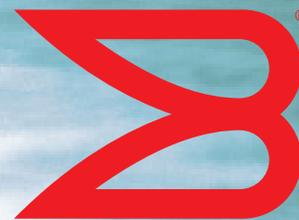


# BROCADE AND EMC SOLUTION



## DATA CENTER

## Brocade VCS Fabric Technology, the Plug-n-Play Cloud Computing Network for Isilon Scale-out NAS

### HIGHLIGHTS

- Features seamless and unprecedented scale-out capacity of NAS storages, server clusters, and Ethernet fabric ensures the highest utilization at the lowest total cost of ownership
- Ensures high availability and robust resiliency for 365x24 uptime with highly scalable and expandable clusters for Isilon OneFS® file systems, vSphere ESXi/VMware clients, and Brocade® VDX switches
- Maintains consistent performance under heavy application workloads, including during server, storage, or switch failures; Traffic unaffected and performance maintained during disruptive stress tests
- Delivers network elasticity, agility, dynamic application provisioning, sub-second failover time, and cost-effective, rapid convergence of Brocade VCS® Fabric technology enable resource deployment/redeployment
- Physical location independence; No pre-planning of racks/spaces necessary; Flexible and incremental expansion as the business grows
- Delivers automatic ISL trunks, low latency, lossless, and all least-cost multi-path Layer 2 forwarding

### THE CHALLENGES

With the increasing frequency of rapid provisioning of data-intensive applications in the cloud, organizations are increasingly challenged to better scale and manage network and storage environments without business disruption.

Today's wide variety of business applications features disparate workloads that create a wide range of performance requirements.

The fast growth of virtual server clusters with hundreds of applications leads to data migration across servers, storages, and network resource pools. NAS traffic places stringent demands on the network. In particular, Isilon scale-out NAS volumes can grow to as much as 15 Petabyte per storage pool. This necessitates a network that provides uniform latency, high resiliency, high bandwidth, full utilization of all least-cost paths, and configuration simplicity.

In the face of the wide range of applications, storage and network protocols and topologies, IT management has become unprecedentedly complex. Brocade VCS Fabric technology, Isilon OneFS Scale-out NAS, and VMware vSphere 5 have been designed with scale-out resource pools, automatic dynamic load-balancing, and policy-defined configuration. Deploying them

together for data center virtualization and private cloud computing projects eliminates the restrictions inherent in previous generation of data center architecture.

### THE BROCADE AND EMC SOLUTION

The Brocade VCS Fabric technology and EMC Isilon Scale-out solution is a validated end-to-end solution delivering incremental scalability to very large configurations, without the need to pre-provision or reserve rack space, while ensuring ongoing uniform performance and redundancy.

With Brocade VCS Fabric technology, Spanning Tree Protocol (STP) is eliminated, allowing all redundant Layer 2 paths to carry application traffic. TRILL-based link-layer routing fully utilizes all least-cost, active paths.

Parallel links between any two Brocade VDX switches automatically form an ISL trunk without manual intervention. The automated procedure greatly simplifies the fabric configuration and management. Application traffic is evenly distributed across all links in a trunk due to hardware-assisted frame stripping. vLAGs between the Brocade VDX switch access ports across Isilon nodes may be configured, regardless of where the nodes are deployed in the fabric. This is ideal for scale-out cloud deployments.

All Brocade VDX switches in a VCS Fabric are aware of each other and the complete fabric topology. Any changes to the topology (adding/removing links and/or switches) do not halt NAS traffic on unaffected links, even during the process of VM migration. The rapid convergence in VCS Fabric technology is significantly improved when compared to STP networks with uninterrupted data access as a result.

