

# BROCADE VIRTUAL COMPUTE BLOCKS FOR VMWARE



## DATA CENTER VIRTUALIZATION

## Simplify Data Center Virtualization with Pre-configured Solutions

### HIGHLIGHTS

- **Integrated Solution:** Integrated infrastructure solutions for virtualization and cloud computing, available in a variety of validated reference architectures
- **Best-of-Breed Components:** Brocade fabric networking technology, Ethernet and/or Fibre Channel, VMware vSphere™ virtualization software, servers, storage, adapters, and management software
- **Simplicity:** Self-contained, preconfigured, and simple to order and service
- **Scalability:** Linear scalability from hundreds to thousands of virtual machines<sup>1</sup> (VMs) with dynamic allocation of compute and storage resources
- **Flexibility:** Configuration choices to meet a range of application workloads, with built-in scale-out for growth without added complexity

Data center virtualization has triggered a revolution in how IT operates; to keep up with business demand, IT groups are deploying resource pools and dynamically provisioning applications based on workload requirements in days rather than months. This dramatic shift in how IT operates is called cloud computing. IT administrators need simpler ways to scale a virtualized environment without sacrificing flexibility, while reducing the time required to deploy new infrastructure. Pay-as-you-grow integrated and tested solutions comprising best-of-breed compute, storage, and network components are needed to streamline virtualization deployment and simplify management. And competitive pricing, coupled with a single point of service and support, minimizes capital and operational costs.

### INTEGRATION WITH BEST-OF-BREED PARTNERS

A Brocade Virtual Compute Block (VCB) is a reference architecture for integrated infrastructure, designed to cost-effectively and quickly scale virtualization and cloud computing. A VCB uses fabric networking technology to simplify how virtual data

centers are built. Brocade is the leader in Fibre Channel fabric solutions, and—with the introduction of the Brocade VDX™ Data Center Switch family—Ethernet fabric solutions are now available to the data center for the first time.

Using a VCB reference architecture, Brocade works with virtualization software, server, and storage partners to deliver complete, integrated virtualization and cloud computing solutions built from jointly tested and validated configurations. A VCB reference architecture is backed by our investment in solution validation and testing, making it easy for partners to provide complete turnkey virtualization and cloud solutions. Our partners recognize that working with Brocade offers their customers the benefits of proven fabric networking technology with the simplicity of operation, scalability, and flexibility they need to meet a wide range of application performance requirements.

**Simplicity.** Brocade VCB configurations are integrated, tested, and easy to order, removing the guesswork from the ordering process and reducing the time to deploy virtualization and cloud computing

<sup>1</sup> The number of VMs varies depending on application workload, but the reference architecture is designed to support this range of VM with a representative mix of light, medium, and heavy workloads per server.

infrastructure. Deploying virtualization infrastructure now takes a few days instead of months. One call provides post-sale support, eliminating the time and effort that used to be spent managing multiple vendors.

**Scalability.** Brocade VCB configurations are designed to supply pools of compute and storage resources that can be allocated quickly to applications that use VMs created with leading virtualization software providers. Brocade VDX Data Center Switches with innovative Brocade VCS™ fabric technology (which includes virtual cluster switching) connect rack mount or blade servers into scalable compute pools. VCS technology delivers the industry's first Ethernet fabric optimized for virtualization, avoiding the complex configuration required by classic Ethernet networks. The VCS Ethernet fabric can connect storage arrays using Internet Small Computer Systems Interface (iSCSI), Fibre Channel over Ethernet (FCoE), or network-attached storage (NAS) into storage pools. Optionally, Brocade Fibre Channel fabrics can be included so that any type of networked storage is available in a VCB. Scaling out server and storage resources is simple; you can readily connect multiple racks together by extending both the Ethernet and SAN fabrics.

**Flexibility.** Partner solutions include a variety of orderable configurations to ensure easy deployment for a wide range of virtualization and cloud computing projects, from hundreds to thousands of VMs. Options include rack or blade servers with various CPU and memory configurations, storage type and capacity, and choice of Brocade fabric switch configurations for Ethernet and Fibre Channel.

### CONFIGURATION COMPONENTS

The VCB architecture for VMware includes rack or blade servers, VMware vSphere hypervisor and management software, Brocade VDX Data Center Switches and/or Brocade Fibre Channel SAN Switches, and partner-supplied servers and storage, as shown in Figure 1.

### VMware vSphere

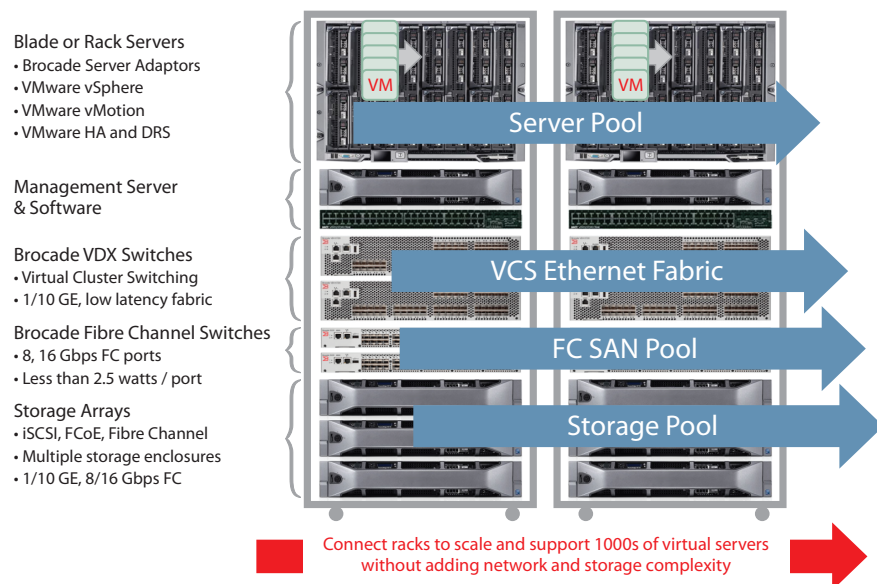
VMware vSphere is the industry's leading virtualization software from VMware. vSphere Essentials Plus and vSphere Advanced Edition are different editions of vSphere that are suitable for the small and medium business environment. Among the various features in vSphere, features like VMware HA (High Availability), VMware Distributed Resource Scheduler (DRS), and vMotion™ are of specific interest when you are designing and deploying a high-availability configuration for small and medium businesses.

