Global provider of ultra-high purity cleaning services assures operational uptime and optimizes application performance with business-driven SD-WAN

QuantumClean enables higher business productivity and elevates quality of employee experience worldwide with Unity EdgeConnect SD-WAN edge platform

How can a super-clean environment like semiconductor manufacturing get even cleaner? Ask QuantumClean, a business unit of Ultra Clean Holdings (UCTT). This company takes clean to "ultra" levels.

Inside semiconductor chambers where silicon wafers are made, tiny particles called nanoparticles can collect and interfere with the manufacturing process. QuantumClean has developed highly specialized methods to remove this microscopic dust from semiconductor chambers and achieve ultra-high purity in the manufacturing environment.

QuantumClean has 21 facilities around the world, and users across these sites all access in-house-developed applications running in the company's U.S. data center to manage the cleaning operation.

QuantumClean®
A Business Unit of UCT

100% NETWORK UPTIME

HIGHER APP PERFORMANCE

30% LOWER LATENCY

If any location loses connectivity and users can't connect to those applications, operations would be unable to continue the cleaning process which could have an impact on the bottom line.

After a major cable cut by a third party took down QuantumClean's Taiwan facility for two days, the company took a fresh look at its network architecture options.

Silver Peak has shown us that having a quality SD-WAN solution makes our network more stable and the job of a network engineer easier. Most important, it allows the business to run smoothly and efficiently, without worrying about network disruptions."

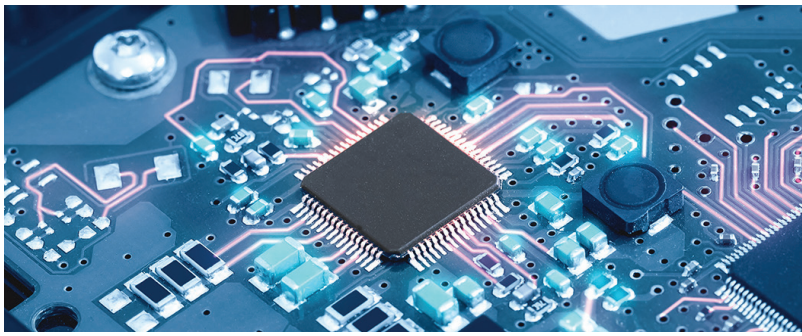
— James McColl, Network Engineer, QuantumClean, a business unit of UCT

Proving that simpler is better

Historically, QuantumClean relied on a single MPLS circuit to connect remote locations to the U.S. data center. All internet-bound traffic was also backhauled through the same data center. After the Taiwan incident, the company began exploring SD-WAN. James McColl, QuantumClean's network engineer, explains, "Our biggest push was to get a second link from another provider. The goal was to reduce downtime, but as we learned more about SD-WAN, we saw the opportunity to also improve application performance and network efficiency."

After evaluating a number of SD-WAN vendors, McColl and the IT team tested solutions from Silver Peak and Cisco, ultimately deciding to deploy Cisco's SD-WAN solution. However, after spending 8–14 hours configuring the routers at each site, and then struggling with operational issues for the next two-plus years, the team had to reconsider. That's when they called Silver Peak back in.

McColl immediately moved ahead with rolling out the Unity EdgeConnect™ SD-WAN edge platform to QuantumClean's 21 global locations. This time, the deployment experience was much different. "Describing it as night and day doesn't even come close," McColl says. "At the first site, our Silver Peak sales engineer walked me through the configuration process and we were up and running in less than 30 minutes. From there, each site deployment went faster and faster to the point where I got the last site connected and online in two minutes. It was just amazing how easy Silver Peak was to deploy."

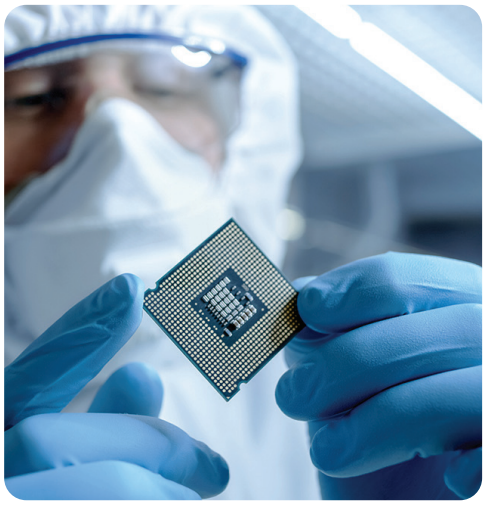


Application traffic optimized based on business priority

Today, the EdgeConnect platform is terminated with MPLS and broadband circuits at every site except two, which use broadband only. Using the Unity Orchestrator™ management interface, McColl configured business intent overlays to optimize network resources based on application need and business priority. For example, QuantumClean's in-house applications are classified as "interactive" with a bonding policy to optimize for highest quality across both links. Voice over IP (VoIP) is classified as "real time" to ensure high performance and call quality. Applications such as Microsoft Office 365, Webex, Mozy, and general internet traffic are classified as "SaaS" and automatically steered directly to the internet locally from each remote location.

