



Architecting for Data Center Agility

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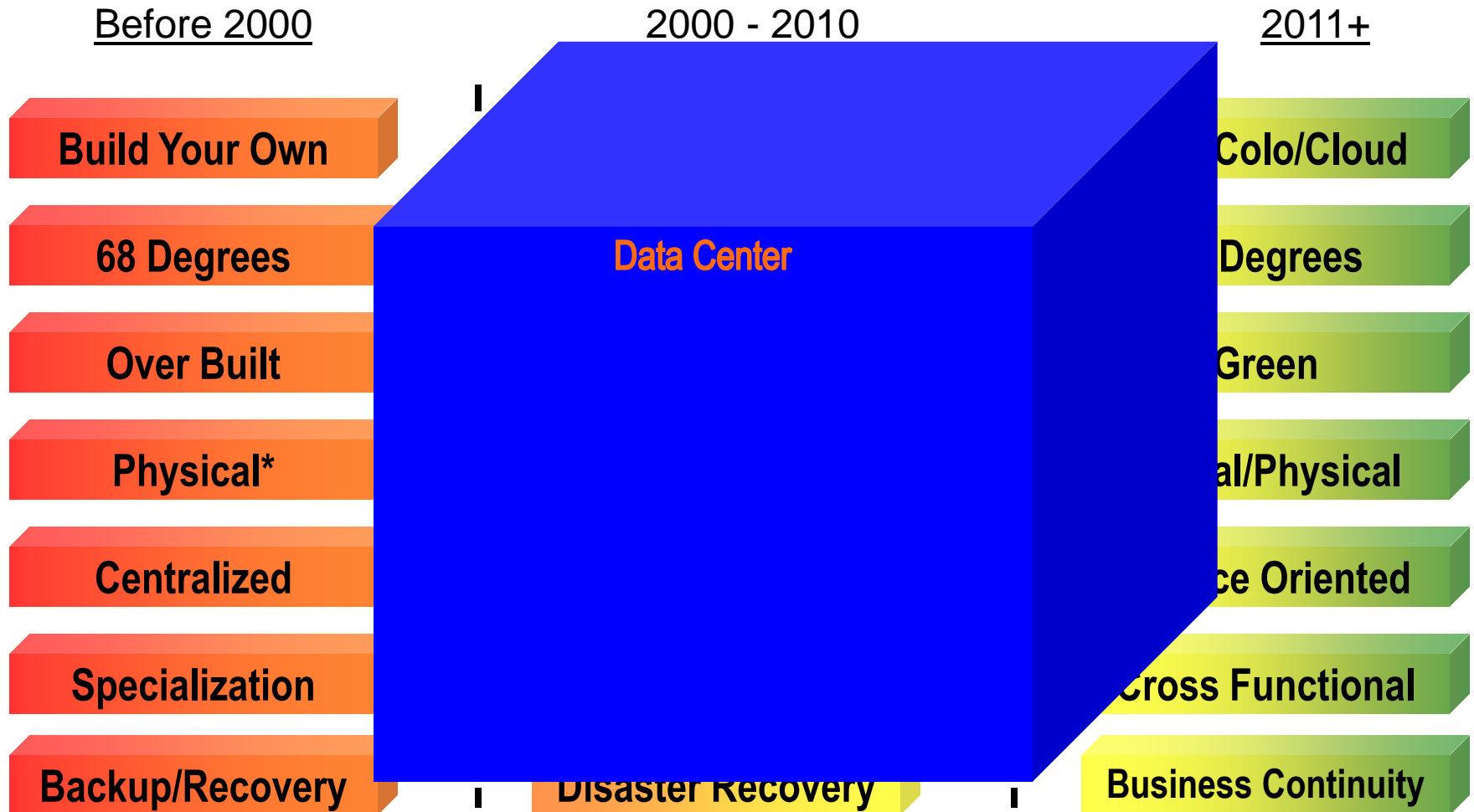
- **About Nemertes**
- **Data Center Agility?**
- **Adoption Trends and Data Center Dynamics**
- **Technology Trends and Roadmap**
- **Case Study**
- **Recommendations**

- Quantifies the business impact of emerging technologies
- Conducts in-depth interviews with IT professionals
- Advises businesses on critical issues such as:
 - Unified Communications
 - Social Computing
 - Data Centers & Cloud Computing
 - Security
 - Next-generation WANs
- Cost models, RFPs, Architectures, Strategies



Data Center Agility?