### Brocade VDX Data Center Switch

Brocade introduced VCS fabric technology with the Brocade VDX family of Data Center Switches. VCS technology includes the industry's first Ethernet fabric for lossless forwarding of storage and IP traffic on a common switched fabric. Inter-switch Links (ISLs) are automatically enabled when cables connect two Brocade VDX Switches, and Brocade Trunks automatically form when multiple ISLs are used. The VCS Ethernet fabric simplifies configuration of Ethernet networks, providing linear scalability for all Ethernet traffic. VDX switches include Distributed Intelligence to simplify network configuration and eliminate network policy problems created by VM migration. When scaling the network, all switches share common configuration settings and are managed as a single Logical Chassis, greatly reducing management time. Also, arbitrary topology capabilities (mesh, Clos, leaf-spine) provide optimum flexibility as environments grow.

### Brocade Fibre Channel Switch

Brocade Fibre Channel switches are designed for rapidly growing storage environments supporting 1-, 2-, 4-, 8-, and 16-Gbps Fibre Channel technology in multiple pay-as-you-grow port configurations with a space efficient 1U form factor. Designed for a broad range of SAN architectures, the Brocade Fibre Channel



**Figure 1.**  
The Brocade VCB Solution Architecture.

Switch family consumes less than 2.5 watts of power per port for exceptional power and cooling efficiency. Brocade Fibre Channel Switches feature consolidated power and fan assemblies to improve environmental performance and reduce overall ownership costs.

### **Brocade Adapters**

The Brocade 1860 Fabric Adapter is a new class of adapter that meets all the connectivity needs of cloud-enabled data centers while providing unmatched performance, application-aware services, unified management, and reduced cost and complexity. It is the simplest, most flexible, and most powerful server connectivity adapter designed to extend fabric services to VMs and applications in highly demanding virtualized environments. Designed to simplify the transition to a cloud-based architecture, the Brocade 1860 offers several key benefits:

- Is a new class of adapter that meets all Fibre Channel and Ethernet connectivity needs in cloud-enabled data centers
- Supports native 16-Gbps Fibre Channel and 10-Gigabit Ethernet (GbE) Data Center Bridging (DCB) connectivity for TCP/IP, iSCSI, and FCoE with Brocade AnyIO technology

- Extends Fibre Channel and Ethernet fabric services to the server and applications
- Consolidates I/O devices by partitioning physical adapters into virtual adapters through Brocade vFLink technology
- Simplifies the transition to private cloud by supporting current and emerging virtualization workloads and technologies
- Simplifies and unifies the management of adapter, SAN, and LAN resources with Brocade Network Advisor

The Brocade 1010 and 1020 Converged Network Adapters (CNAs) integrate 10-Gbps Ethernet Network Interface Card (NIC) functionality with Fibre Channel technology—enabling transport over a 10-GbE connection through the new DCB and FCoE protocols, providing best-in-class LAN connectivity and I/O consolidation to help reduce cost and complexity in next-generation data center environments.

### **Partner Blade/Rack Server**

Rack or blade server options are included in the Brocade VCB architecture. Partners can provide a range of CPUs, cores per CPU, memory, and adapter options to optimize the solution to meet a wide range of application workloads. Brocade and the partner jointly integrate, validate, and test these configurations so customer risk is reduced and time to deployment is days rather than months.

### **Partner Storage Array**

Available storage options include Fibre Channel, FCoE, iSCSI, and NAS with the VCB architecture. Partners can support multiple options with the same VCB architecture, which provides flexible options for storage and fulfills a wide range of application performance requirements.

### **LEARN MORE**

To learn more about the Brocade Virtual Compute Block, visit [www.brocade.com/solutions-technology/enterprise/virtual-compute-blocks](http://www.brocade.com/solutions-technology/enterprise/virtual-compute-blocks).

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/alliances](http://www.brocade.com/alliances).

**ABOUT BROCADE**

Brocade networking solutions help the world's leading organizations transition smoothly to a virtualized world where applications and information reside anywhere. These Ethernet, storage, and converged networking offerings are designed for unmatched simplicity, non-stop networking, optimized applications, and investment protection. Learn more at [www.brocade.com](http://www.brocade.com).

For more information on Brocade VDX Data Center Switches, visit [www.brocade.com/vdx](http://www.brocade.com/vdx).

For more information on Brocade Fibre Channel SAN Switches, visit [www.brocade.com/products/all/switches/index.page](http://www.brocade.com/products/all/switches/index.page).

**ABOUT VMWARE**

VMware, the global leader in virtualization and cloud infrastructure, delivers customer-proven solutions that significantly reduce IT complexity and enable more flexible, agile service delivery. Leveraging VMware vSphere, the most widely deployed foundation for cloud computing, VMware accelerates the transition to a cloud computing approach while preserving existing investments and improving security and control. For more information visit [www.vmware.com](http://www.vmware.com).

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