

Big Data Analytics Provider

EXECUTIVE SUMMARY

Challenge

- Create dedicated IP network for supporting client's big-data analysis application
- Meet strict data integrity requirements
- Minimize operational support needed

Solution

- Brocade VDX 8770 Switches
- Brocade VDX 6740 Switches
- Brocade VCS Fabric technology
- Brocade ICX 6610 Switches
- Brocade vRouter

Results

- Increased IT innovation through superior network manageability
- Fulfilled application requirements for performance and low latency
- Met client's risk and cost thresholds
- Created network reference model for additional big data applications

Powering Big Data Analysis and Proving A New Business Model

Big data is high-volume, high-velocity sets of structured and unstructured data—and organizations can glean a wealth of information from it. According to Baseline Magazine, "A 10 percent increase in data accessibility translates into an additional \$65.7 million in net income for a typical Fortune 1000 company" (Surprising Statistics About Big Data, February 18, 2014). This is just one reason why the market for big data services is growing.

A leading provider of consulting, application development, and IT services recently set out to conquer the challenges of big data. Although the company has dozens of multitenant data centers around the world, it needed to locally support a specific, high-performance analysis application for one of its clients.

Seeking Scale, Power, and Data Integrity

The client's application required a network that could transfer and store exabytes of unstructured and structured data, as well as access and process stored data in parallel. To minimize deployment and operational risk, the network also had to deliver high reliability and operate with minimal oversight. Network systems had to work seamlessly with a multivendor environment running a range of software, including the OpenStack cloud operating system, VMware virtual applications, and Hadoop NoSQL clusters. Compute and control orchestration and integration would be essential.

For the company's client, data integrity is non-negotiable. Data has to be secure, verifiable, and fresh. Because the client was performing real-time analysis, there was no room for latency or vulnerability. However, when gigantic data sets required auxiliary compute power, the company would need to securely connect to additional cloud-based compute resources.

High performance is critical for big data networks. The company wanted 40 GbE network links and all ports to be active for full redundancy without deploying extraneous equipment. The network also had to support high scalability for all possible scenarios. Whether client

WHY BROCADE

“The Brocade architecture used in this deployment is now our reference model for other big-data client implementations. We can easily meet our clients' risk and cost thresholds. We can deliver the required performance. And we're ready for future SDN requirements with the software agility we already have. It's a winning combination for everyone.”

—Chief Technology Officer

workloads required scaling up, down, between data centers, or between clouds, the network had to respond instantly.

“We were asking a lot, but this is what's needed to support the growing number of big-data client applications,” said the company's Chief Information Officer.

“The right network solution gives us a strong competitive advantage as big-data analysis demand grows.”

The company evaluated solutions from three network vendors, including Brocade. It chose Brocade® network solutions because they were the easiest to implement, manage, and expand and provided proven performance and stability.

Scale, Scope, and Speed for the New IP

Brocade data center networking solutions delivered the scale, scope, and speed that the company needed. It chose Brocade solutions to handle today's big-data demands and also help it accelerate service innovation using technologies like OpenStack, Software-Defined Networking (SDN), and Network Functions Virtualization (NFV).

Three of the company's 70 worldwide data centers have begun to host the multivendor compute, network, and storage infrastructure for the client's application. Hadoop clusters each support 40 terabytes for big data applications in a NoSQL architecture that directly attaches to storage. This configuration enables the company's IT team to support massively parallel computing and spread data across thousands of servers without compromising performance.

Each data center deployed two Brocade VDX® 8770 Switches with eight blades as its Layer 3 core. Brocade VDX 8770 Switches also include Brocade VCS® Fabric technology, designed to support non-stop networking and built specifically for cloud environments. Ethernet fabrics built on Brocade VCS Fabric technology also provide unmatched automation, efficiency, and VM awareness compared to traditional network architectures. In the company's two data centers, Brocade VDX 8770 Switches form the spine of the Brocade VCS Fabric cloud.

The Brocade VDX 8770 Switch provides exceptionally high scalability for complex, highly dynamic environments with dense virtualization and extensive automation requirements. The company gained 40 GbE density while eliminating the need for additional routers, which simplified its network architecture.

Brocade VDX 6740T Switches connect to the Brocade VDX 8770 Switches and are implemented with 10 GbE ports and 40 GbE uplinks. As part of the company's Brocade VCS Fabric, they deliver the high performance and low latency required for big-data analysis applications.

Brocade vRouters are deployed at the network edge to encrypt traffic being switched to external cloud compute providers. With the Brocade vRouters, the client's IT department gained high-availability connectivity and simplified management with the ability to provision, configure, and change the network with the agility of software. The company also uses Brocade ICX® 6610 Switches in both data centers for delivering out-of-band network management traffic.

Simplicity Equals Freedom to Innovate

"The Brocade network is by far the easiest to deploy, scale, and manage," said the client's Chief Technology Officer. "We can now focus on delivering the analytics our customers want and on innovating our services because we don't have to babysit the network."

Because of the Brocade VDX Switches and VCS Fabric technology, the big-data network is dynamic and automated. Its architectural simplicity results in greater stability, so the IT team can simply forget about the network and focus on customers' needs. In this deployment, the network is dedicated to one customer application. However, the IT team can quickly and easily remove high data volumes or dedicated applications from the infrastructure and add another application.

Superior Manageability

Brocade VCS Logical Chassis, a feature of Brocade VCS Fabric, enables a single point of management across the entire fabric and lets the IT team push software upgrades with a single command. Zero-touch virtualization support enables them to easily move servers anywhere they are needed without reconfiguration. Easy configuration and management helps save time and reduce operational costs.

Big Performance for Big Data

Brocade VDX 8770 Switches easily handle the company's requirement for high performance. They provide line-rate support for up to 100 GbE and offer packet forwarding performance of up to 11.42 billion packets per second with latency under 4 microseconds to assure rapid response for latency-sensitive big data and high-performance computing applications.

Meet Risk and Cost Thresholds Now and Later

"The Brocade architecture used in this deployment is now our reference model for other big-data client implementations," said the Chief Technology Officer. "We can easily meet our clients' risk and cost thresholds. We can deliver the required performance. And we're ready for future SDN requirements with the software agility we already have. It's a winning combination for everyone."

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