Cisco Unified Data Center

Changing the Economics of the Data Center

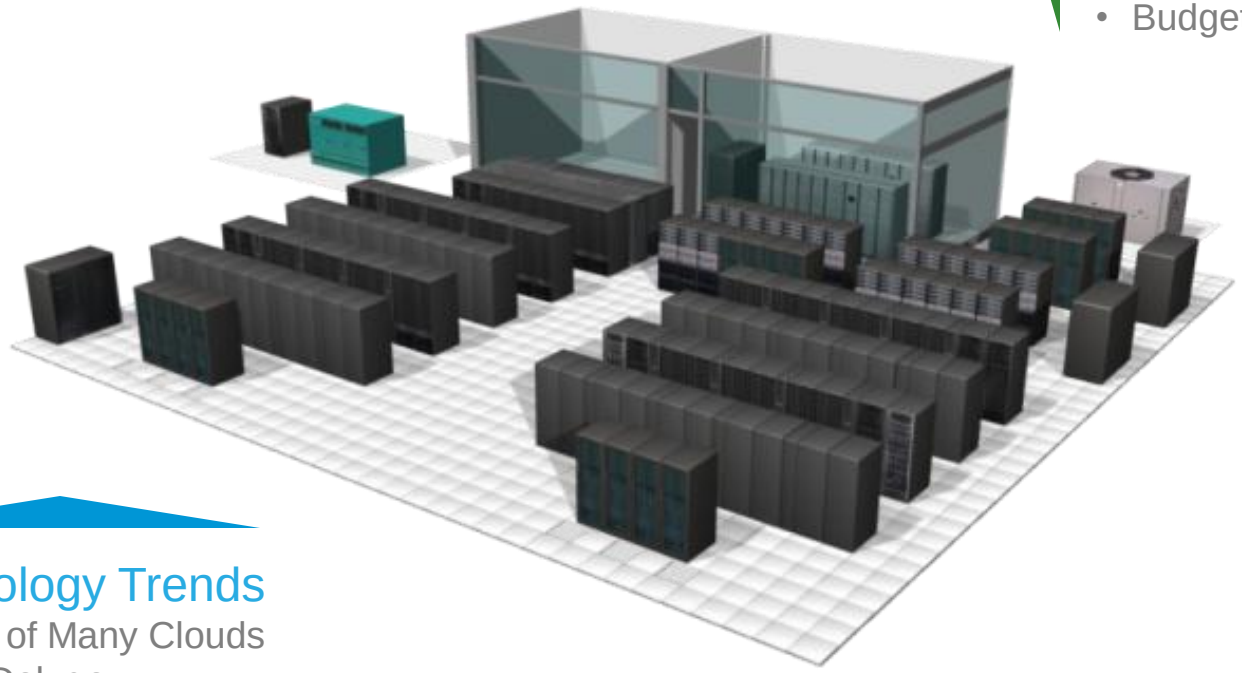
Eugenios Zervoudis

Product Sales Specialist, Greece/Cyprus & Malta

Business and Technology Impacting the Data Center

Business Challenges

- Business Agility
- 24x7 Business
- Security and Compliance
- Budget Constraints

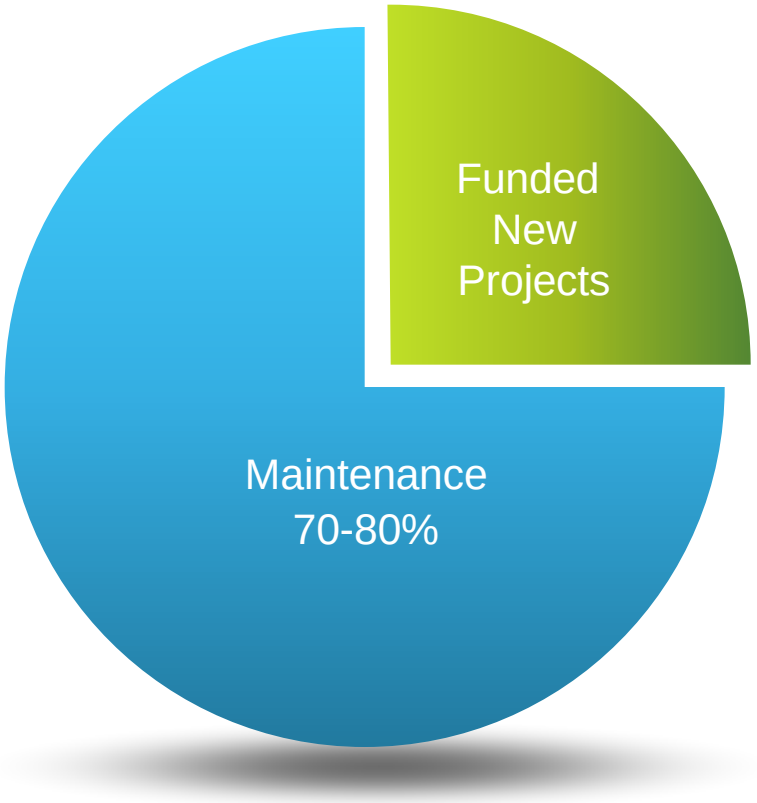


Technology Trends

- World of Many Clouds
- Data Deluge
- Proliferation of Devices
- Energy Efficiency

Today's CIO Challenge

Managing Growing Demand for IT Projects



IT Budgets

Missed Business Opportunities

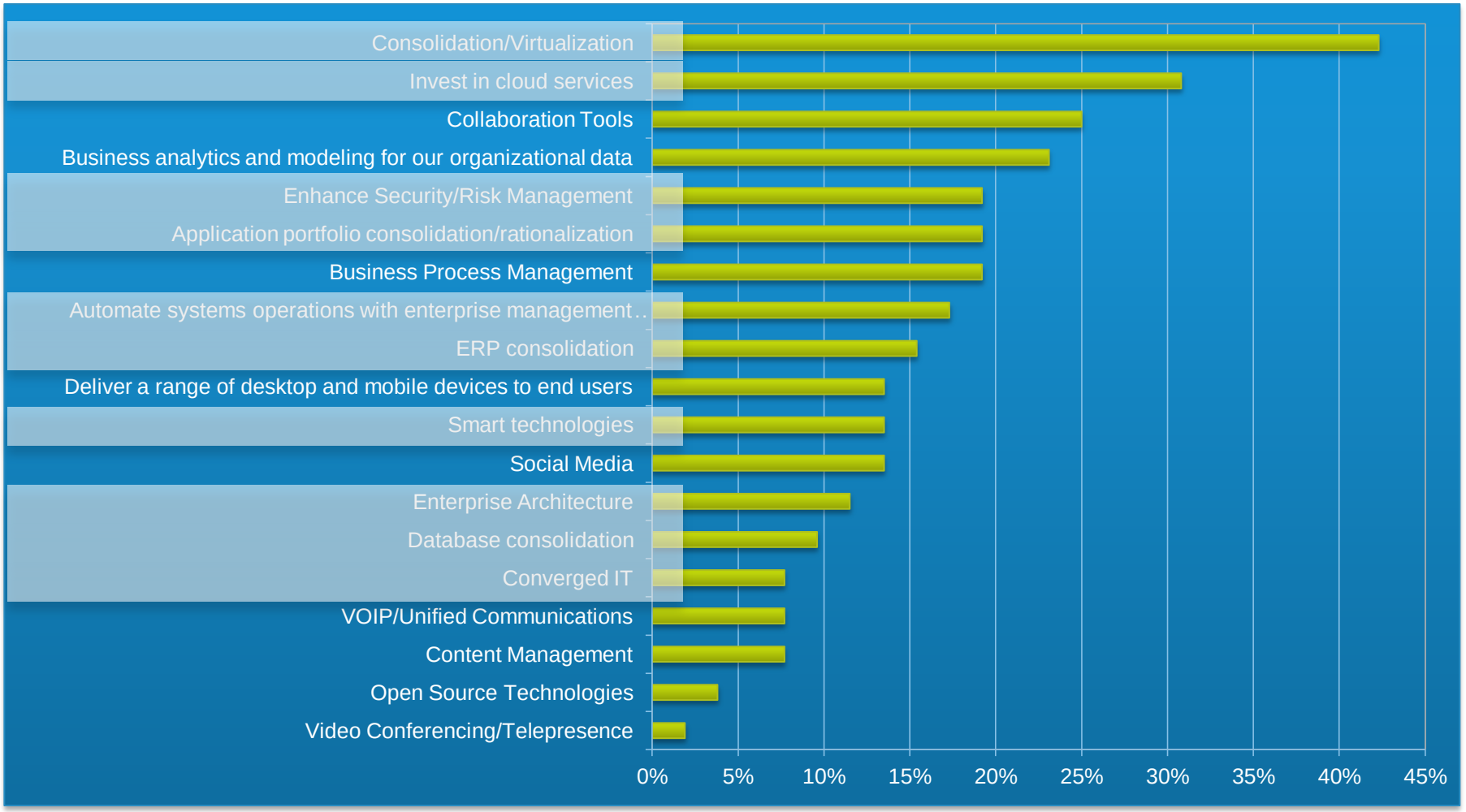
The IT Challenge: Data Center Infrastructure

The Network is the Platform

- Facilities Management
- Business Agility
- Time to Market
- Siloed Network, Compute, Storage
- Inefficient Resources
- Security Vulnerabilities
- Slow, Complex
- Expensive Operations
- Application Restraints

CIO Top Initiatives

Which of the following will be a top IT initiative in your organization in 2012?



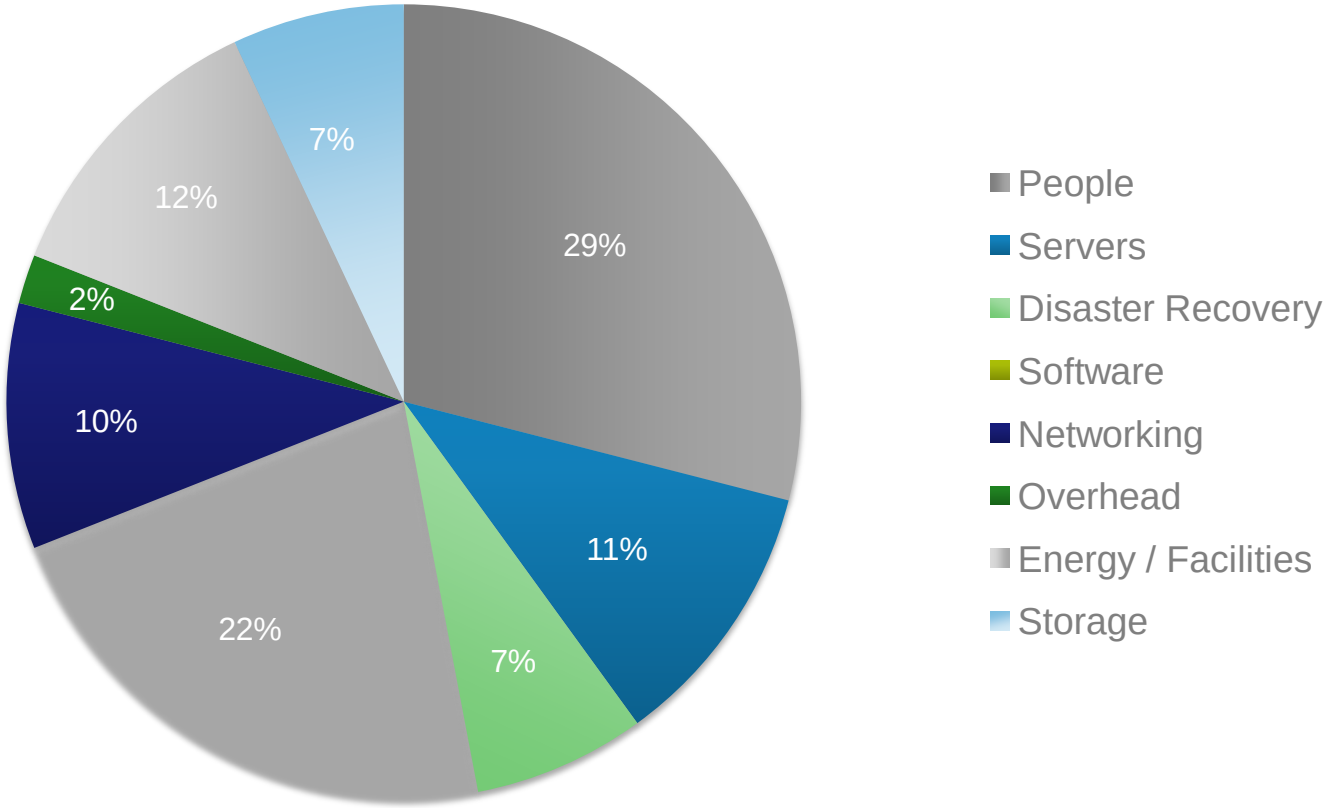
n = 52

Source: IDC CIO Agenda Survey. November-December, 2011; Data shows % of respondents who listed as a top 3 initiative.