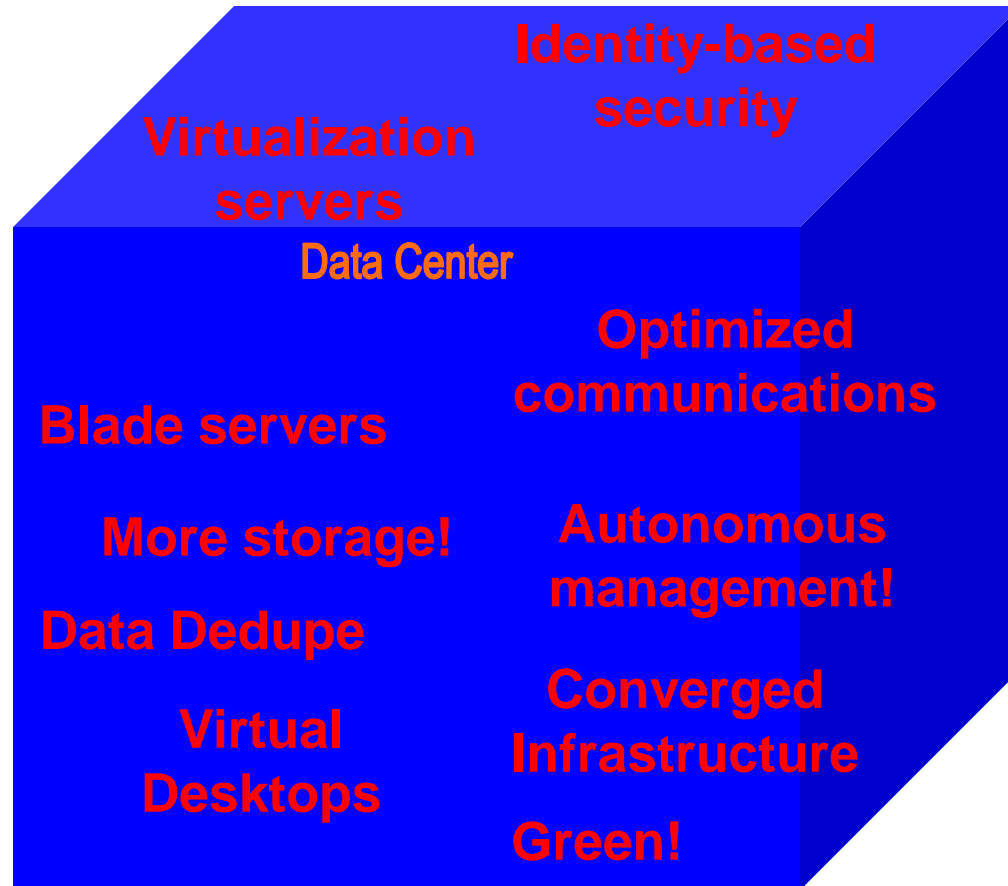
Agile Data Center



Agile Data Center

Getting through
the box faster

Request →

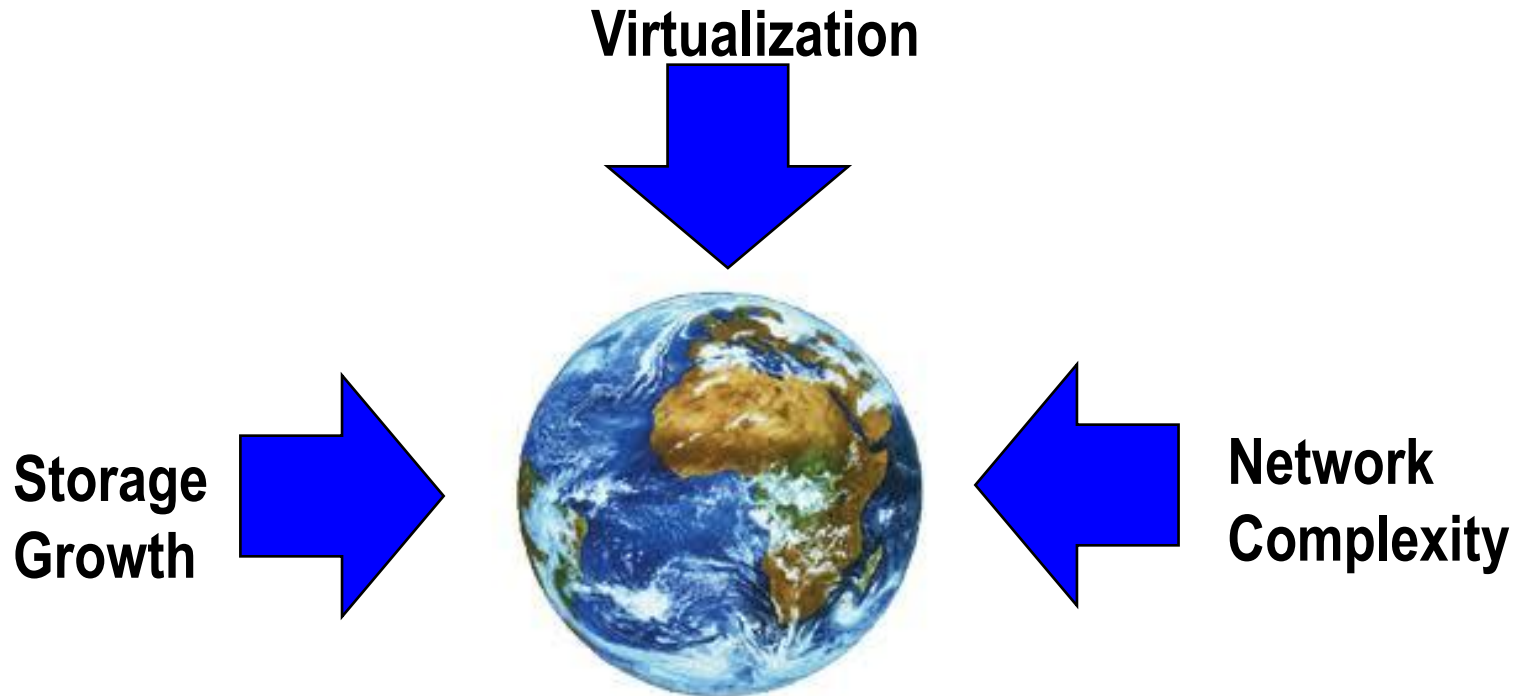


→ Fulfillment

Adoption Trends

- **Virtualization is transforming the data center**
 - Affecting every aspect of operations: Server, services, facilities, power and storage management
- **Complexity is driving new network architectures**
 - Storage and data center networking evolving slowly
- **Storage growing unabated**
- **The march to the cloud is beginning**
 - Private cloud starting
 - Public cloud starting, slowly

