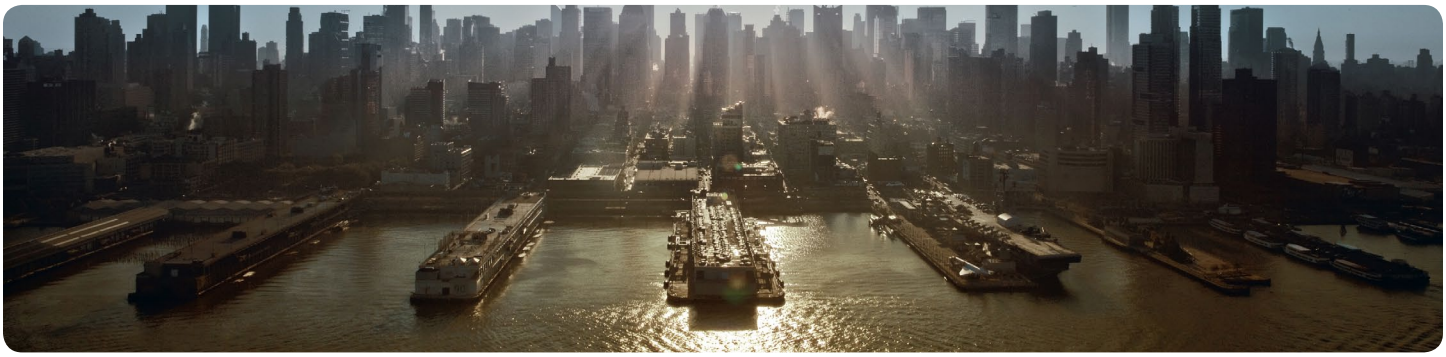
Engineering Firm Upgrades Data Center to Handle Growing Demands



Executive Summary

- **Customer Name:** Moffatt & Nichol
- **Industry:** Engineering, planning, design, and economic analysis of waterfront and transportation infrastructure
- **Location:** Headquarters in Long Beach, California; 28 global offices
- **Number of Employees:** 550+

Challenge

- Manage/store large amounts of data safely and securely
- Support daily project development and delivery across multiple offices
- Meet deadlines in every case

Solution

- Integrated Cisco, VMware, and NetApp to create a FlexPod environment to run processing-intensive applications and store massive amounts of data

Results

- Helped keep projects on schedule with business continuity and fast processing to maximize employee productivity
- Enhanced security by keeping systems and data within data center
- Improved business continuity and productivity while reducing IT administration costs by 15 percent

Moffatt & Nichol meets its deadlines, and the extreme demands of engineering users, with Cisco Unified Data Center solutions.

Challenge

Design and engineering teams need considerable, uninterrupted processing power and immediate access to large amounts of data to move projects forward. Without it, project delays are almost unavoidable and costs can rise rapidly. The teams also need to manage security, scale up while saving money, and have the flexibility to enable staff to work from any location.

All these considerations motivated Moffatt & Nichol, a leading U.S.-based global infrastructure advisor, to adopt Cisco Unified Computing System™ (UCS®). Moffatt & Nichol specializes in the planning and design of facilities that shape coastlines, harbors, and rivers. The company's 550+ employees conduct economic studies, analyze information security for ports, run environmental assessments, draw up engineering designs, and calculate the economic impact of building or redesigning a port. Headquartered in Long Beach, California, the company works from 28 offices worldwide.

The company processes 50 GB of data per day, with engineers using applications such as Delft Hydraulics, SIMULIA Abaqus, Danish Hydraulic Institute (DHI), Bentley MicroStation, and AutoDesk AutoCAD that produce files of more than 50 MB. Some engineering applications can run for months and generate a gigabyte of data every hour. At the same time, engineers use specialized tools to analyze the data that they generate as part of structural or economic studies. All these applications need substantial processing power to enable staff to accomplish their work and avoid lost productivity.

"We're confident that Cisco UCS supports our growth. Because of Cisco's foresight, the same powerful data center and network infrastructure we have now will support our environment for years to come, even as data volumes grow and our needs evolve."

– **Shawn McCullough**
Director of Information Technology
Moffatt & Nichol

Moffatt & Nichol's IT team must help ensure that huge amounts of data (over 20 TB) are available online, for daily access and use by modeling applications. Plus, the firm cannot afford any data loss or interruptions to the ability of staff to work on it. The team has to make certain that current copies of data and systems are readily available wherever needed.

Security of data and cost-effective scalability of IT infrastructure are also key for Moffatt & Nichol, as is the ability to offer employees the option of working reliably from remote locations. This flexibility enables the firm to be more responsive to diverse client demands, as well as builds employee job satisfaction, helping the firm gain a competitive edge by attracting and hiring the best engineers from all over the world.

A few years ago, Shawn McCullough, director of information technology at Moffatt & Nichol, identified virtualization as an approach that could help meet the firm's complex requirements and provide improved performance and more storage at a better price. "As we investigated adopting VMware, Cisco emerged as the company with the best vision for integrating virtual machines within the data center," says McCullough. "We were convinced when we saw how well the Cisco UCS, VMware, and NetApp solutions integrated into FlexPod to complement each other."

FlexPod is a pretested data center solution that integrates compute, storage, and network components from Cisco, NetApp, and VMware into a single, scalable, shared architecture. So when Moffat & Nichol retired its older HP legacy servers, McCullough and his team replaced them with Cisco data center solutions.