The Data Center Opportunity & Benefits

Data Center Economics

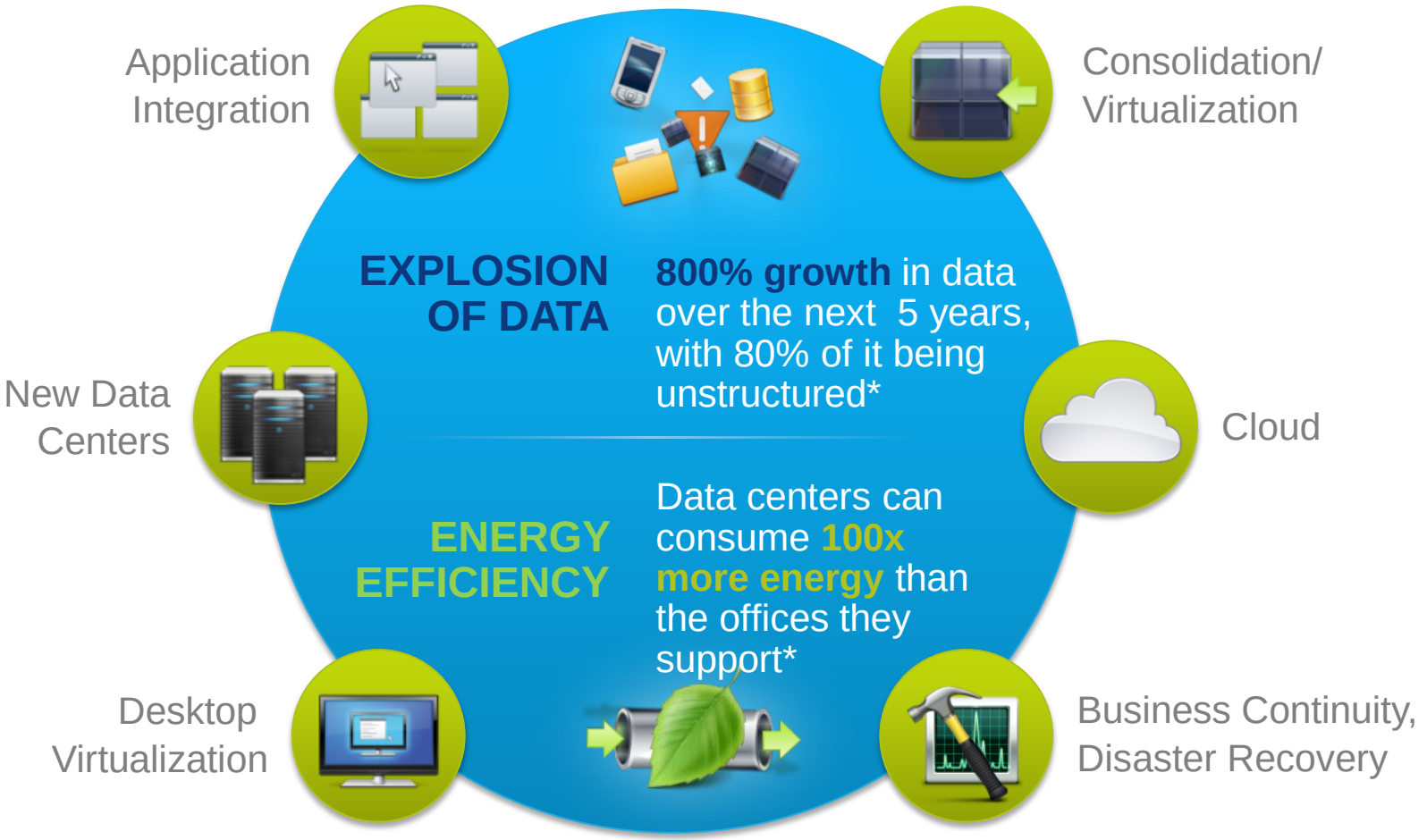
Overall Spend Distribution



Source: Gartner—Cisco IT, “Data Center Cost Portfolio”

Source: IDC, “New Economic Model for the Datacenter”

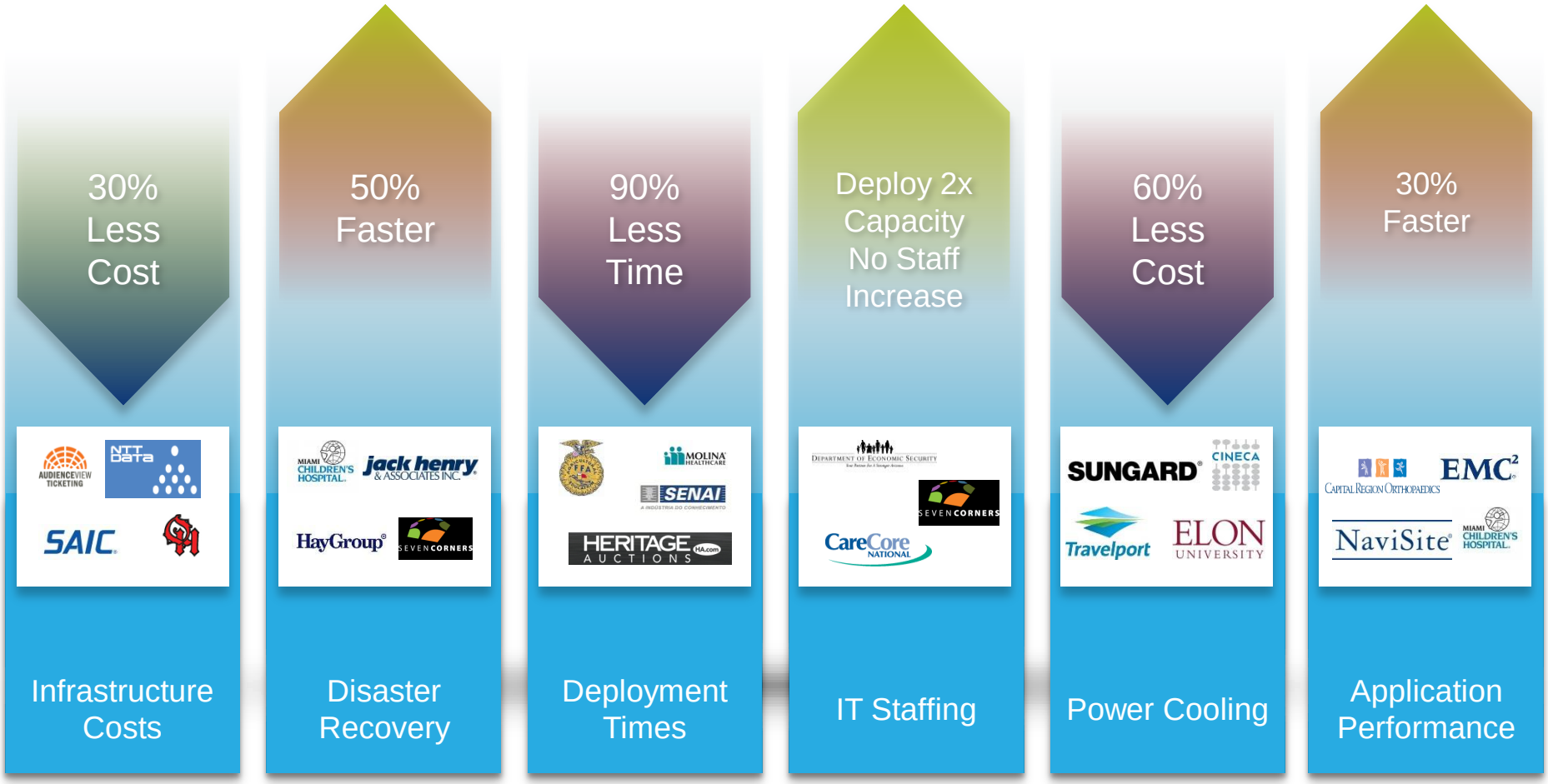
Transformation:
The Need for IT as a Service



*Gartner, *Data Center Executives Must Address Many Issues in 2012*, Mike Chuba Jan '12

What's in it for You

Changing the Economics of the Data Center



The Evolution Journey to ITaaS

Cisco Unified Data Center
The Platform for Delivering IT-as-a-Service

UNIFIED FABRIC

HIGHLY SCALABLE, SECURE NETWORK FABRIC

UNIFIED COMPUTING

STATELESS COMPUTING

UNIFIED MANAGEMENT

AUTOMATED RESOURCE MANAGEMENT (PHYSICAL AND VIRTUAL)

Cisco Unified Fabric

Convergence

Scale

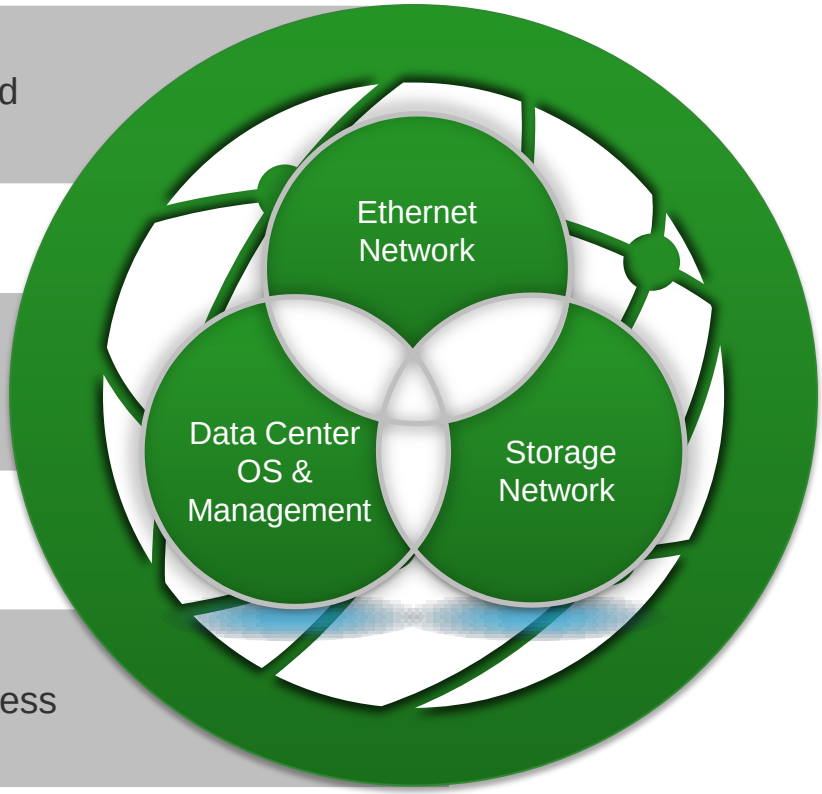
Intelligence

Cisco Unified Fabric

Convergence
Consolidated Infrastructure Simplified
Management Reduced Cost

Scale
Investment Protection Evolves
With Business Geographic Span

Intelligence
Integrated Application Delivery Seamless
VM Networking VM-aware Security



Consistent Networking Across Physical, Virtual and Cloud

What is On the Truck?