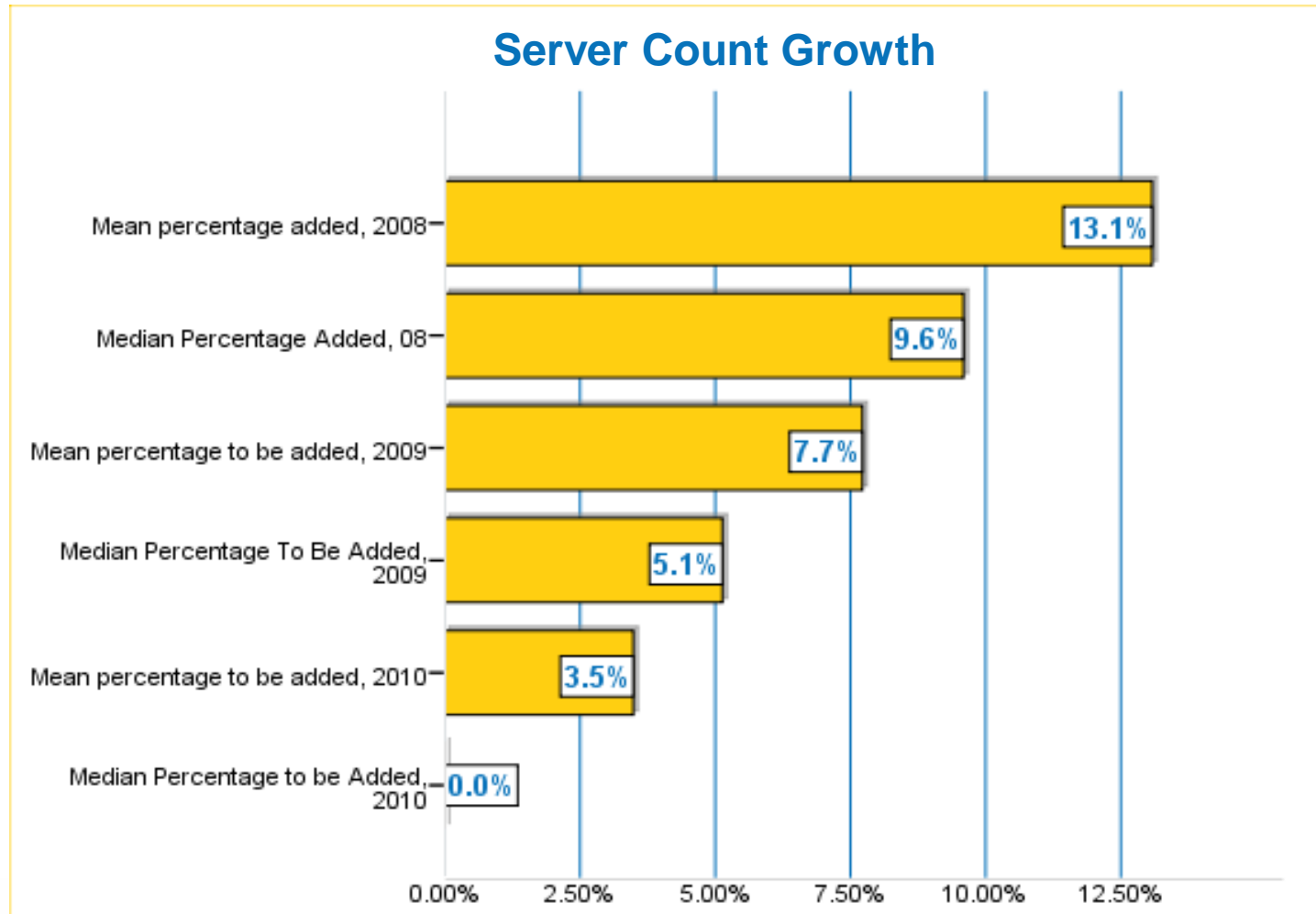




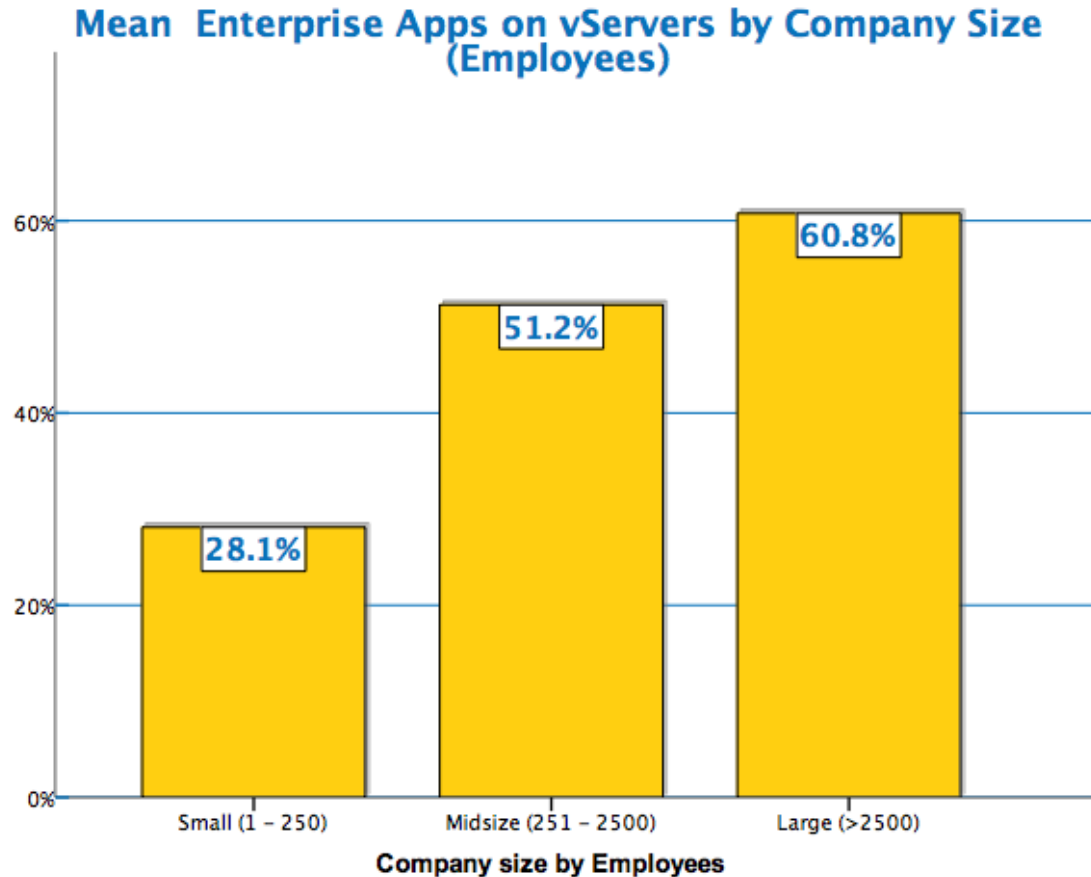
Opposing Forces



Growth in Servers Slowing

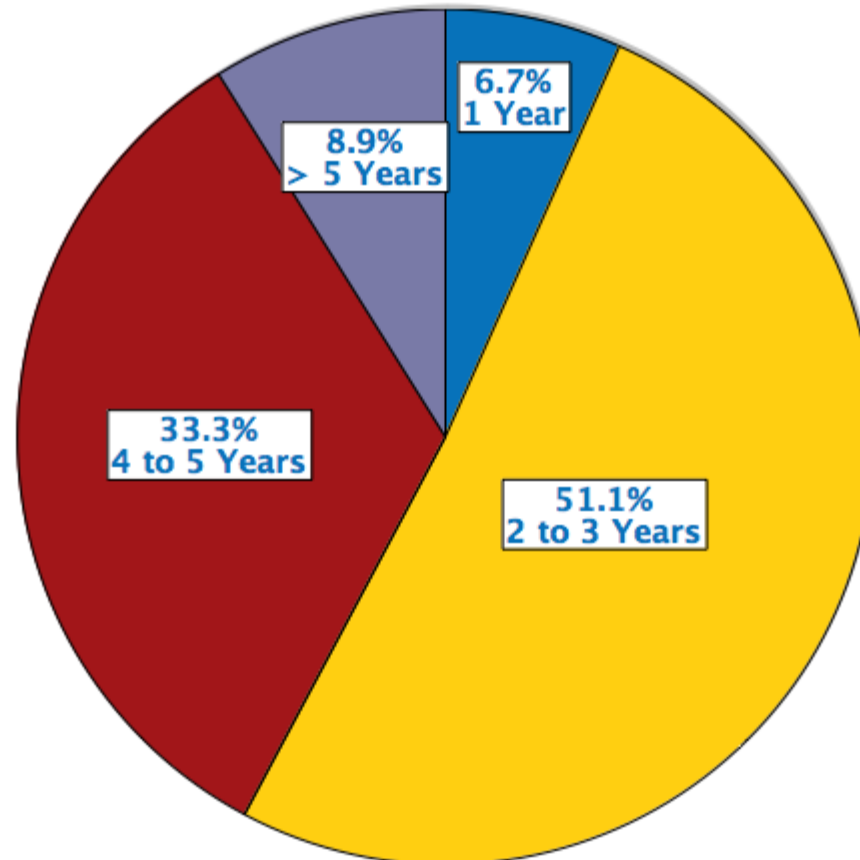


Enterprise Apps on vServers



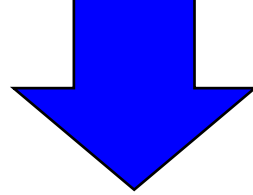
Server Virtualization Rollout

