



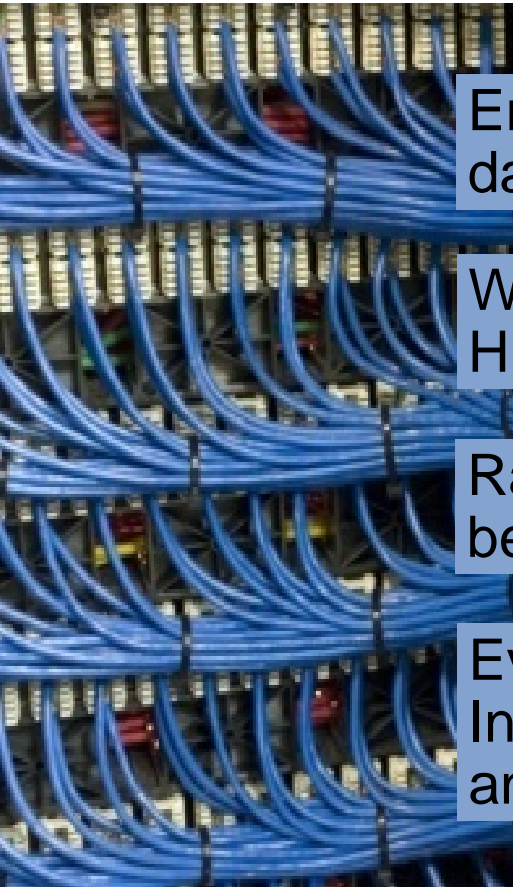
# SAN Technology Convergence

## Impact and Benefits of Unified Fabric over Ethernet



**Marco Di Benedetto**

# The Goals of Unified Fabric



Enable common, mainstream infrastructure for all data center deployments

Wire hosts once to connect to any network – SAN, LAN, HPC. Faster rollout of new apps and services

Rack, Row, and Cross-Data Center VM portability become possible

Every host will be able to mount any storage target. Increase SAN attach rate. Drive storage consolidation and improve utilization

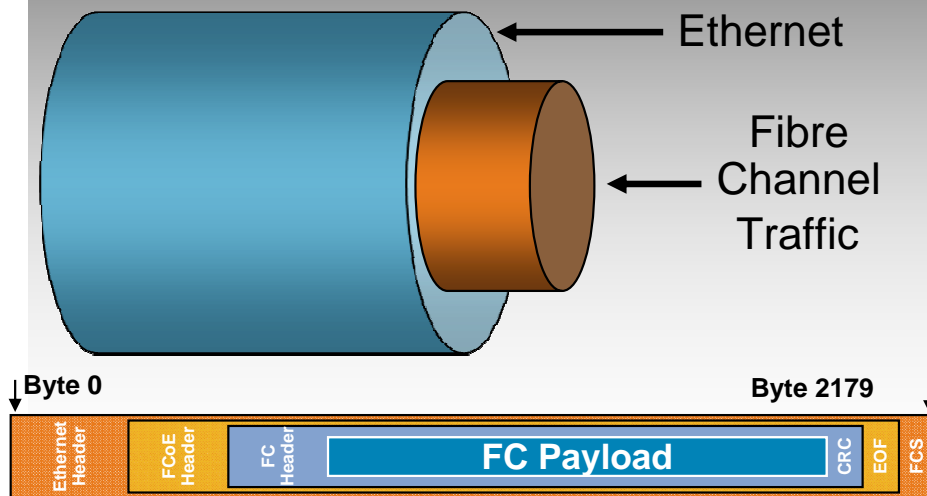
# Unified Fabric over Ethernet Technologies

## IEEE DCB

- Priority Flow Control IEEE 802.1Qbb creates lossless Ethernet with classes of service
- Bandwidth Management IEEE 802.1Qaz allows flexible bandwidth sharing for LAN and SAN
- Data Center Bridging Exchange Protocol (part of IEEE 802.1Qaz) provides device-device communication on resources

## FCoE

- Mapping of FC Frames over Ethernet
- Enables FC to Run on a Lossless Ethernet



# FCoE is the Next Evolution of SAN

FCoE is managed like FC at initiator, target, and switch level



- Completely based on the FC model
- Same host-to-switch and switch-to-switch behavior as FC
- E.g. in order delivery, FSPF load balancing
- WWNs, FC-IDs, hard/soft zoning, DNS, RSCN