SAN

Cisco MDS 9100 Series

Cisco MDS 9200 Series

Cisco® MDS 9500/9700 Series

LAN

Nexus 1010

Cisco Nexus 3000

Cisco Nexus 1000V

Cisco Nexus 2000

Nexus B22

LAN/SAN

Cisco Nexus 5000

Cisco Nexus 7000

CISCO NX-OS: From Virtual Server to Core **CISCO DCNM:** Single Pane of Management

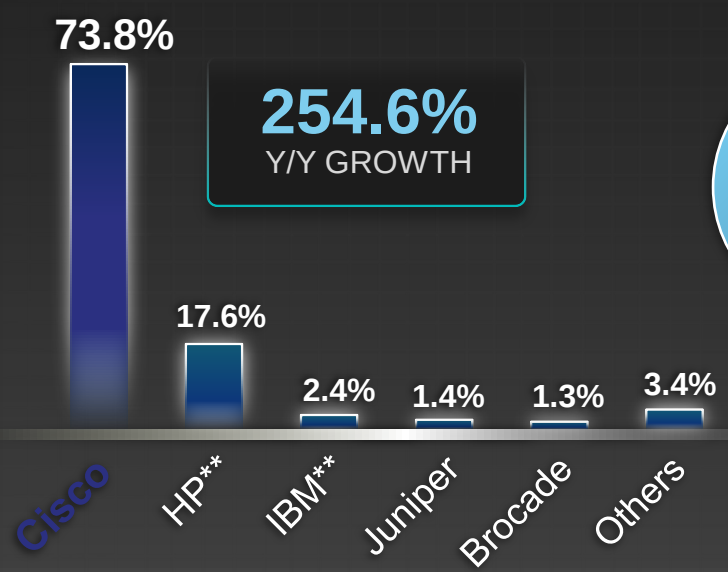
DELIVERING TO YOUR DATA CENTER NEEDS

- Resilient, High Performance, Scalable Fabric
- Workload Mobility Within / Across DCs
- Secure Separation / Multi-tenancy
- LAN+SAN Convergence
- Operational Efficiency / Consistency – P-V-C

Cisco Unified Fabric

Three years of Innovation and Market Leadership

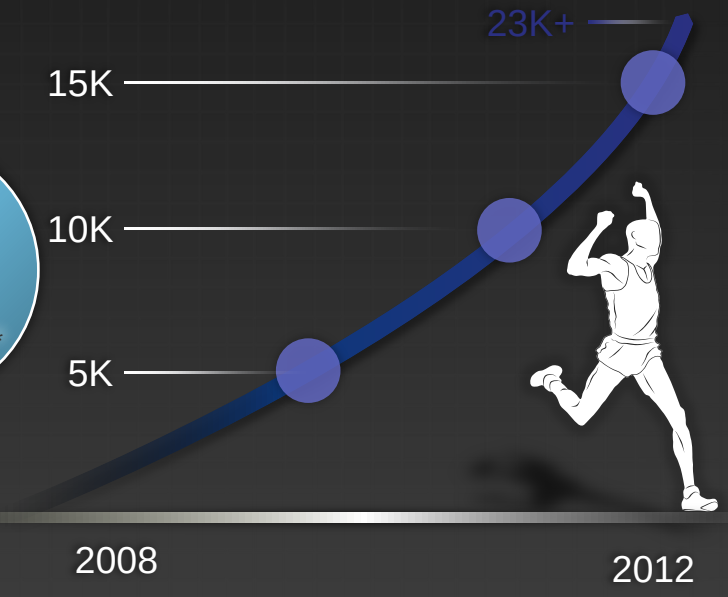
GARTNER DATA CENTER 10-GIGABIT SWITCHES 2010 REVENUE*



254.6%
Y/Y GROWTH

#1
2009—2011***

NX-OS CUSTOMER GROWTH****



* Chart created by Cisco based on Gartner data. Gartner, Inc., Market Share: Data Center Ethernet Switches, Worldwide, 2010, N. Singh, S. Real, July 29, 2011.
**OEM Switches not included
*** Multiple sources including Dell Oro.
**** Created by Cisco based on Cisco data.

Cisco Unified Compute

Convergence

Scale

Intelligence

Cisco Unified Computing System

Built from the Ground up for Physical, Virtual and Cloud

Convergence

Intelligence

Automation

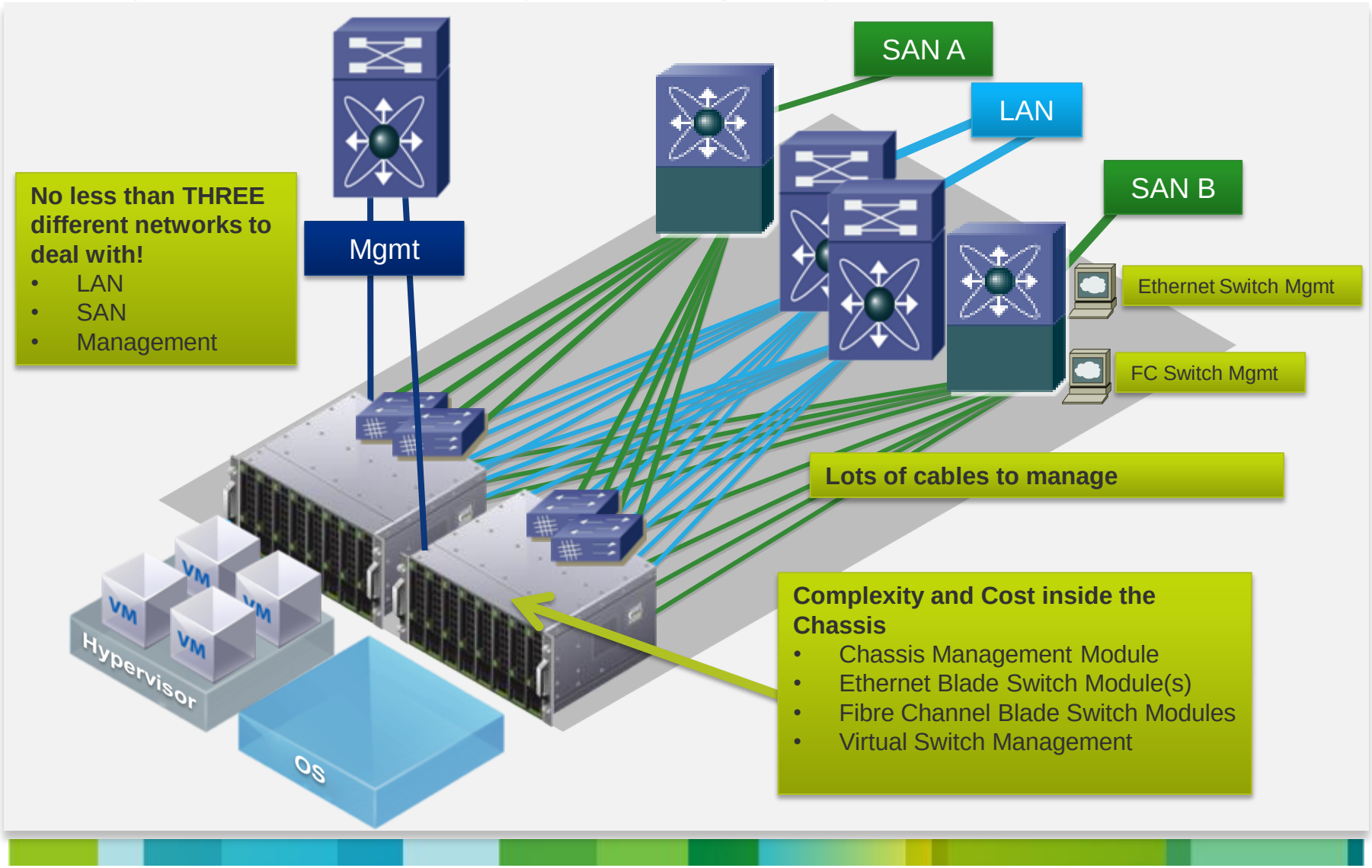
Efficient Scaling
Simplified management

Consistent alignment of policy, configuration and workload

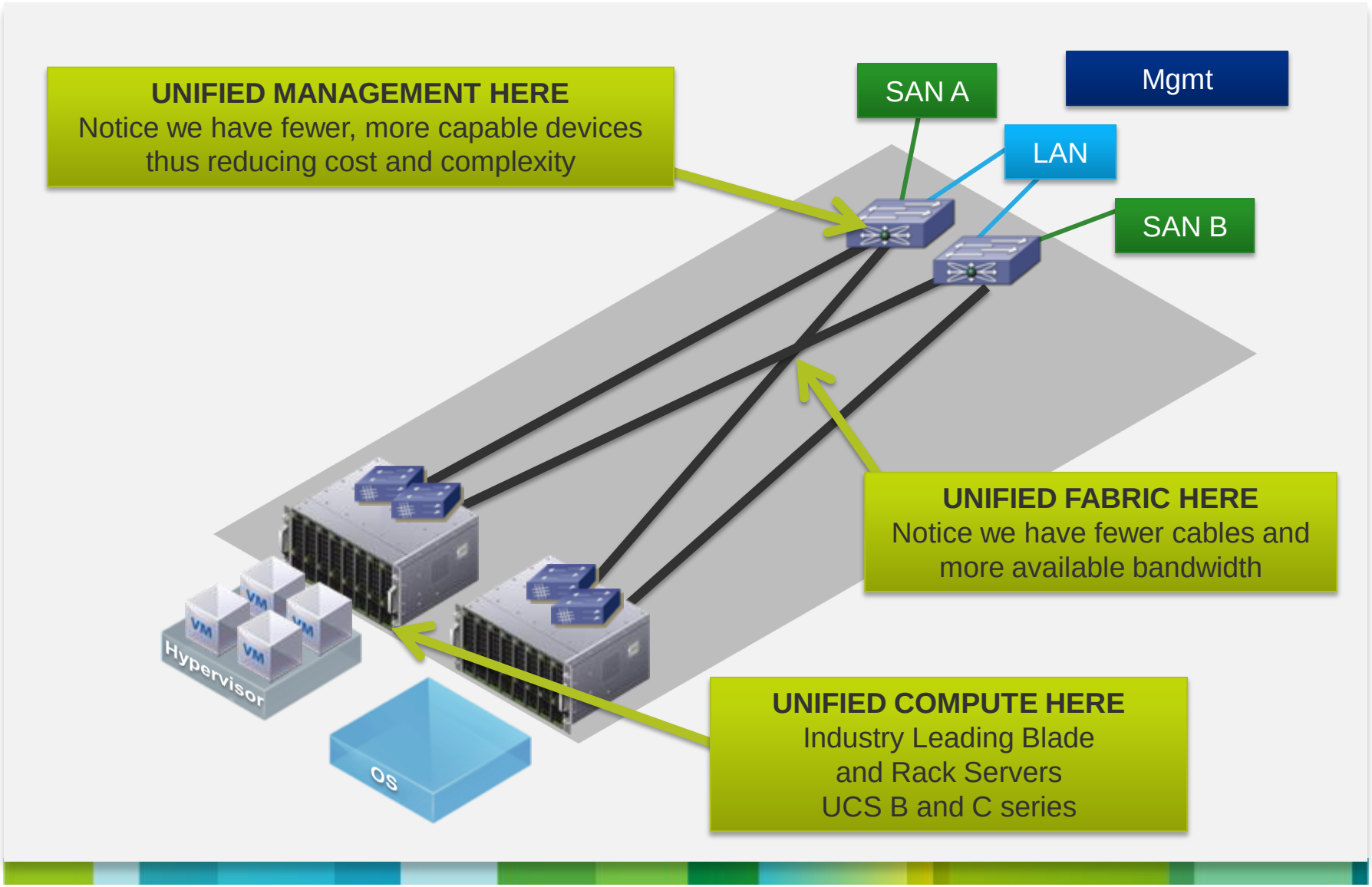
Superior IT productivity
Orchestration ready

