

Cisco Unified Computing System



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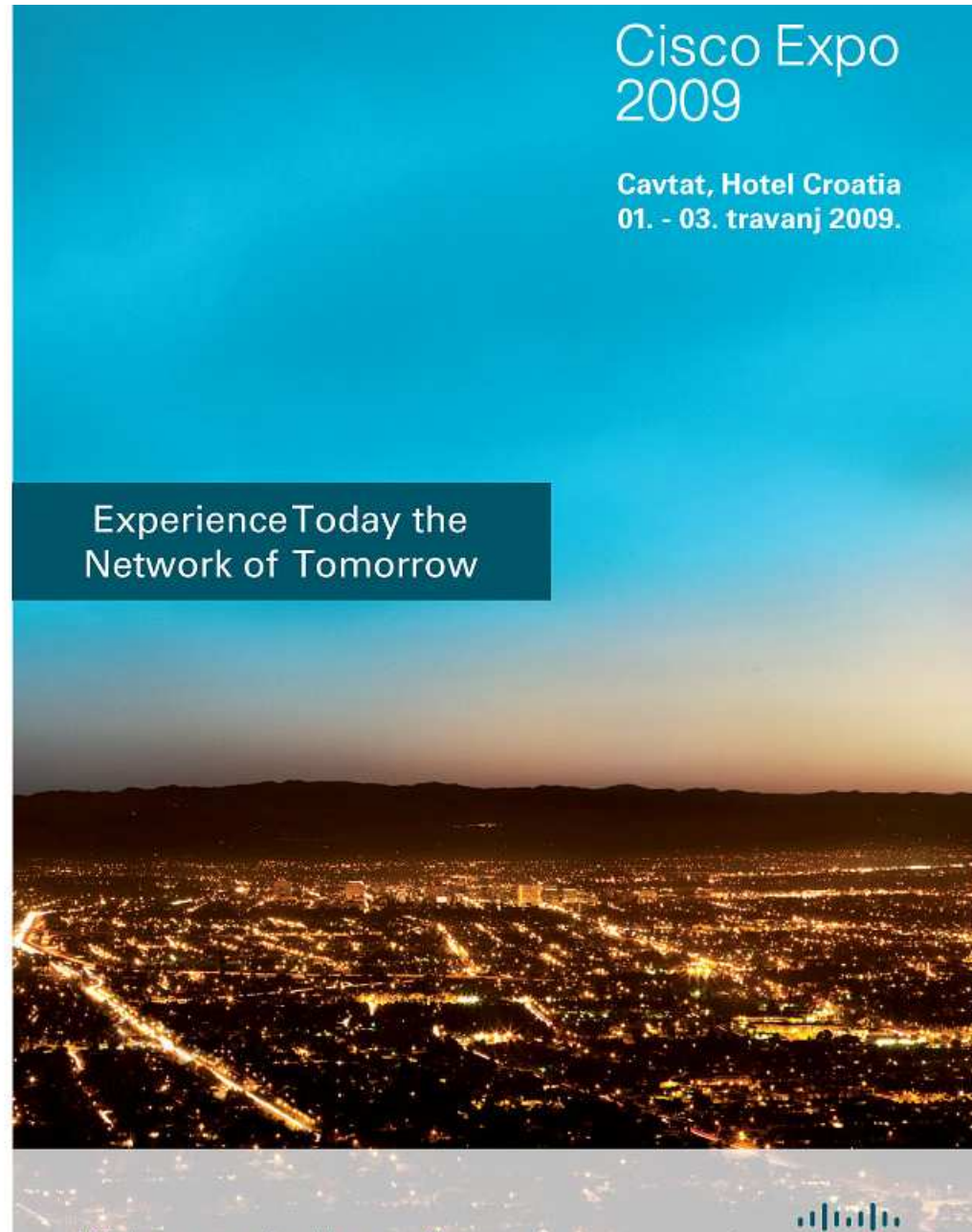
Data Center, Central Europe



Cisco Expo
2009

Cavtat, Hotel Croatia
01. - 03. travanj 2009.

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Business Needs are Driving the IT Revolution

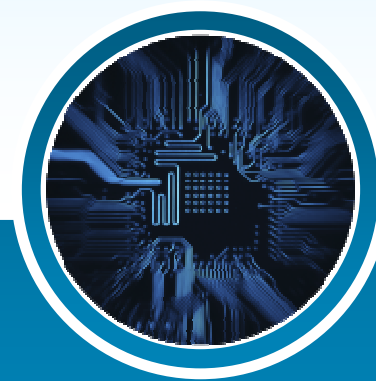
The data center is transforming into an agile and efficient networked environment




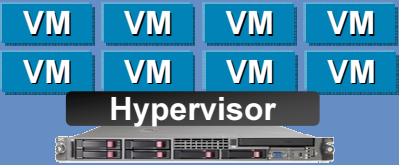
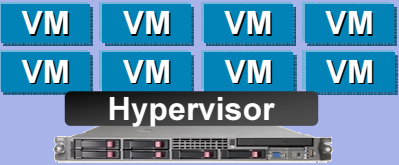
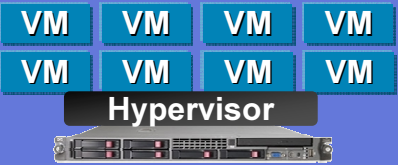
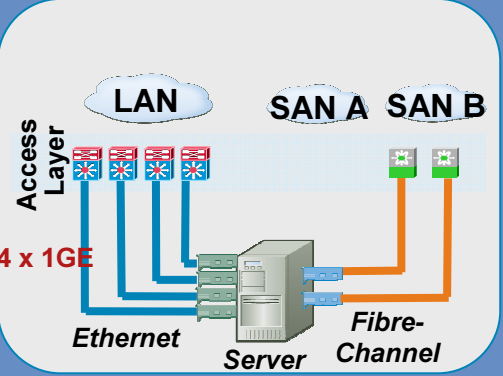
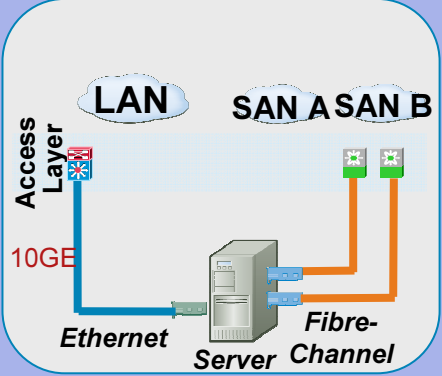
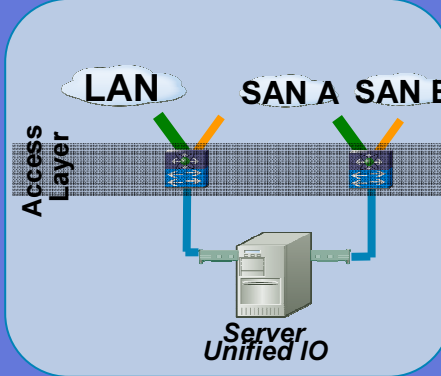
With this evolution, the architecture of the data center is changing



Virtualization has created a market transition...an opportunity to consolidate infrastructure and move resources dynamically

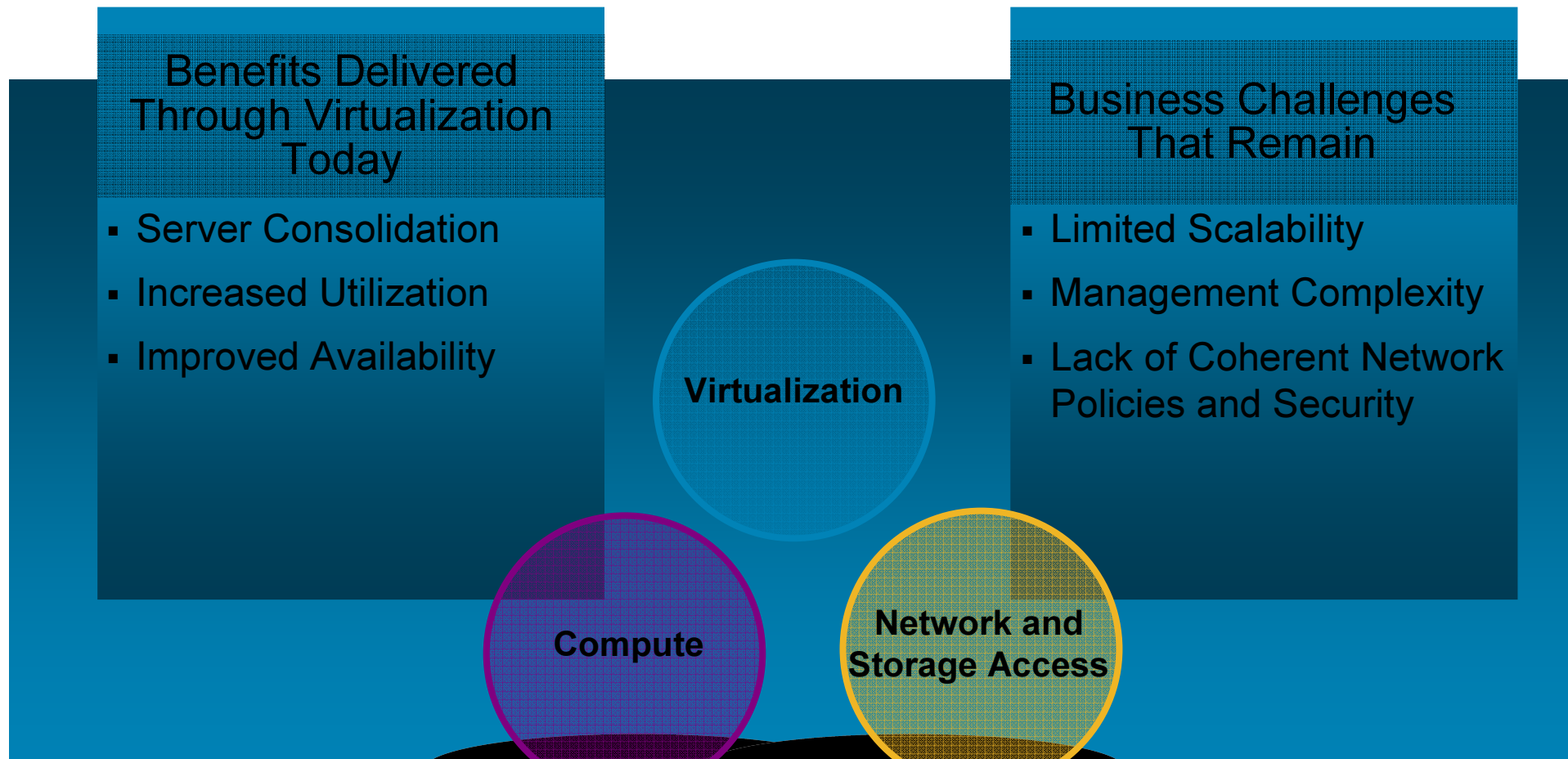


Server Virtualization - Key DC Trend

Today	Virtualization Step1	Virtualization Step2	Virtualization Step3
	 <p style="text-align: center;">GE</p>	 <p style="text-align: center;">10 GE</p>	 <p style="text-align: center;">10 GE/FCOE</p>
			
<ul style="list-style-type: none"> • Many under utilized servers • Cable sprawl • High power, cooling costs • High CAPEX • For every \$1 spent on server capex ~\$5 spent on opex 	<ul style="list-style-type: none"> • Cable sprawl • power, cooling costs • Less number of access layer Ethernet ports 	<ul style="list-style-type: none"> • GE to 10GE in access layer • Less interfaces – reduced Cable sprawl • Savings from power and cooling 	<ul style="list-style-type: none"> • Unified I/O - LAN & SAN consolidation • Reduce NICs, HBAs, • Reduce cabling • More Savings from power and cooling • Lower capex

