



GENERAL MICRO SYSTEMS, INC.
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HURRICANE S1U401-SHS

1U Rugged Rack Mount "Flash Server" with Hardware Encrypted RAID, Dual Removable NAS Cartridges, 12x/24x 1 Gigabit Ethernet, and 10G/40G Ethernet Ports

Two Removable Secure
Cartridges
16x, RAID, NVMe

Each with: Intel®
Xeon® E5
Up to 18 cores

Separate, Secure
12 or 24 Ports
1 Gb + 40 Gb Ethernet

Operating Temperature Range
-20° to +75°C
Available in Rugged Level 3

SYSTEM HIGHLIGHTS

- Single-socket Intel® Xeon® server in 1U rack-mount form factor
- Intel® Xeon® E5 v4 with up to 18 Cores and 36 virtual machines
- Up to 256 GB of DDR4 memory at 2133 MTS with ECC
- Dual 10 Gigabit Ethernet (copper) ports
- Optional fixed M.2 or mSATA for OS boot (optional encrypt/Secure Erase/Write Protect)
- Four removable 2.5" SAS/SATA NAS SSDs each with twist latch (optional encrypt/Secure Erase/Write Protect)

DRIVES AND SECURE NAS CARTRIDGES

- Storage via four removable 2.5-in/15mm SSD flash drives plus removable dual 8-drive cartridges
- Dual removable network attached storage cartridges
- NVMe flash drives use PCIe bus for ultimate speed and lowest latency
- Multi-function RAID controller supports RAID 0, 1, 5, 10, 50, Custom
- Dual cartridge sub-system supports 64 PCIe Gen 3 lanes or 16 SAS III / SATA III lanes for max speed

SYSTEM OVERVIEW

The S1U401-SHS secure storage server "Hurricane" is an ultra-rugged, 1U rack mount, lightweight Intel® Xeon® "flash server" system with expandable and removable Direct-to-disk™ storage at the drive- and cartridge-level, with 12x or 24x 1GbE Ethernet ports and dual QSFP+ sockets for 10/40 Gbits/s Ethernet add-in modules. The Secure High Speed Storage (SHS) in Hurricane integrates with high-performance processing, encrypted and removable RAID storage, networking, high speed I/O, and a MIL-SPEC power supply plus an optional APU in a small, ultra-rugged 1U high rack-mount enclosure with the greatest possible performance per dollar and per watt.

Speed and security are the basis for Hurricane. Flash solid state disks (SSDs) coupled with the Intel® Xeon® E5 and PCIe/SAS/SATA 3rd generation busses make this the fastest "flash server" in the rugged market. General Micro Systems' SecureDNA™ software suite, firmware and system architecture assure that data is protected at-rest and in-flight via RAID controller-side encryption. As well, total system erasure is accomplished via externally- or internally-triggered zeroize (sanitize) Secure Erase operations.