Fabric-based x86 computing architecture optimized for virtualization and cloud

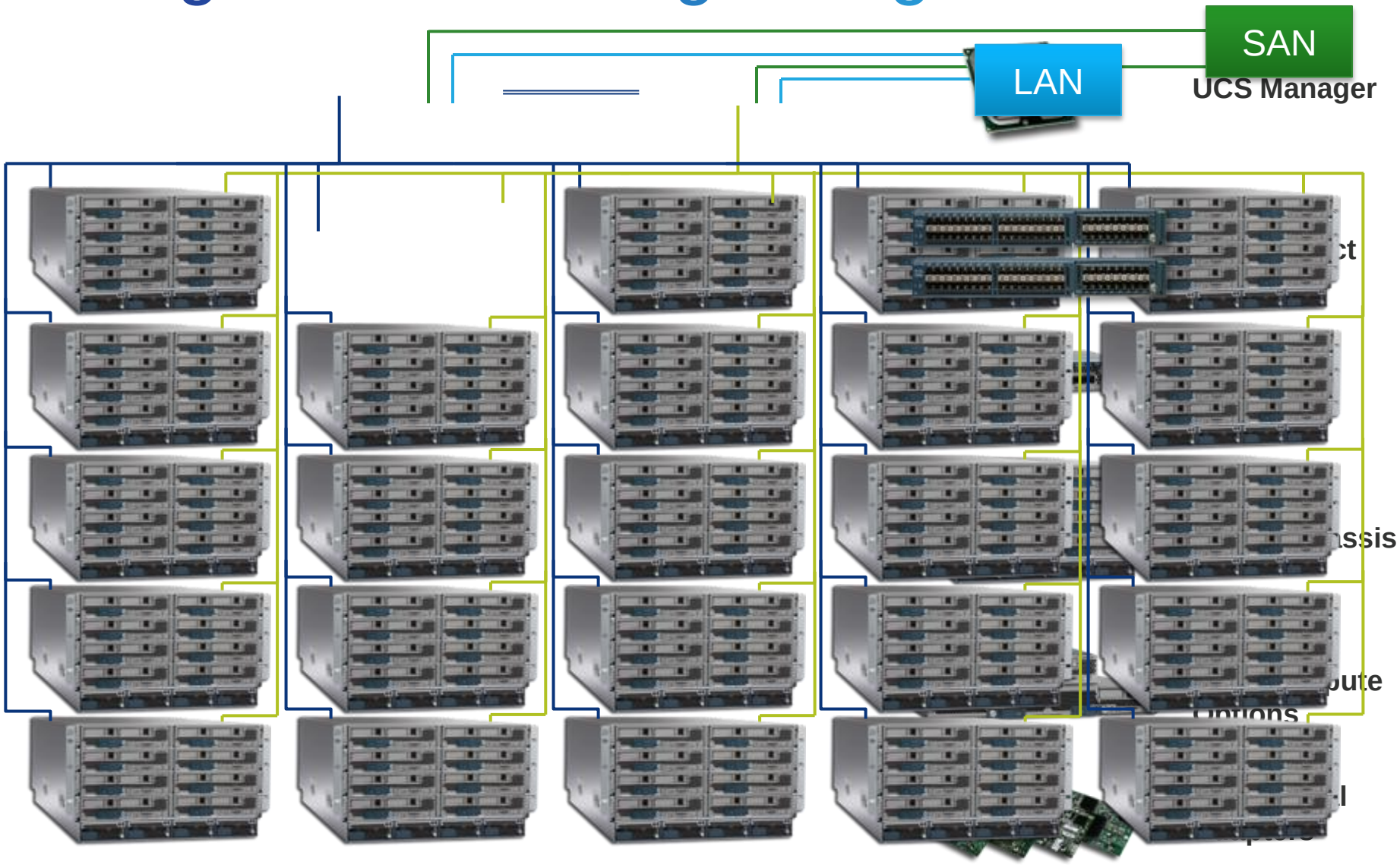
Unify and Simplify – Legacy Vendor View



Unify and Simplify – UCS View



Putting UCS Technologies Together



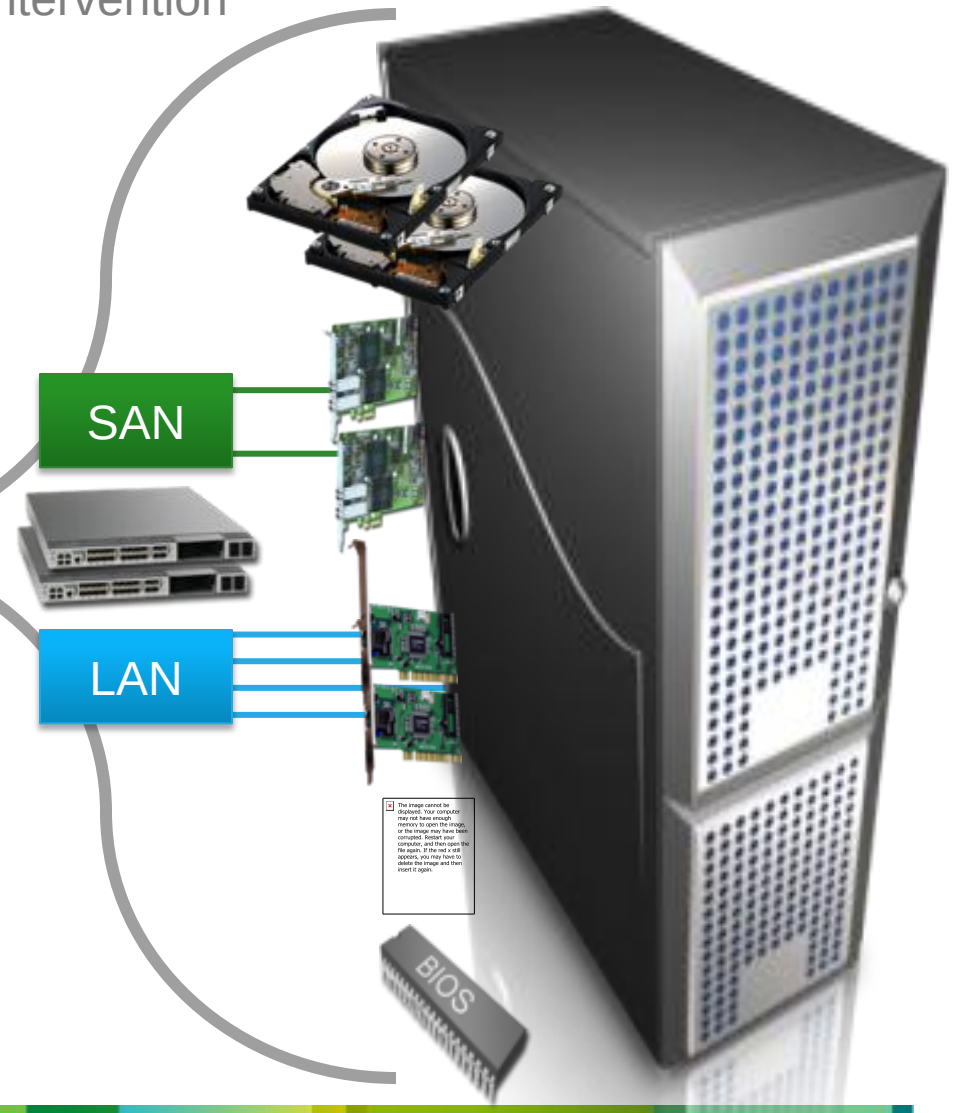
Stateless Computing

Legacy Servers require a lot of manual intervention

Server Identity & Personality

NIC MACs
HBA WWNs
Server UUID
VLAN Assignments
VLAN Tagging
FC Fabrics Assignments
FC Boot Parameters
Number of vNICs
Boot order
PXE settings
IPMI Settings
Number of vHBAs
QoS

Call Home
Template Association
Org & Sub Org Assoc.
Server Pool Association
Statistic Thresholds
BIOS scrub actions
Disk scrub actions
BIOS firmware
Adapter firmware
BMC firmware
RAID settings
Advanced NIC settings
Serial over LAN settings
BIOS Settings



Stateless Computing

UCS Service Profiles reduce complexity and speed up deployment

To build our server
…
Make one or more unique profile copies from a template *(i.e. our blueprint*)

Associate a single profile to a single server. Repeat for more servers as needed

Rapidly deploy any number of servers in just a few clicks!

Service Profile 1

Service Profile 2

Service Profile 3

Service Profile *n*

UCS Rack and Blade Servers

UCS Portfolio

Chassis and Fabric Interconnects

UCS 5100 Series Chassis

UCS 6120

UCS 6140

UCS 6248UP

(Unified Ports)

