

# Brocade Data Center Technology Leadership



**Figure 1.** The Brocade VDX 6940-36Q spine and leaf switch.

## HIGHLIGHTS

- **Zero-touch scale-out:** Brocade® VCS® Fabric technology provides automation through zero-touch provisioning, self-forming trunks, and Logical Chassis, enabling you to add, move, and delete capacity automatically.
- **Integrated resiliency:** Multipathing at Layer 1, Layer 2, and Layer 3 provides resiliency at every network layer.
- **Compelling economics:** Brocade VCS Fabric technology enables 50% lower operational expense (OPEX) and two times greater network utilization.

## Zero-Touch Scale-Out with Brocade VCS Fabric Technology and Brocade VDX 6940 Switch Family

The data center is evolving, driving requirements for infrastructure that can support dynamic growth in Virtual Machines (VMs), distributed applications, and big data, as well as the transition to cloud-based computing—without compromising performance. IT service delivery and data center operators need networks that offer high performance and are operationally efficient, automated, and—most importantly—elastic. The ideal network must be easy to manage and must scale out to meet future business demand.

Scale-out is an architectural trend that is becoming common in all aspects of data center design, due to the very tangible benefits of a scale-out model.

### WHY SCALE-OUT?

The scale-out approach provides three key benefits. First, scale-out enables network expansion over time as a business grows. You can horizontally scale spine switches as the number of leaf switches increase. Scale-out architecture also enables the creation of resilient network fabrics, eliminating “single point of failure” and potential downtime. Most importantly, a scale-out network architecture delivers compelling economic benefits. Unlike scale-up architecture, a scale-out model lowers up-front investment. It uses high-density fixed switches, lowering the total cost of ownership and reducing power, cooling, and data center space.

While scale-out architecture provides many more benefits than scale-up architecture, trade-offs do exist. As additional capacity and performance are needed, new switches must be added to the scale-out architecture, increasing operational complexity with the additional provisioning of hardware and network change. As a result, it is critical for organizations to implement scale-out solutions that offer greater automation and programmatic control of their data center resources. A network fabric such as a Brocade VCS fabric contributes features that decisively deliver needed automation, control, and simplicity.

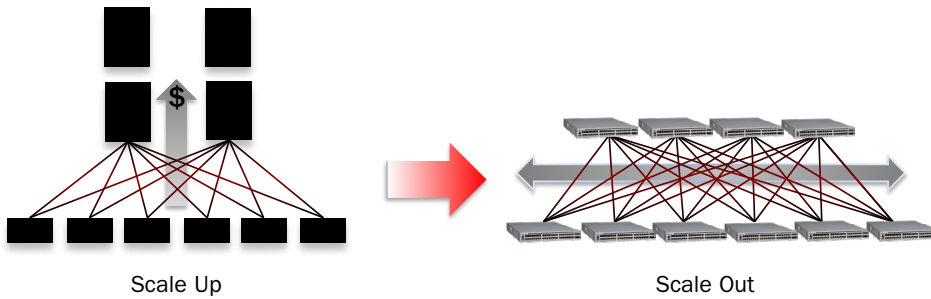


Figure 2. Scale-out architectures drastically reduce costs and improve network resiliency.

### Zero-Touch Scale-Out with Brocade VCS Fabric Technology

Brocade VCS Fabric technology was designed from the ground up to facilitate and optimize scale-out architectures. With zero-touch capabilities, scale-out makes it simple to add, move, or remove network resources without changing configurations to the existing network. Zero-touch provisioning enables simple rapid deployment. As one of the many Brocade fabric automation capabilities, Brocade VDX® switches are preconfigured such that when a new switch is deployed, only a power and network connection is required for the switch to become a member of the fabric. Inter-switch links are automatically formed between new members and all of the switches in the fabric. As a foundation to simplifying scale-out architecture, this method of installation eliminates the use of a manual process and reduces complexity. Brocade VCS Fabric technology offers many other capabilities that enable scale-out networks.

#### Why the Brocade VDX 6940?

The new Brocade VDX 6940 Switch product line, with its industry-leading

density, is a perfect fit for scale-out network architecture. In a 1 RU form factor, it can provide up to 36 40 Gigabit Ethernet (GbE) ports or 144 10-GbE ports. The scale-out of a fabric depends on the port density of the spine switches. By deploying the industry's highest density Brocade VDX 6940 switches, organizations can build a large scale-out network fabric. In addition, Brocade VDX 6940 switches offer a unique balance between two conflicting attributes: buffer and latency. Brocade VDX 6940 switches, with a purpose-built data center chip, excel in optimizing buffer and latency, making them ideal for a wide variety of workloads. Brocade VDX 6940 switches deliver 700 nanosecond (ns) any-port-to-any port latency and offer an industry-leading 24 megabyte (MB) deep buffer in a single Application-Specific Integrated Circuit (ASIC) design. In addition to high density, low latency and large buffers, Brocade VDX 6940 switches offer many advanced capabilities such as VXLAN Gateway, OpenFlow 1.3, converged ports (Ethernet and Fibre Channel), and more.

### WHY SCALE OUT?

- No forklift upgrades—add capacity incrementally
- Eliminate large single point of failure and reduce downtime
- Reduce up-front cost as well as power, cooling and space

### Summary

Scale-out architectures provide a compelling advantage to alternative scale-up routes. You can add capacity incrementally as needed. In a fabric, scale-out architectures are more resilient, eliminating “single point of failure” and downtime. Fixed form factor high-density switches require a lower up-front investment, as well as less power, cooling, and space. Scale-out with these small form factor core devices can reduce capital costs by as much as 50% and can save 30% or more on operational expense.

Fixed format switches such as the Brocade VDX 6940 offer high-density, optimized buffer and latency, making them ideal for data center or cloud provider networks. Brocade VCS Fabric technology, simple provisioning and management, one- and two-tiered architectures, and a low cost makes the scale-out model an improved operational experience over a scale-up approach.

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