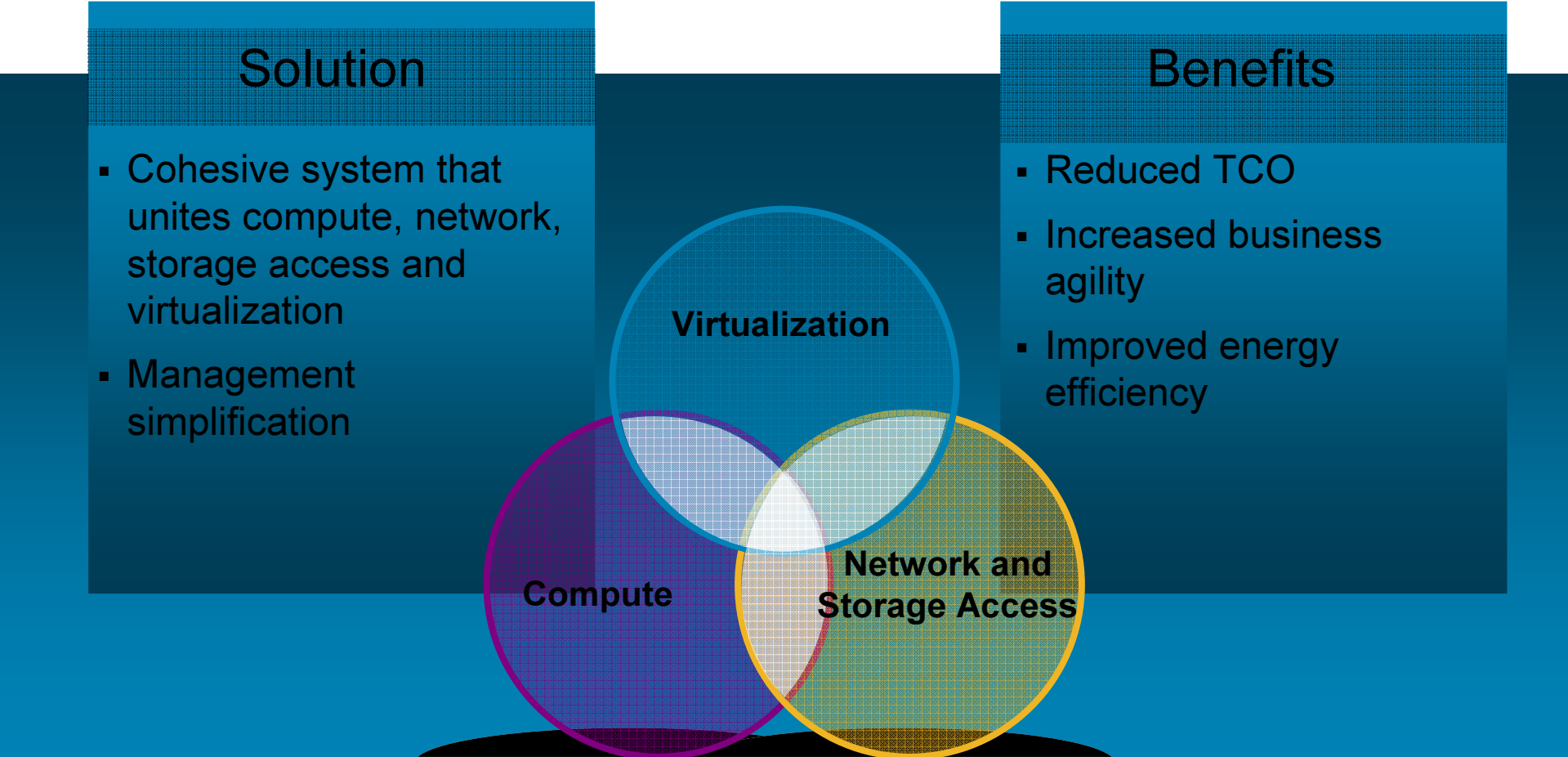
Virtualization Is Transforming the Data Center... but Challenges Remain

Data Center Virtualization Today



Unleashing the Full Potential of the Data Center

Unified Computing

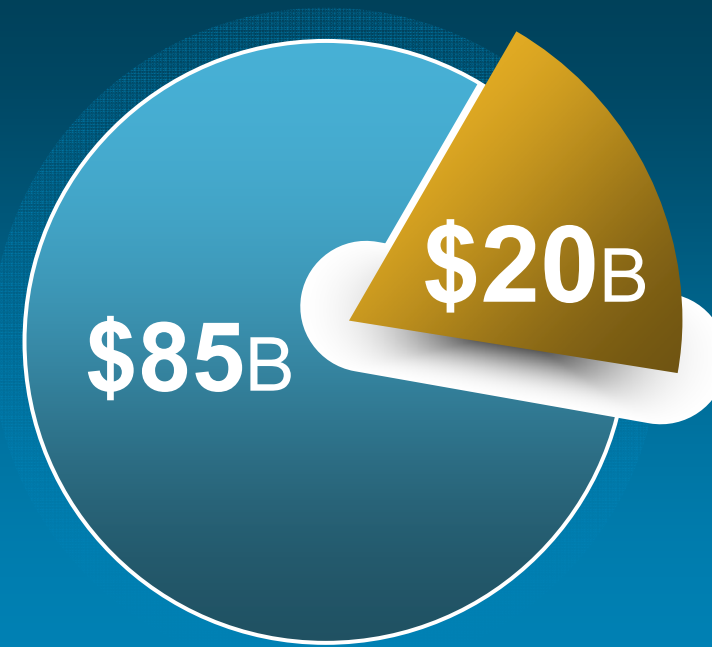


Market Opportunity

Unified Computing System meets the market need by delivering a unique solution that unleashes virtualization

\$85 Billion: the overall market opportunity for data center hardware, software, services, and networking

\$20 Billion: the market opportunity addressed by the Unified Computing System

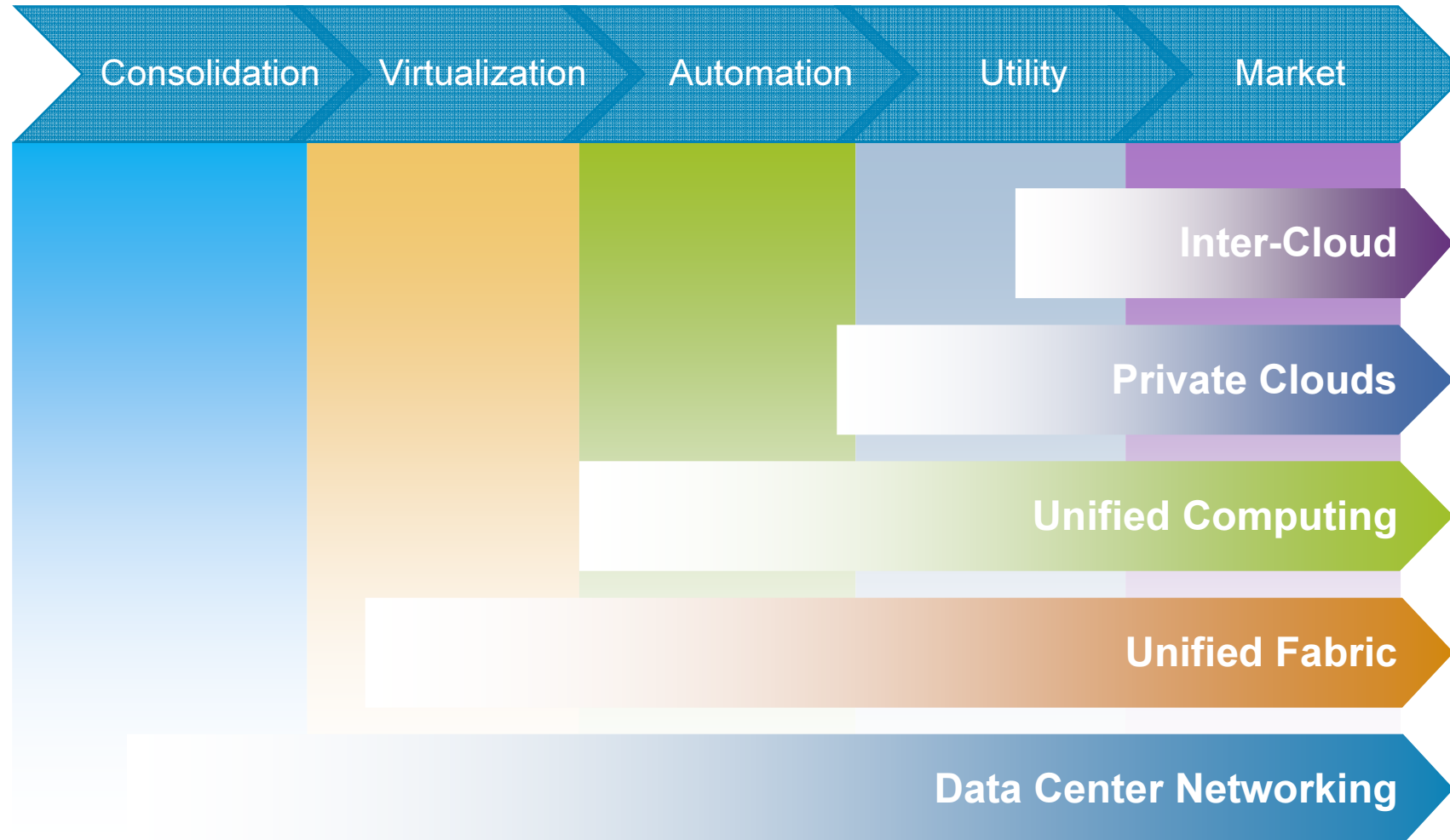


Why Cisco?

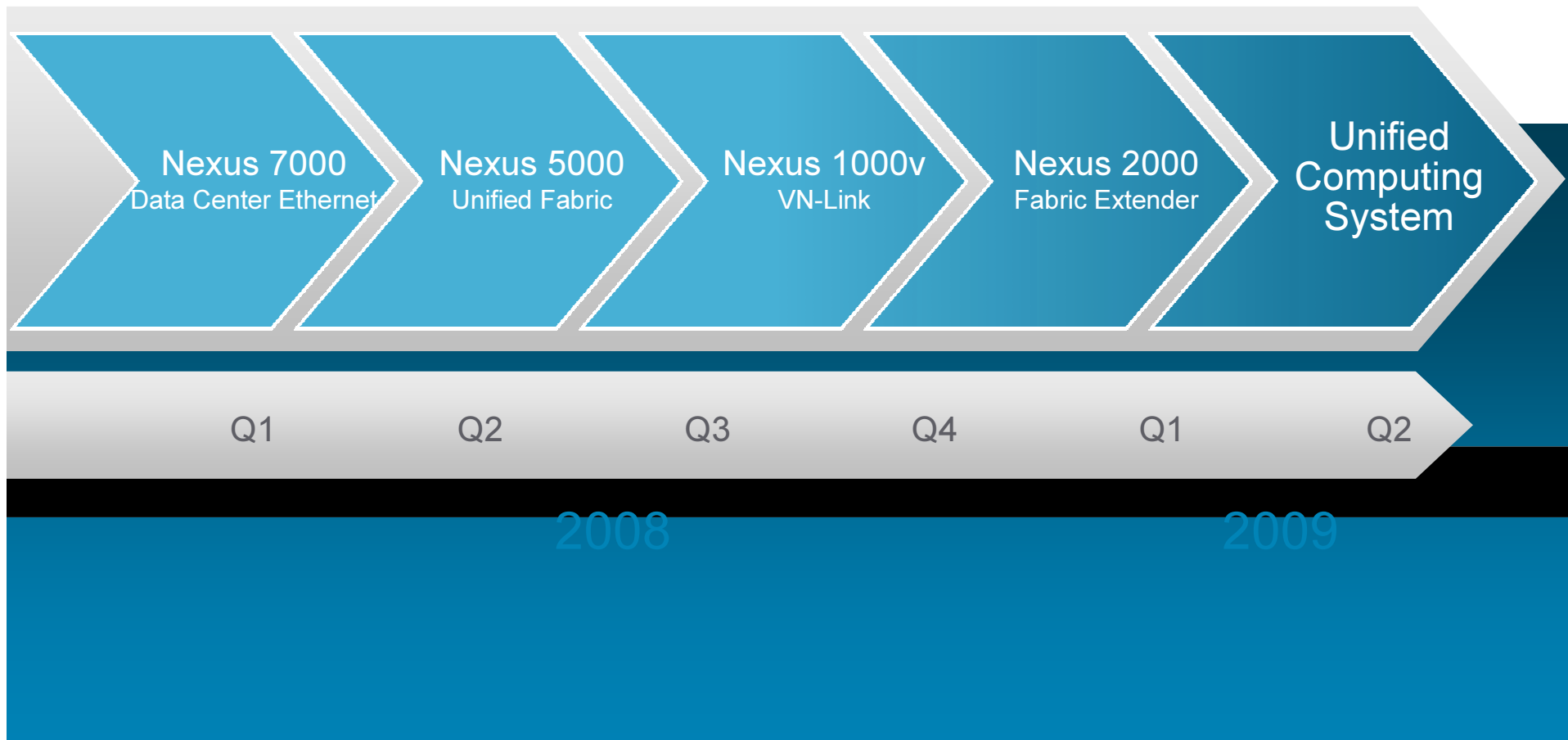
- **Cisco is uniquely positioned**
The network touches everything in the data center
- **Three years ago Cisco**
Began the journey to simplify data center infrastructure
- **We assembled a team**
Of experts from across the industry: Dell, Egenera, HP, Oracle, Sun, Veritas/Symantec, VMware, Xensource, and others
- **Delivered the innovative technology**
That formed the foundation for unified computing
- **We have a track record of success**
In market innovations:
 - IP telephony: new use of IP capability
 - TelePresence: new use of video
 - Collaboration: improve business productivity