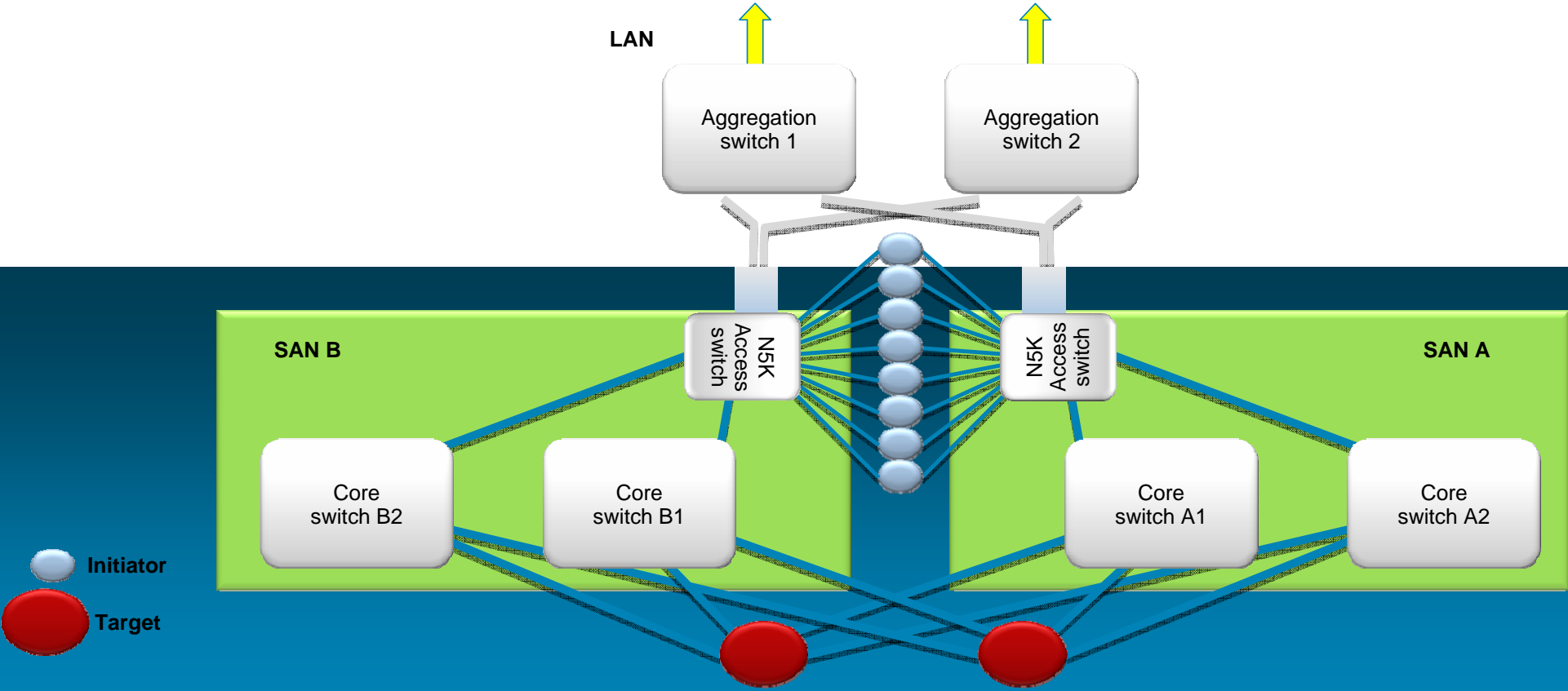
# Nexus 5000: Purpose-built for High Performance I/O

- High performance
  - Up to 52 10GbE ports
  - Terabit bandwidth
  - Non-blocking, non-oversubscribed
  - Any 10GbE port capable of FCoE
  - Native FC ports attach to installed SANs
- MDS Compatible
  - Runs SANOS as NX-OS
  - Look and feel, feature compatible
  - Managed by Fabric Manager
- Server access oriented
  - Access switch for LAN
  - Edge switch for SAN
  - Strategic beachhead for Unified Fabric implementation strategies

