Battleship IOWA Museum

Zyxel Nebula Solution Provides Fast, Reliable, Remotely-Managed Network to Bring Historic Battleship into Digital Era

Customer at a glance

Customer Name
Battleship IOWA Museum

Industry
Museum

Country
USA

Customer Background

Entering service more than 75 years ago, the USS Iowa deployed to the South Pacific in the early years of World War II. The iconic battleship served with distinction in that war, and later during the Korean War. In the 1990s, as the Berlin Wall crumbled, the IOWA concluded her active duty. Located in San Pedro, California, Battleship USS Iowa now serves as a 501c3 non-profit historic naval ship museum and becomes one of the top five museums in Los Angeles. In 2025, it will officially transition to become the National Museum of the Surface Navy.

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David Canfield
VP and Chief Information Officer
Battleship IOWA Museum

Summary

Battleship IOWA Museum needed to upgrade ineffective network infrastructure to enable reliable connection and remote network management. However, they encountered unique networking challenges because of the ship structure. "It is difficult to run cable through armored bulkheads. It is difficult to drop a modern network into an older ship. This is a steel box, so wireless is challenging," according to David Canfield, VP and Chief Information Officer for Battleship IOWA Museum.

"When you're trying to figure out how to deploy a wireless network aboard a 1943 battleship, you have to take into account the armored and steel structure," explained Jonathan Williams, president and CEO of Battleship IOWA Museum. "It is difficult to implement innovative technologies on a platform that is as compartmentalized as this battleship. Our office spaces, museum displays, ticketing sftware, ship store, donor and volunteer management software are all run through the network and in the cloud."

"This is probably the most challenging network environment you will ever encounter. The ship is basically a Faraday cage," said Troy Vail, Innovation and Technology Manager for the battleship. "A Faraday cage is an environment where electrical and wireless signals are contained due to the infrastructure and being a large steel box. In a traditional office space, you have dry wall with some cursory girders holding it up. On this ship, however, every bulkhead is constructed of between half-inch to eight inches of steel, and that tends to cause massive interference with a radio frequency signal." Canfield added, "We were putting a single AP in every single space we had on the ship where we required WiFi access. It got to the point where I was telling our users not to trust the WiFi. If they were not plugged in, they were not going to have a decent network connection."

Canfield also explained that aside from the WiFi network issues, many members of the executive and technical staff reside long distances from the ship. The ability to provide secure connectivity to the ship and remotely manage the network were other challenges that they faced. "Our prior solution had what it called remote management, but you had to get onto the VPN and get to that management controller before we could talk to any of our wireless devices," he said. "That's remote management that isn't really remote because you have to be present to get to the controller.

"This was my first experience with WiFi 6 and Zyxel's APs performed a lot better than I expected. In areas that are separated by two to three inches of thick steel, I was able to get excellent speeds of between 100 to 200 Mbps throughput on the other side of what would effectively be six inches of steel plating and at over 200 feet away from the access point. With our legacy system, I would have to have multiple access points in the middle to achieve that. Additionally, the remote management is a lot more robust than that of our legacy system."

Troy Vail
Innovation and Technology Manager
Battleship IOWA Museum

Challenges

- Deploy a wireless network aboard a 1943 battleship with an armored, steel structure
- Upgrade ineffective network infrastructure to enable reliable connection
- Implement simpler and more efficient methods to manage network devices management problems

Benefits

- Enhanced guest satisfaction and staff productivity via strong WiFi connectivity throughout the museum
- Increased opportunities for network enhancements and innovative services
- More scalable, cost-effective and operationally efficient cloud networking management

Products used

- Nebula Control Center (NCC)
- WAX650S 802.11ax Access Point
- XS1930-12HP Smart Managed PoE Switch
- USG FLEX 700 UTM Firewall

To address their unique networking challenges, Canfield and Vail deployed the Zyxel WAX650S 802.11ax (WiFi 6) Access Points, XS1930-12HP Smart Managed PoE Switch and USG FLEX 700 Firewall. "This was my first experience with WiFi 6 and Zyxel's APs performed a lot better than I expected," Vail said. "In areas that are separated by two to three inches of thick steel, I was able to get excellent speeds of between 100 to 200 Mbps throughput on the other side of what would effectively be six inches of steel plating and at over 200 feet away from the access point. With our legacy system, I would have to have multiple access points in the middle to achieve that." He also stated that while the unique structure of the historic battleship provided challenges to mounting the APs throughout the ship, the provisioning and deployment of the APs was easy.

Nebula allows for easy device registration by scanning the QR code on devices

Providing secure remote access to the network was easily solved using Zyxel's Secure WiFi Service. "The secure WiFi solution allows you to scan that barcode, pre-program the access point in Nebula, and then sending the AP to a remote office," Canfield said. "So setting up that secure connection from the remote office to our internal file system does not require me to put a body on site. It also does not expose the network to the home network where you would have to have an equal amount of security in the home network. You can simply send this AP out when they connect to that AP there on the office network. I have a very secure environment that I can trust. The ability to simply pre-program that device, send it to the remote office, and have them plug in and connect with no other interaction is really amazing!" Zyxel's Nebula Cloud Management Solution was deployed to enable Canfield and Vail to monitor and manage the network via the cloud from anywhere at anytime. "By moving to Nebula, we gained the ability to control the devices, even when we could not get immediately to the VPN or the local layer two network," said Canfield.

"The remote management is a lot more robust than that of our legacy system," Vail explained. "With the old system, we had to VPN into the ship to check the uptimes and everything else. But with the Nebula cloud-managed system, we're able to see it 24/7, no matter what, whether the VPN's up or not. It offers us a better viewpoint into the overall health of the network." Canfield further explained the benefits that Zyxel's WiFi 6 APs have delivered to Battleship Iowa. "Our previous Solution was not a WiFi 6 solution and we dealt with a lot of limited range and channel overlap conflicts. We just had a lot of problems driving traffic through that solution. By switching to the Zyxel WiFi 6 APs, we've increased our performance, range and reliability, and reduced our packet loss. What we've been able to do with this Zyxel solution is reduce the number of APs that we have in place while increasing speed and reliability." Canfield added, "Using Zyxel Nebula, we've reduced the difficulty of managing the large population of APs, and with the Zyxel WiFi 6 APs, we've increased reliability to the point that we no longer have to tell our users don't trust the WiFi."