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A **BELDEN** BRAND

CUSTOMER CASE STUDY
NORTHROP GRUMMAN

DELIVERING MISSION-CRITICAL PERFORMANCE AND RELIABILITY FOR UAS OPERATIONS AND TRAINING

INDUSTRY
Defense & Intelligence

APPLICATION
Command and Control

KEY REQUIREMENTS
Continuous on-station presence with zero signal latency

Provide persistent, accurate and reliable image delivery of surface threats

Ability to instantly switch views at the destination

WHAT WAS THE CHALLENGE?

Northrop Grumman was tasked to develop a persistent, remotely- piloted maritime intelligence, surveillance and reconnaissance (ISR) data collection and dissemination capability that fulfills the maritime war fighter's requirement for continuous battle- space awareness. Built for the U.S. Navy's Broad Area Maritime Surveillance (BAMS) program, the Triton MQ-4C UAS (unmanned aerial system) will support a wide range of intelligence-gathering and reconnaissance missions, maritime patrol and search and rescue.

The Triton MQ-4C provides real-time ISR capabilities over vast ocean and coastal regions and supports missions up to 24 hours. The high-altitude UAS is equipped with a sensor suite that provides a high-resolution, 360-degree view of its surroundings at a radius of over 2,000 nautical miles. Deployment of the Triton will allow the Navy's P-8A, P-3C and EP-3E aircraft to focus on their core missions, creating operational efficiencies and adding to the ISR capability the service's Maritime Patrol and Reconnaissance Force.

Remotely piloting a UAS and operating its array of sensors from a distance requires a secure, reliable and accurate command and control infrastructure incorporating multiple computer keyboard, video and mouse (KVM) data feeds and aircraft control through a joystick and other computer peripherals. To enhance security and improve pilot productivity, these multiple computer sources are located some distance away from the actual operator station. Missions can last many hours and require multiple shifts, with video and peripheral signals needing to be switched between pilots at different operator stations without compromise. Crew fatigue is a critical concern.

WHAT WAS THINKLOGICAL'S SOLUTION?

Northrop Grumman required a KVM supplier with experience in meeting the unique performance and reliability requirements of UAS control systems, and had equipment with Information Assurance (IA) accreditations authorized for use in classified military applications, particularly complex, multi-layered "Red/Black" network environments. Northrop Grumman chose Thinklogical for a secure, high-bandwidth, operational and training command and control infrastructure that was fiber-optic-based, resolution agnostic, and could accurately deliver video and computer peripheral signals over distance in uncompressed form without latency or loss of quality.

Sam Guinto, Northrop Grumman's BAMS UAS Mission Control Systems (MCS) System Integration and Test lead, conducted research on a variety of KVM signal extension and switching products before partnering with Thinklogical. "We did a very thorough job, working closely with Thinklogical to design the Triton computer infrastructure," said Guinto. "We based our design decisions on Thinklogical's system performance, interface routing capability and functionality."

Thinklogical was the only supplier with an established IA methodology across high-end video switching equipment able to meet Common Criteria EAL-4 certification requirements, which played an important role in the selection decision. The Thinklogical VX 160 KVM matrix switch deployed by Northrop Grumman offers protocol agnostic, modular, non-blocking switching supporting any video format at any resolution with no frame or pixel loss, as well as any computer or video related peripheral data. Combined with Thinklogical's Velocitykvm model 24 and 28 extenders, the resulting system is the only solution accredited for multi-classification secure computing and video signal routing within the same chassis, able to extend and switch dual and single link DVI and USB 2.0 signals over multimode fiber at full fidelity.

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>
> - Sam Guinto,
> Northrop Grumman BAMS UAS MCS System Integration and Test Lead

WHAT WERE THE RESULTS?

Thinklogical KVM technology provides seamless interaction between ight control and sensory data, enabling the Triton BAMS MCS administrators to centralize critical computing resources in a secure location and allocate them as needed to the UAS operator stations to meet demanding mission requirements. This is done with no signal compression or added latency, which would impair the crew's performance and effectiveness during extended missions.

"Ultimately, the Thinklogical system provided the BAMS Mission Control System operators with a user experience that is not compromised, even when accessing multiple systems," noted Guinto.

The Navy's MQ-4C Triton launched its initial flight test phase validating more than 568 test points at Northrop Grumman's Palmdale, Calif., facility on March 13, 2014. During the test program, the Northrop Grumman/Navy test team conducted 13 flights, including several long-endurance flights totaling 81 hours at altitudes up to 59,950 feet.

The MQ-4C is scheduled to take its first cross-country flight in the summer of 2014, followed by the second test aircraft shortly after. The Navy plans to field 68 Triton UAS and will be used with the manned P-8 Poseidon maritime patrol aircraft to conduct surveillance missions. The Navy is building a mission-control complex for all BAMs operations at Jacksonville Naval Air Station, Fla.

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