VM-Aware SANs

Bob Nusbaum, Product Line Manager

Why Virtualize Anything?

Virtualization enables:

- Pooling resources across physical units
- Allocating / re-allocating resources as needed
- Assignment based on class of service required
- Improving resource utilization
- Scaling without regard to physical system limits
- Mobility of virtualized objects across resource pool
- Changing physical infrastructure without disruptions

The Value of Virtualization:

Traditional IT Practice

With Virtualization

Virtual Machines (VM) & Storage Networking

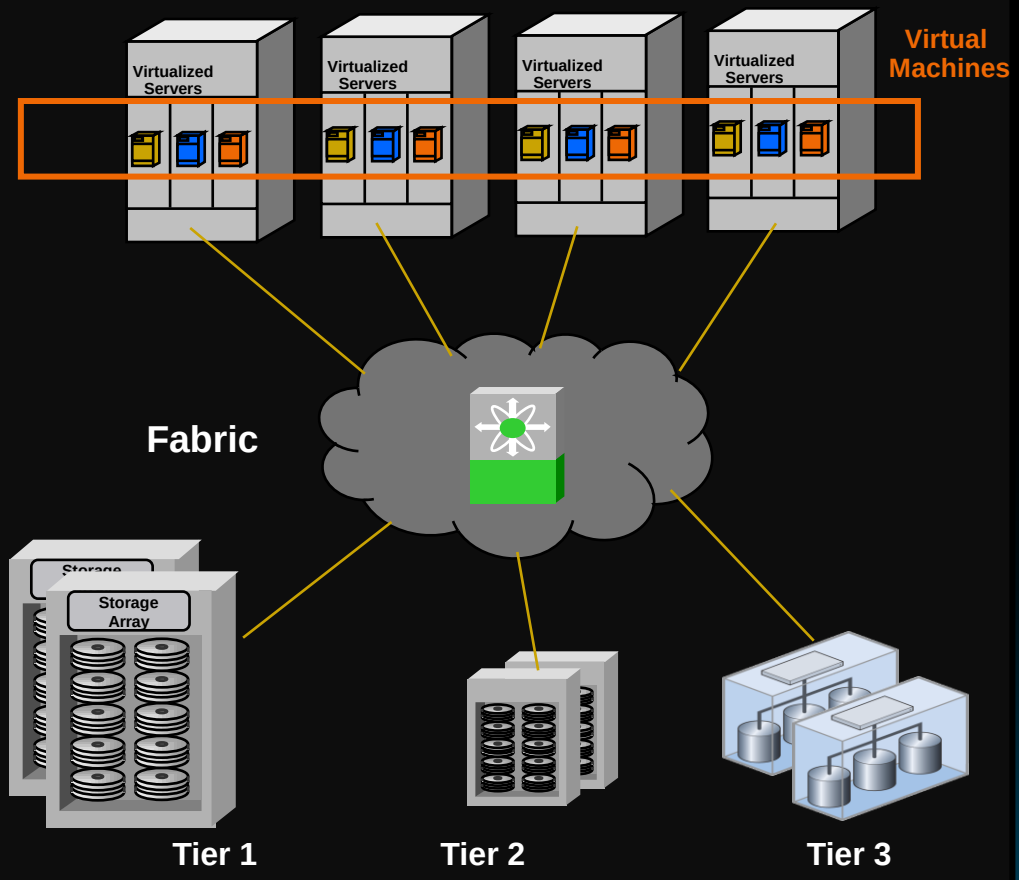
Virtual Machines pose new requirements for SANs

Switching Performance

- Support complex, unpredictable, dynamically changing traffic patterns
- Provide fabric scalability for higher workload
- Differentiate Quality of Service on a per VM basis

Deployment, Management, Security

- Create flexible and isolated SAN sections, support management Access Control
- Support performance monitoring, trending, and capacity planning up to each VM
- Allow VM mobility without compromising security