United Computing Continues Data Center 3.0 Strategy

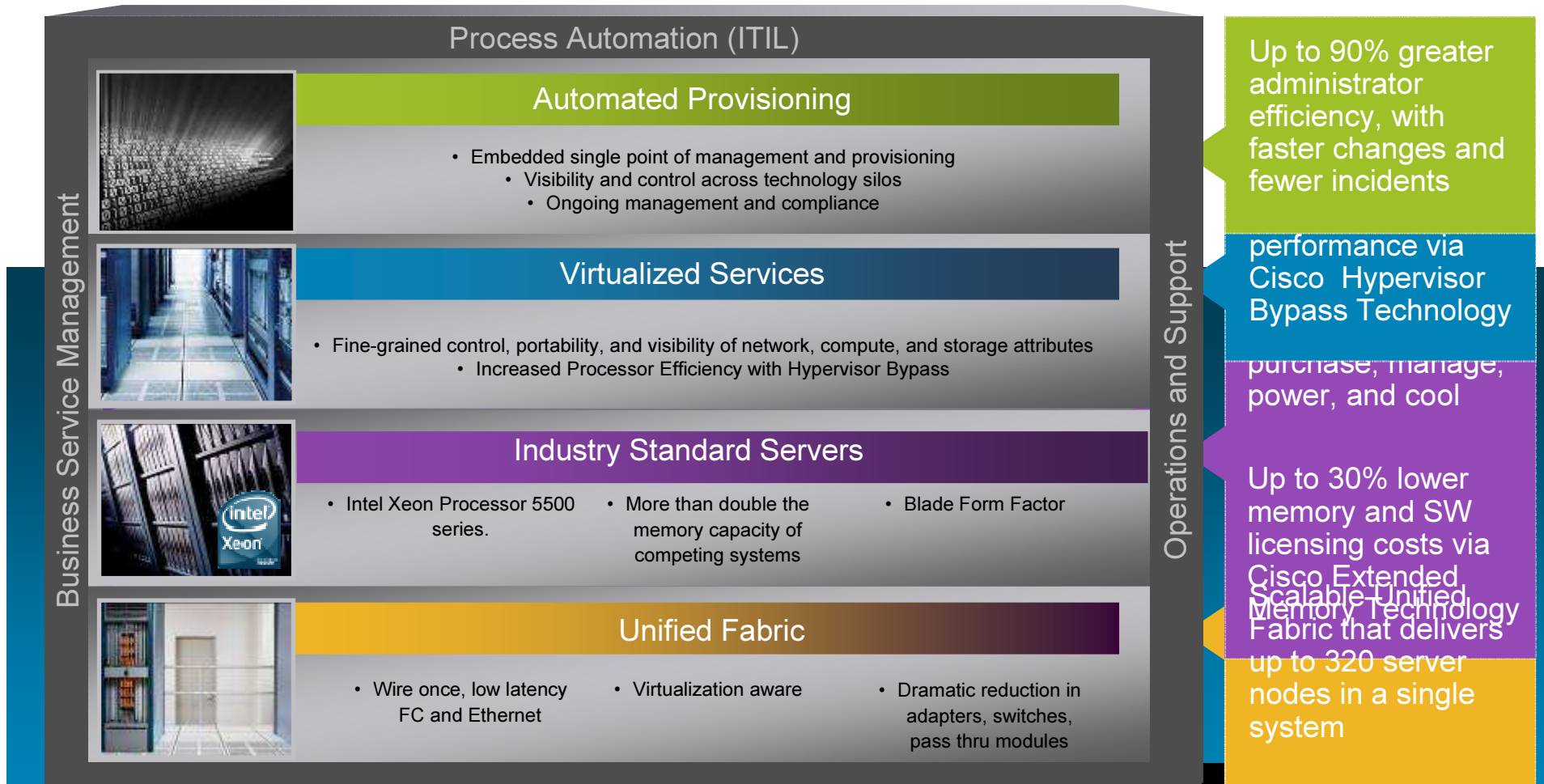


Technology Introduction Timeline

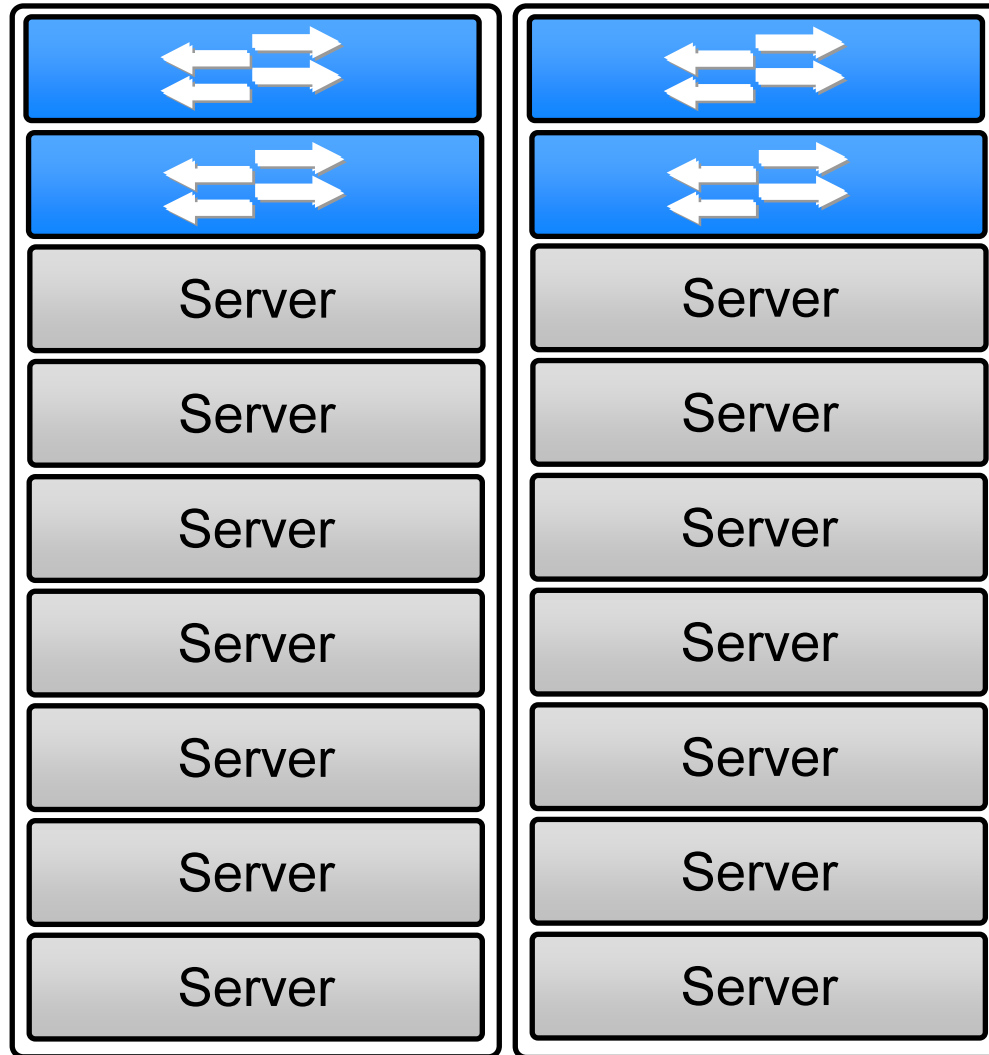


Cisco Unified Computing System

The Cisco Unified Computing System is designed to dramatically reduce datacenter total cost of ownership while simultaneously increasing IT agility and responsiveness.