Estimated Time for Server Virtualization Rollout



Data Center Forces: Storage Growth

Virtualization

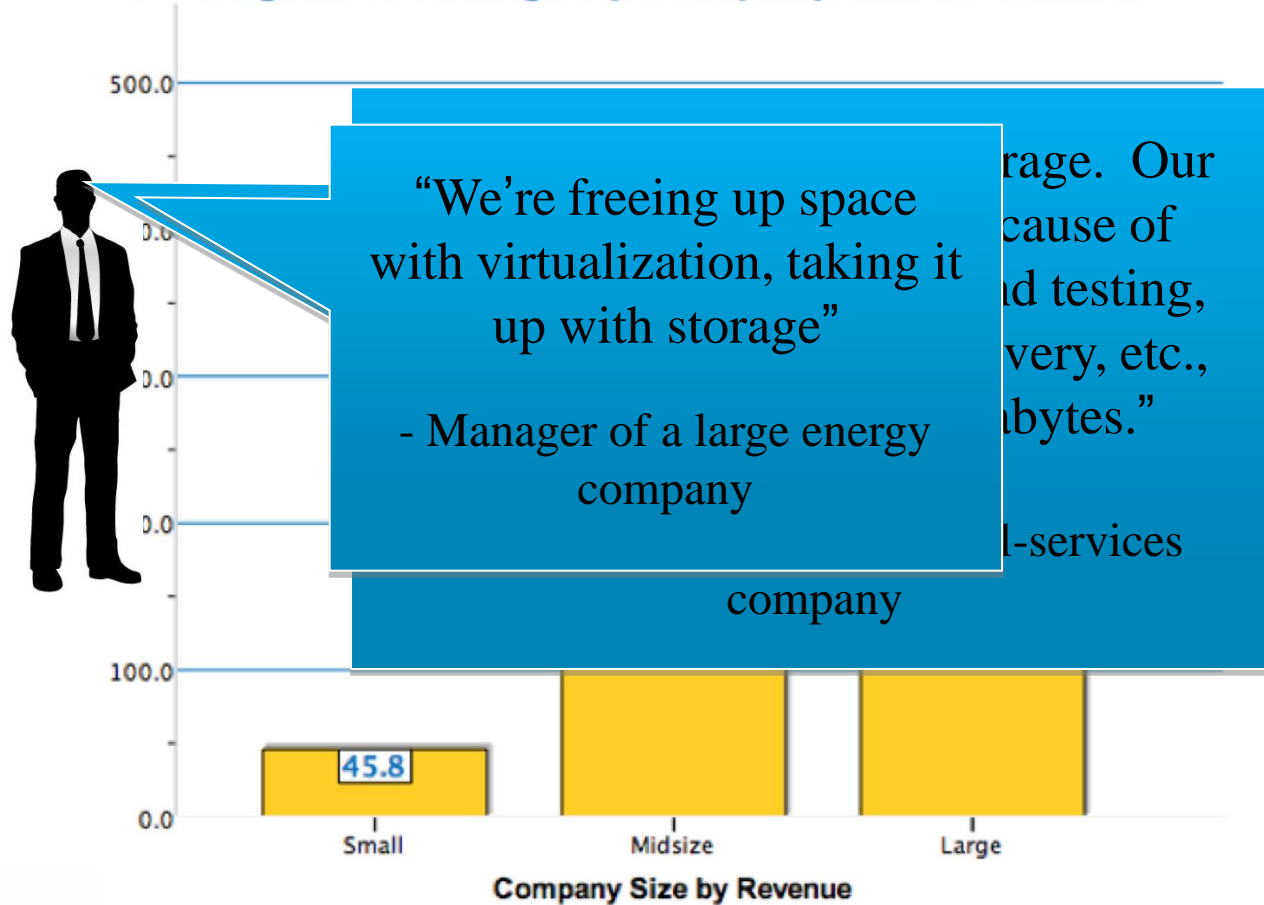


Storage
Growth



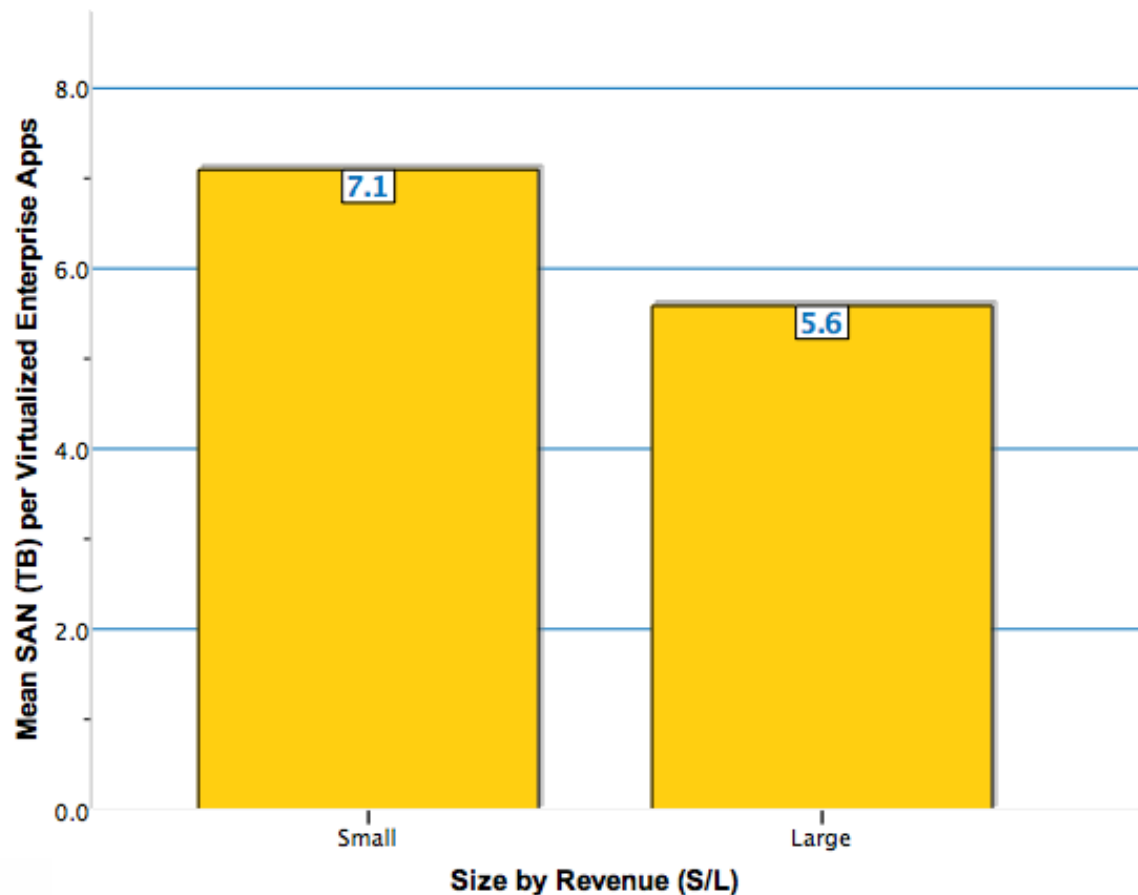
SAN by Company Size

Average SAN Storage by Company Size (Revenue)

