

Switch and Router Subsystems Onboard Amphibious Assault Vehicle

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DEFENSE SOLUTIONS



Challenge

- Upgrade of AAVC-7 Amphibious Assault Vehicle network backbone
- Supply rugged network router and switch subsystems fully qualified to MIL-STDs for use in harsh platform environments
- Mitigate product obsolescence of historical Cisco®-based networking systems, while maintaining familiar Cisco IOS® Command Line Interface

Solution

- Proven Cisco IOS-based networking technology meeting environmental, information assurance and interoperability requirements
- Rugged COTS Cisco 5915 ESR-based Parvus® DuraMAR® 5915 router
- Rugged COTS Cisco ESS 2020-based Parvus DuraNET® 30-2020 switch

Results

- AAV command variant platform receives latest embedded Cisco IOS-based security and networking capabilities
- Successful deployment of SWaP-C optimized Line Replaceable Units (LRUs)
- Rugged COTS Cisco IOS-based router and switch subsystems

Challenge

The U.S. Navy's Space and Naval Warfare Systems Command (SPAWAR) required an IP network backbone upgrade for the AAVC-7A1, the command variant of the US Marine Corps (USMC) Amphibious Assault Vehicle. This veteran tracked amphibious landing vehicle plays a vital role in troop transport used to deliver surface assault elements of the landing force and their equipment. The AAVC-7A1 variant integrates multiple tactical radios and internetworking communications equipment used by commanders.

The U.S. government needed to upgrade the networking architecture onboard the AAVC-7 to extend the service life of the platform and transition from legacy Cisco IOS-based router and switch subsystems to newer Cisco technologies that still met the information assurance and interoperability requirements of the Department of Defense (DoD) and could easily be configured and maintained using a familiar Cisco Command Line Interface (CLI).



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Parvus DuraMAR 5915 router

Solution

Solid performance with previous generations of Parvus DuraMAR router/ DuraNET switch subsystems installed in the earlier models of the AAV platform positioned Curtiss-Wright as the supplier of choice for the AAVC-7 network upgrade. The size, weight, power and cost (SWaP-C) optimized Parvus LRUs, based on the latest Cisco embedded switch and router technologies, were selected by the customer to provide network connectivity for the tactical comms equipment used onboard the vehicle.

Specified for the AAV was the Cisco IOS-based [Parvus DuraMAR 5915 router](#) delivering secure Layer 3 mobile routing capabilities from its Cisco Embedded Services Router (ESR) Advanced Enterprise IOS, along with the [Parvus DuraNET 30-2020 switch](#) subsystem providing 19 ports of fully managed Layer 2+ Cisco IOS switching achieved with Cisco's Embedded Services Switch (ESS) 2020 technology.

Both subsystems went through extensive MIL-STD qual testing for thermal, shock, vibration, humidity, dust/water ingress, EMI/EMC susceptibility and emissions. Both boxes are sealed against dust and water ingress to IP67, and both had completed vibration testing that spanned wide application requirements, including tracked vehicle environments to jet fighter and helicopter platforms, validating their use on the AAV platform.

These units are listed on the DoD Unified Capabilities Approved Product List (APL), validating information assurance and interoperability for DoD Worldwide agency use.

Result

Command variants of the USMC AAV were outfitted with embedded Cisco IOS-based rugged Parvus subsystems to provide comprehensive security and L2/L3 networking features in support of mission operations. As a result of these rugged COTS SWaP-C optimized LRUs meeting all functional, environmental, and defense agency interoperability requirements, these units now provide network connectivity for the tactical communications equipment onboard the AAVC-7.



Parvus DuraNET 30-2020 switch

Platform images courtesy of Defenseimagery.mil