

Rugged, Encrypted Data Storage for an ISR Pod

**CURTISS-
WRIGHT**
DEFENSE SOLUTIONS

13,58 722424
9,56 7912
48,51 272742
54,9 19548

4835,48 545621585
4861,8 846542844
1872,548 485484156
68487,4 684584715

Challenge

- Protection for classified ISR data
- Hostile, size constrained environment
- Accelerated program schedule

Solution

- NSA CSfC Components List approved encryption
- Rugged and compact NAS
- Commercial off-the-shelf device

Results

- Protected Top Secret data-at-rest
- Lowered technical risk with tested, deployed device
- Reduced program risk with high TRL NAS

Challenge

Keeping up with current technology can be a costly and time-consuming process, especially for military aircraft. A pod attached to the aircraft can be used to increase the aircraft's functionality, or change its role, while minimizing integration and customization costs. Because pods can be fitted to almost any aircraft, and operate independently, they often contain an aircraft's intelligence, surveillance, and reconnaissance (ISR) systems.

When a leading aerospace and defense manufacturer required a data storage solution that could withstand the challenging pod environment, they contacted Curtiss-Wright. Because the customer's ISR pod that collects and stores sensitive data is attached under the aircraft, the customer sought a secure data storage solution that could maintain reliability under extreme temperatures and vibration. Due to the tight program schedule, the customer was looking for a commercial off-the-shelf solution (COTS) that could be turned around in a number of weeks instead of the months often required of custom solution development.

45,20 452424
545 424212177
13,58 722424
9,56 7912
48,51 272742
54,9 19548



Solution

As the aircraft's eyes and ears, an ISR system's data is often Top Secret. Protecting Top Secret data has been traditionally achieved through NSA Type 1 encryption, which involves a costly and time-consuming process. The aerospace manufacturer had tight project deadlines to meet and chose instead to use COTS encryption solution that is internationally approved. The [DTS1 network attached storage](#) (NAS) system has two layers of Commercial Solutions for Classified (CSfC) approved encryption (hardware and software). CSfC is an NSA-approved approach for protecting classified National Security Systems (NSS) information. The two DTS1 encryption layers have been certified by National Information Assurance Partnership (NIAP) under the Common Criteria (CC) program and are also listed as approved NSA CSfC components. Because the DTS1 is NSA CSfC approved, the customer could securely store Top Secret data onboard the aircraft without going through the Type 1 process (note that the removable memory cartridge (RMC) on the DTS1 is considered unclassified when in transport between the carrier ground station and aircraft).

Military aircraft are often cramped with operators, systems, peripheral devices and cabling, leaving little room for operational movement. However, while moving the ISR system to a pod under the aircraft frees up space onboard and improves upgrade and modification costs, it leaves a severely limited amount of room for ISR hardware, in an extremely harsh environment. The DTS1's small size, weight, and power consumption allowed it to fit into the pod while its rugged design ensured reliability in extreme temperatures and vibration. In addition, the RMC has a durable, high-insertion cycle connector designed for 100,000 removals/insertions, ensuring a long life expectancy throughout continuous removal for post-mission analysis and playback. The lightweight, compact device measures just 1.5 inches (3.8 cm) tall and less than 49 inches (121.9 cm) cubed. When equipped with a four-terabyte (4 TB) RMC, the DTS1 weighs in at less than 4 lb (1.8 kg) and uses less than 18 watts of power.

Results

Choosing the DTS1 meant that the customer could reduce their program costs and schedule with an off-the-shelf solution that met the program's unique requirements. Because the DTS1 is a NSA CSfC approved solution, the customer avoided the timely and costly process of developing an alternative NSA approved solution. Curtiss-Wright invested time and IRAD funds to take the DTS1 through the NSA CSfC approval process, so that similar customers do not have to. The DTS1 is NIAP certified and NSA and NATO approved today. Using an approved NSA CSfC solution like the DTS1, ensures the sensitive Top Secret data collected on the pod's ISR missions is protected to national standards.

The customer kept system footprint down with the small form factor DTS1. Because the DTS1 met the customer's requirements off-the-shelf, the customer was able to save time and money with the easily integrated COTS solution.



DTS1: 1-Slot Network Attached File Server

Image Credit: Andy Wilson