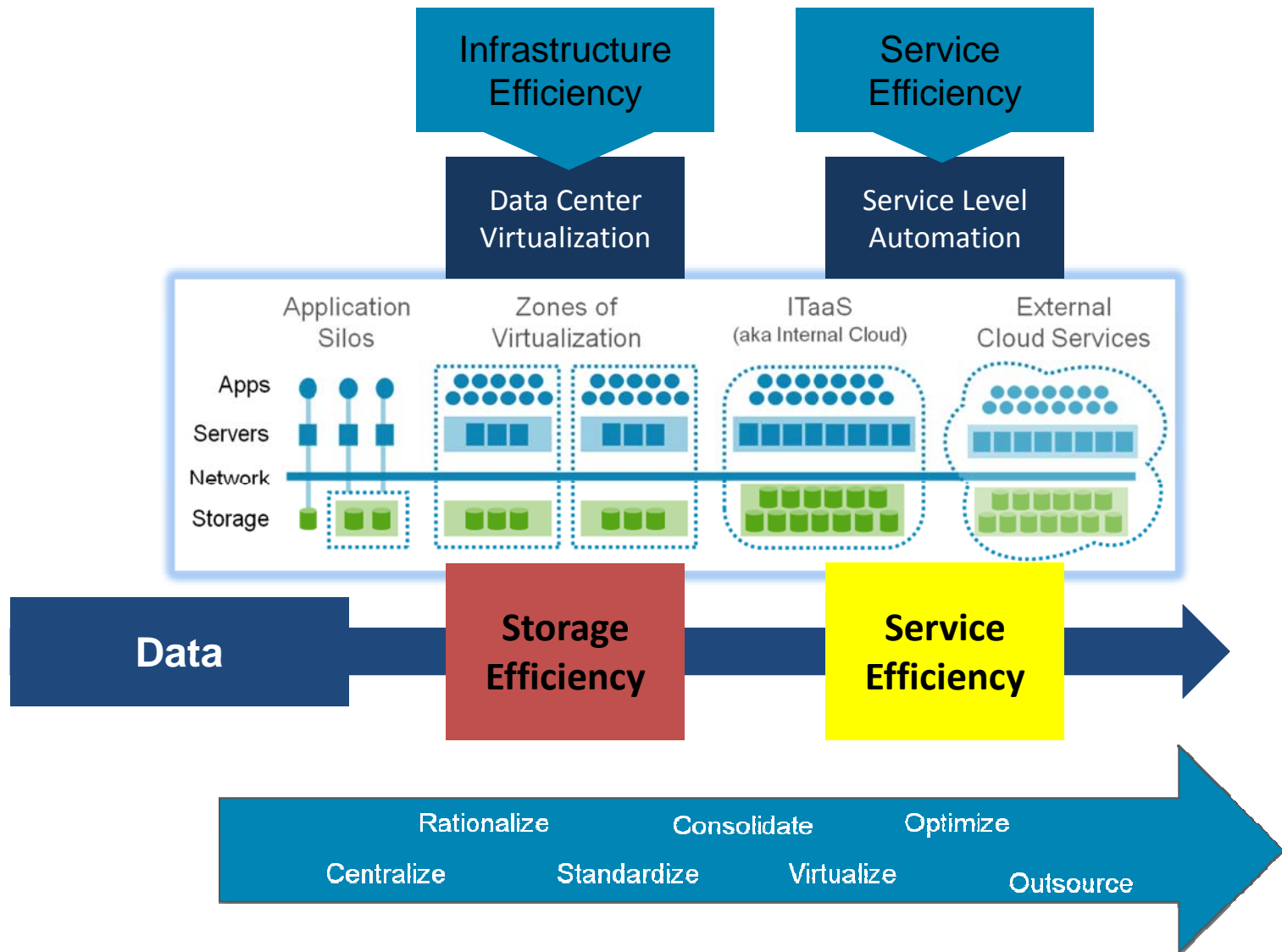
## Shared Infrastructure



- Build a great storage box
- Application integration
- Workflow management