Server Deployment: Rackmounts



- **First generation**

- Rack-optimized

- Top of Rack or End of Row switches

- Cables

- **Benefits**

- Space utilization

- Highly flexible

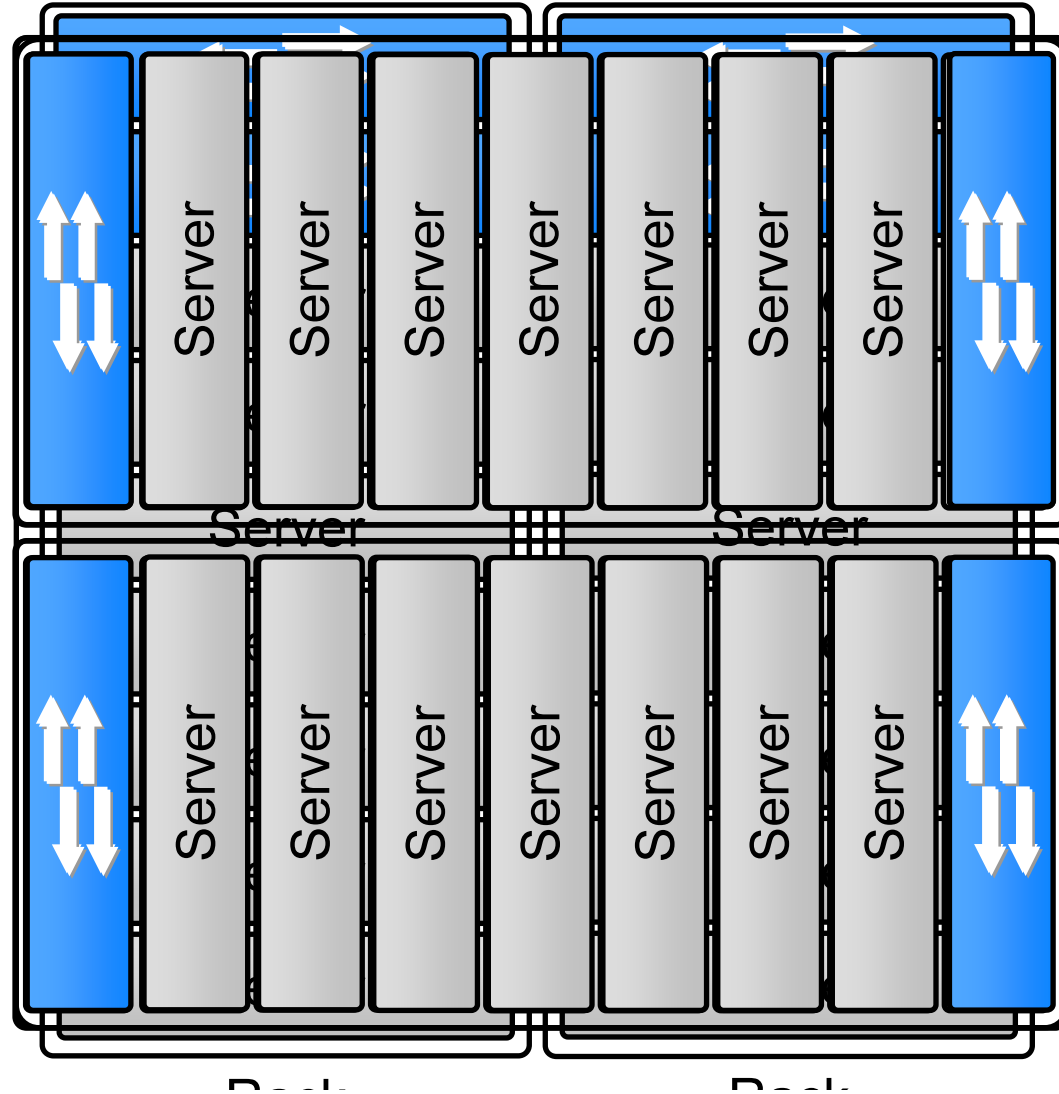
- **Weakness**

- Cabling

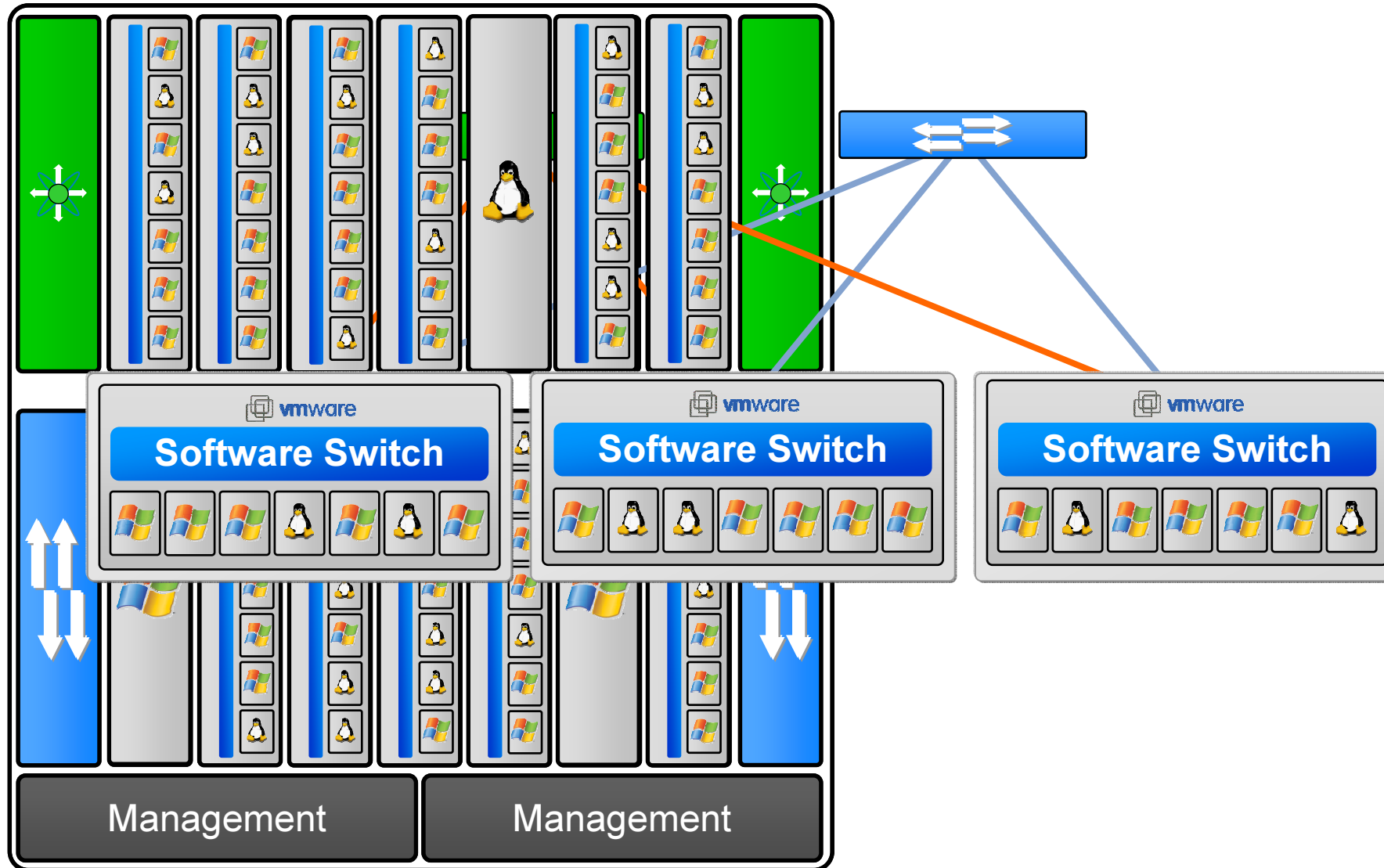
- Serviceability

- Power efficiency

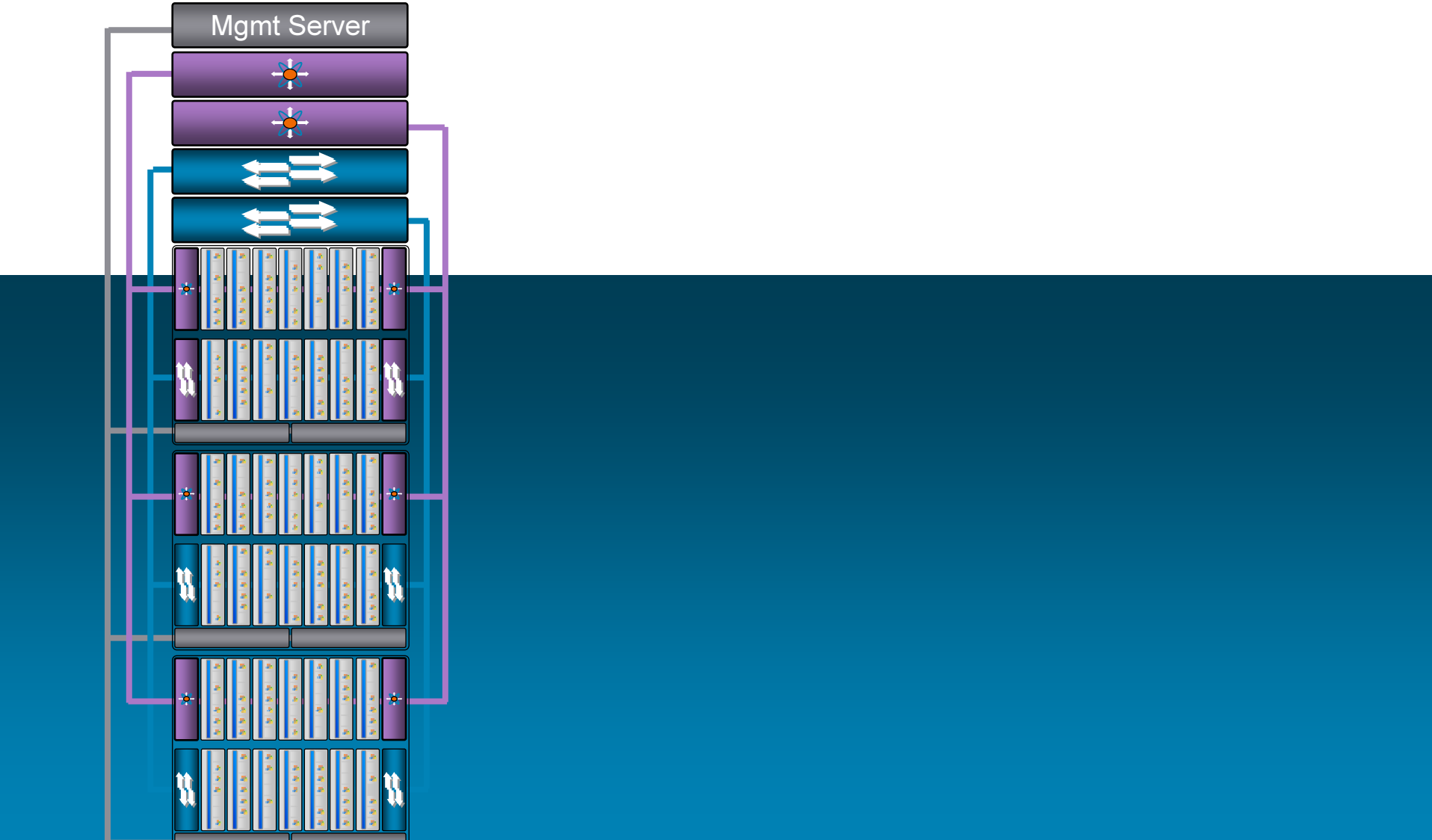
Server Deployment: Blades



Server Deployment Scale

