



## DHAKA STOCK EXCHANGE LTD. TRANSFORMS IT INFRASTRUCTURE WITH VMWARE'S VIRTUALIZED SOLUTIONS TO THE DELIGHT OF BROKERS AND INVESTORS



### INDUSTRY

FINANCIAL SERVICES

### LOCATION

BANGLADESH

### KEY CHALLENGES

- Pressure to deliver applications for brokers in a timely manner
- Need to enhance operational efficiency and data security
- Managing IT resources and identifying bottlenecks

### SOLUTIONS

- VMware vSphere®
- VMware vRealize® Operations™
- VMware vCenter™
- VMware vCenter Server® Heartbeat™

VMware's virtualization solutions have transformed Bangladesh's Dhaka Stock Exchange Ltd. (DSE) into a highly efficient bourse, enabling it to roll out new applications to its 250 stock brokers much faster than before while minimizing downtime. Its virtualized infrastructure has also helped optimize resources, improve capacity planning, pre-empt and better plan network needs thereby lowering operational costs. Critical to the development and progress of Bangladesh's economy, the modernization of DSE's infrastructure ensured its reliability and scalability to support the country's growth.

### Customer Profile

As the premier exchange of Bangladesh, DSE runs a fault-tolerant, automated trading system for transparent and highly efficient trading of securities. As of 2014, DSE facilitates the trading of 546 securities worth about US\$41.6 billion. In its 60-year history, DSE has contributed significantly to the Bangladesh economy by providing a platform for companies to raise funds from the public. It is now in the relentless process of modernizing and upgrading its systems and facilities to take advantage of new technologies.

### The Challenge

With the growth in trading volume and speed over recent years alongside Bangladesh's progress, DSE has faced challenges in ensuring its IT infrastructure - powered by 250 physical servers and used by brokers to execute trades - was constantly online and available. Despite its sprawling physical infrastructure, DSE faced scalability issues, particularly in view of the company's plans to achieve a sustainable average daily turnover of BDT 25 billion (US\$315.4 million) by 2020.

DSE also hopes to double the total number of listed securities (other than government bills and bonds) within the next three years. But the large server footprint presented other challenges. Not only did the company face growing power, data center space and cooling requirements, it also had to grapple with security concerns as the number of mission-critical applications - such as its Order Management System that processes trades - grew over time.

The significant effort in keeping the lights on and maintaining all its systems meant that DSE's technical team could not provide timely support for its brokers. Neither could it roll out new applications quickly: it often took months to launch a new application, even though DSE had provisioned excess capacity based on trade volumes and future demands. These were the primary factors slowing down DSE's business growth.

“As part of our proactive approach to keep pace with technological advancement, DSE has embarked on a digital transformation journey to provide the highest standards of service through efficiency improvement.

With VMware’s vSphere® virtualization solution and vRealize® Operations™, we have enhanced our service to brokers and investors alike.

From an IT management perspective, we now have a more robust, reliable and scalable infrastructure that is better aligned to the needs of our customers and core business.”

MOHAMMAD RUHUL AMIN, ASSISTANT  
GENERAL MANAGER, ICT DIVISION,  
DHAKA STOCK EXCHANGE LTD.

#### BUSINESS BENEFITS

- Optimize infrastructure
- Cost reductions
- Speed up application deployment
- Improve security and operational efficiency

#### APPLICATIONS VIRTUALIZED

- Centralize order management system (DSE Flex-TP)
- DSE-Mobile online trading platform for investors
- Post trading clearing and settle systems
- Offline surveillance systems
- Market data systems
- Microsoft SQL database servers
- Microsoft Exchange server

## The Solution

DSE implemented a highly virtualized infrastructure and management tool using VMware’s virtualization platform vSphere® and vRealize® Operations™, a solution bringing data from applications to storage into a unified, easy-to-use management tool, to help the bourse to get the best performance, availability, and efficiency from their infrastructure and applications. Not only has the virtualized infrastructure helped DSE deploy applications more quickly, it also enhanced application performance and availability by prioritizing access to resources.

With the operations management capabilities of vSphere®, DSE can now monitor and manage the health of its IT infrastructure, identify performance bottlenecks and capacity shortfalls. It can also rebalance workloads before demand spikes to enable application performance, while leveraging self-learning algorithms and predictive analytics that adapt to DSE’s IT environment. This means that the infrastructure can now better support its 250 brokers at critical junctures such as during periods of high trading volume and around major market events, allowing them to form accurate, smart investment decisions.

Each minute of downtime means delays in investment decisions and transactions that can lead to substantial losses. High availability and more efficient systems, thanks to vSphere®, vRealize® Operations™ and the network’s ability to recover virtual machines quickly on other hosts during downtime, meant a reduction in these potential losses.

## Business Results and Benefits

The business benefits were clear from the start. By consolidating 250 servers to just 25, VMware’s vSphere® virtualization solution reduced the workload of DSE’s IT staff tremendously. Apart from being able to better identify, troubleshoot and resolve issues, the business was also able to increase its consolidation ratio and capacity planning for the future. With the optimized infrastructure, DSE’s IT team can more accurately predict the IT resources needed and pre-empt technology and infrastructural needs.

Additionally, the IT team can now easily control and manage every component of the IT infrastructure such as applications, operating system, database, storage and network load. This has improved operational efficiency by enabling the IT team to identify problems early and quickly, and escalate issues to partners when necessary.

DSE has increased data center uptime to 98 percent and reduced recovery time by 50 percent. With more efficient and effective operational capabilities, the IT team can now focus on delivering new applications to delight DSE’s new and existing brokers and investors. Prior to virtualization, DSE took at least three months to roll out any new application. Today, it can do so in just eight days, greatly improving the service it offers to its pool of 250 brokers. With the faster roll out of applications ranging from monitoring to trading platforms, the brokers are able to more accurately and swiftly execute trading.

With a smaller server footprint and better resource utilization rates, DSE has also enjoyed savings in power, cooling and rack space. It managed to cut operating expenditure by around 50 percent and capital expenditure by some 30 percent. In addition, the VMware-powered private cloud has enabled DSE to serve 100,000 retail investors through the DSE-Mobile smartphone app. The app facilitates stock trading on the go, and is connected to the exchange’s

- Microsoft Active Directory
- Microsoft File Server
- Microsoft SharePoint

#### PLATFORM

- HPE
- Cisco

#### PARTNER

- NNS Solutions
- Data Edge Limited

Centralized Order Management System powered by the private cloud. With the enhancement to brokers' mobility, DSE witnessed a 50 percent increase in customer reach and response, improving customer service by four times.

#### Looking Ahead

The deployment of VMware vSphere® and vRealize® Operations™ has provided a good foundation for DSE to realize its vision of becoming the leading exchange in the region. For one, it is planning to build a new disaster recovery site for its production and office automation systems. To that end, it is looking to implement network virtualization with VMware NSX® and software-defined storage with VMware VSAN® – two key components of a holistic software-defined data center (SDDC) strategy.

DSE also hopes to provide a desktop virtualization service in future. To bolster employee productivity and collaboration, it is in the process of providing cloud-based services such as Microsoft's SharePoint, Exchange and Skype for Business that will be hosted on its new VMware-powered private cloud.