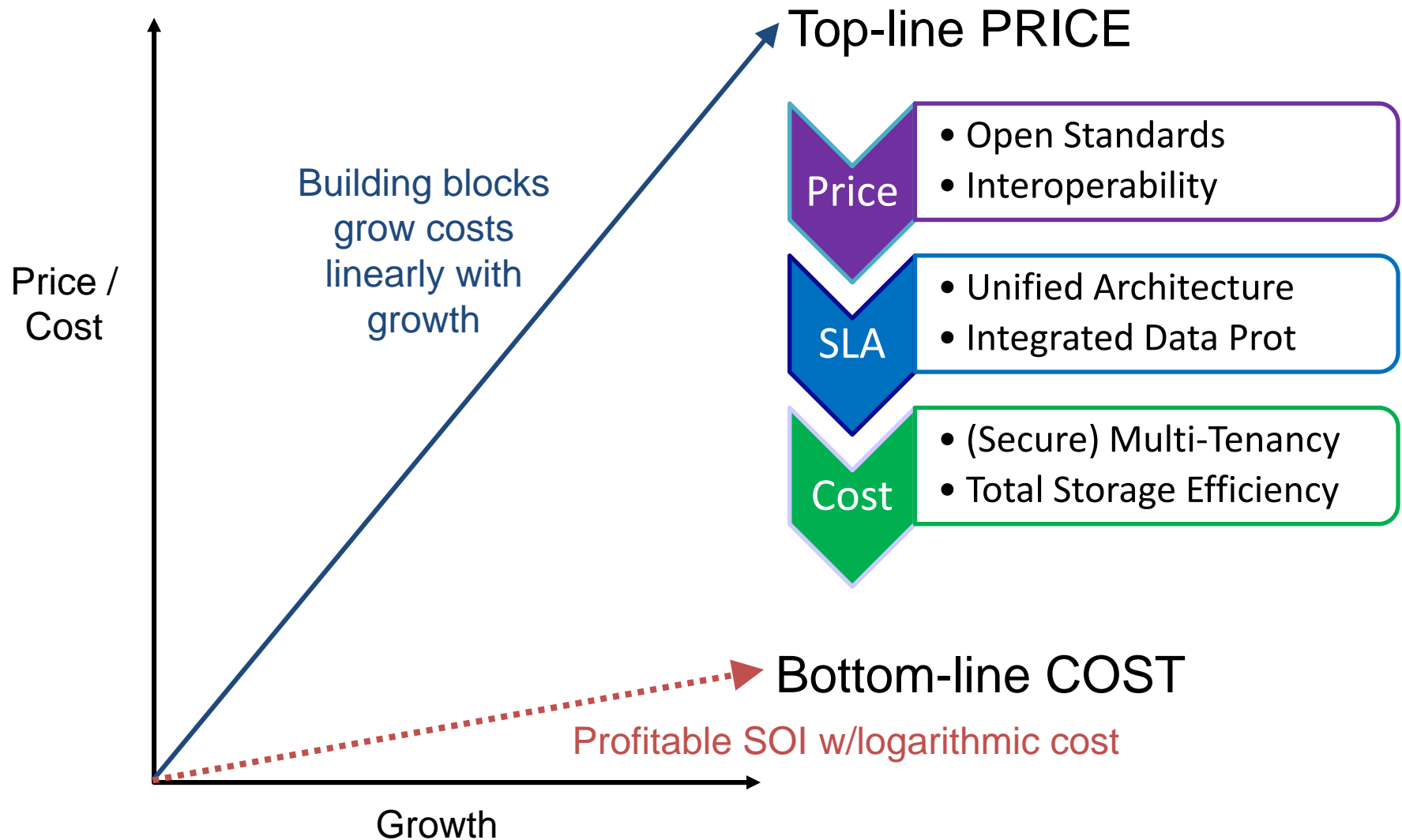
- Build a scalable storage cluster
- Unify management view
- Build capabilities for multi-tenancy
- Integrate with data center orchestrators