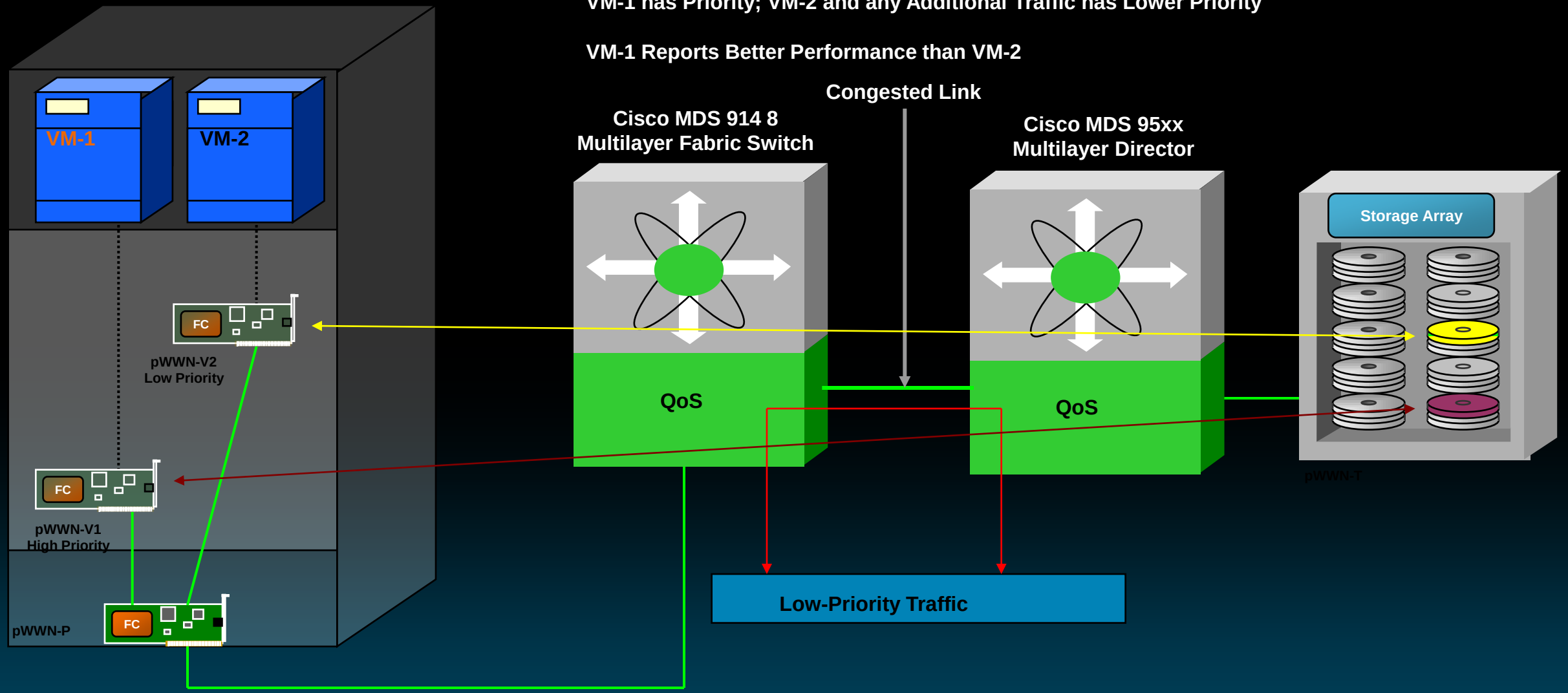
Virtual Machine Optimized MDS 9000 SANs

- Switching Infrastructure to support growing VM Bandwidth
  - Flexibility, Performance, Density and Security
  - 8 Gbps Fibre Channel
  - Investment Protection
- VN-Link Storage Services for VM Optimized SAN
  - Per VM Unique HBA association (NPIV)
  - Per VM Quality-of-Service
  - Per VM Security, Performance Monitoring and Management
  - VM belongs to different VSAN (F-port trunking)
- Blade Server Optimized SAN
  - Network Port Virtualizer (NPV)
  - Flex Attach
  - F-port Port Channel, F-Port Trunking