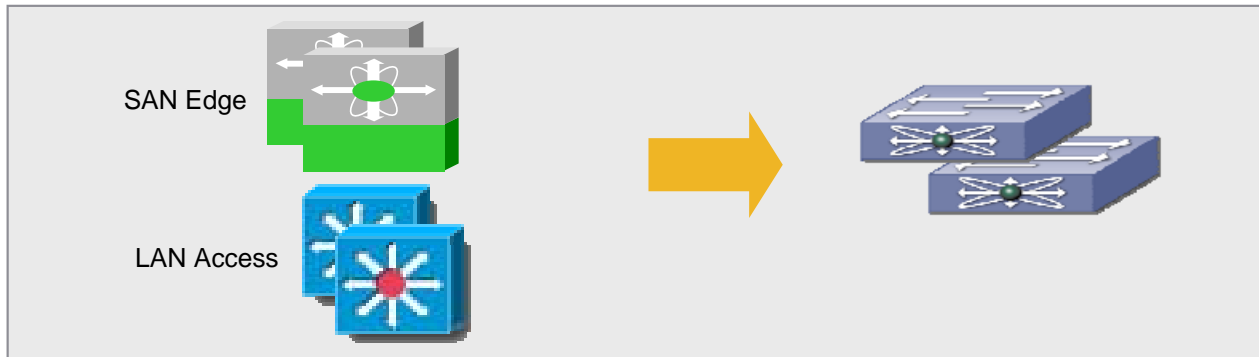
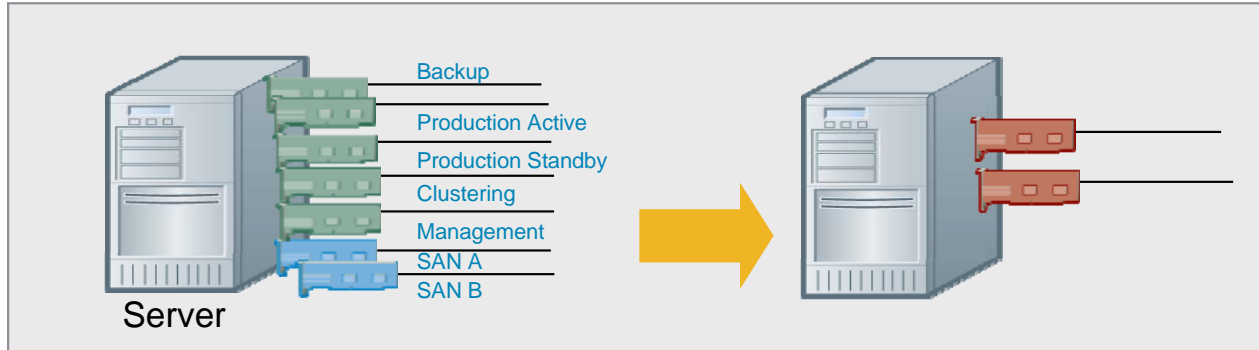


**Cisco Nexus 5020 and 5010  
Architected for Unified Fabric**

# Core-Edge Design, Mapping to Ethernet



# Total Cost of Ownership for N5000



## Consolidate I/O

- Eliminate adapter and switch ports
- Eliminate cables
- Avoid air dams
- Reduce cable maintenance
- Reduce power

## Standardize I/O

- Standard server configuration
- Enhance server consolidation
- Enhance storage consolidation

# Impact on Blade Servers

## Even greater TCO benefit for blade servers

- Additionally eliminates multiple instances of pass through or blade switch cards
- Creates universal mezzanine adapter – solves constraints based on server blade form factor
- Blade server chassis can be smaller, less complicated, draw less power or more powerful in the same form factor



# Summary

- Unified Fabric over Ethernet is available today from industry leaders
- FCoE is the next evolution of SCSI / Fibre Channel
- Unified Fabric will transform the economics of server deployment and network connectivity
- Unified Fabric will contribute to extending the life of data centers

Learn More:  
[www.cisco.com/go/datacenter](http://www.cisco.com/go/datacenter)





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