Rack-Mount

Mainstream

UCS C210 M2

UCS C240 M3

UCS C200 M2

UCS C220 M3

Extended Memory

UCS C260 M2

UCS C250 M2

Intensive and Mission Critical

UCS C460 M2

Blade

UCS B200 M2 / M3

UCS B250 M2

UCS B230 M2

UCS B440 M2

2S EP

2S EX

4S EX

Cisco UCS: Many Server Form Factors, One System

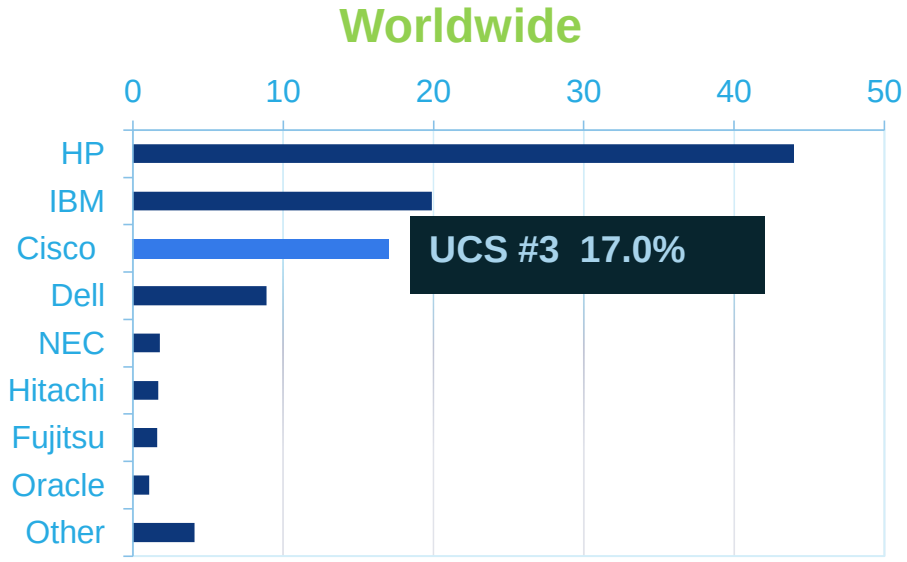
Cisco UCS Leadership and Momentum

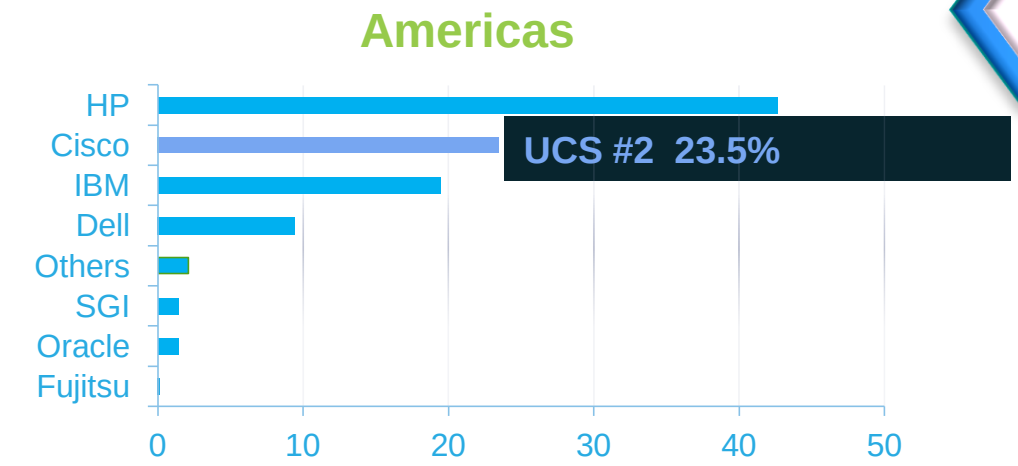
- As of Q2FY13 Data Center revenue reached a $2B annualized run rate.
- In Q2FY13, Data Center revenue grew 65% Y/Y
- As of February 2013, there are over 20,000 unique UCS customers which represents 87% Y/Y growth
- More than half of all Fortune 500 customers have invested in UCS
- 460 customers have booked over 1 Million in UCS solutions and over 1,000 have booked over $500,000
- Over 3,000 Channel Partners are actively selling UCS worldwide and over 1560 UCS specialized partners in the channel world wide
- As of CY12 Q4 Cisco is one of the Top 5 Server Vendors based on Worldwide Revenue Share1
- 70 World Record Performance Benchmarks to date

Source: [1] IDC Worldwide Quarterly Server Tracker, Q4 2012, February 2013, Revenue Share

Customers Have Spoken

X86 Server Blade Market Share, Q4CY12[1]





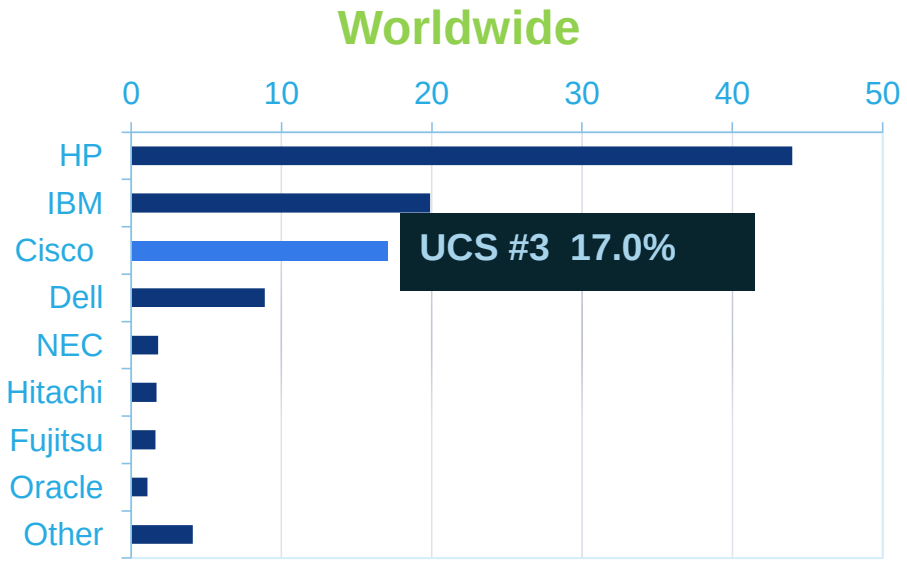
- UCS momentum is fueled by game-changing innovation; Cisco is quickly passing established players
- x86 Blade servers grew 4.4% Y/Y in Q4CY12[2]

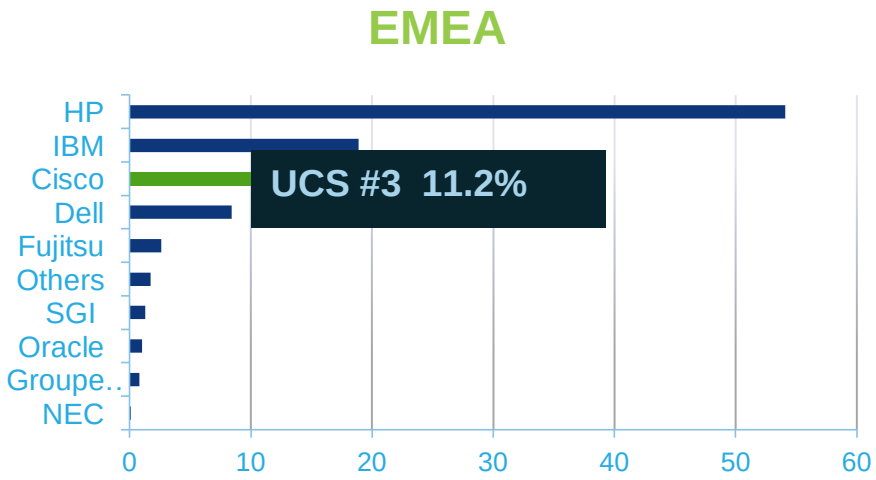
UCS After Only Three Years

- Maintained #3 in EMEA x86 blades (11.2%) and achieved #2 in Americas(23.5%)[1]
- Maintained #3 worldwide in x86 Blades with 17.0%

Customers Have Spoken

X86 Server Blade Market Share, Q4CY12[1]





- UCS momentum is fueled by game-changing innovation; Cisco is quickly passing established players
- x86 Blade servers grew 4.4% Y/Y in Q4CY12[2]

UCS After Only Three Years

- Maintained #2 in N. America (24.8%) and #2 in the US (25.1%)[1]
- Maintained #3 worldwide in x86 Blades with 17.0%

They Said It Couldn't Be Done

Worldwide X86 Server Blade Market Share

- UCS impacting growth of established vendors like HP
- Legacy offerings flat-lining or in decline
- Cisco growth out-pacing the market

Market Appetite For Innovation Fuels UCS Growth

- **Customers have shifted 17.0% of the global x86 blade server market to Cisco and over 24% in North America (**

Demand for Data Center Innovation Has Vaulted Cisco Unified Computing System (UCS) to the #3 Leader in the Fast-Growing Segment of the x86 Server Market