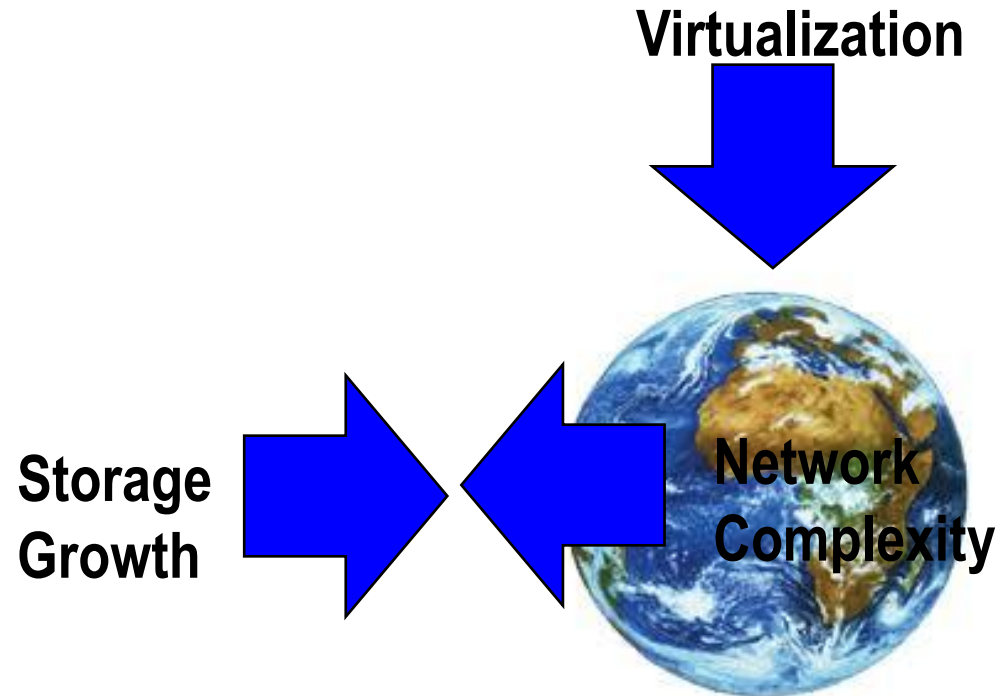


SAN per Virtualized Application

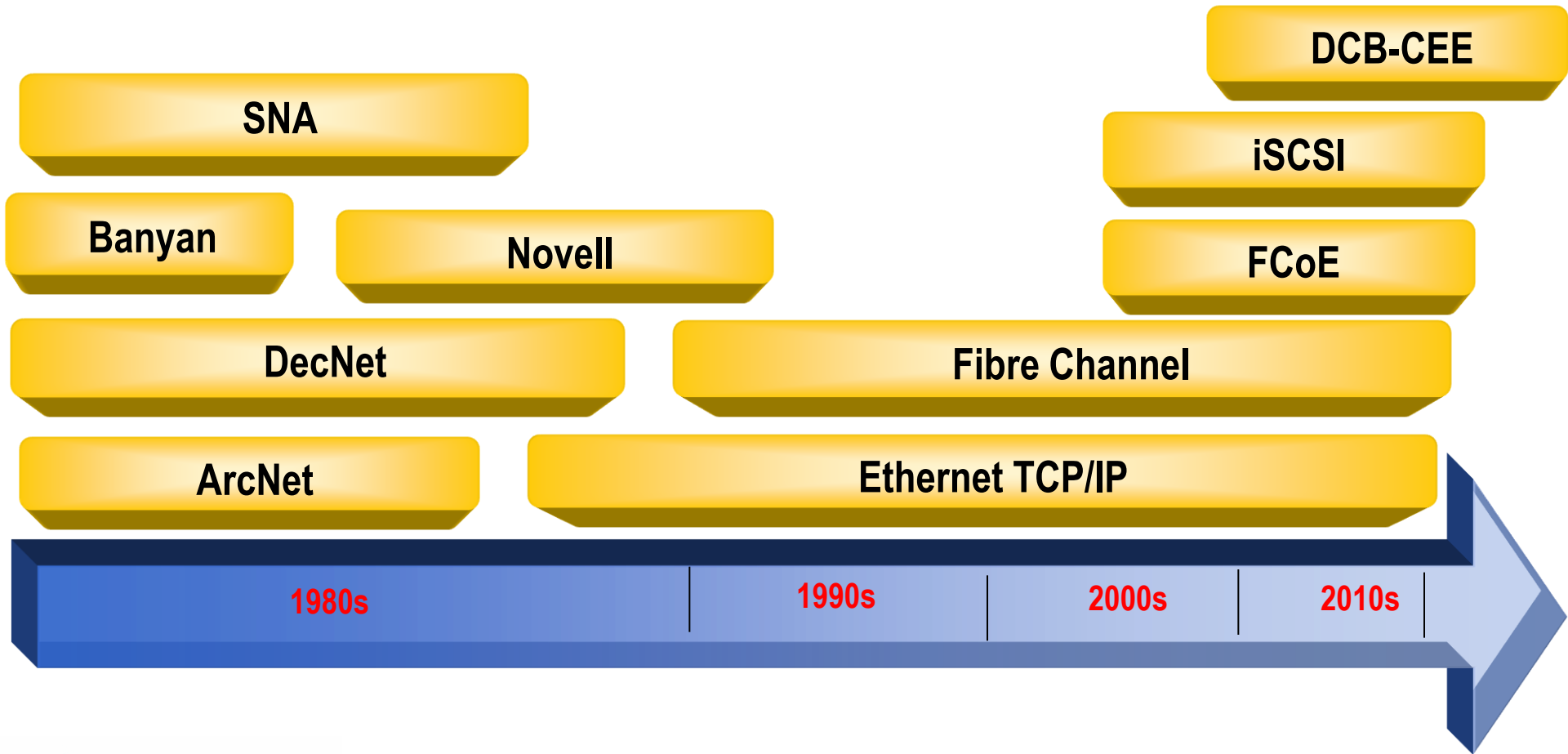
SAN per Virtualized Enterprise App by Company Size (Revenue)