Solution

Today, Moffatt & Nichol's remote offices worldwide are using Cisco® C210 rack-mounted servers with 12 blades each to virtualize servers and increase server utilization. The servers continually sync data back to Moffatt & Nichol's data centers in Florida and California.

Moffatt & Nichol's data centers run on Cisco UCS, leveraging Cisco C210 Servers and Cisco B230 and B440 Blade Servers. Moffat & Nichol is in the process of replacing its HP SANs with FlexPod, which will help the company store its approximately 100 TB of data. Each data center uses two Cisco Nexus® 7010 Switches that link to Cisco 6120 Fabric Interconnects, and from there to NetApp storage. With 10 GB FCoE uplinks, the data centers have plenty of bandwidth to communicate between the Cisco UCS and storage infrastructure.

The majority of the applications, including high-end engineering applications, Microsoft Exchange, SQL server databases, and others, running at Moffatt & Nichol are already managed in the Cisco UCS data centers, and the company is migrating over all remaining applications. Currently, several key applications (about 20 percent) are virtualized, and the IT team is leveraging the virtual environment as well as a private cloud to test out a thin-client virtual desktop infrastructure (VDI). The team has reduced its use of desktop devices and instead runs VDI from the data center, enabling staff to work from home, using an inexpensive zero client or a thin client. Staff gets the same performance as in the office environment, because all processing and data storage take place in the Cisco UCS data center, not on the device.

Results

Cost savings

After initial investment in the Cisco UCS infrastructure, Moffatt & Nichol has started to see significant savings as it adds servers and processors and upgrades its original purchases. For example, one Nexus switch started with a 40 GB backplane and has now been upgraded to 100 GB.

Moffatt & Nichol's expanding VDI is also delivering cost savings, enabling the company to replace Dell T7500s (high-end workstations with 8 to 12 GB of RAM and dual core processors) with inexpensive thin clients and zero clients. In fact, employees can use their own devices to access corporate VDI resources, so all Moffatt & Nichol needs to provide is a URL link. McCullough and some of the company's key personnel are setting an example for employees: they periodically work from home using a Cisco ASA 5505 Adaptive Security Appliance with an IP phone and a VDI device or personal computer. Moffatt & Nichol's Business Development Team, based around the world, depend on an IP phone and VDI device to get work done on the road. And, project teams working off site at client's facilities have a way of staying connected to the firm and their projects.

"Users can't see any difference between the performance of inexpensive thin clients running through our Cisco environment and high-powered workstations," says McCullough. "In fact, sometimes the thin clients are faster: with the Cisco C210 servers and the virtualized infrastructure, we avoid mechanical issues that might impact performance."

The new infrastructure also saves money on software licenses. License managers enable Moffatt & Nichol to pay for licenses based on the number of concurrent users, not on the total number of users who need access to an application.

Thanks to the Cisco UCS Manager, the same staff of seven engineers who previously managed 90 servers now manages 150 Cisco servers that smoothly integrate with its entire infrastructure, including Cisco VoIP, WebEx®, WAAS, and Nexus switches. With each of the Cisco server, network, and voice products having a similar intuitive user interface and the ability to be managed remotely, IT responsiveness is accelerated and productivity boosted, while reducing IT administration costs by 15 percent.

Security and business continuity

With all data securely managed in the data centers and stored in the FlexPod environment, the staff has no need to move data around the system or copy it onto workstations. Moffatt & Nichol is now training staff not to copy data onto devices, and this is reducing the security risk when devices are lost or stolen.

An important benefit for the company in implementing the new Cisco UCS data centers is improved business continuity. With virtualization and syncing of data, if a data center or remote office goes down, the IT team can use the other data center to create a virtual server, sync the latest snapshots of any lost servers and data, and resume service within 15 minutes. If some problem keeps users from getting to the office, they can use VDIs to work remotely, accessing snapshots of their local servers running in the data center.

"We are moving our systems beyond traditional disaster recovery strategies where people ask how are we going to get our data back?" says McCullough. "With Cisco Unified Data Center solutions, we are not worried about the 'how' and can focus on getting back online faster."

Product List

Cisco Unified Computing System servers

- Cisco UCS B200 Blade Servers
- Cisco UCS B230 Blade Servers
- Cisco UCS B440 Blade Servers
- Cisco UCS C210 Servers

Routing and Switching

- Cisco Nexus 7010 Switches
- Cisco 2900 Series Integrated Services Routers

Network Management

- Cisco Unified Computing System Manager
- NetApp System Manager
- Solarwinds Orion
- VMware vCenter

Security and VPN

- Cisco ASA 5520 Adaptive Security Appliance

Performance

For Moffatt & Nichol, the outstanding performance of the Cisco Unified Data Center solution has been critical. "We needed excellent performance, and we couldn't get that in a virtualized environment without Cisco UCS," says McCullough. In particular, he says, Cisco server profiles have proven to be a "phenomenal concept" that has provided significant advantages. "With a service profile that's no longer attached to the hardware, we can move processing around to different blades as needed, to make maximum use of our resources," he says.

"Technology today is evolving fast, so to be successful, we're always watching the latest developments, listening to what leading vendors say," says McCullough. "Cisco's vision of a unified data center was a clear winner, so we placed our bet, and we've been glad that we did. We're confident that Cisco UCS supports our growth. Because of Cisco's foresight, the same powerful data center and network infrastructure we have now will support our environment for years to come, even as data volumes grow and our needs evolve."

For More Information

To find out more about Cisco Unified Data Center solutions, go to: www.cisco.com/go/dc.

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