Cisco Unified Management

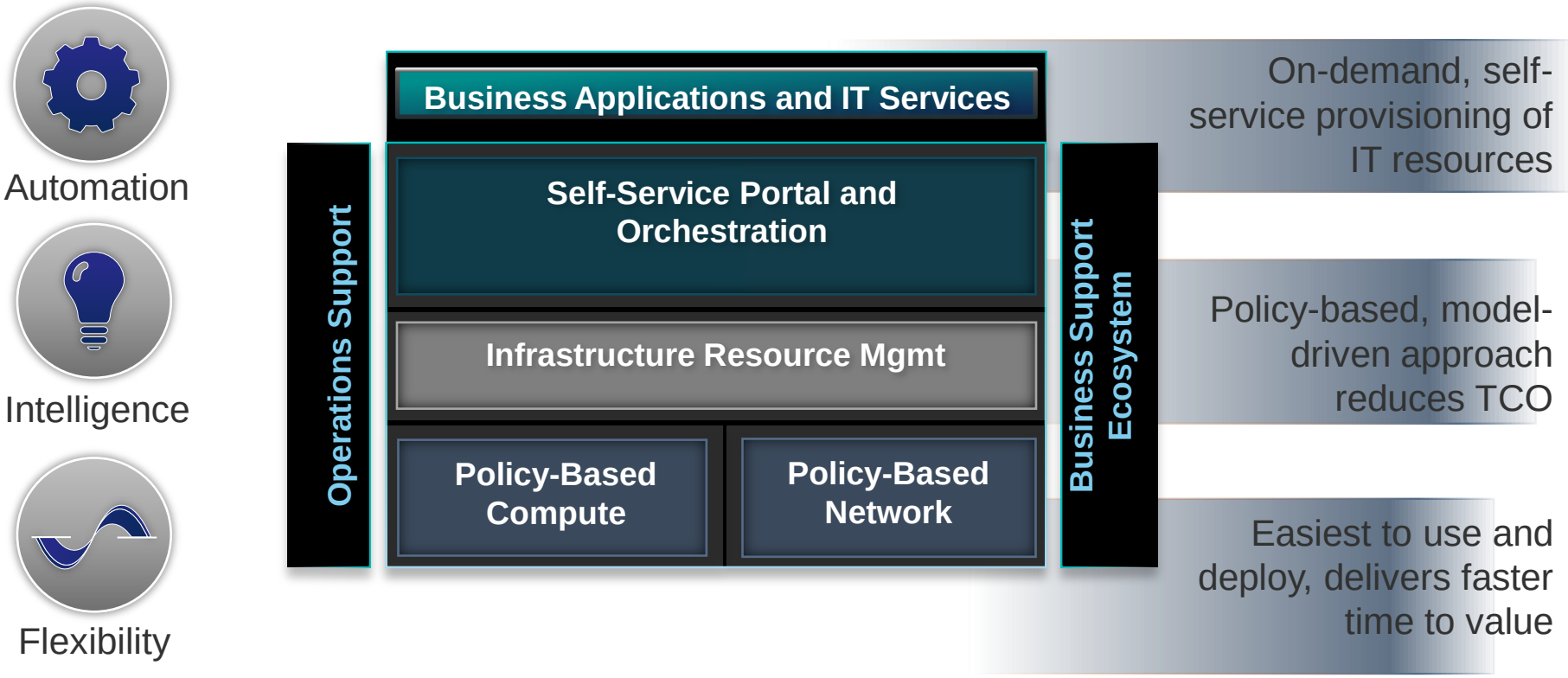
Convergence

Scale

Intelligence

Cisco Unified Management

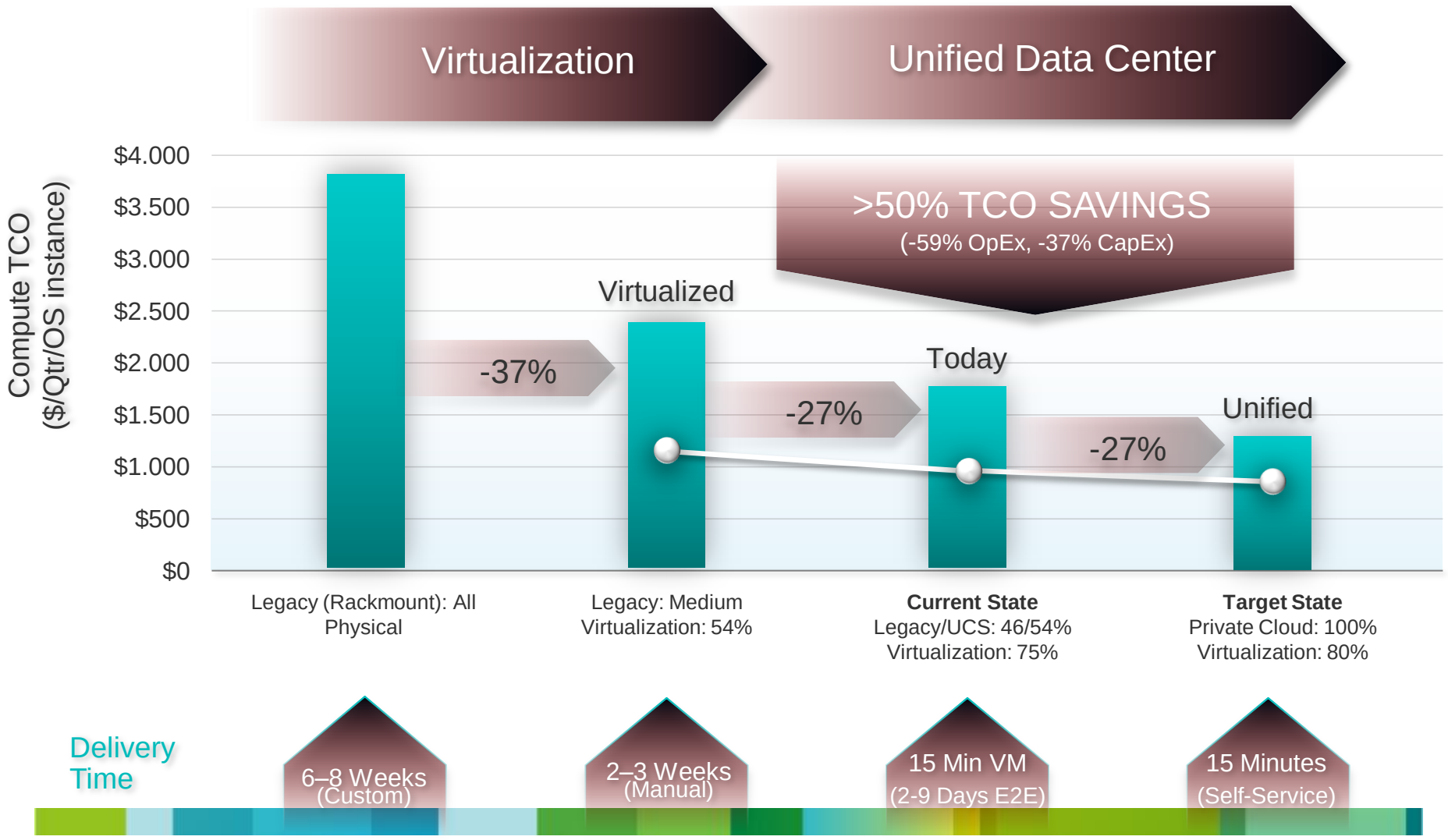
Automation and Orchestration Designed for IT-as-a-Service



Optimized for Cisco architectures, complements existing IT systems management

Cisco Unified Management
Simplifying Automation and Orchestration

Cisco Unified Data Center
Keeping the Promise



Cisco Integrated Solutions

Convergence

Scale

Intelligence

Integrated Solutions

Power of the Ecosystem

	Enterprise Apps	Databases	Business Analytics	Virtual Desktop	Vertical Applications
Applications	Oracle E-Business Suite, PeopleSoft, Siebel, SAP, Microsoft Exchange, Microsoft SharePoint Server 2010	Oracle Database 11g, Microsoft SQL Server 2008, MySQL	Microsoft SQL Server 2008 R2 Fast Track Data Warehouse, SAP HANA & BWA, Greenplum, SAS	Citrix, VMware, Microsoft	McKesson Empowering Healthcare, Murex, distra, MEDITECH Medical Information Technology, Inc.
OS / Hypervisor	Windows Server 2008 R2, VMware, Novell, SUSE, Microsoft, RedHat, Citrix, Oracle				
Management	Novell, EMC², Compuware, VMware, DynamicOps, HP, Symantec, BMC Software, CA, Zenoss, IBM, SolarWinds				
Infrastructure	VBLOCK, NetApp FLEXPOD				

Enterprise Apps on UCS

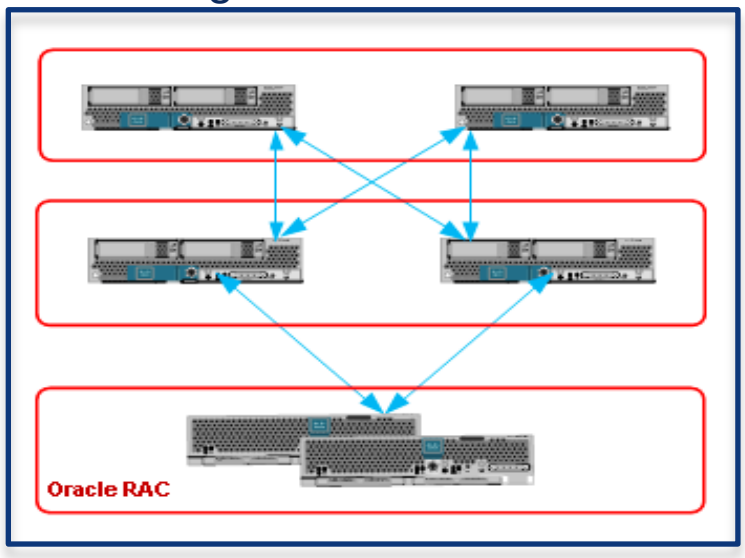
Oracle Core Application Expertise

Web Tier

Application Tier

Database Tier

Single Blades Chassis



Targeted ERP Applications:
- **Oracle E-Business Suite**
- **PeopleSoft**
- **JD Edwards**
- **Siebel**

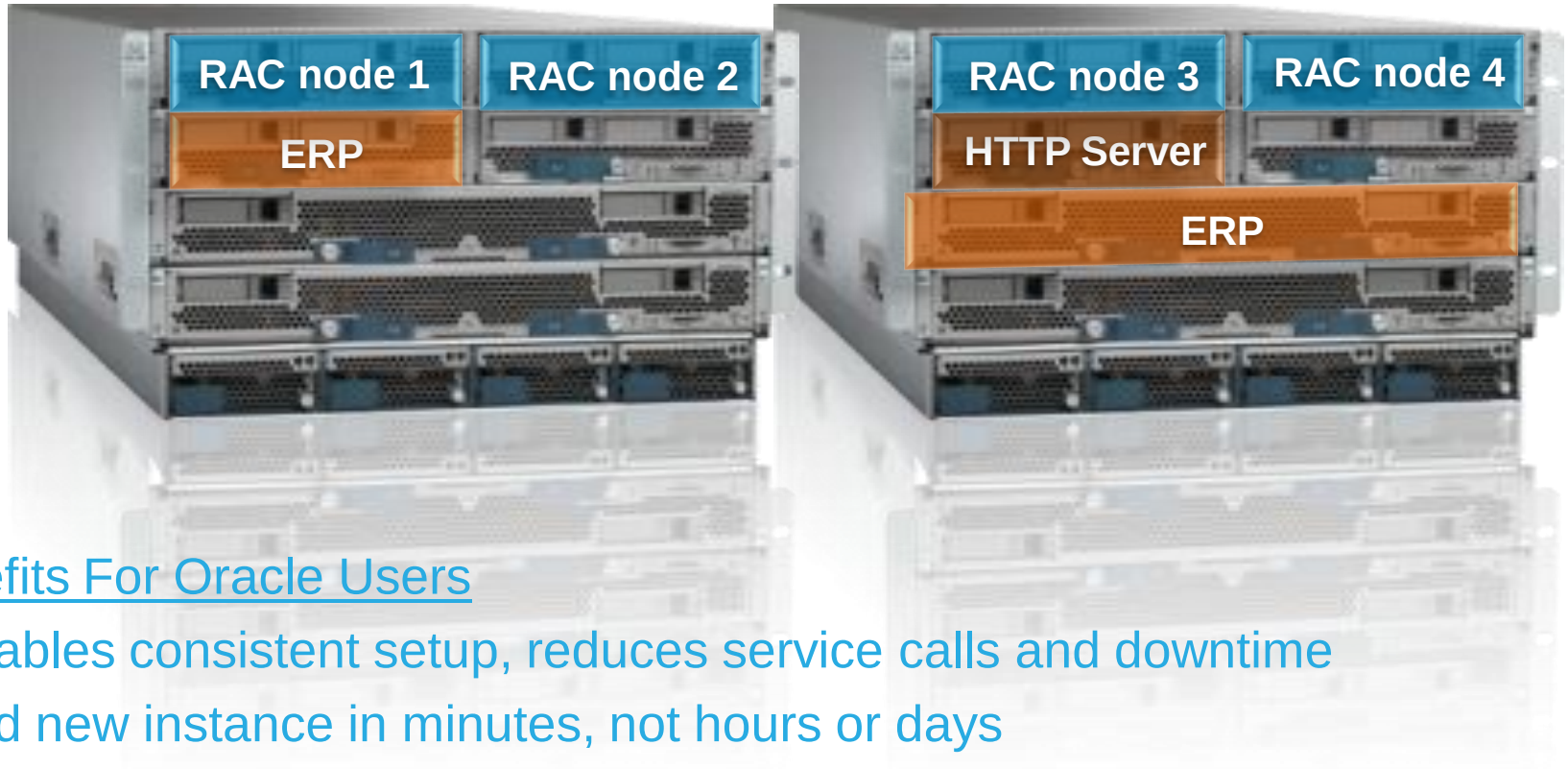
Cisco Validated Designs:
- Best Practices
- Implementation Tips
- Design Guides

Application Benchmarks:
- Heart of YOUR business
- Established leader
- Bare metal & virtualized

Sizing Guides:
- Detailed configurations
- B-Series or C-Series
- Data from benchmarks and scaling proof points
- Performance tips

Service Profiles Oracle Examples

Match System Resources to Workloads “on-the-fly”



Benefits For Oracle Users

- Enables consistent setup, reduces service calls and downtime
- Add new instance in minutes, not hours or days
- Immediately test if workload is CPU or memory constrained
- Automatically load profile when new server added to system
- No LAN, SAN Zoning or any reconfiguration