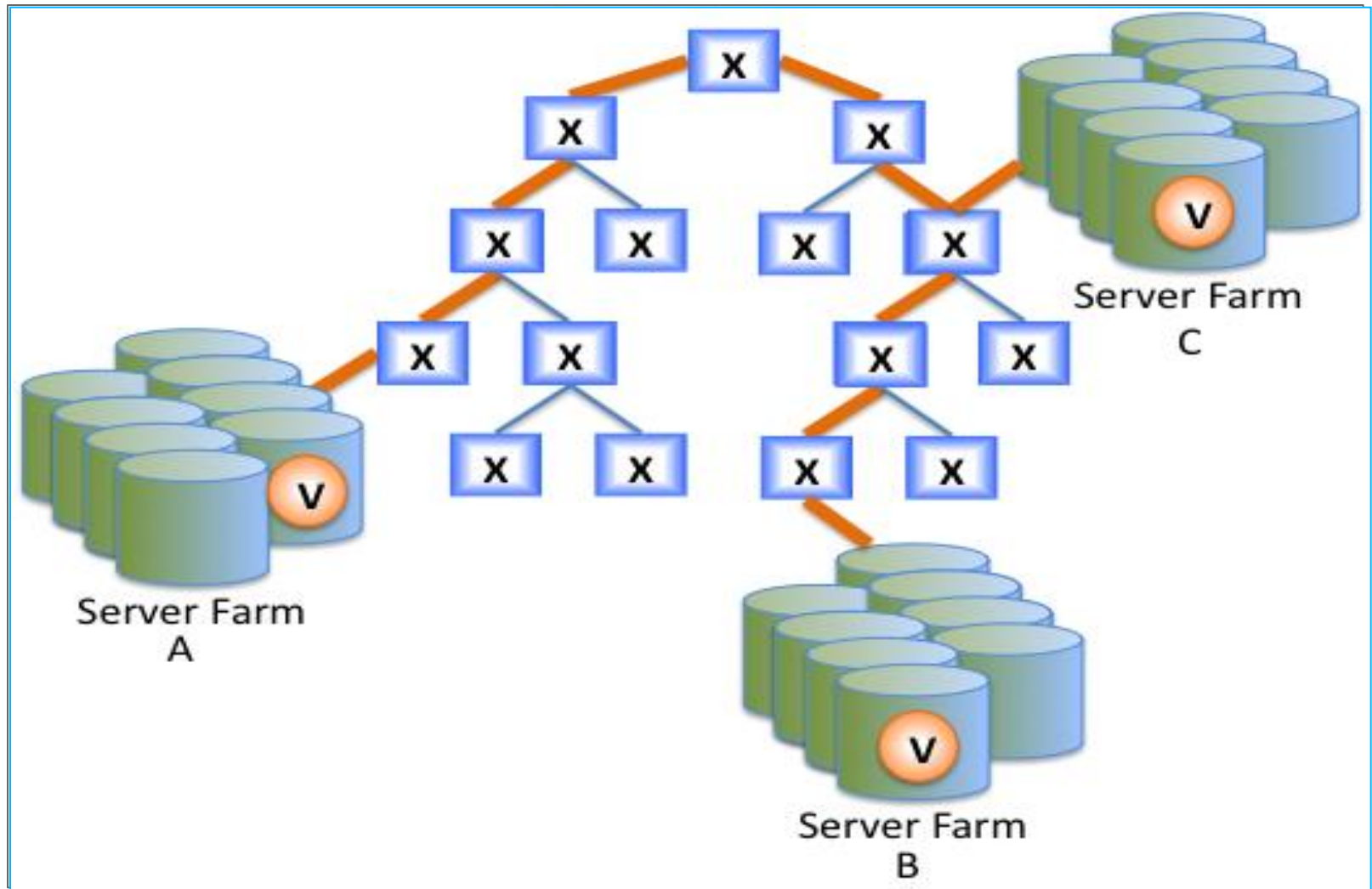
Data Center Forces: Network Complexity



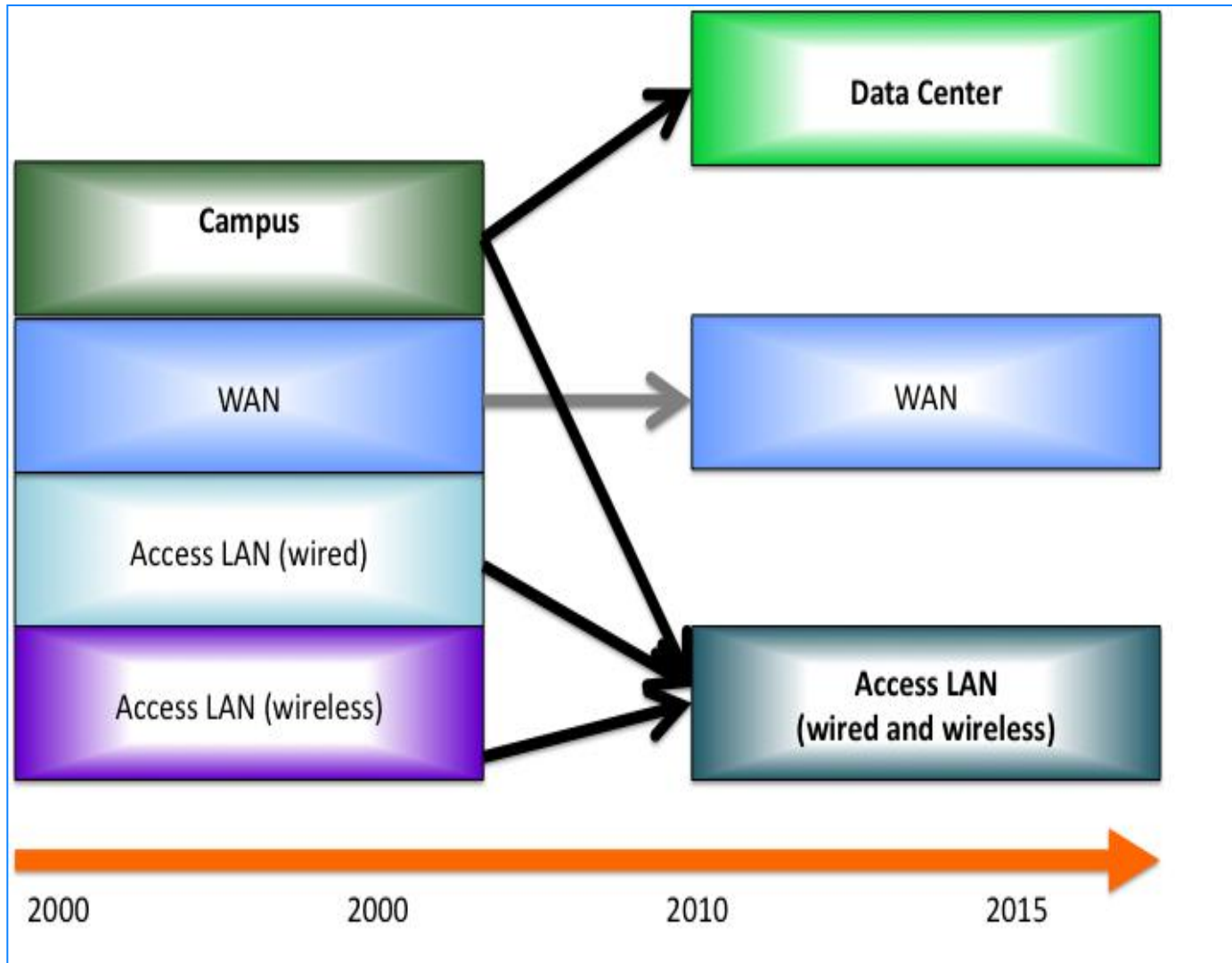
Networking: Back to the Future



Data Center Complexity Driving Network Simplicity



New Network Topology



Technology Trends

Technology Outlook

Multicores

Autonomic facilities

Storage consolidation

Storage Enet

Network consolidation

10 Gig Enet

40 Gig Enet

2010

2011

2012

2013

2014+

Virtualization

In-row cooling

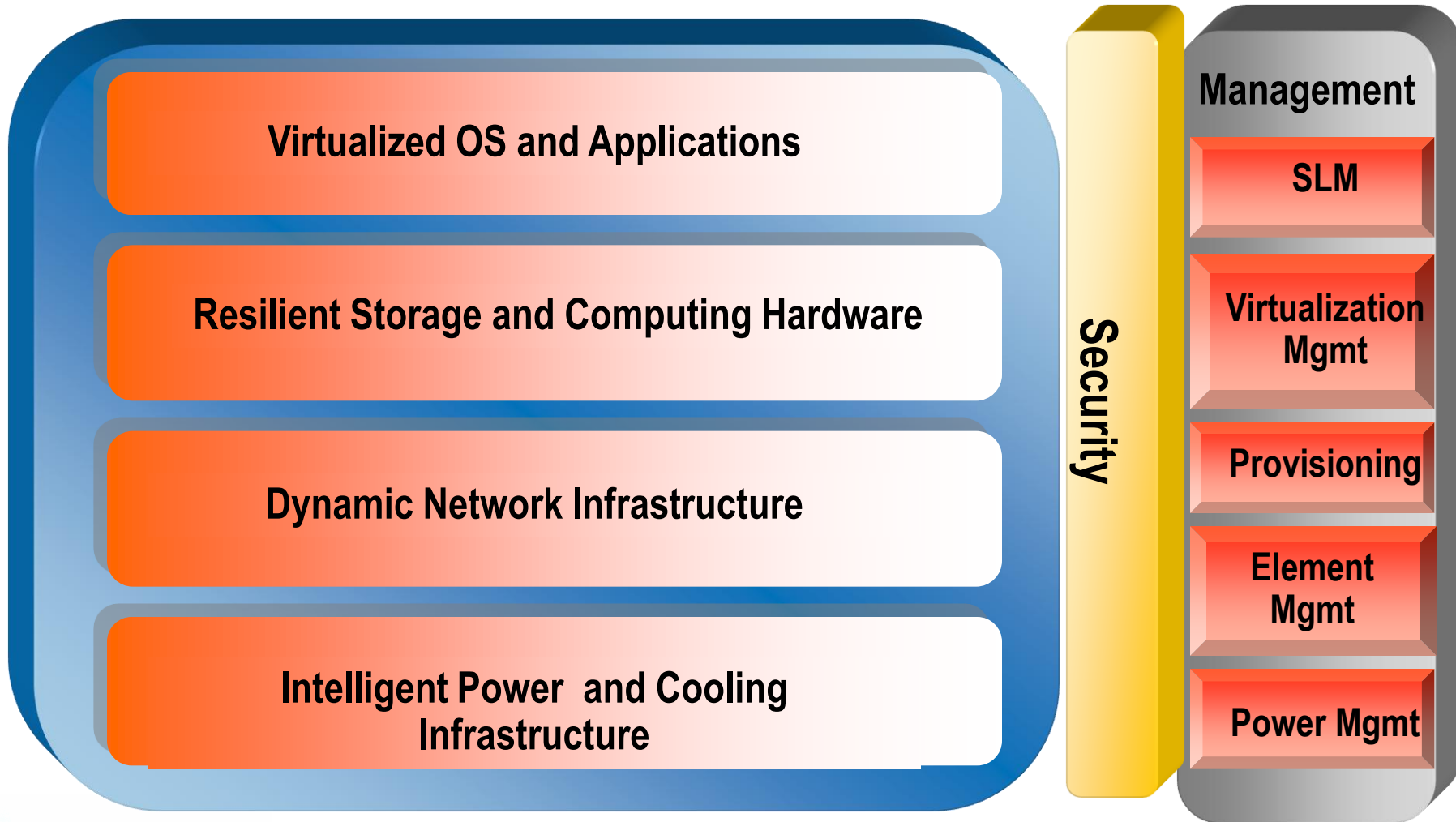
In-chassis cooling

Server pool consolidation

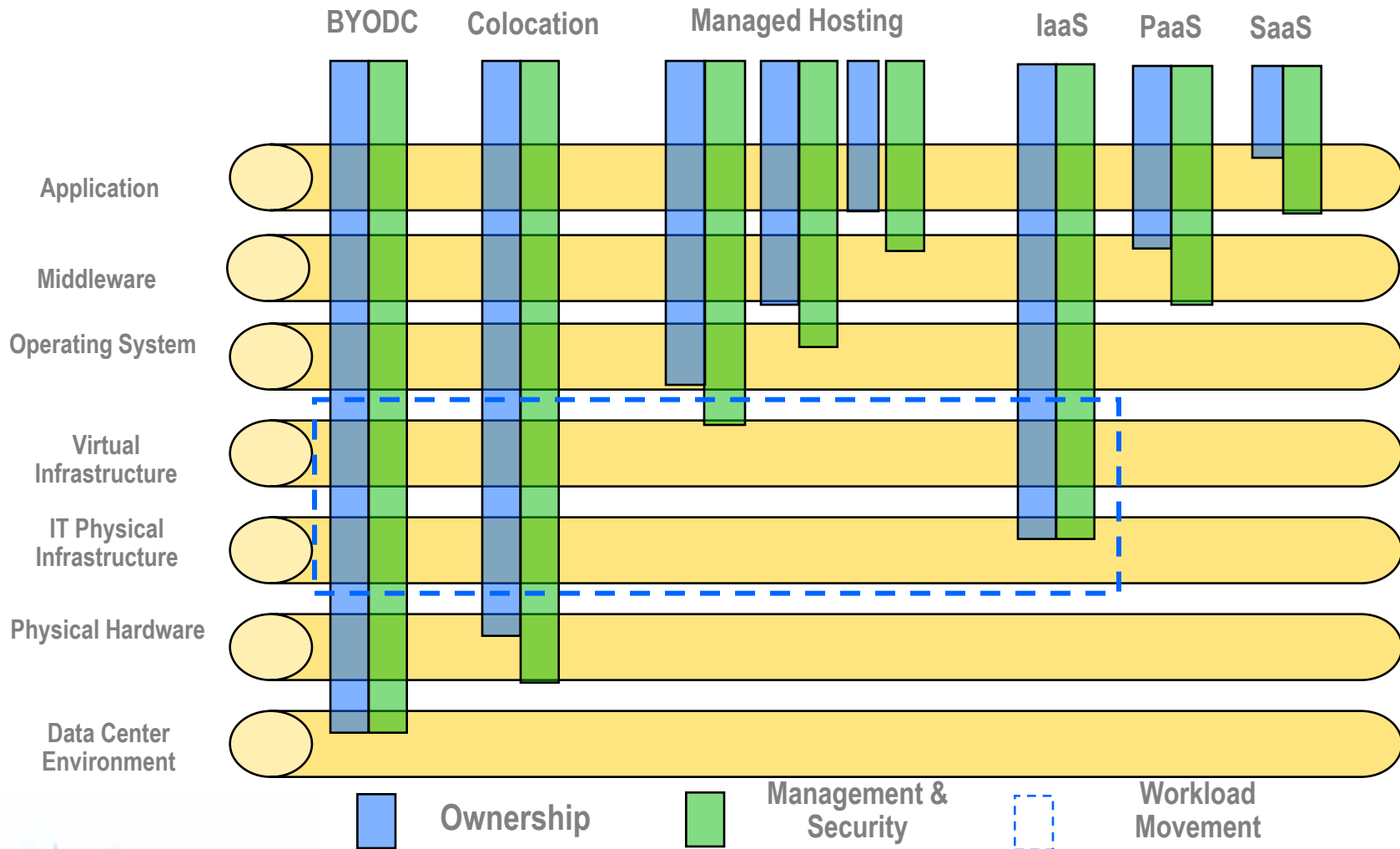
In-rack cooling

Power metering

Environmental sensors



The Outsourcing Spectrum



Data Center Outsourcing Adoption

	Leasing	Colocation	Managed Hosting	SaaS	Cloud (PaaS & IaaS)
2009	12%	29%	23%	42%	~ 2%
2010		35%		52%	9%
2011	Stay Tuned				

- Greatest data center success correlates to owning data center and outsourcing
- Security and compliance concerns hold back cloud adoption

Is Outsourcing the Answer?

Risk Averse
Latency Sensitive
Capital Available
Skills Available
Power/Space/HVAC Available
Location Sensitive
Redundancy Sufficient
Time Available