# Infrastructure Transformation

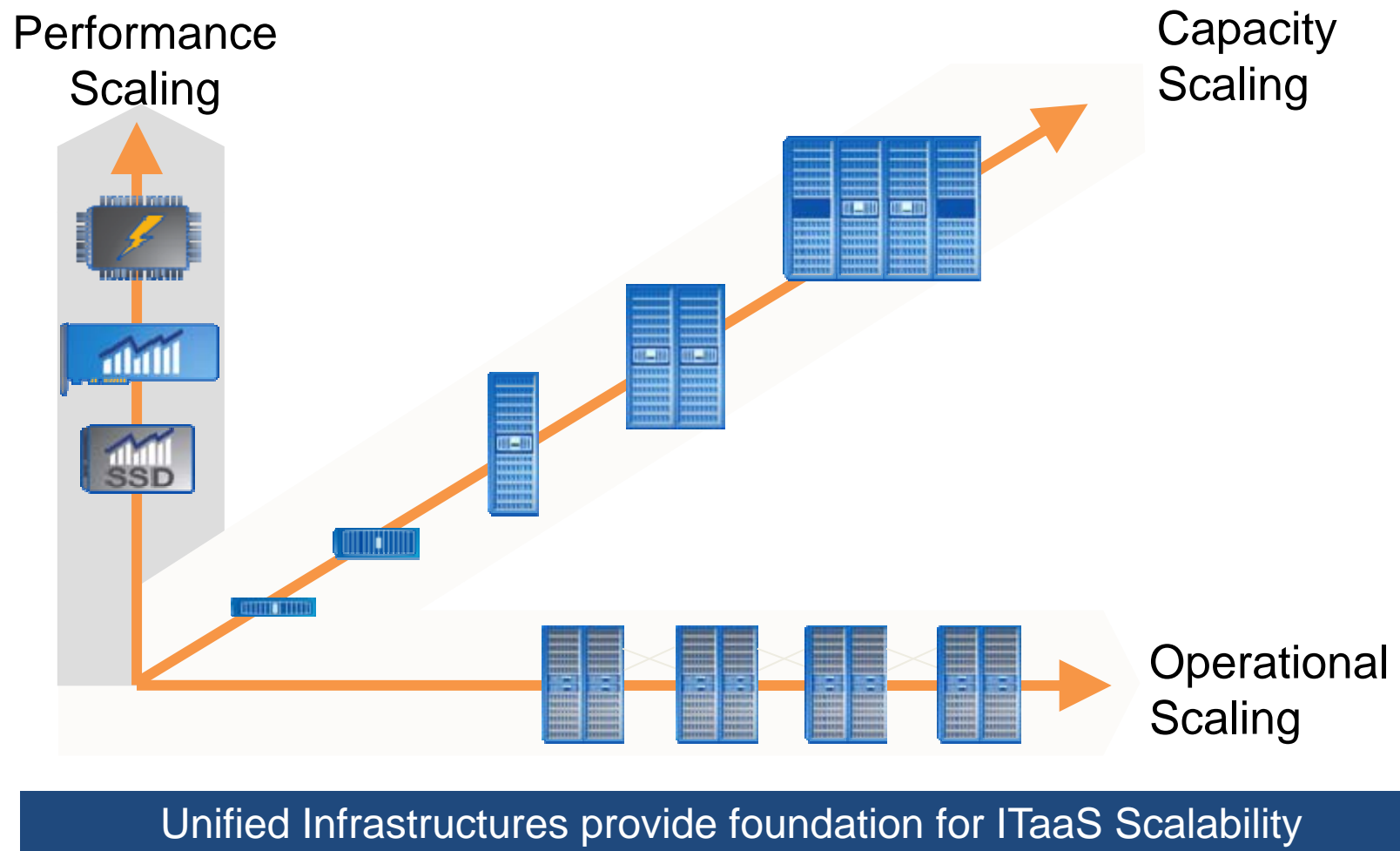




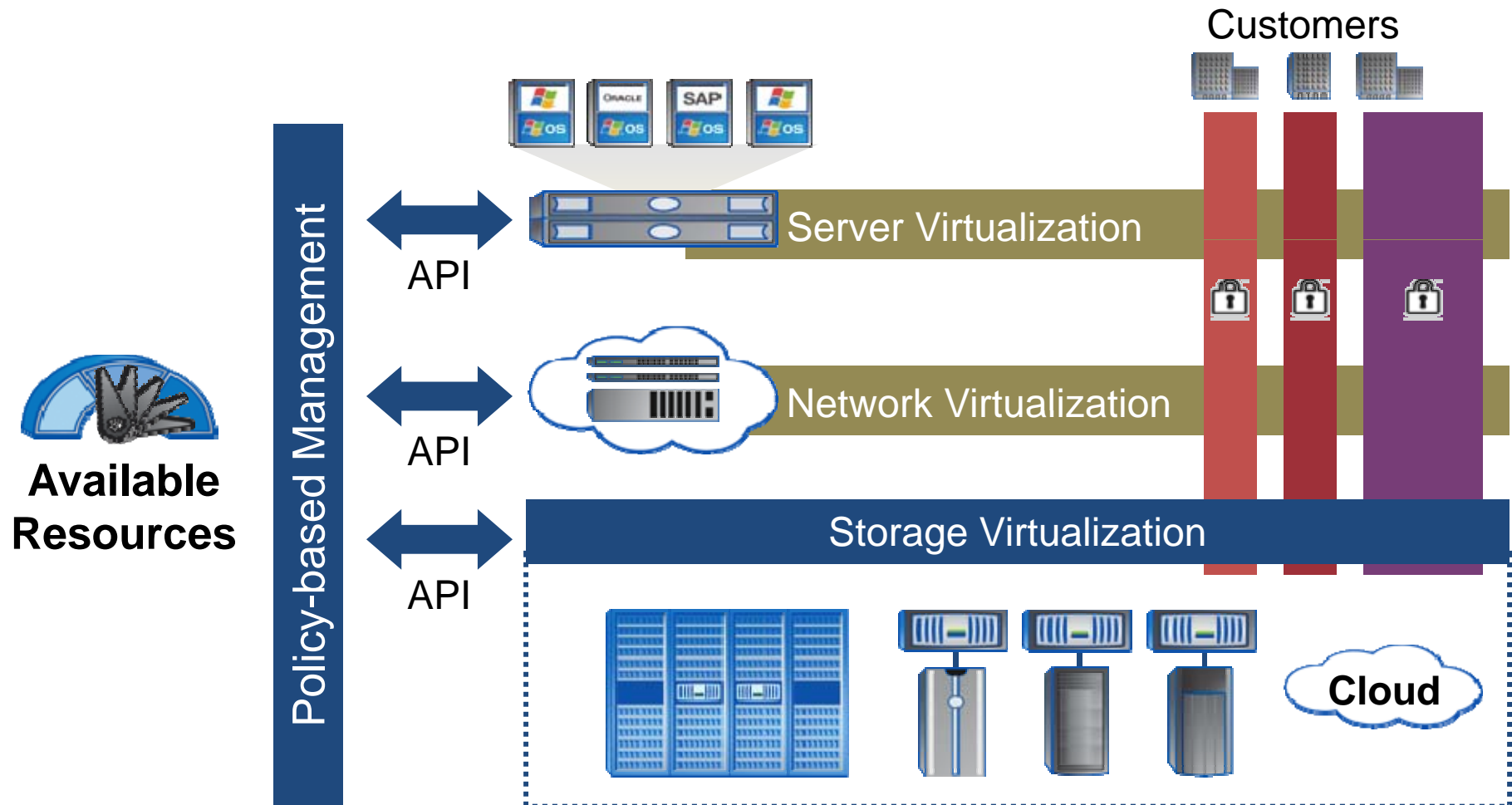
# SOI – Economies of Cloud Scale



# Cloud Scaling: Required on Three Dimensions

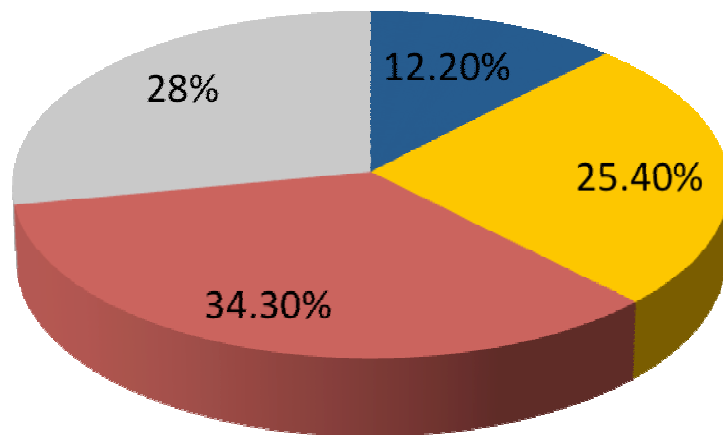


# Cloud requires Programmable Infrastructure

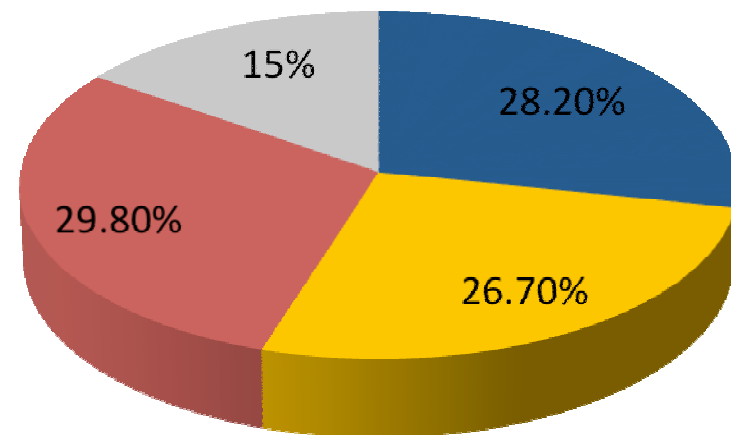