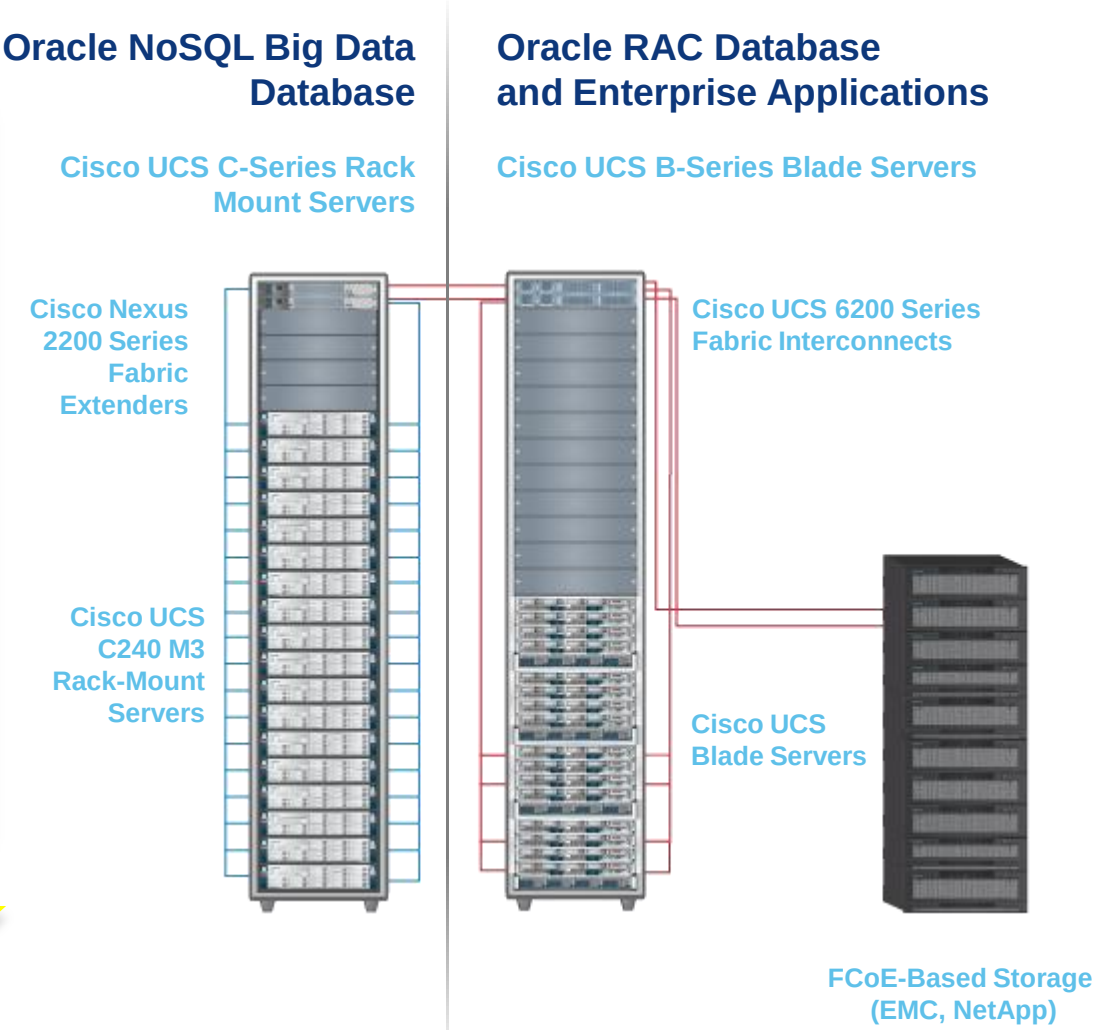
Unmatched Flexibility to Drive Oracle

Cisco UCS can drive Oracle NoSQL Big Data and Oracle RAC deployments *simultaneously* under a single management domain!

"We are excited to be offering Oracle NoSQL Database running on Cisco UCS™. The scalability and enterprise-class capabilities of Cisco UCS beautifully complements the capabilities of Oracle NoSQL Database to solve Big Data challenges."

Marie-Anne Neimat
Vice President, Development
Oracle

Exclusive Certification



Cisco Performance Leadership – Top to Bottom

UCS Achieves Top Performance across the Entire Stack

Announcing at OpenWorld!

	ORACLE	World Record Benchmarks	Performance Proof Points
Enterprise Applications	Oracle E-Business Suite, PeopleSoft, Siebel, JD Edwards, Oracle Fusion	**Oracle Application Standard Benchmark 12.1.3** Payroll Batch – Extra Large Model Order to Cash Batch – Large Model **B200 M3**	**Siebel 8.1.1.4** **10,000 Users** **JD Edwards 9.1** **Oracle VM** **2,000 Users**
MiddleWare	Oracle WebLogic, Oracle SOA Suite, OracleAS		
Database	Oracle Database, Oracle TimesTen	**Oracle Application Standard Benchmark 12.1.2** Payroll Batch – Extra Large Model Order to Cash Batch – Large Model **B200 M3**	**PeopleSoft 9.0** **North American Payroll** **255,319** **Payments/Hour**
Operating System	Oracle Linux	**TPC-C Two Socket** **1,609,186.39 tpmC, $0.47/tpmC** **C240 M3**	**Oracle NoSQL** **1,244,550 Mix Operations/Sec.**
Virtualization	Oracle VM		

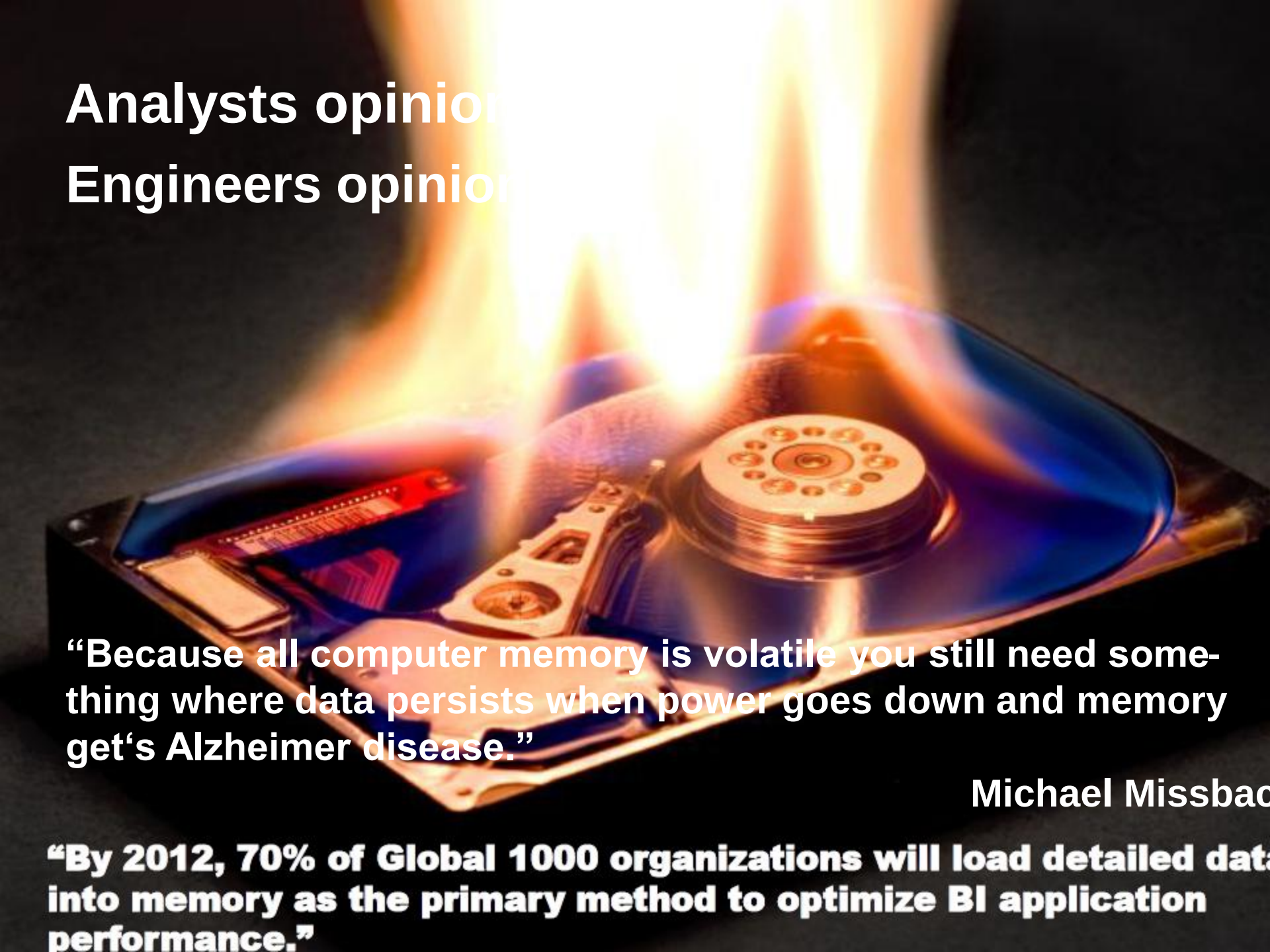
23 World Record Oracle-based Benchmarks!

As of 9/27/12. Source: Transaction Processing Performance Council (TPC), www.tpc.org. Record TPC-C benchmark result for a two-processor system: Oracle Database 11g Release 2 Standard Edition One and Oracle Linux on Cisco UCS c240 M3 High-Density Rack Server, 1,609,186.39 tpmC, $0.47/tpmC, available 9/27/12.