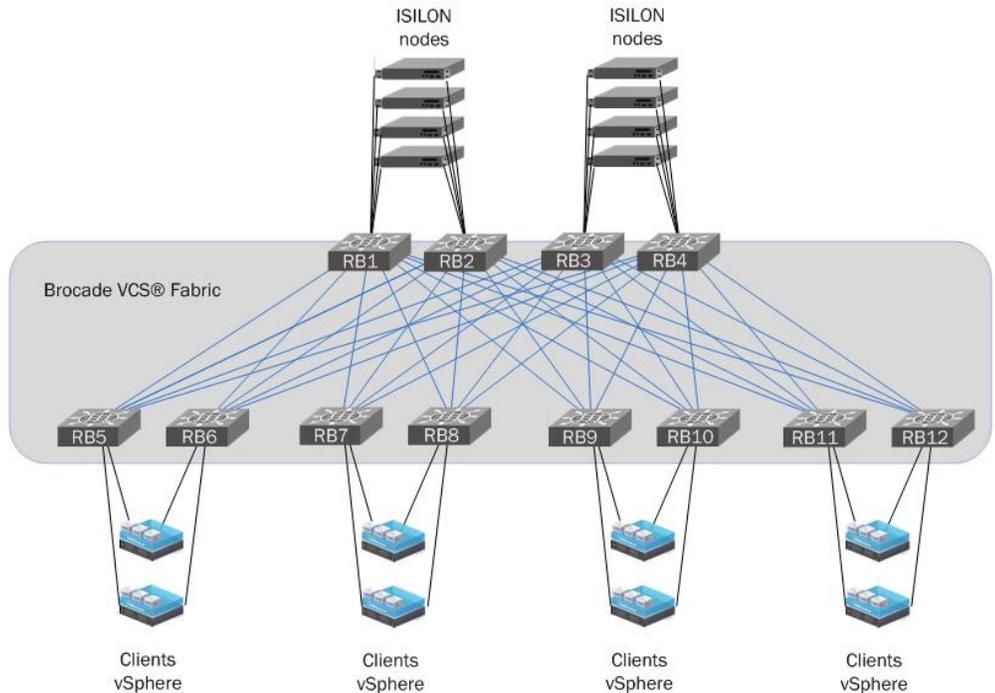
Brocade VCS Fabric employs Data Center Bridging (DCB) for lossless Layer 2 transport, and supports jumbo frames for improved performance—NAS blocks up to 8 KB can be forwarded in a single Ethernet frame.

For virtualized server environments where VM migration occurs, Brocade VCS Fabric technology provides automatic port profile migration, which ensures all network policies applied to the new ingress port of the fabric, regardless from which port VM traffic enters. VCS Fabric port-profile creation is automatic and synchronized with VM creation. vSphere sends a message to the VCS fabric with all needed information about the VMs and the port group so VCS Fabric can create an AMPP port-profile. When a VM migrates, vCenter sends an alert to the VCS Fabric so the new ingress fabric port for VM traffic is explicitly identified in advance. In VCS Ethernet Fabric, there is no limitation of the choice of a hypervisor.

With its resiliency, scalability and simplified management, the Brocade VCS Fabric technology and EMC Isilon NAS Scale-out solution enables organizations to meet the performance requirements for network and storage data center environments.

**Figure 1.**

Brocade VCS® Fabric Data Center Reference Architecture for Isilon Scale-out NAS with VMware vSphere 5



**LEARN MORE**

Brocade partners with companies of all sizes to deliver innovative solutions that help organizations maximize the value of their most critical information. To learn more, visit [www.brocade.com/alliance](http://www.brocade.com/alliance).

**ABOUT BROCADE**

Brocade networking solutions help organizations transition smoothly to a world where applications and information reside anywhere. Innovative Ethernet and storage networking solutions for data center, campus, and service provider networks help reduce complexity and cost while enabling virtualization and cloud computing to increase business agility. Learn more at [www.brocade.com](http://www.brocade.com).

**ABOUT EMC**

EMC is the world’s leading developer and provider of information infrastructure technology and solutions that enable organization of all sizes to transform the way they complete and create value from their information. VMware, an EMC company, is the global leader in virtualization software for industry-standard desktops and servers. EMC partners with the largest, most important players in IT to provide jointly engineered services and solutions that speed deployment, improve performance, and maximize return on investment.

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