By 2013, more than 50% of the storage market is expected to be files and objects

**2010 Storage consumption**  
**100% = \$27.2B**



**2013 Storage consumption**  
**100% = \$27.2B**



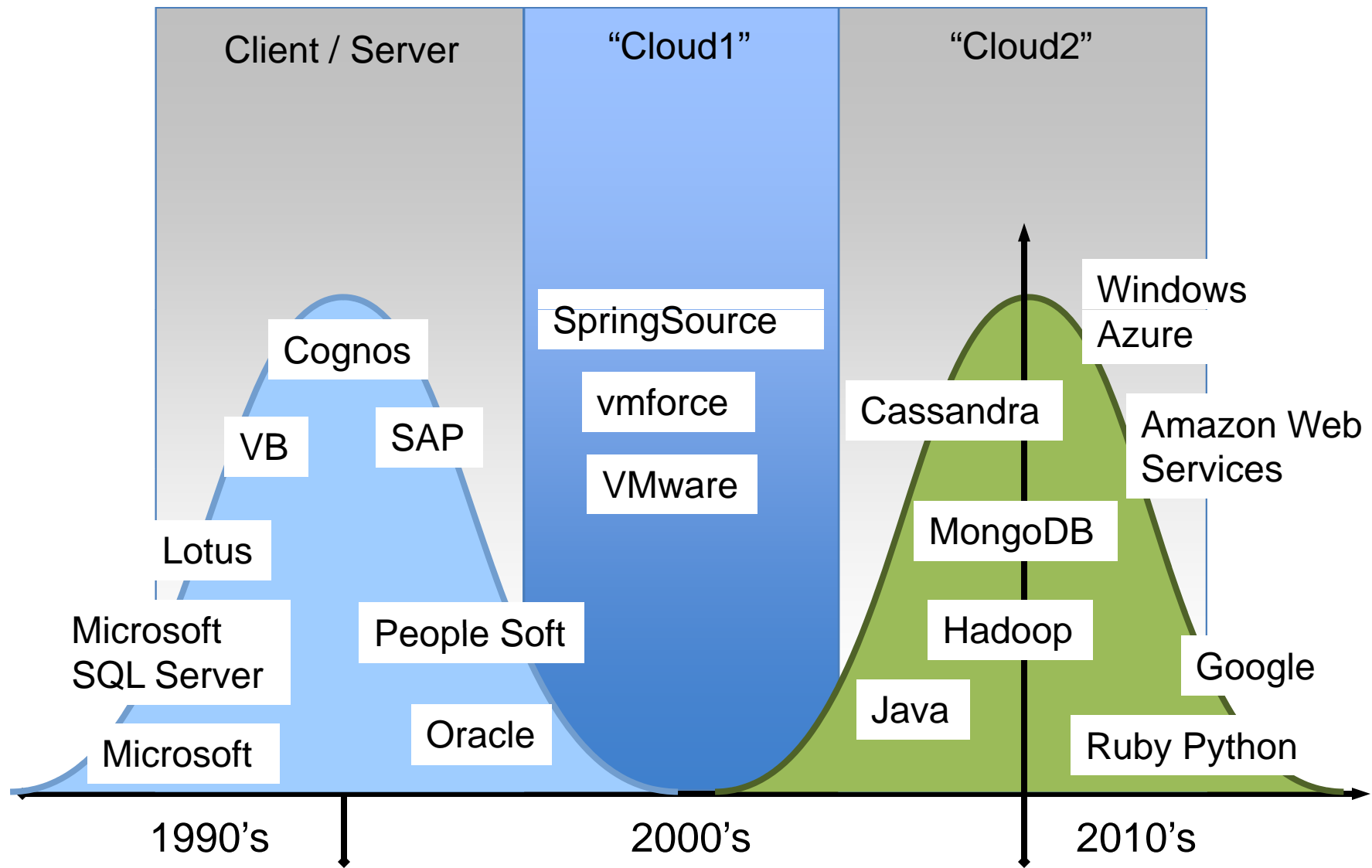
- Content depots (mainly objects and files)
- Traditional unstructured (mainly objects and files)