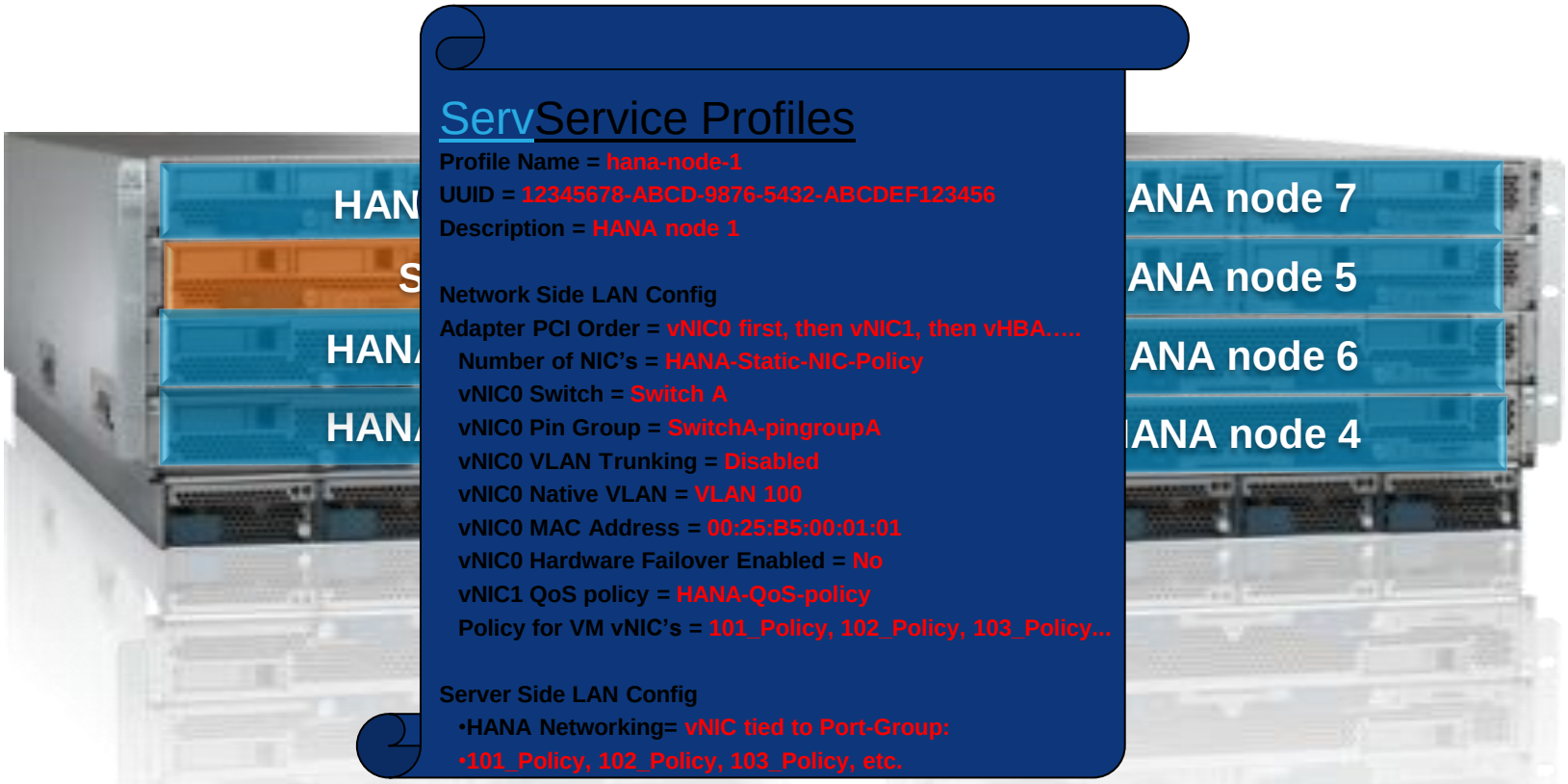
Cisco HANA Scale-Out Solutions

Unlimited scalability with Cisco

Server	Maximum RAM Capacity	Max RAM Supported for HANA	Theoretical Maximum In-Memory Data Set with SAP HANA		
			3-to-1 compression	5-to-1 compression	7-to-1 compression
4 x Cisco UCSB440	4 x 512 GB	4 x 512 GB	6 TB	10 TB	14 TB
8 x Cisco UCS B440	8 x 512 GB	8 x 512 GB	12 TB	20 TB	28 TB
12 x Cisco UCS B440	12 x 512 GB	12 x 512 GB	18 TB	30 TB	42 TB
16 x Cisco UCS B440	16 x 512 GB	16 x 512 GB	24 TB	40 TB	56 TB
…	…	…	…	…	……
40 x Cisco UCS B440	40 x 512 GB	40 x 512 GB	60 TB	100 TB	140 TB
…	…	…	…	…	…..


Analysts opinio
Engineers opinio
“Because all computer memory is volatile you still need some-
thing where data persists when power goes down and memory
get‘s Alzheimer disease.”
Michael Missbac
“By 2012, 70% of Global 1000 organizations will load detailed dat
into memory as the primary method to optimize BI application
performance.”

Hardware Abstraction & Service Profiles



☹ **SAP appliances like BWA and HANA have fixed IP addresses!**

☺ **Service profiles enable move of appliance nodes to spare blades**

☺ **Servers become secure interchangeable hardware components**

System Center with Cloupia

Cloud Service Providers

IT Admins

IT Operations

Microsoft System Center

Orchestrator | Operations Manager | Service Manager | PowerShell | SSCVMM

- Enterprise-Wide Orchestration with SCO
- Integration with IT Operations & Management Tools with SCOM & SCVMM

Network Services Manager

cloupia Infrastructure Management

3rd Party PowerShell Libs
UCS PowerTool

Data Center Core Network & WAN

Compute

UCS

Network

Storage

NetApp

FlexPod

VBLOCK

EMC²

Customer Choice

DELL

hp

IBM

CISCO

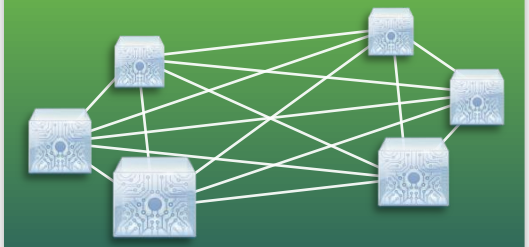
Physical Infrastructure

Partner Ecosystem

Key Takeaways

Cisco Unified Data Center
Key Takeaways

Changing the Economics of the Data Center Requires a Unified Approach to People, Process and Technology



Cisco Unified Data Center Is a Platform Designed From the Ground up to Deliver IT as a Service

The Cisco Approach Delivers the Promised Benefits of Business Agility, Financial Efficiency and IT Simplification

Thank You

Cisco IT's Case Study– Summary

	Traditional	Unified Fabric	UCS
DC efficiency	100%	130-150%	130% 170-200%
10,000 sq ft, 1 MW			
Cabling	$2.7 million	$1.6 million	$1.6 m
Physical Server Count	720	930 -1080	1200-1400
VM Count	7200	9300-10800	12000-2

Density efficiencies

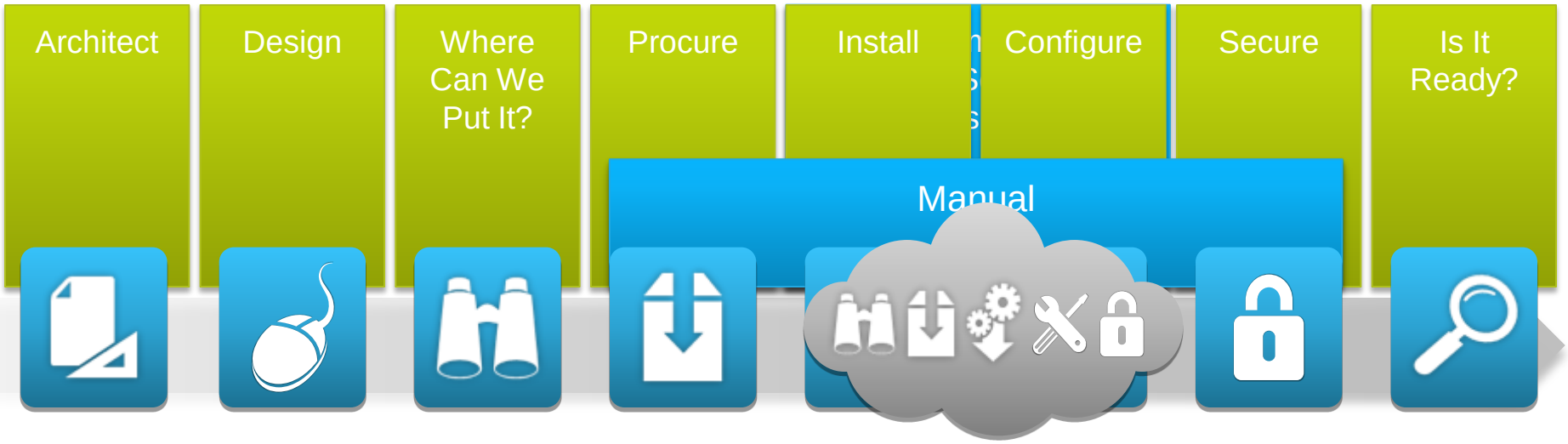
~40% Savings from cabling

7,200 to 28,000 VMs -- In the same size DC

Notes: Assumes pre-UCS average V2P ratio of 10 to 1 and post UCS average ratio of 20 to 1 due to the memory expansion technology. Unified Fabric efficiency gains result from power optimization. UCS efficiency gains result from additional power benefits of UCS.

Time to Market - Automate Service Delivery

FROM 8 WEEKS TO 15 MINUTES



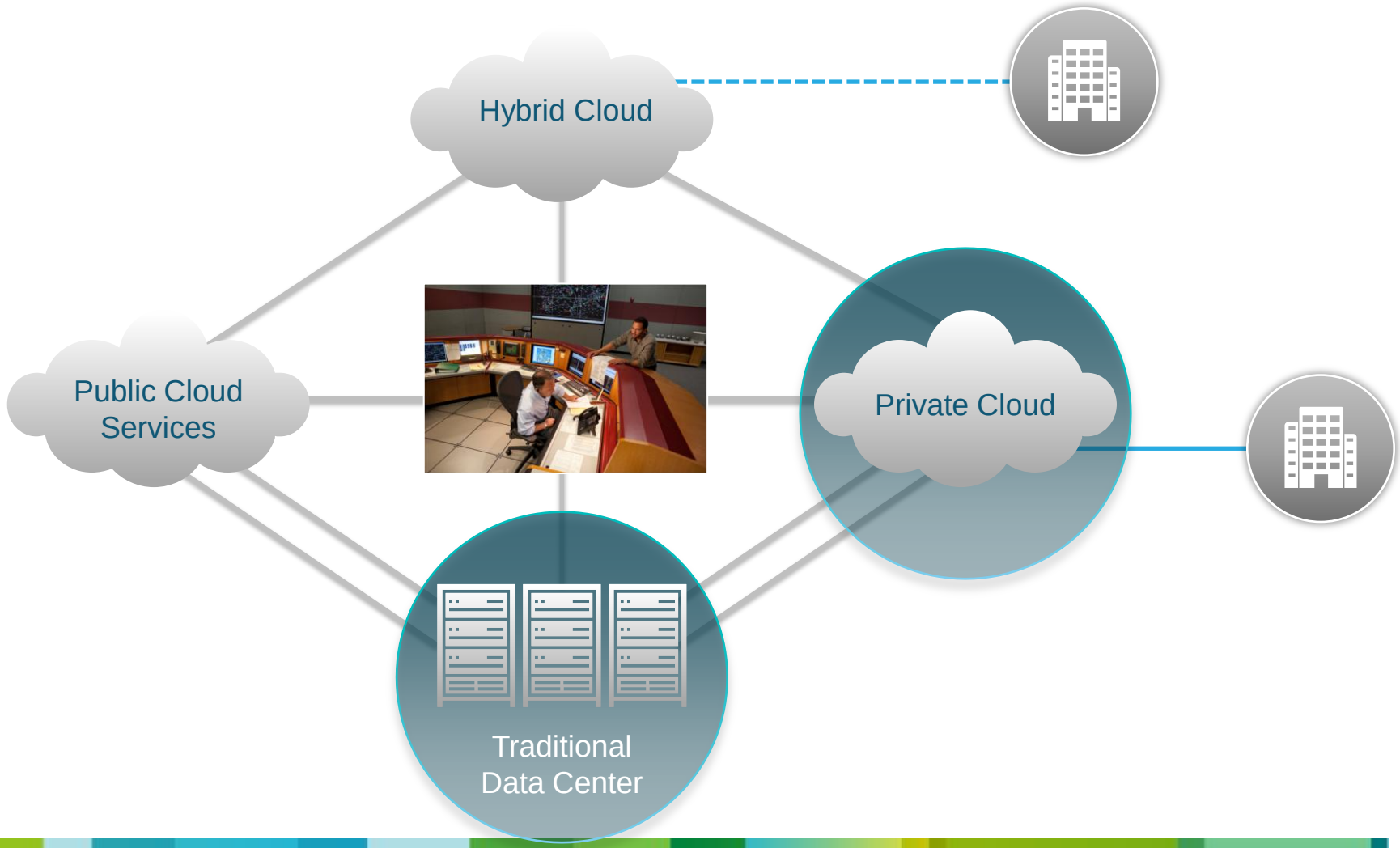
Capacity On-Demand

Policy-Based Provisioning

Built-In Governance

Tomorrow's IT—World of Many Clouds

Enabling Multiple IT Sourcing Models



Vblock

Delivered By VCE – a Joint Venture between Cisco and EMC with VMware and Intel

- Pre-packaged converged infrastructure from Cisco, EMC and VMware via The VCE Company
- Single point of configuration validation, ordering, delivery, support and warranty
- Benefits:
  - 30 days from Order to Production
  - Complete System Integration
  - Seamless support from VCE

FlexPod

- Platform that hosts infrastructure software and business applications in a virtualized and bare-metal environment.
- Tested and validated by Cisco and NetApp against wide range of hypervisors, management platforms, applications
- Benefits
  - Right-sized for scale
  - Efficiency via unified storage, management and networks
  - Secure Multi-tenancy