



Benefits of the Unified Data Center



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The Data Center is at a Market Transition

Transformation

- Technology Advances
- Energy Efficiency
- Economic Efficiency
- Dynamic Business Environment

Challenges

- Scalability
- Management Integration
- Application Migration
- Coherent Policies and Security

Virtualization

Compute

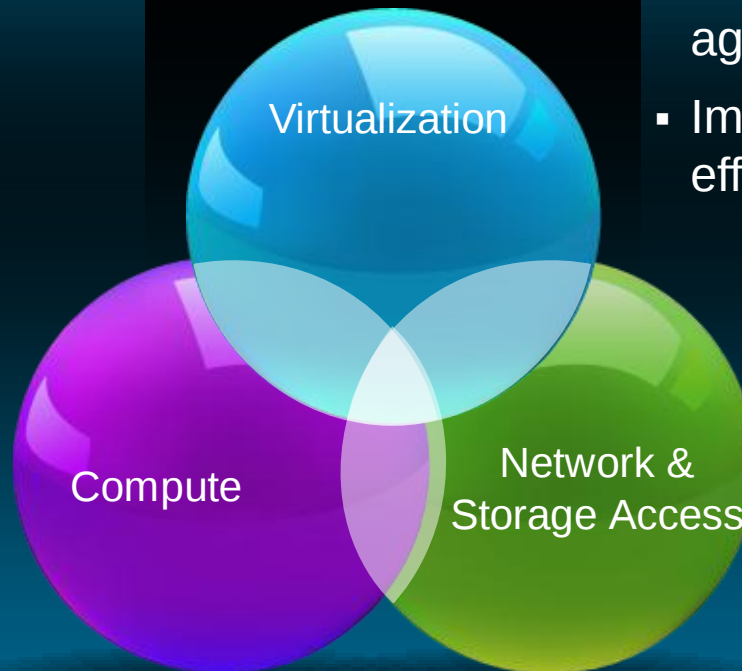
Network &
Storage Access

Unleashing the Full Potential of the Data Center

Solution

- Cohesive system that unites compute, network, storage access and virtualization
- Management simplification

Unified Computing



Benefits

- Reduced TCO
- Increased business agility
- Improved energy efficiency

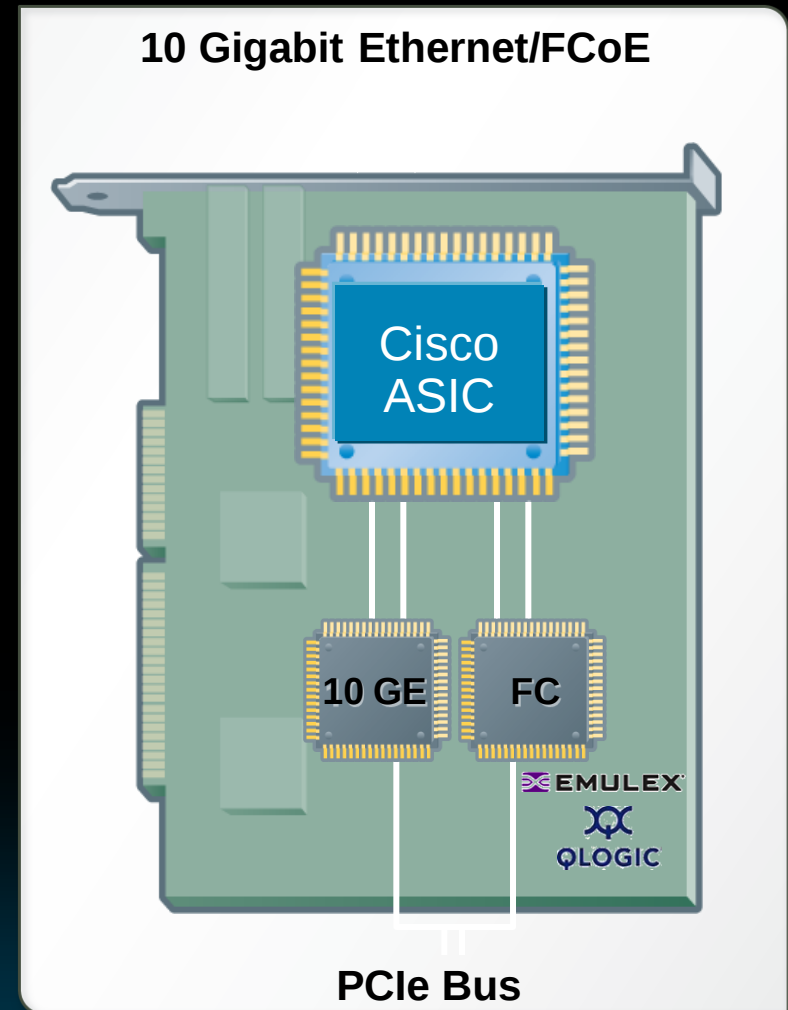
Unified I/O and Fabric



Unified I/O

Delivered via Converged Network Adapter (CNA)