With the unified routing interoperability provided by EdgeConnect, QuantumClean was able to retire its branch routers, consolidating the edge and eliminating the licensing and maintenance costs associated with the routers. McColl notes, "The branch routers just added complexity and another point of possible failure. It's much easier to use Orchestrator to centrally manage routing through the EdgeConnect appliance."

Improves application performance and quality of experience



To accelerate its Interactive-class applications and file transfers, QuantumClean takes advantage of optional Unity Boost™ WAN optimization. Boost improved latency more than 30 percent and reduced data on the network through compression and deduplication. Moreover, once data is transmitted to a remote location, Boost caches the data locally, avoiding the need to retransmit as much as 95 percent of the data each time users access the application.

McColl points out, "Applying Boost to our central applications made a big difference in response time for end users. Pages load faster and the quality of the user experience is much better. One of the biggest complaints we used to get was how slow applications ran. The complaints have stopped since we deployed the Silver Peak SD-WAN with Boost."

QuantumClean also improved the quality of VoIP calls and video conferences, which benefit from capabilities such as path conditioning , quality of service, and dynamic path control provided by EdgeConnect.

Network resilience for maximum uptime

One of the most important reasons QuantumClean moved to SD-WAN was higher uptime, and the improvements since deploying Silver Peak have been dramatic. As the only network engineer supporting 21 global sites running 24/7, McColl appreciates the network resilience EdgeConnect enables, providing sub-millisecond link failover to assure uninterrupted connectivity even during circuit brownouts or outages.

"I could get calls any time of day or night," McColl recalls, "but now those calls are practically non-existent. Our local MPLS link in the U.S. went down for four days recently, but we had no downtime. Nothing ran slower and nobody called. People at the site didn't even notice."

Another benefit is easier day-to-day network administration thanks to Orchestrator centralized management software. "It's so easy to make changes in Orchestrator and apply them to all 21 sites," McColl says. "Orchestrator gives me one central place to see things like traffic flows, alarms, link and tunnel status, and historical charts. It's a huge time saver."

QuantumClean's success with the Silver Peak SD-WAN will soon extend to UCTT, as well. UCTT was having VoIP call quality issues between its China and Singapore sites, but after consulting with McColl and testing EdgeConnect, the sites saw quality instantly improve. UCTT is now moving forward with rolling out the EdgeConnect SD-WAN edge platform across its 13 global locations.

McColl concludes, "Silver Peak has shown us that having a quality SD-WAN solution makes our network more stable and the job of a network engineer easier. Most important, it allows the business to run smoothly and efficiently, without worrying about network disruptions."

For more information on Silver Peak and our solutions, please visit: silver-peak.com

Customer

QuantumClean, a business unit of UCTT, is the global leader in sub-10nm validated, ultra-high purity services for the semiconductor wafer fabrication industry, as well as OEM and OPM manufacturers. The company's include cleaning process tool chamber parts, extending the life of process parts, and optimizing process tool parts. Founded in 2000, QuantumClean employs 1,600 people in 21 ultra-high purity cleaning and recoating sites located in eight countries.Challenge

Challenge

QuantumClean's global service locations all rely on access to business-critical applications running in the company's U.S. data center. In the past, internet traffic was also backhauled to the central data center. With only a single MPLS connection from each site, any circuit outage caused downtime for the affected cleaning location, costing QuantumClean hundreds of thousands of dollars per hour in lost revenue.

Solution

QuantumClean deployed the EdgeConnect SD-WAN edge platform across all of its 21 global locations, bonding MPLS with a broadband link at all sites except two, which rely on all broadband. QuantumClean also implemented Boost WAN optimization to accelerate its most critical applications and file transfers. With the EdgeConnect solution, the company was able to retire its branch routers and enable local internet breakout at each remote location. QuantumClean uses Orchestrator to centrally manage the global SD-WAN.

Results

- Consolidates the edge infrastructure, retiring branch routers and eliminating associated licensing and maintenance costs
- Enables local breakout at branches for more efficient access to SaaS applications like Microsoft Office 365
- Reduces application latency by more than 30 percent, increasing application performance and accelerating file transfers
- Improves the quality and reliability of VoIP calls and video conferencing, elevating the quality of the end user experience
- Eliminates downtime due to brownouts or outages on any one circuit, supporting higher business productivity
- Streamlines network administration with centralized management and orchestration

Company Address

Silver Peak Systems, Inc
2860 De La Cruz Blvd.
Santa Clara, CA 95050

Phone & Fax

Phone: +1 888 598 7325
Local: +1 408 935 1800

Online

Email: info@silver-peak.com
Website: www.silver-peak.com

© 2020 Silver Peak Systems, Inc. All rights reserved. Silver Peak, the Silver Peak logo, and all Silver Peak product names, logos, and brands are trademarks or registered trademarks of Silver Peak Systems, Inc. in the United States and/or other countries. All other product names, logos, and brands are property of their respective owners.

SP-ECS-QUANTUMCLEAN-070120