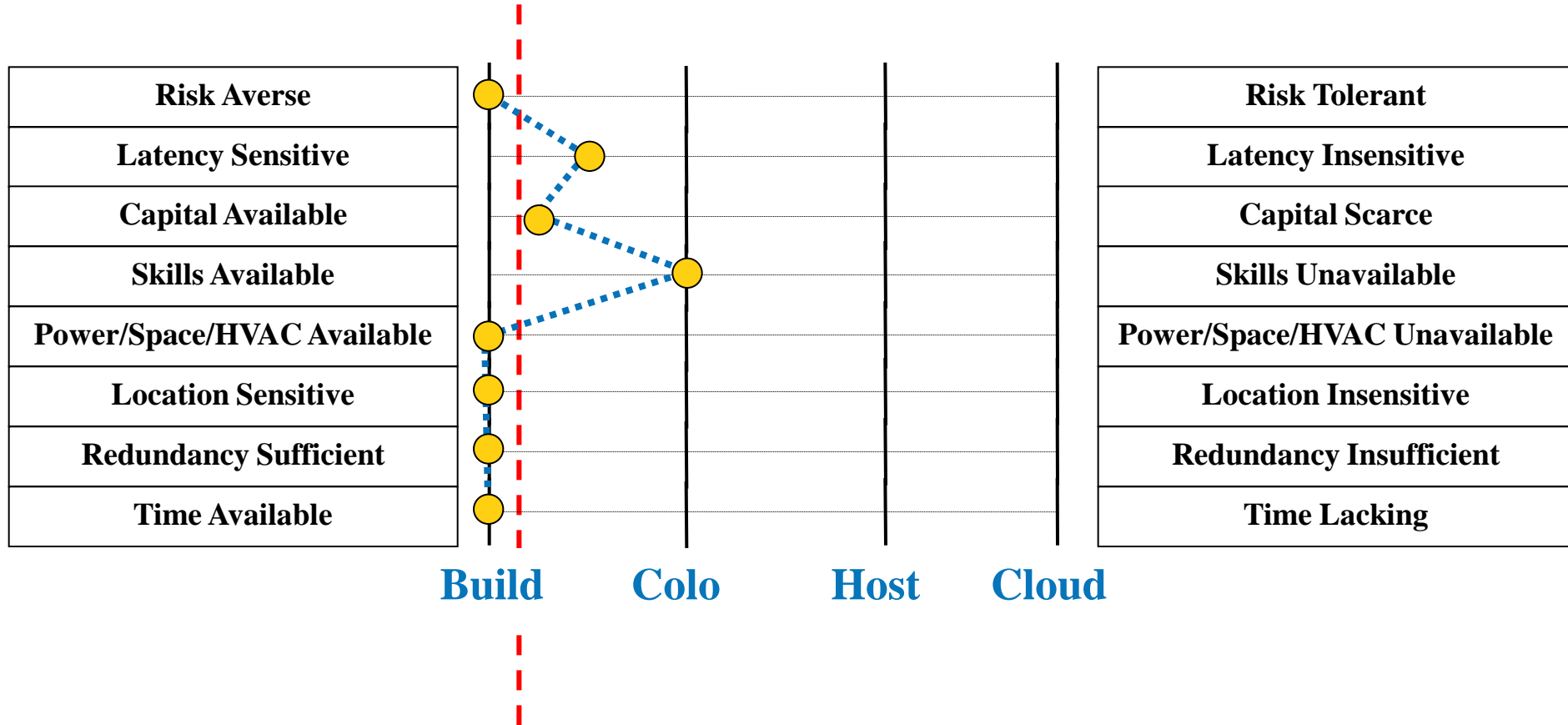
Risk Tolerant
Latency Insensitive
Capital Scarce
Skills Unavailable
Power/Space/HVAC Unavailable
Location Insensitive
Redundancy Insufficient
Time Lacking



“Best thing we ever did! It met all our needs: capacity, reliability, flexibility. It really set us up to take advantage of the technologies now available.” – Senior VP for IT

- **Global financial services company with 52 data centers globally and endemic power, space, cooling problems!**
- **So, built 3 new DCs(US, EMEA, APAC)**
- **Virtualized servers, centralized storage, used WAN optimization**
- **Hot zones with targeted cooling**
- **Power designed to 75W/ft² (using less than 50); cooling designed to 150W/ft²**
- **Now measure power at wall, PDU, power strip, track PUE – now 1.63**
- **Down to 14 DCs with room to grow**

Global Financial Services Outsourcing Spectrogram

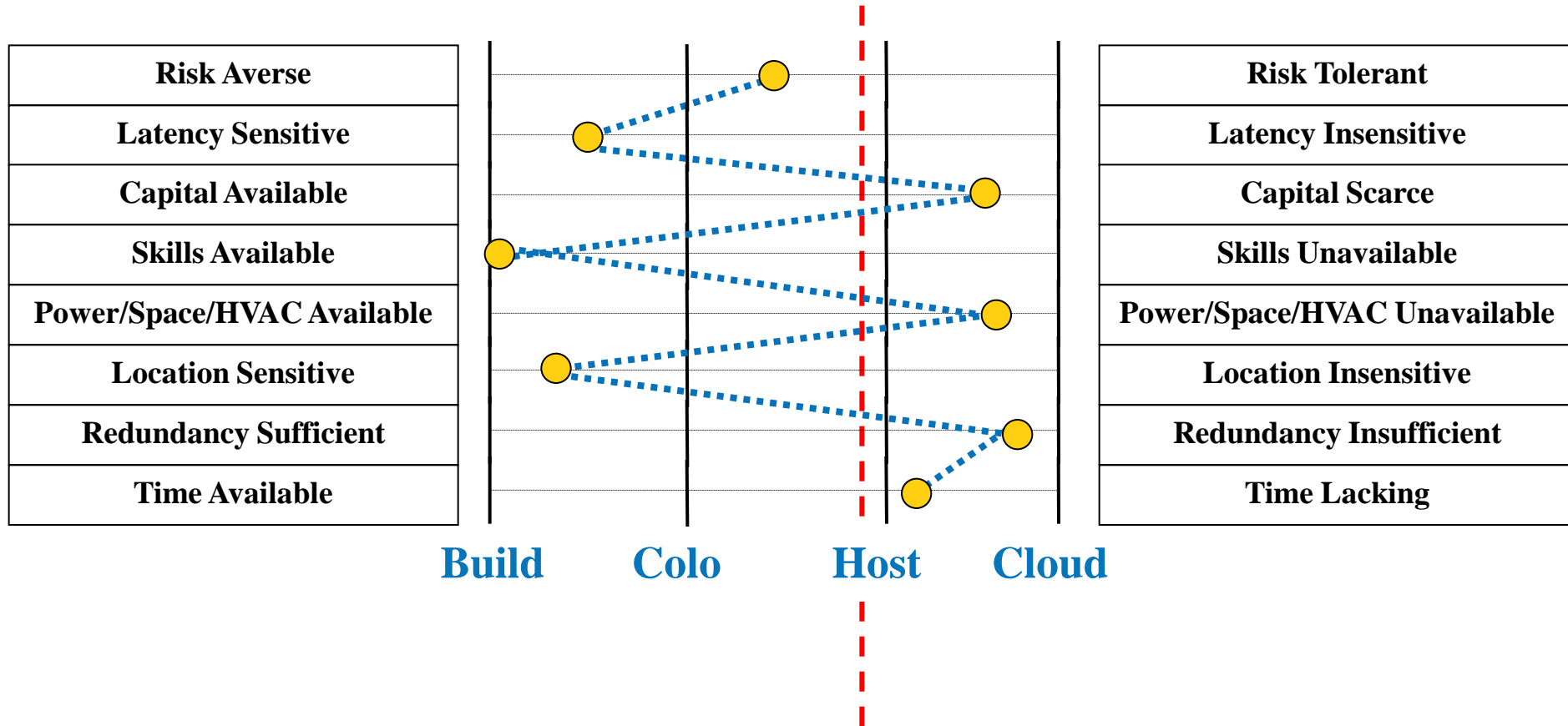


Case Study – Healthcare Startup



- **Small startup where time to market is critical**
- **Limited capital resources**
- **Delivering healthcare IT services and electronic medical records**
- **Staff is mostly developers**
- **Limited power resources**
- **No redundancy in-house**
- **Privacy of data is a big issue**

Healthcare Startup Outsourcing Spectrogram



What Should You Be Doing?

Urgent: Act Now



Multicore computing, server consolidation, server virtualization, services subnet, Gig Ethernet, SaaS

Short-Term Plans



Storage consolidation, storage networking, storage virtualization, in-row or overhead cooling, asset & capacity mgt, IaaS and PaaS, 10 Gig Ethernet

Long-Term Plans



Network consolidation, autonomic facilities, sustainability strategy, in-chassis cooling

Specific Needs



Hosted data centers, IaaS, specialty consulting/engineering firms, cloud computing, in-rack or in-chassis cooling



Thank You

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