# UNS Rugged NAS

## Network Attached Storage for Unattended Operations

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SILVER HONOREE

### Key Features

- Network Attached Storage
- Protection of top secret and below data
- Supports unattended operations
- 32 TB removable solid state memory
- 2 GB/s system throughput
- 4 x 10 GbE, 8 x 1 GbE ports
- NFS, CIFS, TFTP, iSCSI, PCAP
- Boot network clients with PXE and DHCP

### Applications

- Deployed network file server
- Top secret and below data-at-rest
- Unattended vehicles: UAV, UUV, USV, UGV
- Mobile ISR system

## Overview

The Curtiss-Wright UNS (Unattended Network Storage) is a rugged network attached storage (NAS) system that supports industry-standard network storage protocols (NFS, CIFS, iSCSI, HTTP, and FTP) through four 10 GbE (Gigabit Ethernet) and eight 1 GbE ports. Trusted to protect critical data-at-rest (DAR), the UNS incorporates top secret/sensitive compartmented Information (TS/SCI) encryption for unattended applications. With a 32 TB Removable Storage Module (RSM), the UNS is a leader in protecting classified DAR for transport between a base station and aircraft or other mobile vehicles. With no moving parts or air-pressure dependent components, the UNS operates in a broad range of harsh conditions. Additionally, it supports the Preboot eXecution Environment (PXE) and Dynamic Host Configuration Protocol (DHCP) in order to serve boot files to network clients, allowing designers to eliminate redundant client storage on the clients.

## Data Protection for Unattended Applications

The UNS incorporates the ProtecD@R® Multi-Platform Encryptor (KG-204) from General Dynamics Mission Systems (GDMS). In order to maintain a high system throughput, the UNS is designed to accomodate two KG-204 encryptors behind a secured panel. The incoming data is encrypted and then stored on the RSM.

The ProtectD@R Multi-Platform is the first DAR encryptor planned to be certified for unattended operations. This feature allows the encryptor to protect data while in unmanned environments such as unmanned underwater vehicles (UUV) or unmanned air vehicles (UAV).