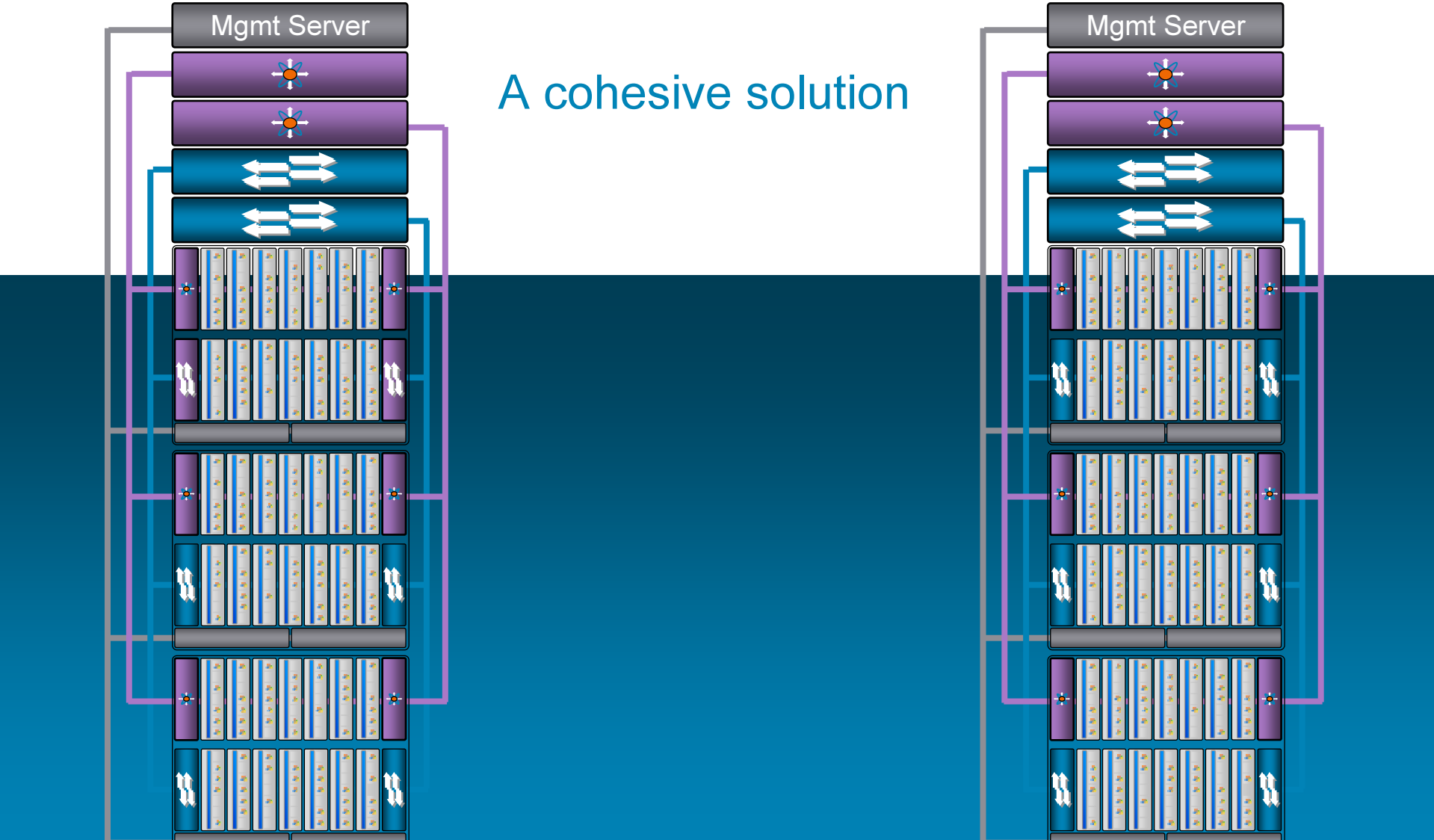


Simplifying the Data Center

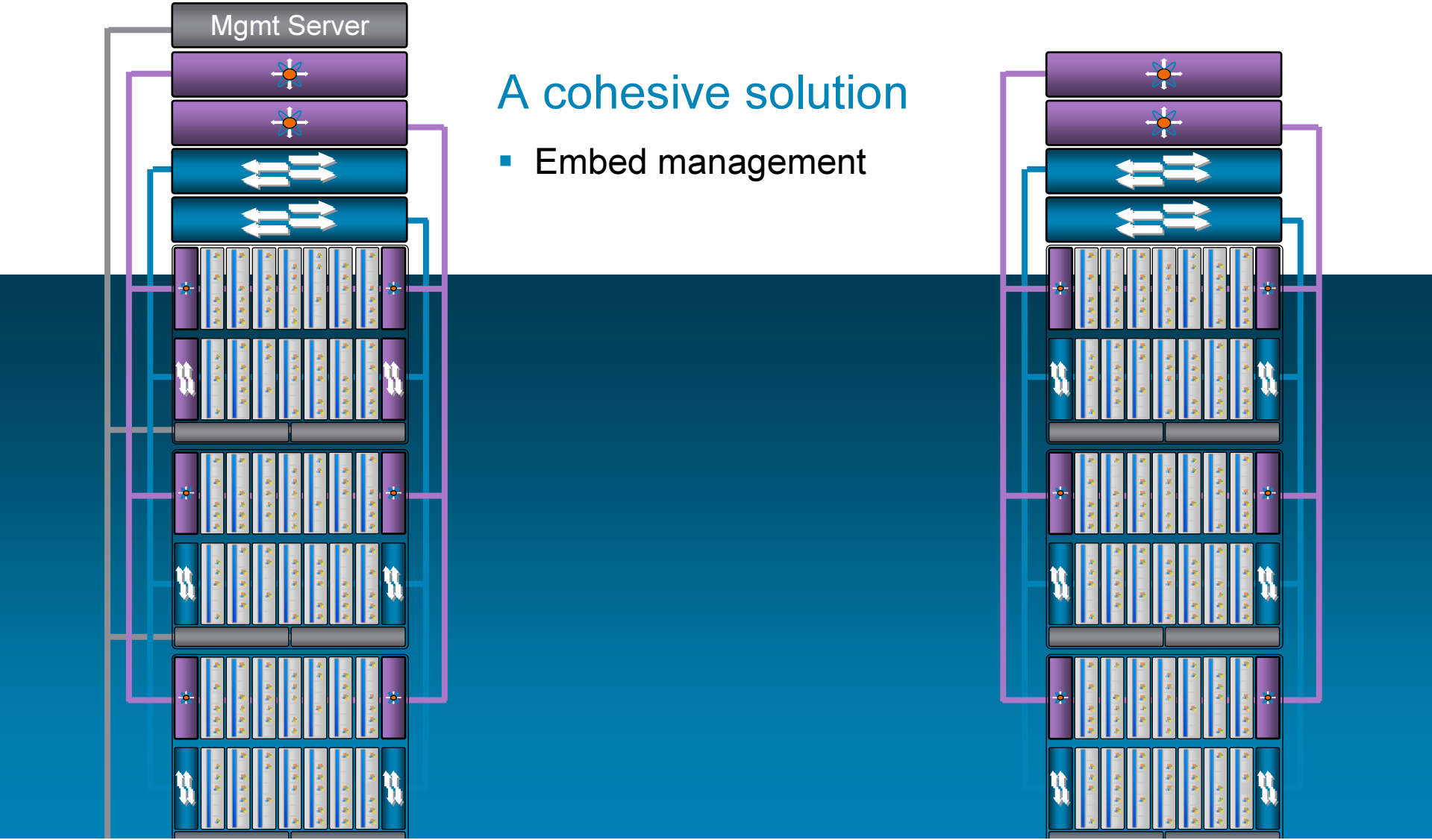


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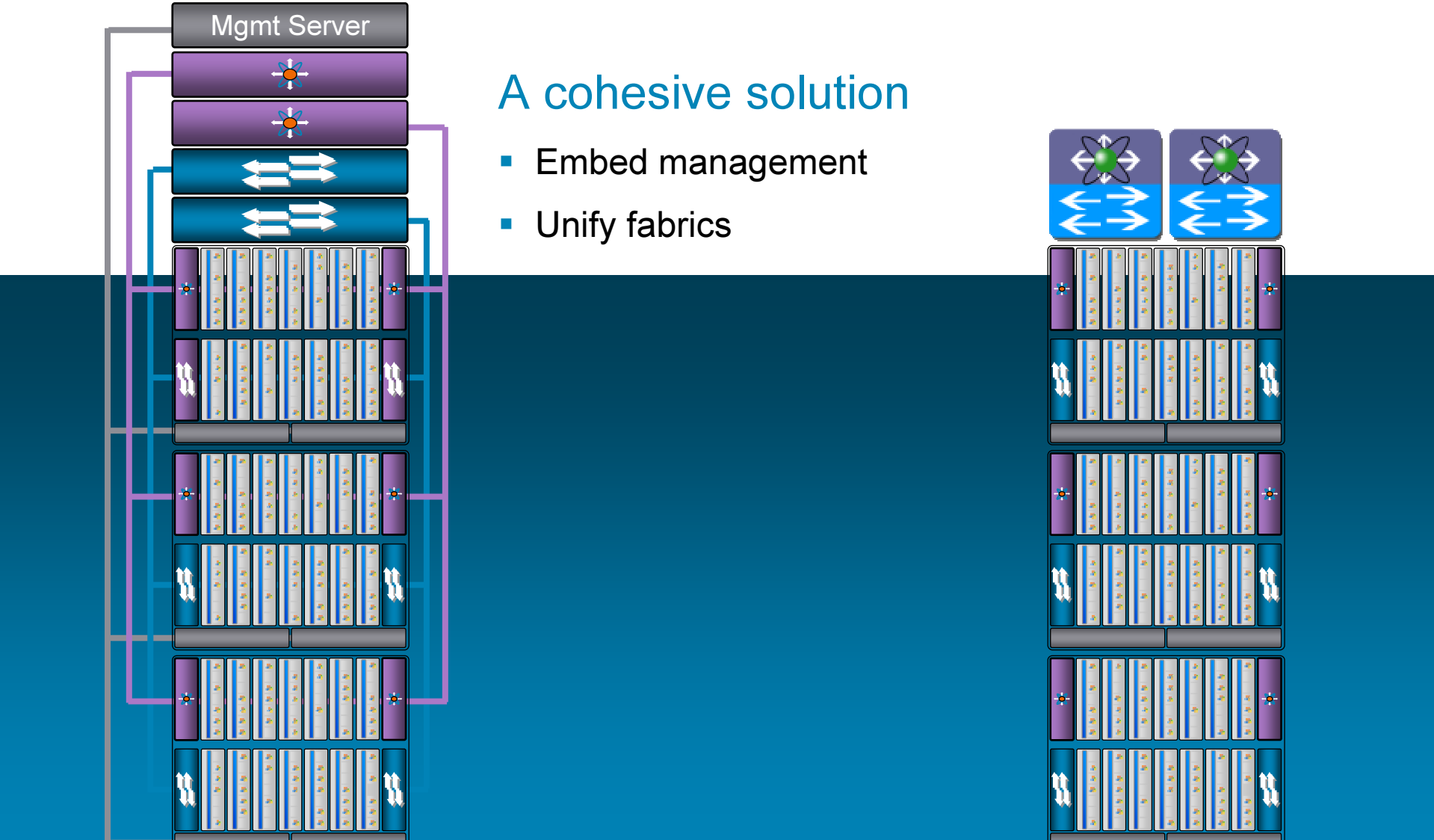
A cohesive solution



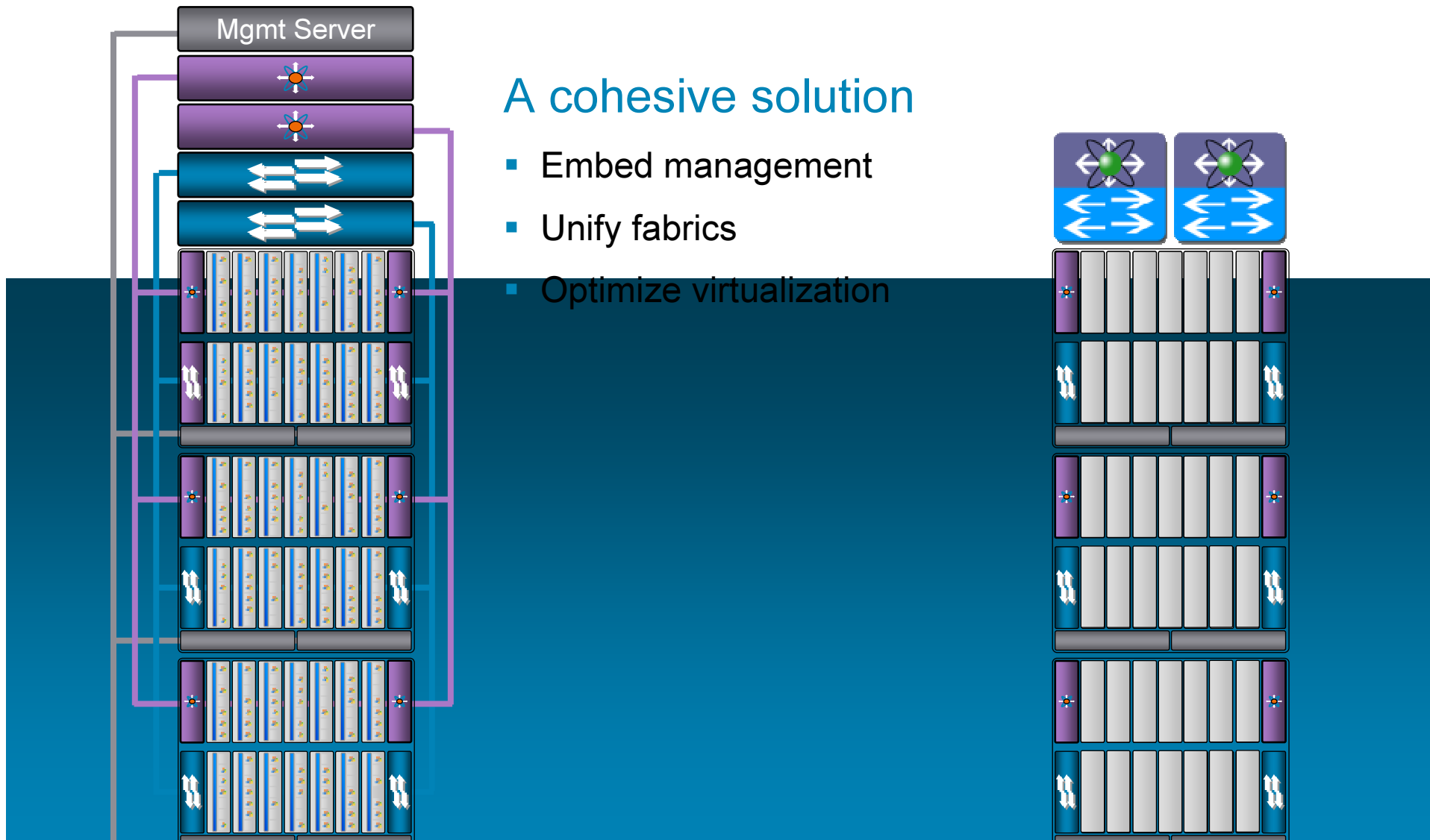
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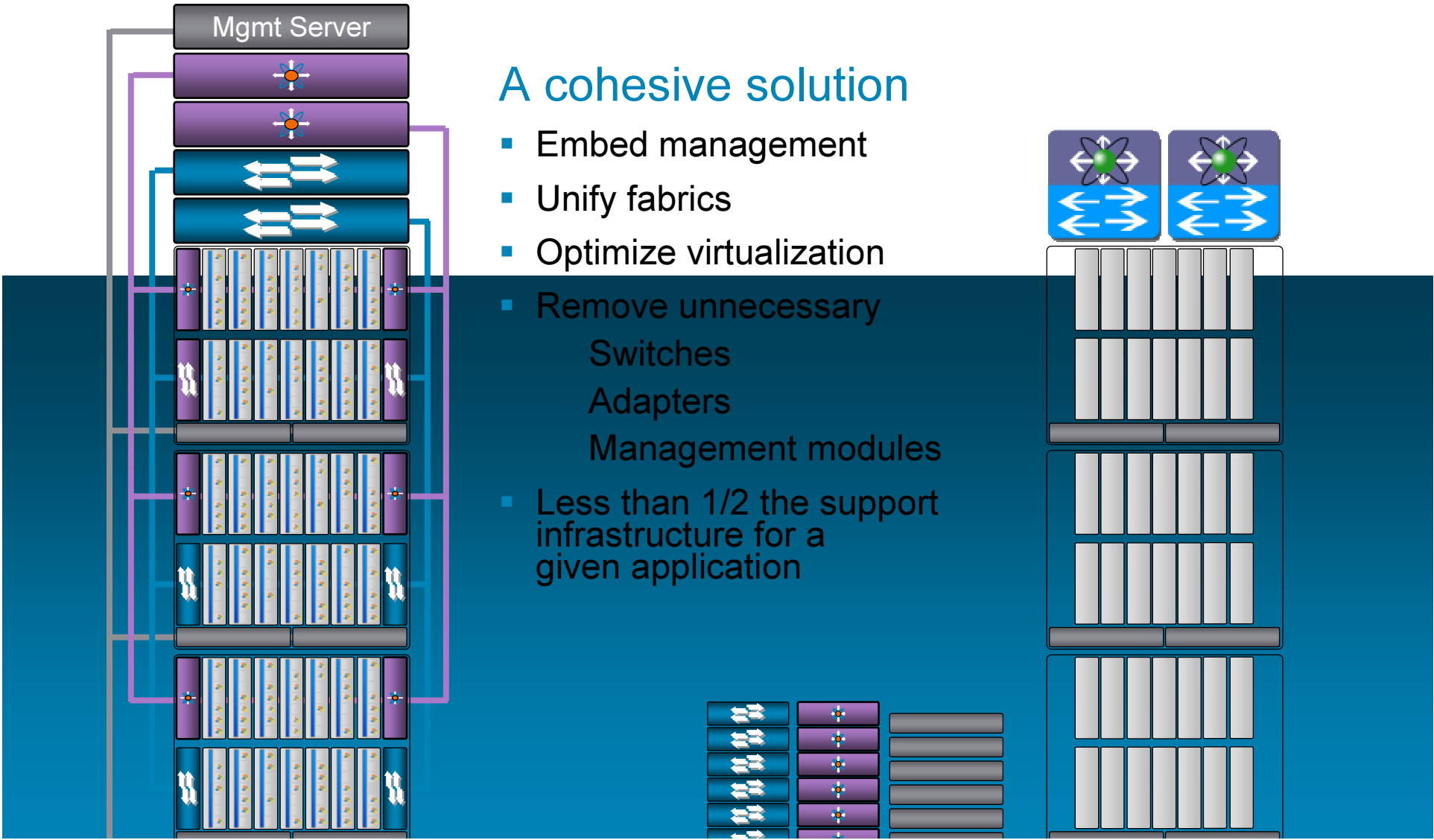
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Simplifying the Data Center