- Traditional structured (mainly blocks)
- Traditional replicated (all three data types)

# 5 Influences on IT for 2011-2015

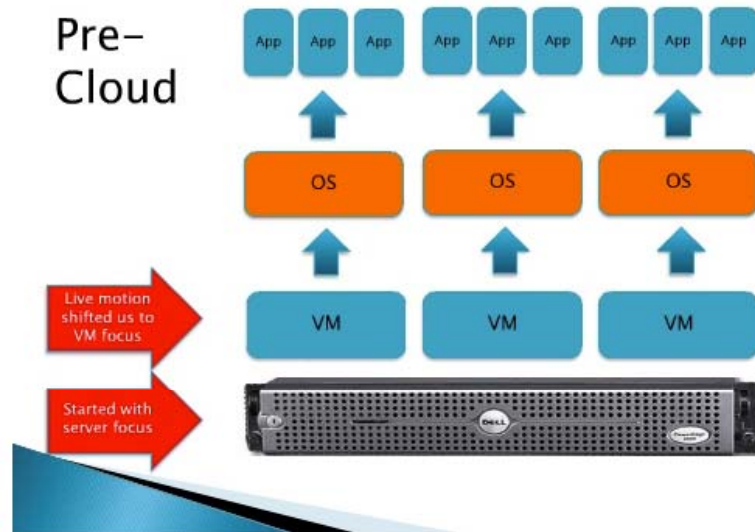


<http://blog.softwareinsider.org/2010/10/04/mondays-musings-how-the-five-consumer-tech-macro-pillars-influence-enterprise-software-innovation/>

