Defense agency levels up on network capacity and reliability
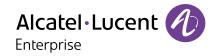
govloop

The U.S. military depends on its communication networks to convey mission-critical data. A modernized solution from ALE has helped get the agency back on track.

Alcatel·Lucent Enterprise

The agency struggled with ever-increasing demands for network capacity. At the same time, the switches in place weren't sufficiently hardened to withstand the extreme environmental conditions inherent in the military mission.

Challenges

The need for modernization

In addition to the need for greater capacity, the agency had an urgent requirement for more robust hardware. It had hardened switches in place, but in a humid and dusty environment, those switches were proving insufficient.

"The cooling fans were too loud," which threatened to become a battlefield liability, Kleinpeter said. "And it was a very harsh environment — very humid, very dusty, with a lot of particulates at times. The switches needed to run for extended periods of time with little to no opportunity for maintenance, and they were failing."

The need for upgrades was apparent and urgent. Yet the agency faced a number of key hurdles. First, there were compliance requirements that complicated the procurement picture. The new solution would need to meet the standards of the Trade America Act (TAA), which requires a product to be either wholly grown, produced, manufactured or "substantially transformed" in the U.S. or a "designated country." And the solution would need to be on the Department of Defense approved product list.

The new switches would need to be hardened to withstand the harsh environment, with the ability to survive temperatures ranging from -40° C to 70° C with minimal maintenance. In addition, the solution would have to satisfy a high bar when it came to the security of the physical devices. "They needed to make sure the switches were locked down with multitiered password protections," Kleinpeter said. "They needed to know that no one without a very high level of security could make changes to the devices."

The security issue was a top priority, in part because of past incidents in which unauthorized personnel had made changes that had impacted the network. "It wasn't malicious, but it was causing them problems," he said. "That issue of unwanted access was one of their biggest issues."

With the security gaps and the physical failures that were taking place, "they were losing control of what was happening on their network," Kleinpeter said. "It became pretty urgent for them to make a move."

ACTION

A robust modernized solution

The agency turned to Alcatel-Lucent Enterprise for a robust, modernized solution. The Alcatel-Lucent OmniSwitch® 6865 is a ruggedized, advanced Layer 3, scalable Ethernet switch, designed to operate reliably in harsh environments. These high-bandwidth switches support mission-critical applications that require wider operating temperature ranges, high security, reliability, performance and ease of management.

"It has four times the capacity of their existing equipment, so we're giving them a lot more computing capability," Kleinpeter said of the project, which was completed in just six months. "Our product off the shelf met all the requirements for the protocols they were running," he said. "This particular switch is designed to operate without a fan, which was a huge plus, because it reduced the acoustic footprint."

48% of cyberattacks are aimed at government, the most targeted sector

-40° C to +74° C
is the operating threshold of the Alcatel-Lucent OmniSwitch 6865

767,181 hours

is the mean time between failure for the OmniSwitch 6865 with one power source

"The equipment they had was running at over 80% capacity, and they were starting to see errors and problems in their network."

STEVEN KLEINPETER, DIRECTOR OF FEDERAL SALES, ALCATEL-LUCENT ENTERPRISE.

The new switches met the heat, humidity, dust and particulate requirements, as well as shock requirements, and it met all the TAA and defense certification requirements.

To achieve the high bar for security, ALE worked hand-in-glove with the agency to develop a customized solution. "We discussed the parameters of what they needed in regard to this multi-tiered authorization process," Kleinpeter said. "The Alcatel Lucent Enterprise software development team looked at it and felt it was something we could do in a fairly short timeframe." Some procurement hurdles had to be overcome in order to develop the customized security solution. "Their money was designed for purchasing, versus R&D, so the money available upfront to do this engineering work was very limited."

ALE solved the problem by taking a small payment for non-recurring engineering fees, or NRE, to support development of the security solution. The team then delivered a prototype, known as "delivery of first article," to prove what could be done.

"We showed that we can make this manufacturing process work. They could then test it to make sure it truly met requirements," he said. "That happened within about four months. They took that product, tested it in their lab, then gave us the go-ahead."

As a result, "their network is running exactly the way they expected it to," Kleinpeter said. "It's meeting all their needs, and it gives them plenty of room for future growth. In terms of security, these switches are effectively locked down, which is exactly what they were looking for."

Going forward, he expects the agency to expand its deployment of these and similar devices. "They were very pleased with our flexibility, agility and the reliability of the product. They've been buying more products, and I have had other engineers call to talk about other network solutions."

Best practices

When pursuing upgrades to the networking hardware:

Make requirements clear

- It's important to work closely with the vendor to ensure requirements are crystal clear

Look for flexibility

- Partner with a vendor that has the operational flexibility to meet complex procurement and technical requirements

Pursue a prototype

- It can be helpful if the vendor can deliver a first article for testing before beginning full production.

THE ART OF THE POSSIBLE

In the big picture, the success of this venture helps to demonstrate the art of the possible. "The networking equipment available today is very robust and very reliable," Kleinpeter said.

"At ALE, we are standards-based and can integrate with other vendors' networking products." With this approach, "you can build very high-capacity and secure solutions. There are so many things going on in the network world today, end-users have a lot of options when they are looking to implement robust and reliable network solutions."

PRODUCTS AND SOLUTIONS

Alcatel-Lucent OmniSwitch® 6865 Hardened Ethernet Switch

Alcatel-Lucent Enterprise helps bring to life the modernized ITS networking vision, with heavy investments in transportation-related research and development, including hardened switches and modernized networking software and services.

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