QoS for Individual Virtual Machines

Zone-Based QoS:
VM-1 has Priority; VM-2 and any Additional Traffic has Lower Priority

VM-1 Reports Better Performance than VM-2



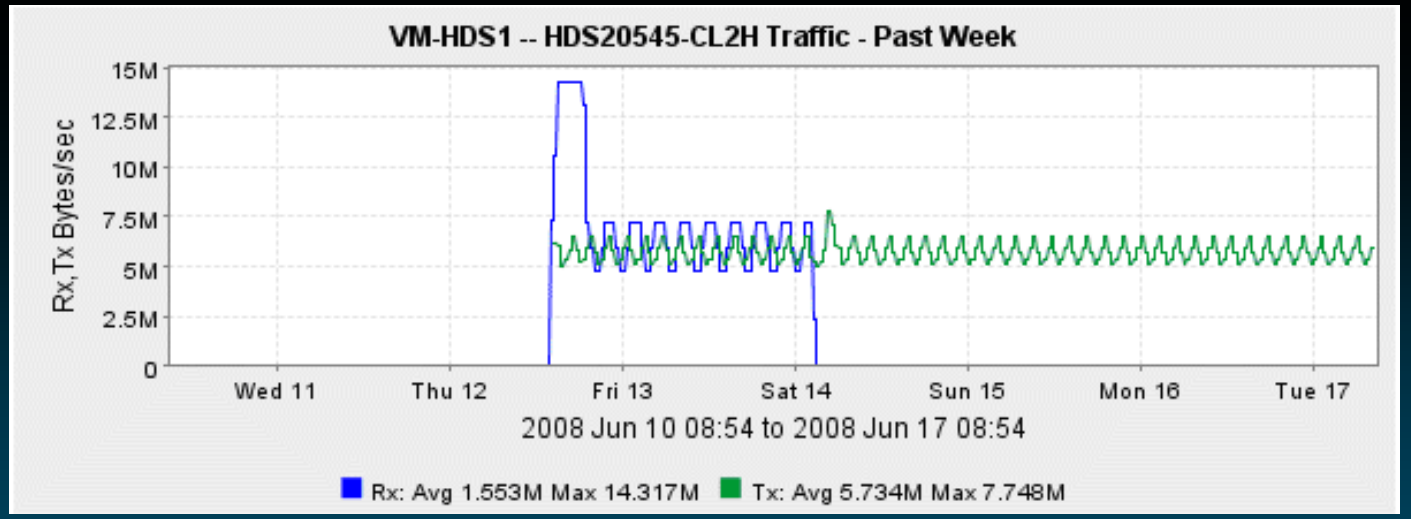
Performance Monitoring of an individual VM

Cisco Fabric Manager is the management GUI for Cisco SANs.

Cisco Fabric Manager provides a full set of tools for fabric configuration and performance monitoring.