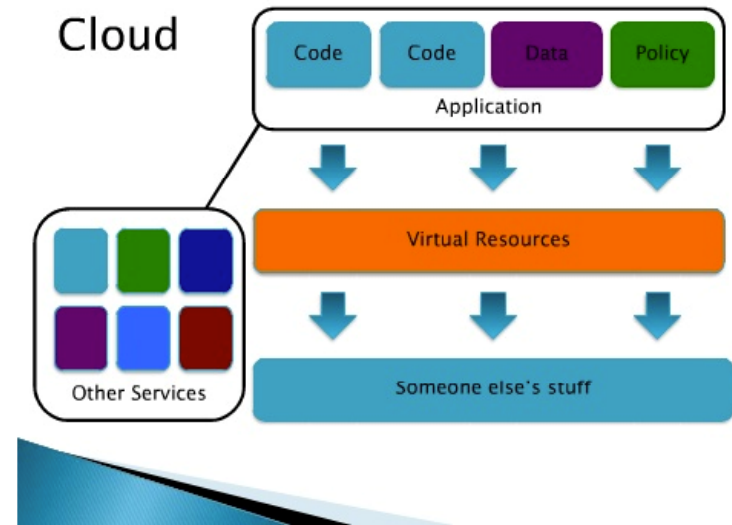
# Waves of change in IT Apps



# Big Storage = Big Content + Big Data



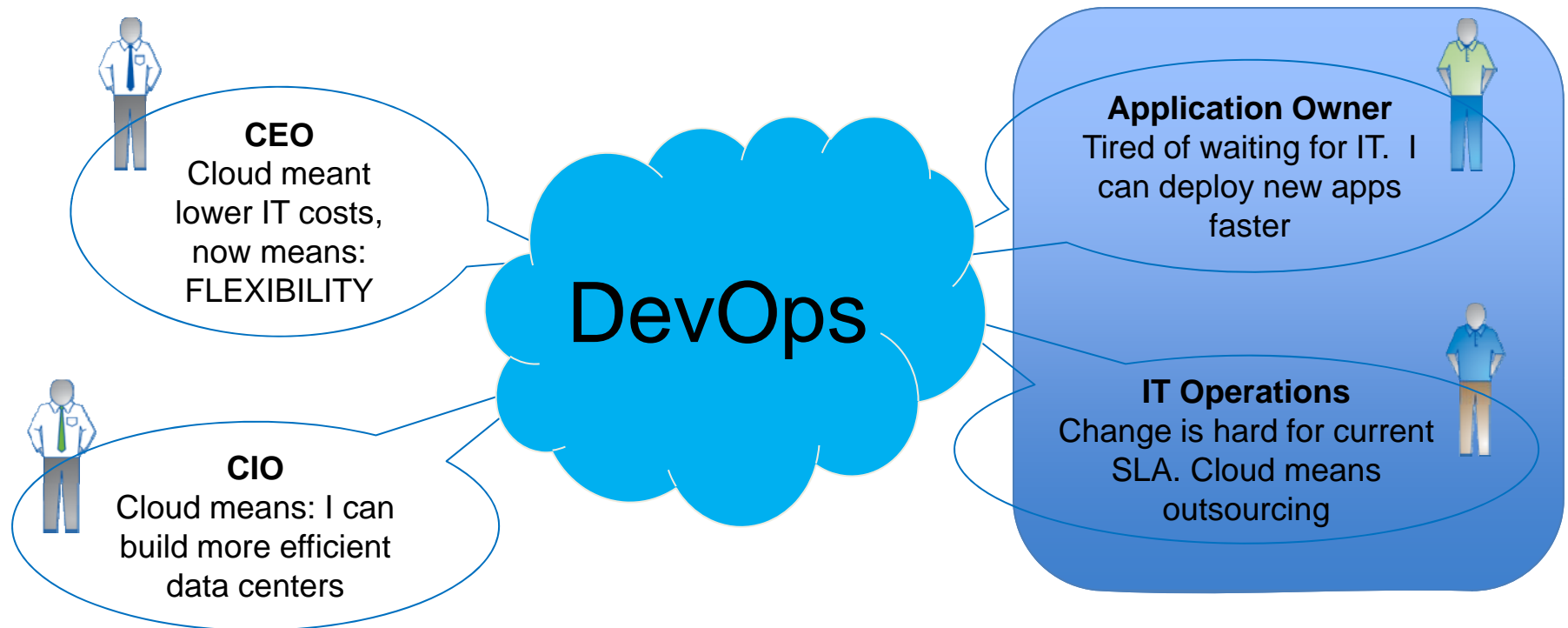
A server-centric view of operations  
(Credit: James Urquhart)



An applications-centric view of operations  
(Credit: James Urquhart)

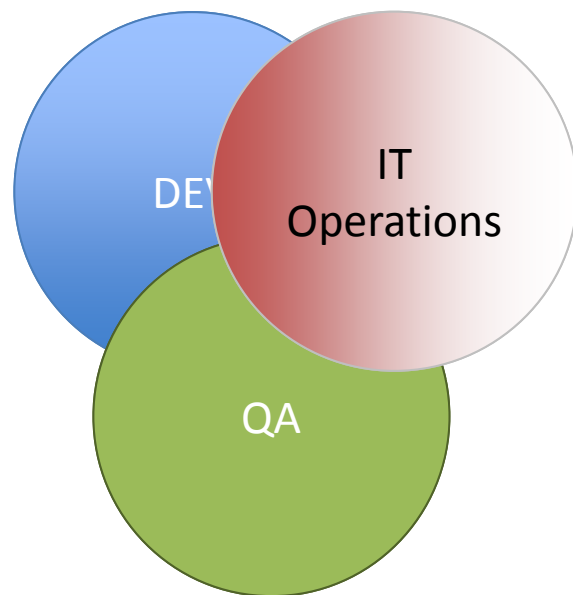
Capability	Networked Storage	Big Storage
Unified Architecture	Yes	Yes
Storage Efficiency	Capacity, Performance	Bandwidth, Density
Focus	Shared IT, ITaaS	Big Content, Big Data
Scale	Up & Out	Content & Data Volume
Multi-Tenancy & Tiering	Storage-based	App(Host)-based
Optimizations	Response Time	Bandwidth
Verticals	All	All
Organizational Target	IT Operations	Prod / Svc Development

