Dynamically Adaptive Secure Computing Area Network™ (DASCAN)

THE CHALLENGE

The United States Marine Corps (USMC) faced a challenge in increasing the availability of their Unmanned Aerial System (UAS) video feeds down to the Forward Operating Base (FOB) level. Tactical data networks providing data support to the FOB level are commonly Disadvantaged, Intermittent, Low-Bandwidth (DIL) networks. Existing solutions implemented unicast full-motion video (FMV) feeds across multiple-hop satellite feeds, straining the DIL networks and causing highly inefficient bandwidth utilization. In addition to pushing multicast FMV feeds and optimizing bandwidth utilization, it was felt that any solution would also need to address the expeditionary environment which meant low power consumption, semi-ruggedization and enough power to be a small data center. Each of these challenges needed to be addressed.

THE STRATEGY

Computer Systems Center Incorporated (CSCI) possesses subject matter expertise (SME) in UAS requirements, FMV solutions and in network optimization as well as in information assurance requirements within a tactical environment. In addition to in-house expertise, CSCI produced an appliance that could solve the expeditionary requirements, its Dynamically Adaptive Secure Computing Area Network™ (DASCAN).

CSCI serves as SME to architect a solution utilizing its DASCAN as a foundation to provide an optimal solution addressing all expeditionary needs. Understanding the tactical requirements as well as UAV needs, CSCI integrated various Commercial and Government off-the-shelf (CoTS/GoTS) products, minimizing cost and licensing for the government, which would sit atop the foundation of the DASCAN HW solution to receive and retrieve multicast FMV feeds, increasing availability to FOB units. CSCI ensured optimization by testing and analyzing the suggested solution in a tactical training environment.

CSCI's DASCAN network appliance addresses a significant number of requirements enhancing energy efficiency, and performance levels from operational, security and technical perspectives. DASCAN's single chassis solution combining switching, processing and storage, ensures speed, accuracy and timeliness in the gathering and delivery of data satisfying dynamic end user demands. Use of high-speed, multi-processor server blades and multi-terabyte storage gives DASCAN the ability to process and tag data sets at the fastest rate possible. The combination of high speed I/O interfaces, powerful processors and high performance storage, managed in an advanced software environment allows DASCAN to provide this level of data capture and delivery. The DASCAN platform solution provides for a dependable, stable foundation for content dissemination by utilizing the ability to manage multiple virtual machines hosted locally, while allowing for application and web services to be delivered to local edge users, reducing reach-back requirements and eliminating latency.

CSCI used this foundation along with an integrated system of superior quality software solutions to study and document current capabilities; clarify future requirements for managing military Intelligence, Surveillance, and Reconnaissance (ISR) assets and their supporting systems; and to distribute valued information at the right time over a DIL tactical environment to geographically dispersed units.

THE RESULTS

A DASCAN implementation, along with an integrated software solution satisfied the need of providing continuous real-time situational awareness, air picture deconfliction, and UAS video feeds to and from the FOB during multi-sensor reconnaissance operations. DASCAN is a single chassis network environment proven to be able to catch massive volumes of data from multiple concurrent streams; inventory, categorize, catalogue and process data using tagging; process, store and retrieve data for review and analysis; and push information in real-time to any reliable user in any desired data format.

CSCI achieved a 3-year authority to operate (ATO) with DASCAN as the baseline while demonstrating the introduction of new capabilities.

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