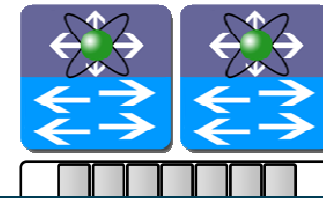


Simplifying the Data Center



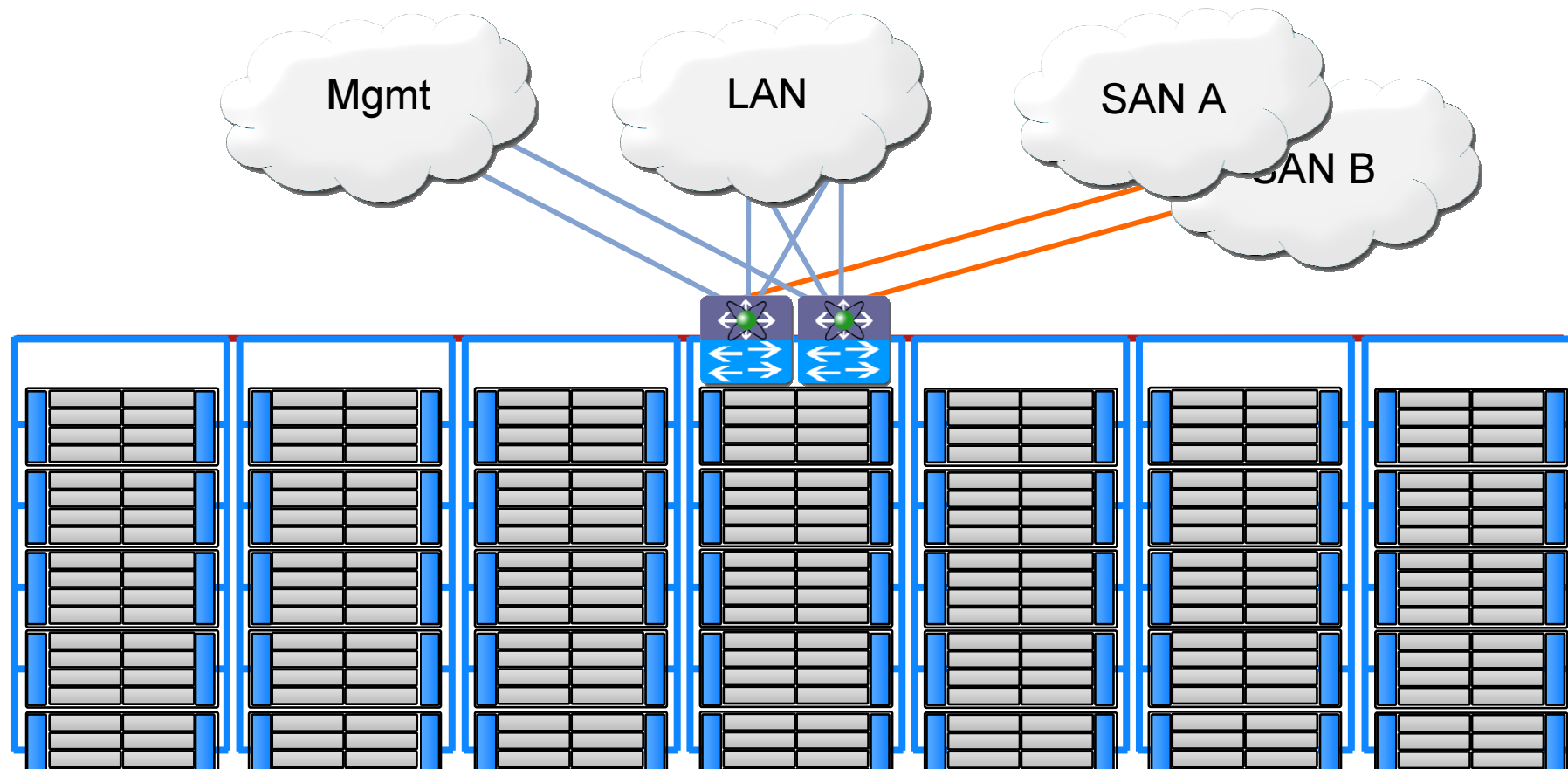
Cisco Unified Computing System

- UCS
 - Mgmt Server
 - Scalable compute platform
 - Integrated virtualization
 - Natural aggregation point: Network
- Unified embedded management



Our Solution: Unified Computing System

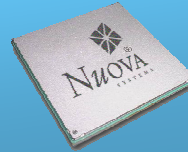
- Single, scalable integrated system
- Network + compute virtualization
- Dynamic resource provisioning



UCS nas Nexus Technology Components

UCS Building Blocks

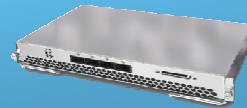
California Manager
Embedded in Fabric Switch



Fabric Switch
20 Port 10Gb FCoE
40 Port 10Gb FCoE



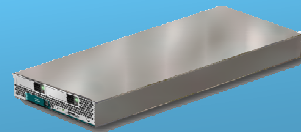
Fabric Extender
Logically part of Fabric Switch
Inserts into Blade Enclosure



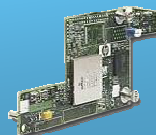
Blade Enclosure
Flexible bay configurations
Logically part of Fabric Switch



Blade(s)
Two blade types
Mix blade types within enclosure



Adapters
Four adapter options
Mix adapters within blade



Nexus Products



Nexus 5000
Unified Fabric



Nexus 2148
Fabric Extender



Nexus 1000V

CNAs with FCOE

Blade Chassis

- 6RU Chassis
 - Blades and Power supplies plug-in from front
- Blades
 - Power & cooling budget allows leading edge processor performance and memory capacity
 - Combinations of half slot and full slot blades
 - Up to 8 Half slot blades
 - Up to 4 Full slot blades

- Power Supplies
 - 4x 2,500W hot-plug Power Supplies
 - 90% efficient
 - N+N redundancy (grid redundant)
 - No zoning
 - 4 single phase 220V, IEC320-C19



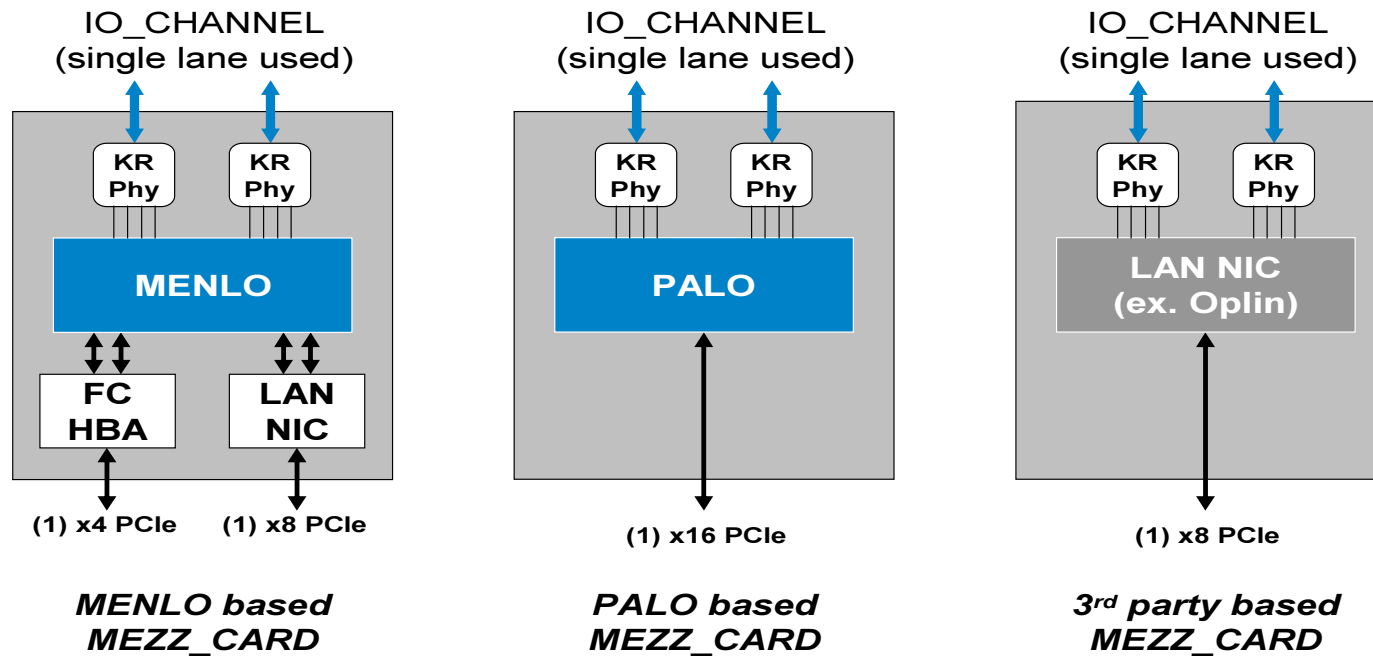
Half-Height Compute Blade (available at FCS)

- Based on Intel Nehalem-EP platform
 - Hardware enabled Virtualization architecture
- Half slot blade
 - Two Sockets
 - Twelve DDR3 DIMM sockets
 - Up to two SAS/SATA Disks
 - Hardware RAID 0 & 1
 - Single mezzanine adapter
 - Dual port 10Gb full duplex
- Mezzanine cards options:
 - Menlo CNA (Emulex / QLogic)
 - Nuova Palo
 - Intel Oplin Dual 10Gb Ethernet NIC
- OS support:
 - VMware, Windows, Redhat, Novell/SuSE etc.
- Remote and front panel KVM, vMedia and Console

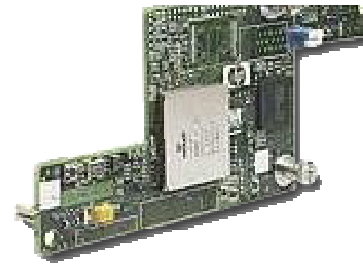


Mezzanine Cards (Server I/O Options)

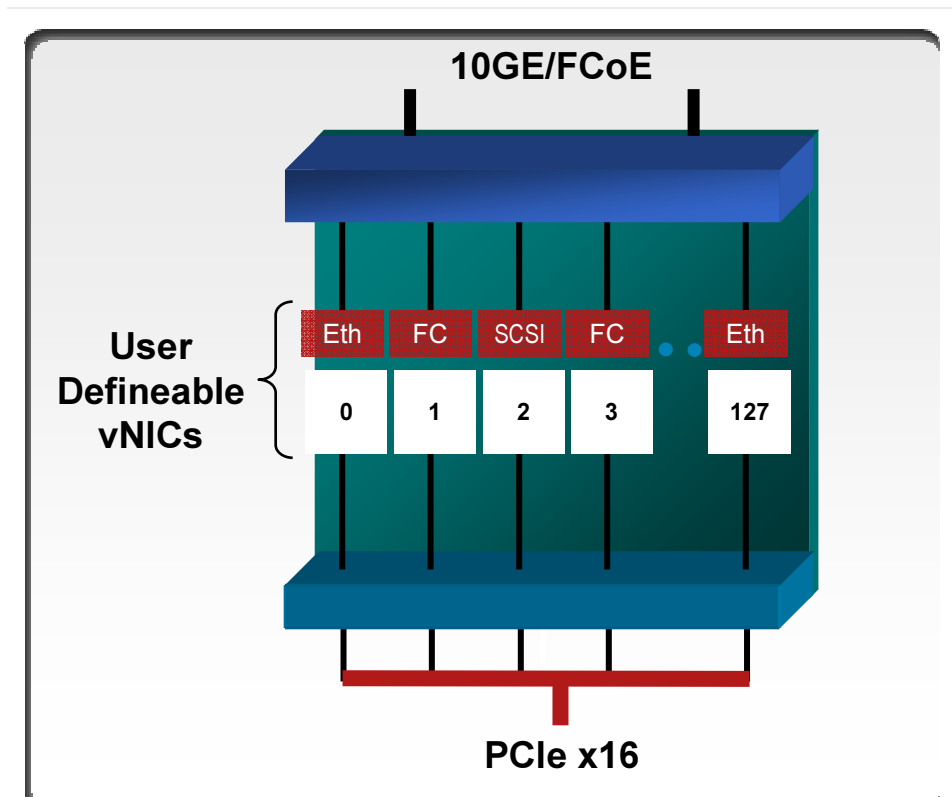
- Menlo
 - Intel 82598 (Oplin)
 - Qlogic ISP2432 or Emulex Zephyr
- PALO
 - Instantiates Fibre Channel, Ethernet/LAN, virtual NICs
(in conjunction with NIV support from Central Switch)
- Oplin (Intel 82598)
 - 3rd party based