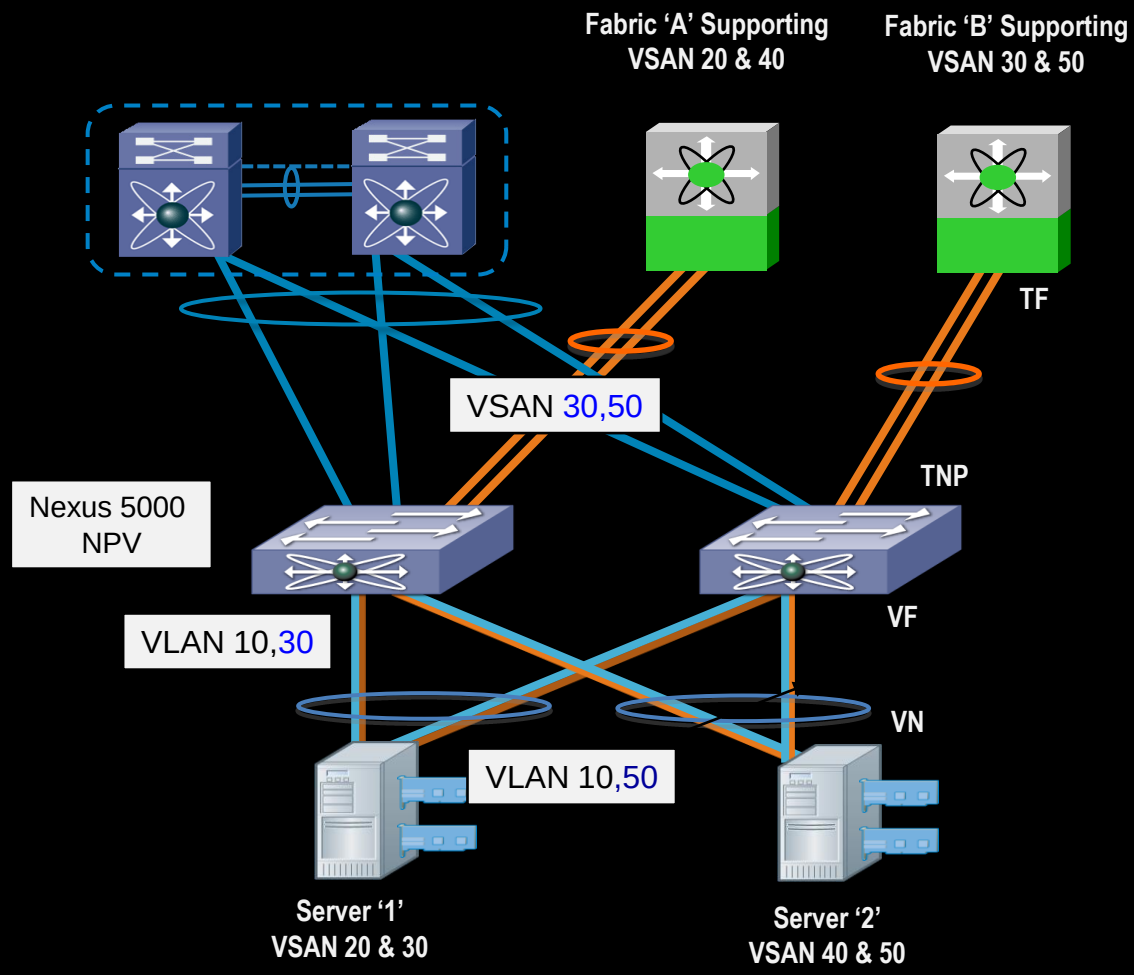
The same performance monitoring capabilities available for the physical devices are available for the individual NPIV-enabled virtual machines

Single monitoring point across the entire end-to-end storage infrastructure



Unified Fabric Design

- Nexus 5000 access switches operating in NPV mode
- With NX-OS release 4.2(1) Nexus 5000 supports F-Port Trunking and Channeling on the links between an NPV device and upstream FC switch (NP port -> F port)
- F_Port Trunking: Better multiplexing of traffic using shared links (multiple VSANs on a common link)
- F_Port Channeling: Better resiliency between NPV edge and Director Core
  - No host re-login needed per link failure
  - No FSPF recalculation due to link failure
- Simplifies FC topology (single uplink from NPV device to FC director)



F-Port Trunking & Channeling

Encore!

Back by Popular Demand!

SAN Virtuosity Series

www.sanvirtuosity.com

Session	Topic	Date	Time
#1	Getting Starting: Virtualization and FC SANs	10/6/2010	9:00 AM PT
#2	Business Continuity and Disaster Recovery	11/10/2010	9:00 AM PT
#3	SAN Data Protection and Security	1/12/2011	9:00 AM PT
#4	FCoE and Network Convergence	2/9/2011	9:00 AM PT

EMULEX CISCO vmware