- Replaces multiple adapters per server
 - Consolidates 10 GE and FC on a single interface
- Offers off-the-shelf NIC and HBA ASICs from Qlogic and Emulex
 - Dual 10 Gigabit Ethernet/FCoE ports
- Supports native drivers and utilities
 - Customer-certified stacks
- Minimum disruption in existing customer environments
- Supports PFC and DCBX
- Linux (SLES and Redhat) and Windows versions



Unified Fabric

Delivered over 10GbE

- Simplifies infrastructure and lowers TCO

Fewer cables, adapters, switches

Less equipment to power and cool

- Multiple, standards-based options

Lossless 10Gb Ethernet IEEE 802.1Qbb, 802.1Qaz, 802.1Qau

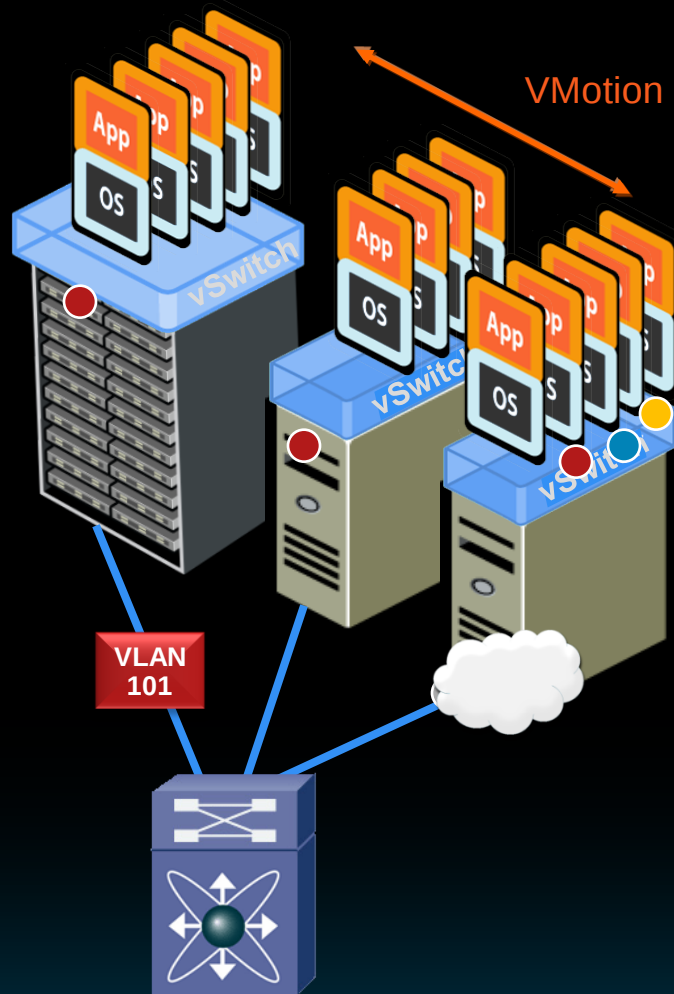
Fibre Channel over Ethernet T11/FC-BB-5

iSCSI

- Every host can mount any storage device
- Ubiquitous connectivity



Unified Visibility & Control for Server Virtualization



Problems:

- VMotion may move VMs across physical ports—policy must follow
- Impossible to view or apply policy to locally switched traffic
- Cannot correlate traffic on physical links—from multiple VMs

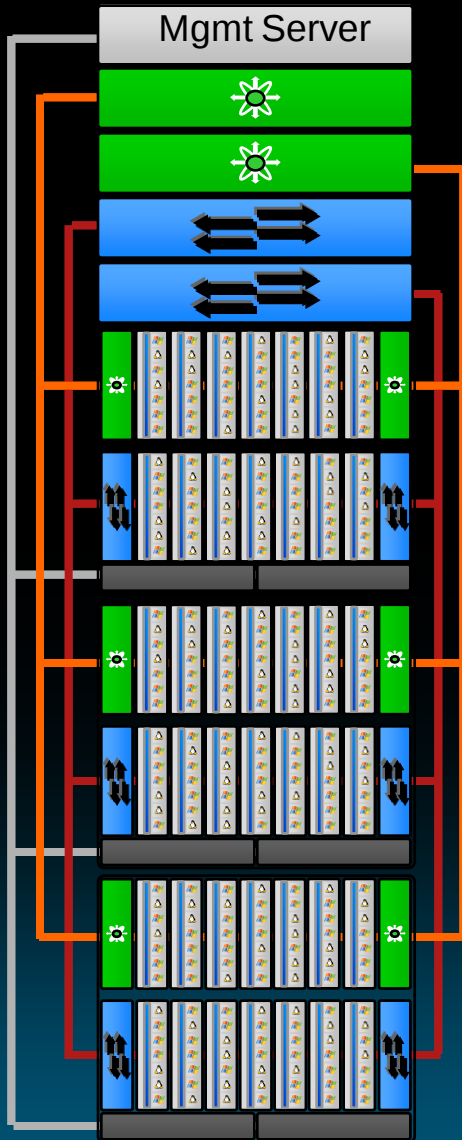
VN-Link Technology:

- Extends network visibility to the VM
- Policies configured per VM with full mobility
- Coordinated, coherent management

Unified Computing



Simplify

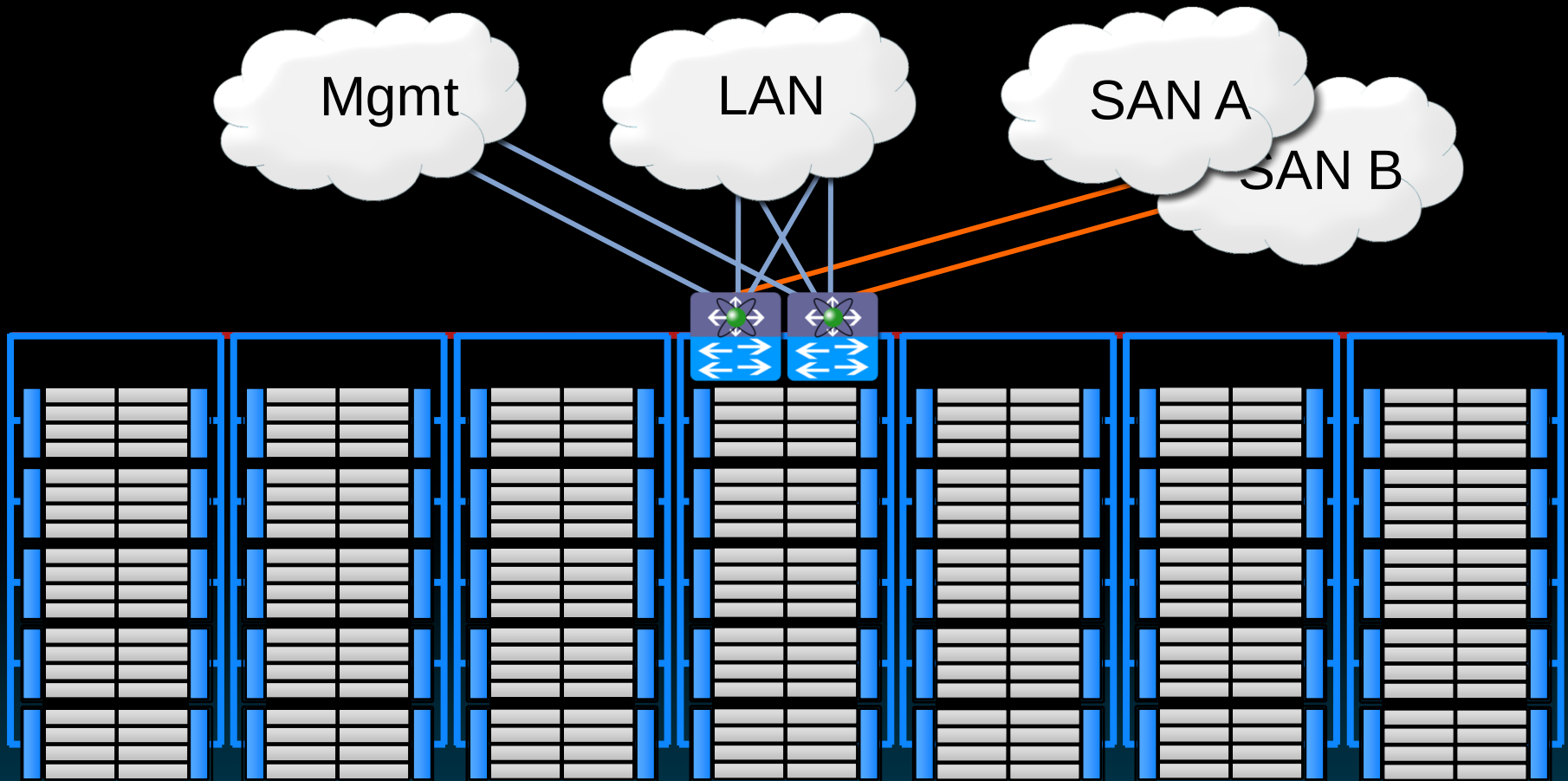


- Embed management
- Unify fabrics
- Optimize virtualization
- Remove unnecessary switches, adapters, management modules
- 1/2 the support infrastructure for a given workload