APPLICATIONS

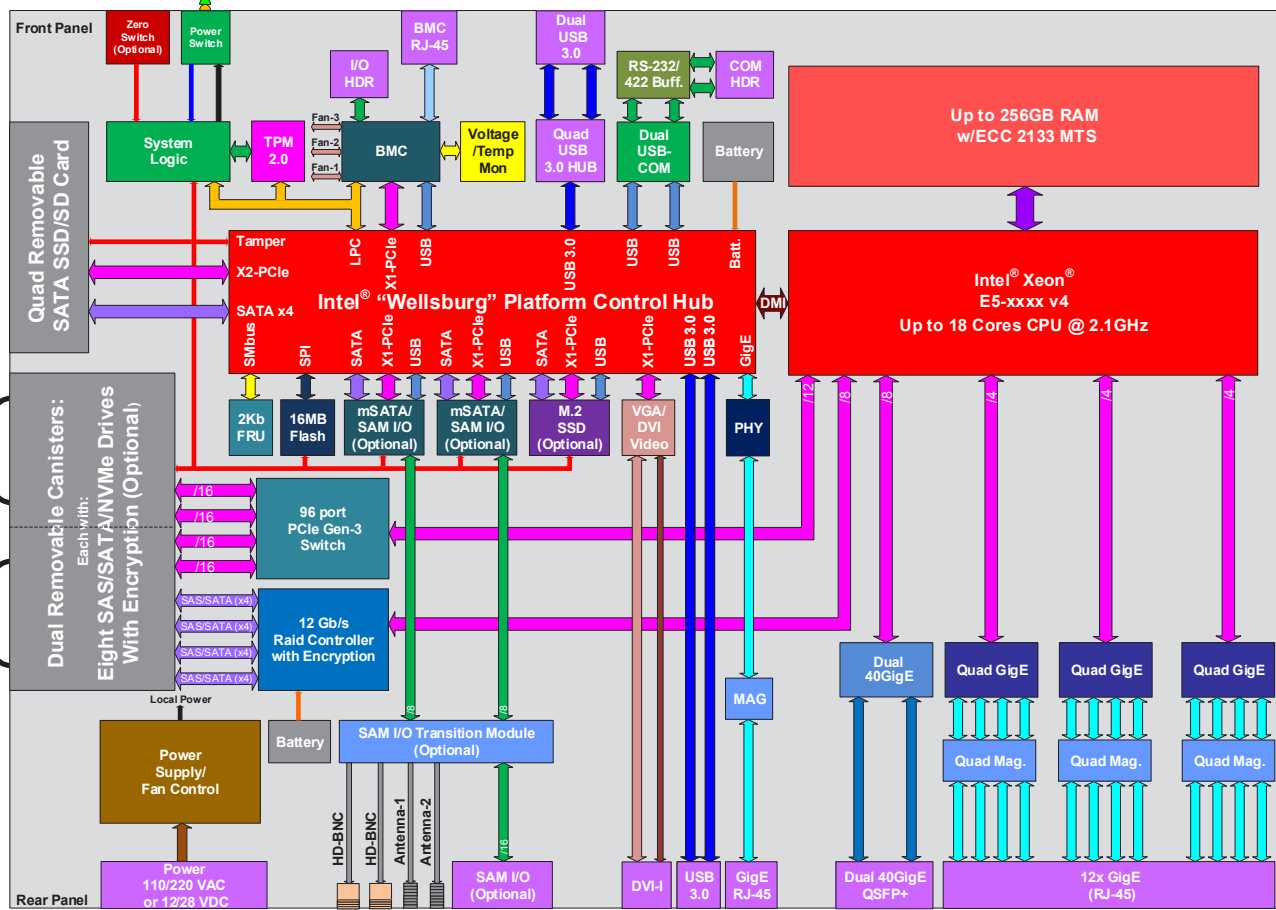
The 1U rack-mount S1U401-SHS Hurricane secure storage server is three complete sub-systems packaged together: rugged rack mount Xeon® server, multi-port Ethernet, and Direct-to-disk™ cartridge storage with secure, encrypted and removable RAID-controlled flash SSD drives.

Hurricane is intended for military/defense/aerospace networks where one server can power up to 36 virtual machines (18 core Xeon®) and perform network functional virtualization (NFV) using 14 Ethernet ports (2x 10 GbE and 12x or 24x 1 GbE) with either two or four inter-server 10/40 GbE fiber ports. The removable drives are ideal for encrypted sensor storage such as C4ISR missions where data is streamed via LAN or add-in I/O to the encrypted drives then removed post-mission for analysis.

With the onboard 1 and 10 Gigabit Ethernet ports, Hurricane is an ideal forwardly-deployed vehicle-mounted battlefield server, SIGINT/ELINT platform for recording data and distributing it to multiple Ethernet LANs. Ethernet ports provide LAN connectivity, CPU-based bridging, and multi-node connectivity. Removable drives with optional encryption provide NAS and software-defined storage that scales with system requirements.



BLOCK DIAGRAM



ENVIRONMENTAL SPECS

- SWaP-E:** Highest performance Xeon® server, multi-port Ethernet switch and encrypted secure NAS in a space-efficient 1U rack-mount server form factor
- Size:** 19" x 19.7" x 1.75"
- Weight:** 27 lbs.
- Power:** As low as 200 W
- MIL-STD:** MIL-STD-810G, MIL-STD-1275D, MIL-S-901D, DO-160D and MIL-STD-461F
- Temperature:** Operates up to extended temp -20° C to +75° C (Optional)
- Ruggedness:** Available in ruggedization levels R1-R3



I/O AND EXPANSION OPTIONS

- Storage on four encrypted/removable SSD drives (SAS-3/SATA III/NVMe)
- Dual removable encrypted RAID cartridges, 16 SSDs total (SAS-3/SATA III/NVMe)
- RAID 0, 1, 5, 10, 50; SED/OPAL, FIPS-197, FIPS-140-2
- On-the-fly hardware encryption for cartridges
- Four USB 3.0 ports
- One HDMI/DVI-I console video port up to 1920 x 1080 (no audio)
- 16 MB flash BIOS with optional Write Protect/Secure Erase and battery-less operation
- Panic support for system Zeroize via Secure Erase, including BIOS and all non-volatile storage
- Real Time Clock (RTC) with field-replaceable battery
- Platform Module (TPM) 2.0 for secure operation and crypto key root of trust
- Optional dual SAM I/O™ or mSATA sites for storage or PCIe-Mini expansion with flexible 21-pin connector
- Optional specialty panel I/O including RF (Wi-Fi, BT, etc) and SMPTE dual HD-SDI video

NETWORKING

- Twelve 1 Gigabit Ethernet ports (copper); optional twelve additional 1 Gigabit ports
- Two 10/40 Gigabit Ethernet ports via QSFP+ (copper; optional fiber: single/multi-mode)
- One Gigabit Ethernet service port with TCP/IP offloading for system management