# Evolution of Cloud1 → Cloud2





# DevOps Spheres of Influence



Full Application LifeCycle Perspective	
Software Development	<ul style="list-style-type: none"><li>▪ Agile</li><li>▪ Scrum</li><li>▪ Auto-build</li><li>▪ Integrated Bug-tracking</li></ul>
IT Operations	<ul style="list-style-type: none"><li>▪ Configuration Management</li><li>▪ Version Control</li><li>▪ Security</li><li>▪ Backup / Recovery</li><li>▪ HA / DR</li></ul>
Quality Assurance	<ul style="list-style-type: none"><li>▪ Instrumentation</li><li>▪ Analysis</li></ul>

# Development $\leftrightarrow$ Operations Integration



Configuration Management &  
Version Control for  
BOTH Apps & Infrastructure



Data-oriented App  
Architecture &  
Infrastructure-Design

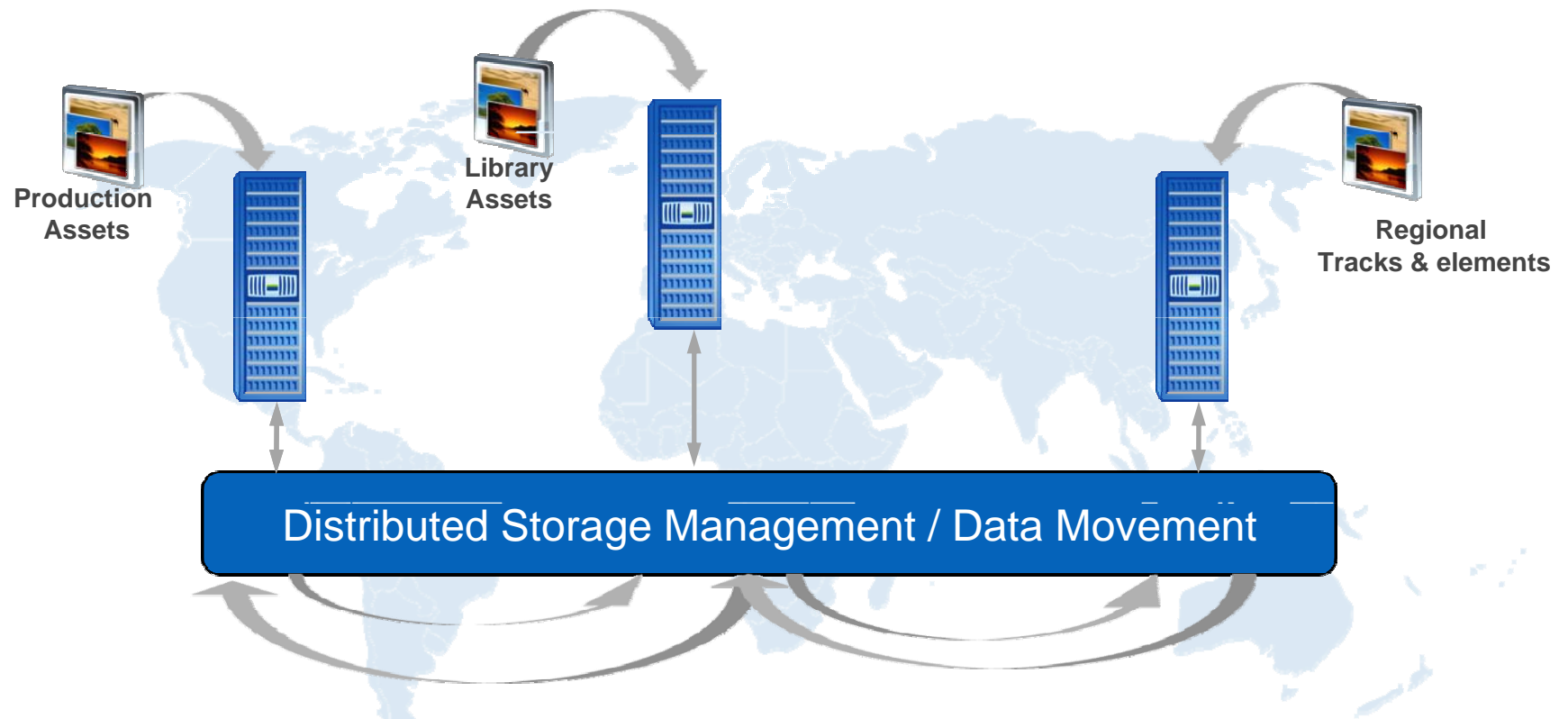


Integrated App &  
Infrastructure Security

Design & Operate at Scale



# Cloud Storage Global Architecture, Local Governance



- Meta-data driven data management places content at the most logical locations while remaining visible, accessible, secured and protected for all
- Intrinsically provides disaster recovery for all sites
- No silos, offline backups, data wranglers or explicit media movement required.