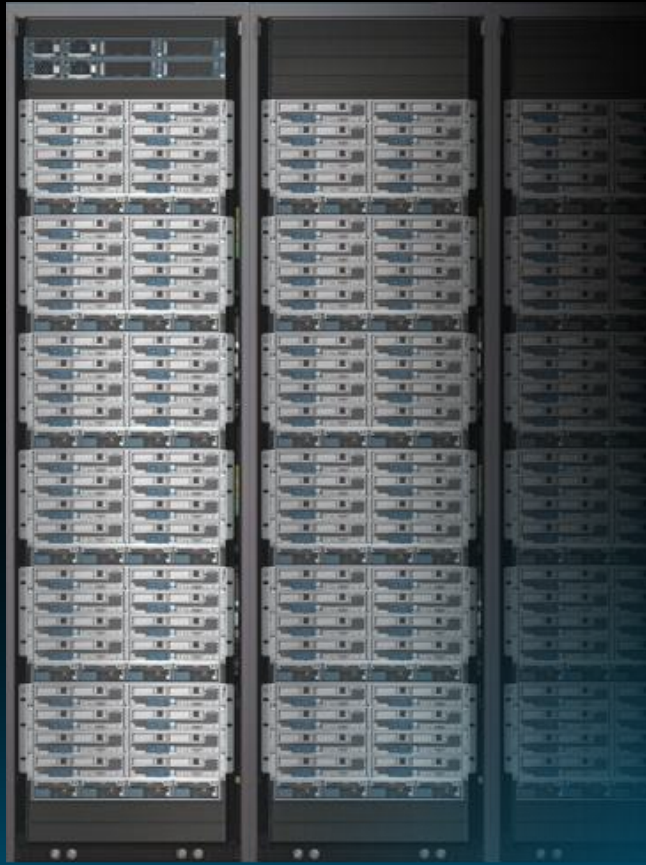


Amplify

- Highly scaleable: from 1 – 320 blades in one integrated system
- Compute and network virtualization
- Dynamic resource provisioning



Unify



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

Benefits of the Unified Data Center



Sample Configuration – 8 Blades

Legacy System

• Blades	\$45,528
• Adapters	\$5,992

Total Blade	\$51,520
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• Chassis, Fan, PSUs	\$8,713
• Networking	
• 10Gb Eth Switch	\$24,398
• 4Gb FC Switch	\$18,998
• Management Software	\$7,000

Total Infrastructure	\$59,109
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Overall Total	\$110,629
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Unified Computing System

• Blades	\$45,320
• Adapters	\$5,992

Total Blade	\$51,312
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• Chassis, Fan, PSUs	\$4,197
• Networking	
• Fabric Interconnect	\$36,592
• Fabric Extender	\$3,998
• Management Software	0

Total Infrastructure	\$44,787
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Infrastructure Savings	\$14,322
	24%

Overall Total	\$96,099
Savings	\$14,530
%	13%

Sample Configuration – 320 Blades

Savings at Scale – 1/3 the Infrastructure Cost

Legacy System

• Blades	\$1,821,120
• Adapters	\$239,680
Total Blade	\$2,060,800
• Chassis, Fan, PSUs	\$174,260
• Networking	
• 10Gb Eth Switch	\$487,960
• 4Gb FC Switch	\$379,960
• Management Software	\$554,400
Total Infrastructure	\$1,596,580
 Overall Total	 \$3,657,380

Unified Computing System

• Blades	\$1,812,800
• Adapters	\$239,680
Total Blade	\$2,052,480
• Chassis, Fan, PSUs	\$167,880
• Networking	
• Fabric Interconnect	\$138,182
• Fabric Extender	\$159,920
• Management Software	0
Total Infrastructure	\$465,982
Infrastructure Savings	\$1,130,598
	71%
 Overall Total	 \$2,518,462
Savings	\$1,138,918
%	31%

The Right Solution at the Right Time

Tangible Cost Savings

- CAPEX and OPEX reduction (up to 35%)
 - less than one-half the infrastructure
 - improved productivity through management simplification

Improved Business Agility

- Accelerate deployment of new business applications
- Decrease service outages

Investment Protection

- Industry standards-based platform
- Open management API ensures co-existence with legacy data center infrastructure