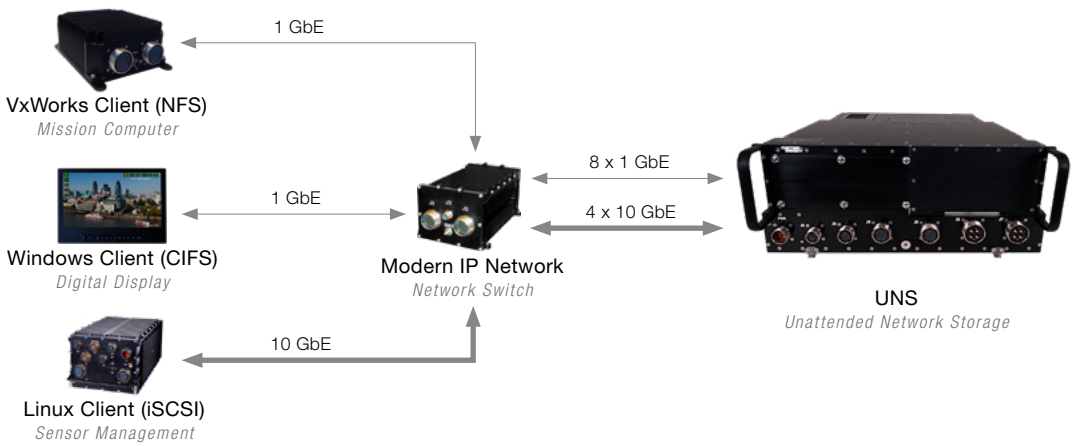


Figure 1: UNS supporting network clients

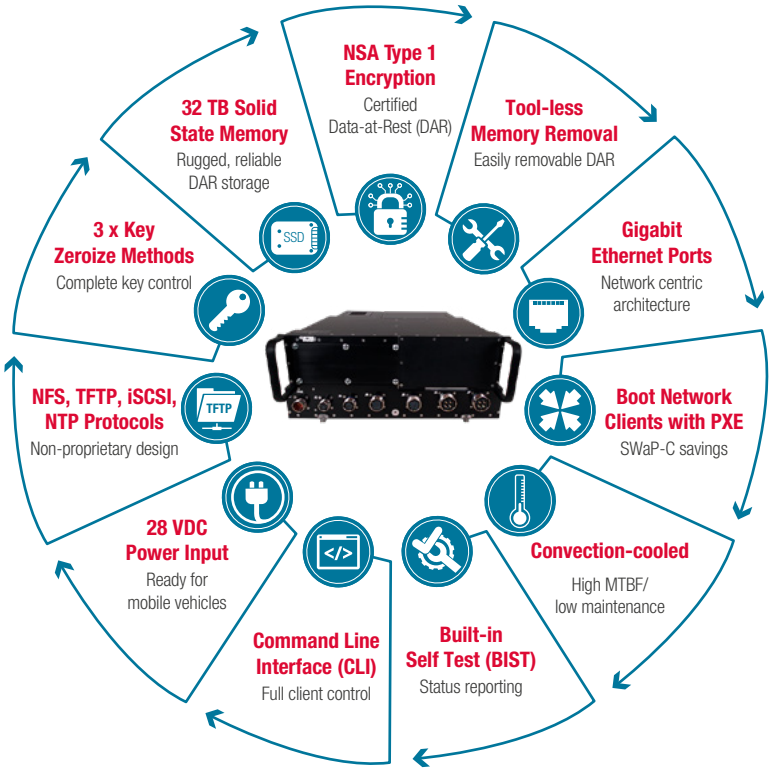


Figure 2: UNS features and benefits

# Specifications

## Physical

- Dimensions (W x H x L):
  - 17.8 x 7.1 x 18.95” (45.21 x 18.16 x 48.13 cm)
- Weight: <52 lb (23.6 Kg)

## Power

- Voltage Input
  - 28 VDC nominal
  - 22-29 VDC range
  - MIL-STD-704
- Power dissipation: ~ 250W (UNS, RSM, 2 x KG-204)
- Hold-up: 50 ms

## MTBF

- @ 30°C: 11,600 hours (estimate)
- @ 55°C: 8,800 hours (estimate)

## I/O ports

- 4 x 10 GbE (10GBASE-T)
- 8 x 1 GbE (1GBASE-T)
- 2 x USB (reserved)
- 1 x Discrete input for zeroize

## Data-at-Rest Encryption

- Two ProtecD@R Multi-Platform Encryptor (KG-204) slots
- Top Secret and below support for unattended operations
- Remote Crypto Ignition Key (CIK)
- Black Key Fill over DS-101 Interface via Local Mini-USB Port

## Data-at-Rest Storage

- One removable storage module
- 100K insertion cycle connectors
- 8 x 4 TB = 32 TB (64 TB planned)
- Tool-less removal

## Temperature

- Operational: -40°C to 55°C

## Protocols

- Network attached storage - NFS, CIFS, FTP, HTTP
- Block storage - iSCSI
- Packet capture - PCAP
- Network booting - PXE, DHCP

## Rugged Solid State Storage

The UNS chassis is designed to accept one removeable storage module. The RSM houses multiple 2.5" solid state drives (SSD) with a current total capacity of 32 TB. Additionally, it supports SATA III protocol that is capable of handling speeds of 6 Gb/s.

Designed for frequent, repeated use with 100,000 insertion cycle connectors, the RSM is perfect for deployed applications requiring the storage of data and then the removal and transport to another location.

Figure 3: RSM with 32 TB SSD capacity

## Remote Boot Lowers SWaP-C, Simplifies Software Updates

The UNS supports the industry standard PXE protocol that is proven to allow network clients to boot from the UNS. The UNS acts as a DHCP server to the clients. The administrator can set up the UNS to provide specific files to specific clients (identified by their IP address). Those files can be application programs or even the client operating system (OS) and can be kept in a separate partition isolated from NAS files or iSCSI blocks.

So what does this mean in a network centric system? Traditionally, each client would have a local hard disk to store its application and OS. This separate storage added size, weight, power, and cost (SWaP-C) to each client computer. With PXE boot, each client can have a simple boot setup that pings the UNS which will then provide the boot files (application and/or OS). This concept is ideal for systems concerned with SWaP-C.

White Paper: Using NetBoot to Reduce Maintenance and SWaP-C in Embedded Systems.

Not only does this remote boot approach save SWaP in your system, it also allows fast updates to the client's application software and OS without going back to a depot. This can be a great time and logistics savings.

## iSCSI Block Storage

The UNS supports iSCSI protocol enabling network clients to use the UNS as a block storage device (iSCSI target). The iSCSI initiator (which can be any client in the network) has full control of the blocks and the organization of the blocks. A separate partition is used for iSCSI block storage to keep this data separate from the PXE boot files and NAS files.

White Paper: Using Software Full Disk Encryption and Disk Partitioning to Protect and Isolate Network Attached Storage Functions.

## Key Discovery

The ProtecD@R Multi-Platform is designed to ease key management across multiple locations. The encryptor uses Pre-Placed Keys (PPK) which are filled in Black Key format. The use of symmetric PPK allows for the same key to be loaded on multiple encryptors. This feature allows the RSM to be encrypted in one location and moved to another location where it can be decrypted.

When in transport between vehicle and ground station and not powered, the data on the RSM is considered unclassified.

## Ground Station

The UNS Ground Station (UNS-GS) is intended for use in conjunction with the UNS. The UNS-GS accommodates the same Removable Storage Module (RSM) that is used in the UNS.

## Ordering Information

- VS-UNS2KG-8X: UNS with slots for 2 KG-204 encryptors, 1 slot for RSM8X
- VS-RSM032M-8X: 32TB RSM with 8 x 4TB MLC SSD and 8 x SATA III ports
- KG-204: ProtectD@R Multi-Platform Encryptor, Top Secret and Below, Unattended Operation (Note: Contact GD-MS for price and availability.)