# SNIA CDMI / CSI Value Proposition



- Standards Development, Implementation, & adoption
  - Making Cloud Storage (a) Easier to understand, (b) Simpler to implement, & (c) Easier to manage

## Standards Development

- CDMI (Cloud Data Management Interface) v 1.01

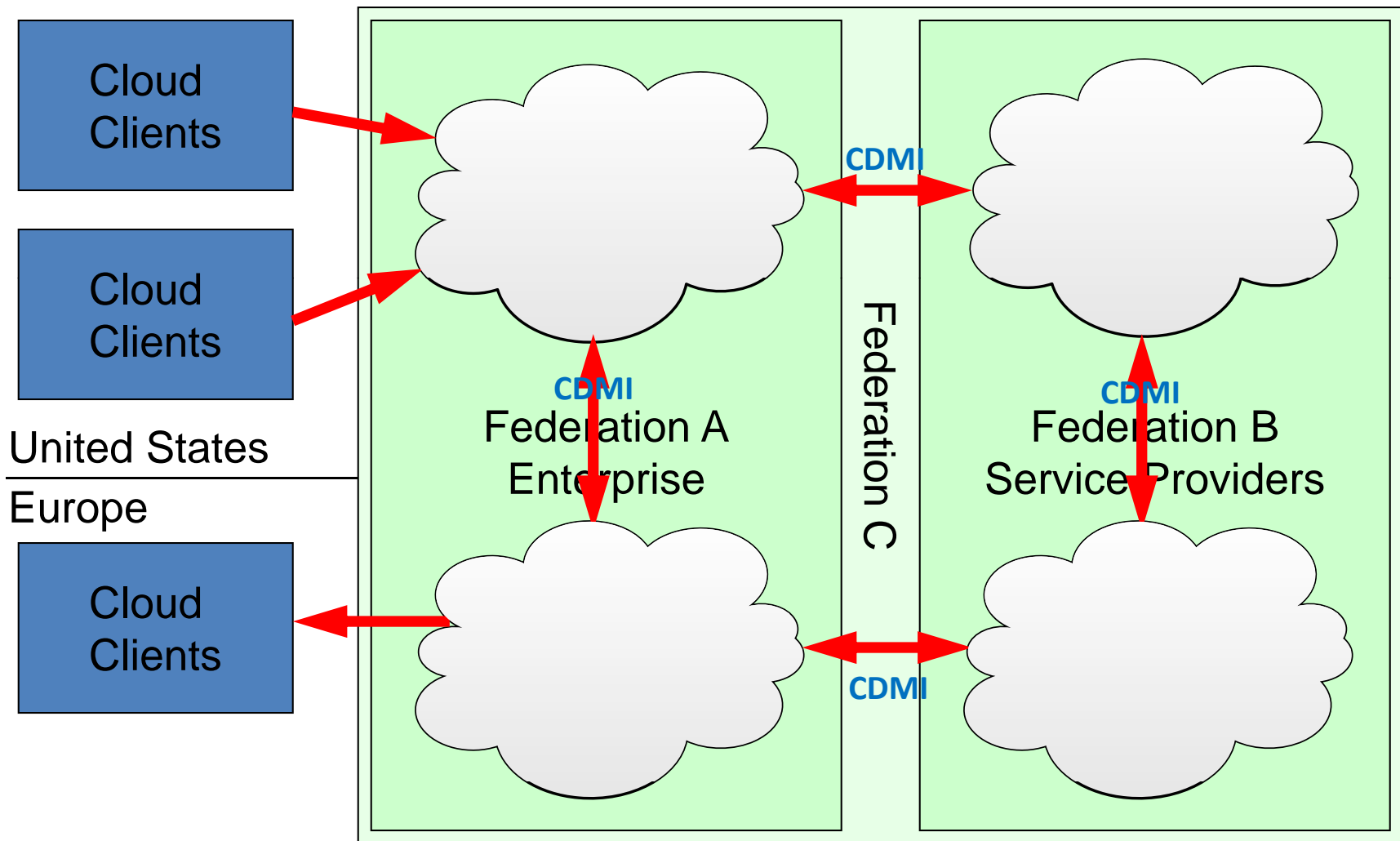
## Implementation

- CDMI PlugFest
- Cloud Reference Implementation (CRI)
- Developer's Guide
- Joint CDMI/OCCI Demo at OGF29

## Adoption

- Storage Multi-tenancy – White Paper
- Security white paper
- Upcoming white papers

# Enabling Hybrid Clouds



# SNIA CSI Members

Cloud Storage  
**SNIA**

actifio

Asigra.

ca  
technologies

|||  
CISCO™

Cleversafe®

COREVAULT™  
Secure Online Backup & Recovery

deskone®

EMC²  
where information lives®

HITACHI  
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mezeo  
The Cloud Storage Platform

NetApp™

Novell.

ORACLE®

SCALITY

SEPATON®

SPECTRA  
Changing The World of Storage

SwiftTest

terremark®

xiotech®



**Questions?**



# Resources

- Understanding the cloud and 'devops' Blog
  - [Cnet - Wisdom of Clouds](#) (James Urquhart / Cisco)
- Cloud Data Management Interface (CDMI)
  - <http://cdmi.sniacloud.com/>
- SNIA Cloud Storage Initiative (CSI)
  - <http://www.snia.org/cloud>





# **Driving Innovation Through the Information Infrastructure**

**SPRING 2011**