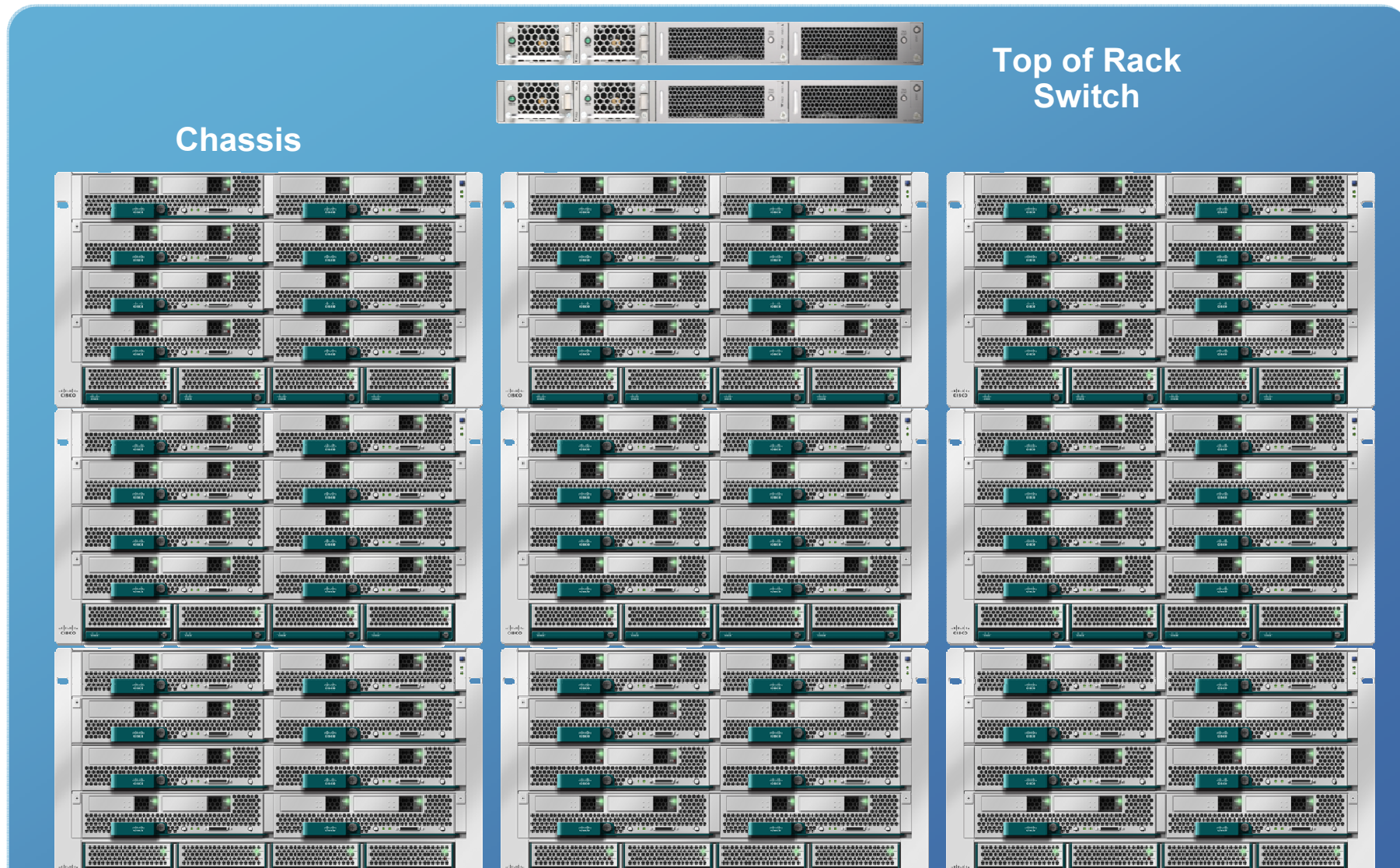
California Palo Adapter



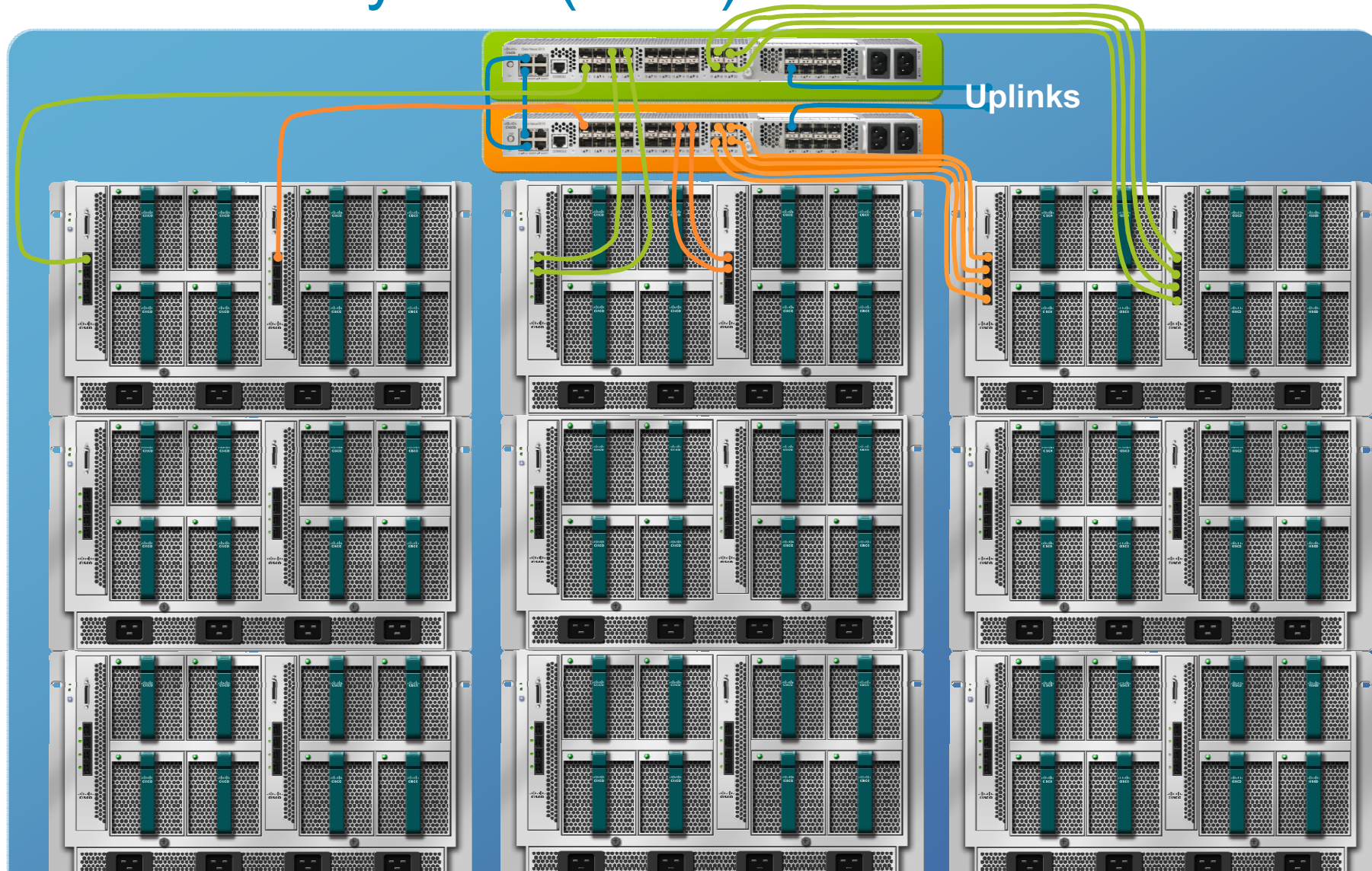
- Virtualized adapter designed for both single-OS and VM-based deployments
- Provides mobility, isolation, and management from the network
 - Secure
 - Transparent to hosts
- Cut-through architecture
- High Performance
 - 2x 10Gb
 - Low latency
 - High BW IPC support
- **128 vNICs**
 - Ethernet, FC or SCSI
 - 500K IOPS
 - Initiator and Target mode



Overall System (Front)

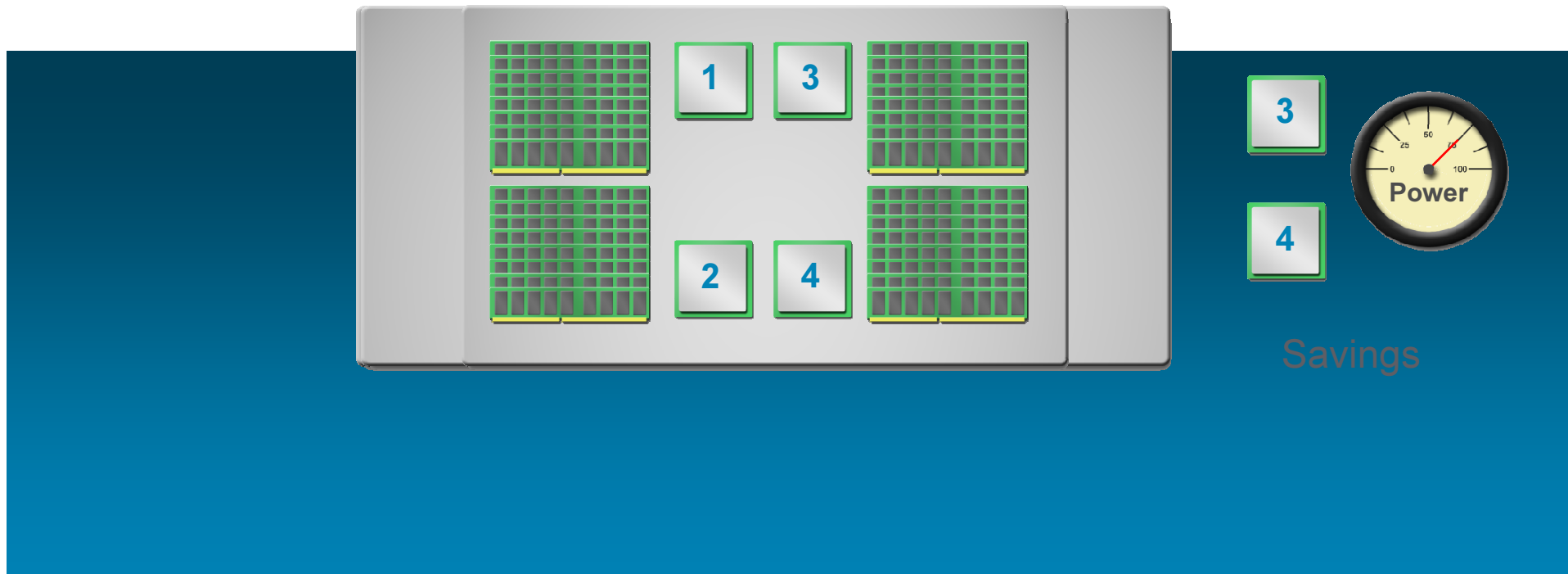


Overall System (Rear)



