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Establishing Infrastructure-as-Code

NterOne is fully integrating its compute, storage, and network environments with Cisco technologies

The customer summary

Customer name
NterOne

Industry
IT training and services

Location
Reston, Virginia

Number of employees
100+

Challenges

· Improving operational speed, agility, and scale

· Deploying a wide variety of virtual resources for students and clients around the world

· Enhancing infrastructure visibility and orchestration

Solution

· Full-stack data center infrastructure with cloud-based management

Results

· Accelerated VM deployments from hours to minutes

· Consolidated toolsets and optimized data center resources

· Improved network visibility, troubleshooting, and mean time to resolution (MTTR)

· Established a tightly integrated, software-defined foundation for infrastructure-as-code

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A booming business

NterOne provides IT training courses, remote labs, software solutions, and services around the world. Nearly all of them are customized for specific clients or groups and delivered from the company's North Carolina data center. And business is booming.

"We're experiencing more than 100 percent year-over-year growth with our services, and our classes are always in high demand," says Matthew Taylor, director of engineering at NterOne. "Our solutions and services are constantly changing, so we need the ability to quickly spin up and down a variety of resources—from virtual machines and emulators for our training courses to full test and development environments for remote labs and proofs of concept."

NterOne uses a variety of foundational platforms to do so, he explains, including Cisco® Unified Computing System™ (Cisco UCS®), Cisco HyperFlex™, and Cisco Application Centric Infrastructure (Cisco ACI®). And the company recently upgraded its Cisco UCS environment with the new Cisco UCS X-Series to accelerate and scale its operations.

"The performance of UCS X-Series blows away previous generations of the platform," Taylor says. "And the modularity of the platform gives us tremendous flexibility, enabling us to adapt to whatever use cases our clients throw at us."

While the company's Cisco HyperFlex clusters are used for general purpose workloads, its Cisco UCS X-Series environment supports the largest and most bandwidth-intensive applications and client services.

"Standing up massive VMs takes four to five hours per node—at a minimum—with traditional blades," Taylor says. "With UCS X-Series, it takes 25 minutes. That's a game changer for us."

Full-stack visibility

Cisco Intersight™ has been a game changer for NterOne as well, providing full-stack observability and orchestration across multiple computing, storage, and network environments.

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Matthew Taylor
Director of Engineering, NterOne

"Intersight is the glue that brings together UCS, HyperFlex, ACI, and our NetApp storage environment," Taylor says of the cloud-based tool. "It gives us a single management interface for our entire data center instead of individual tools for every component."

The end goal, he adds, is using Cisco Intersight Service for HashiCorp Terraform to establish infrastructure-as-code.

"With Intersight, we don't need to have a server with a bunch of scripts. We don't need to have FTP servers. We don't need to maintain snapshots," Taylor explains. "We just go into the tool, create a workflow and deploy, and it handles the rest."
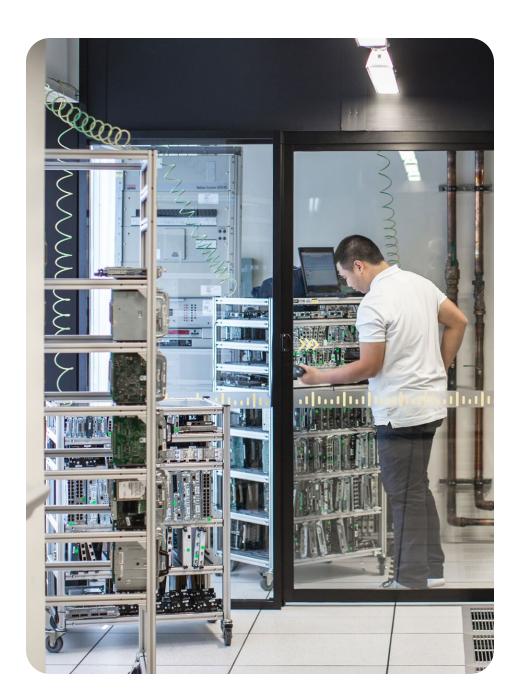
In addition to consolidating its toolset and the servers typically required to run them, NterOne is using Cisco Intersight Workload Optimizer (IWO) to monitor and maximize resource utilization.

"IWO has been very eye-opening," Taylor says. "We ran it on our HyperFlex cluster, and it found more than 500 anomalies—mostly overutilized CPUs and memory—that we've been able to fix. It has also helped us identify overprovisioned VMs to free up resources and apply them elsewhere."

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Full-scale integrations

NterOne uses Cisco Nexus® Dashboard to configure, manage, and pull telemetry from its Cisco ACI network.

"Nexus Dashboard has helped us consolidate our toolset, improve visibility, and simplify our operations," Taylor says. "We no longer need separate tools for network configuration, deployment, telemetry, and troubleshooting."

Leveraging Cisco Nexus 9000 switches and a multi-site architecture design, the Cisco ACI network will align NterOne's primary data center with a new disaster recovery site currently being built. Cisco Nexus Dashboard will provide orchestration and automation across both sites. And the network will be tightly integrated with the company's Cisco UCS, Cisco HyperFlex, and NetApp storage environments.

"Full-scale integration and infrastructure-as-code will dramatically improve the speed, efficiency, and agility of our operations," Taylor says. "And whether it's through teaching and consulting or implementing and managing, we can extend those same benefits to our students and clients around the world."

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Director of Engineering, NterOne

Product links

- [Cisco UCS](#)
- [Cisco HyperFlex](#)
- [Cisco ACI](#)
- [Cisco Intersight](#)
- [Cisco Intersight Workload Optimizer (IWO)](#)
- [Cisco Intersight Service for HashiCorp Terraform](#)
- [Cisco Nexus 9000 Series switches](#)
- [Cisco Nexus Dashboard](#)
- [Cisco Nexus Dashboard Fabric Controller](#)

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