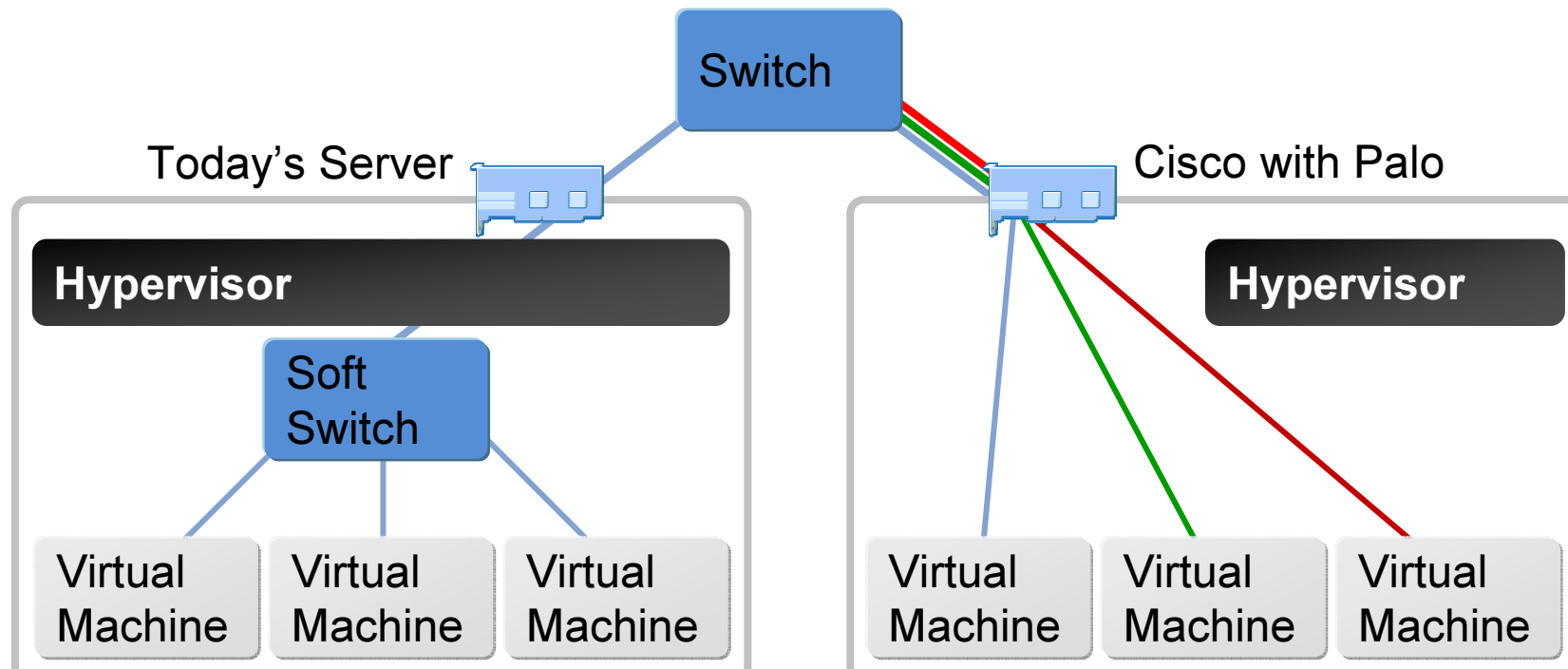
Memory Expansion

Higher server consolidation & larger VM density
Reduces CPU, power/cooling, and SW licensing costs
Competition - max 18 & high density with proprietary tech



Virtualization Adapter

True wire once architecture – highly dynamic
Network policy and visibility brought to VMs
Hypervisor bypass support – increases performance
Reduce NIC and mezz card infrastructure



Service Profiles

Blade identities can be duplicated, automatically moved and deployed, and failed-over to another blade

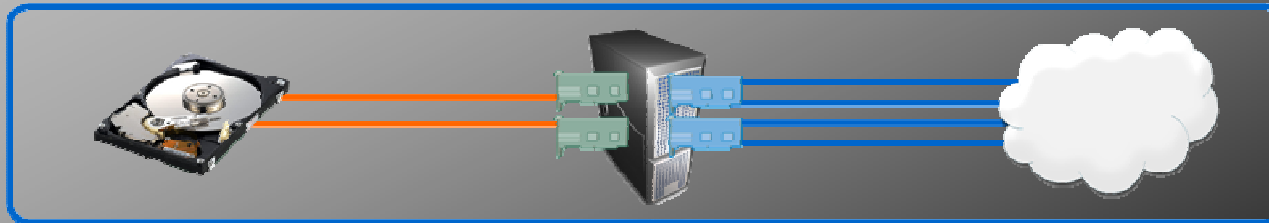
Firmware and bios included – competition does not do

“Stateless” environment

Significant process/labor savings

Service Profile

- Encapsulation of HW state – MAC, WWN, Firmware, BIOS



Service Profiles

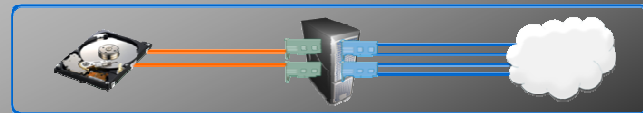
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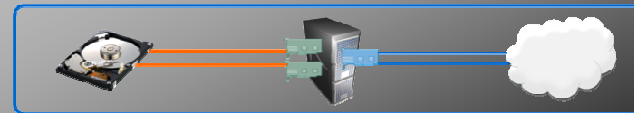
“Stateless” environment

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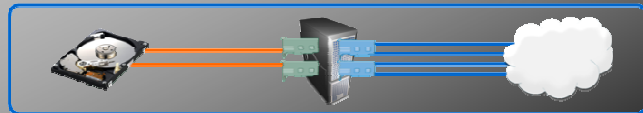
Service Profile



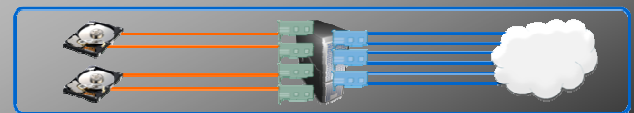
Service Profile



Service Profile



Service Profile



Announcing Unified Computing System

A single system that unifies

- Compute: Industry standard x86
- Network: Unified fabric
- Virtualization: Control, scale, performance
- Storage Access: Wire once for SAN, NAS, iSCSI

Embedded management

- Increase scalability without added complexity
- Dynamic resource provisioning
- Ability to integrate with broad partner ecosystem

Energy efficient

- Fewer servers, switches, adapters, cables
- Lower power and cooling requirements
- Increase compute efficiency by removing I/O and memory bottlenecks

Sample Case Study

Large Enterprise

Legacy System

- 320 Servers
- Time to provision new applications: days to weeks
- \$21M spent on CapEx
- \$800K spent on power and cooling (3 year)
- 3,520 Cables
- 31 Racks

Unified Computing System

Savings

- 320 Servers
- Time to provision new applications: minutes
- \$12M spent on CapEx **43%**
- \$650K spent on power and cooling (3 year) **19%**
- 480 Cables **86%**
- 12 Racks **61%**

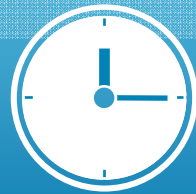
Business Benefits

Unified Computing System



Reduces total cost of ownership

- CAPEX: Up to 20% reduction on average
- OPEX: Up to 30% reduction on average
- Cooling and power efficient



Increases business agility

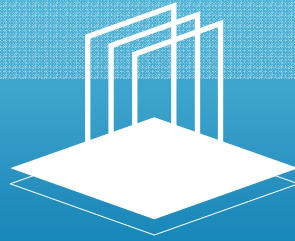
- Provision applications in minutes instead of days
- Automation reduces service outages
- Just-in-time resource provisioning



Investment protection

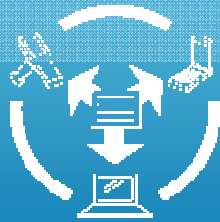
- Industry standards-based
- Co-exist with existing data center infrastructure
- Leverage existing management applications via API

Initial Target Customers



Virtualization

- IT organizations with large server and data center virtualization initiatives



Large Data Set

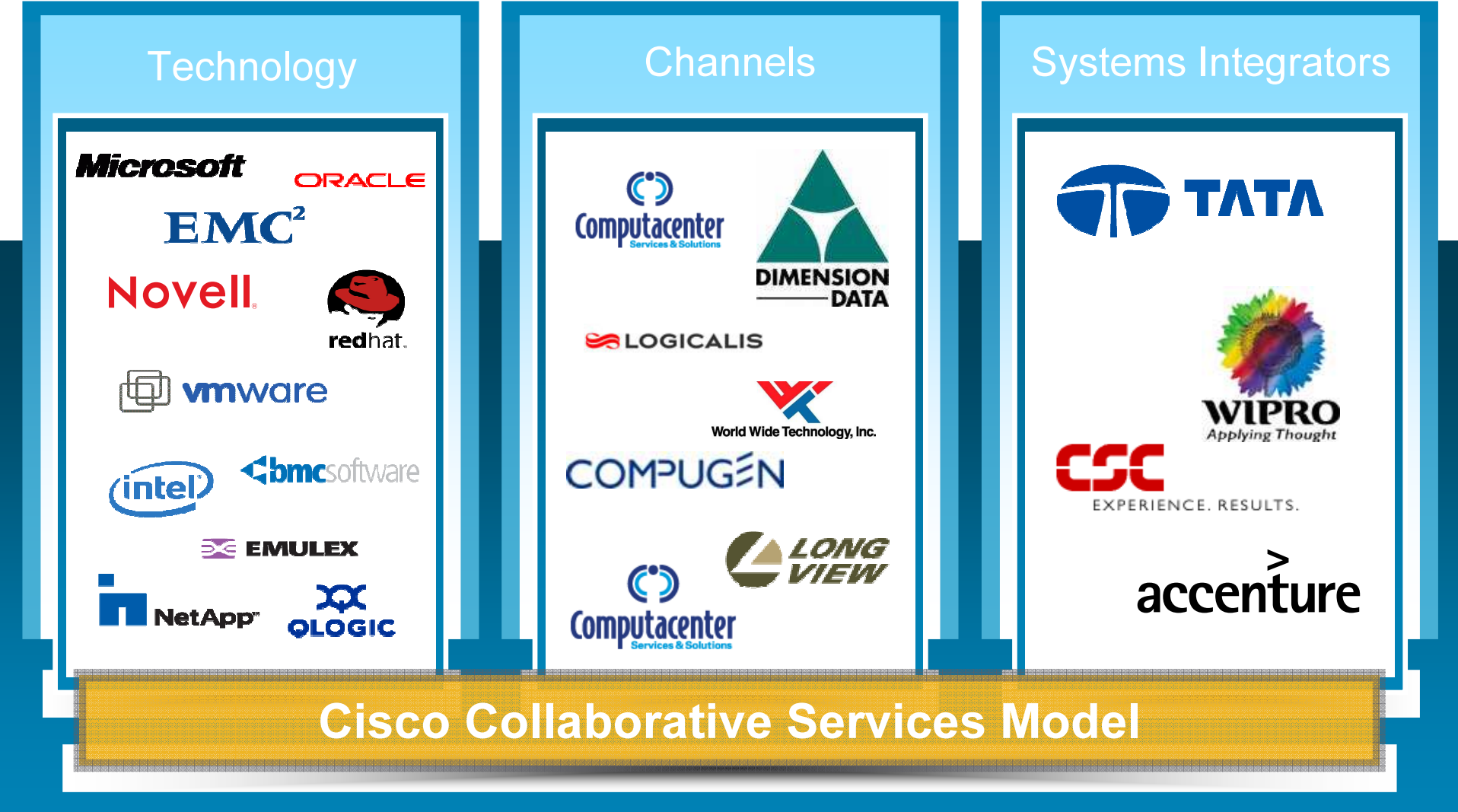
- Applications requiring large memory such as business intelligence, financial and engineering modeling



Service Provider













- Hosted solutions, multi-tenancy

Partnering with Industry Leaders



Cisco Unified Computing System

Technology Partners

	Adapter	OS	Hypervisor	Application	Mgmt	Storage
					BladeLogic	
					Smarts	CLARiiion/ Symmetrix
	CNA					
	10 GbE					
		Windows Server	Hyper-V	SQL Server	System Center	
					System Center	FAS
		SUSE Linux				
		OEL	Oracle VM	Oracle RAC Oracle DB		
	CNA					
		RHEL				
				Business Suite		
			ESX		vCenter	

Summary

The Right Solution at the Right Time

Virtualization has created a market transition

A unique opportunity to create a more agile and efficient infrastructure where resources can dynamically move within the data center

Cisco is uniquely positioned

to lead the transformation to the next generation data center with a new architectural approach

The Unified Computing System

is a next-generation data center platform that unites compute, network, storage access, and virtualization into a cohesive system

The Unified Computing System unleashes the power of virtualization

Helping customers to reduce TCO, increase business agility and improve energy efficiency





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