



GENERAL MICRO SYSTEMS, INC.
TRUSTED AND DEPLOYED SINCE 1979



VELOCITY 2U

High Speed NAS Storage Recorder with Quad Intel® Scalable Xeon® Processors, CRPS Dual-Redundant 3000W PSUs and 20 Removable Drives

Quad Intel®
Scalable Xeon®
Up to 28 Cores Each

Removable Storage
20x SSDs
NVMe/SATA/SAS Drives

Copper/Fiber
10/40 GbE
4x 100 GbE (8x Optional)

CRPS Dual Redundant
3000 W PSUs
220 VAC (110 VAC optional)

SYSTEM HIGHLIGHTS

- Quad Intel® Scalable Xeon® CPU (Platinum, Gold) with up to up to 28 cores (2.5 GHz) and Turbo Boost (3.8 GHz)
- Up to 2 TB total DDR4 ECC DRAM – 1 TB per CPU
- Up to 11 PCIe Gen 3 add-in slots: two full height (dual slot), two half height (low profile), and two PCIe Express Mini
- Storage: up to 8x internal M.2 SSDs (NVMe/SATA) and 20 removable SSDs (NVMe/SATA/SAS)
- Ethernet: Quad 10 GbE, four dual 10/40 GbE (8 total), and four 100 GbE (eight optional)
- Dual-redundant 3000 W power supplies: 110-240 VAC, 60 Hz
- Baseboard Management Controller (BMC) with IPMI and dedicated 1 GbE port and RS-232 console port
- USB connectivity: 2x USB 2.0 and 2x USB 3.0
- VGA console output, additional (optional) video ports with GPU PCIe add-in card(s)
- Optional HD Audio with Mic, Headphones, and Amplified Speaker Out
- Optional Intel® VROC for NVMe
- RuggedDNA™ design and air-cooled with proprietary TwoCool™ fan control
- SecureDNA™ security suite zeroizes/sanitizes BIOS/Firmware/SSDs
- SourceSafe™ allows direct control of BIOS features and source code

SYSTEM OVERVIEW

Rugged “Velocity” servers are network attached storage (NAS) servers ideal for harsh environments. “Velocity-2U” brings exceptional rackmount processing and flexibility to defense applications. The Velocity-2U server uses four of Intel’s second-generation Intel® Scalable Xeon® processors, up to 28 cores each (embedded, Gold/Platinum SKUs) with up to 2.0 TB total system memory (ECC, 2933 DDR4) to accelerate compute-intensive workloads.

Multiple Ethernet LAN interfaces are provided at 1/10/40/100 GbE: four 1/10 GbE, eight 1/10/40, and four 100 GbE (eight optional).

With up to twenty individual SAS/SATA/NVMe drives installed, massive amounts of sensor data can be redirected to on-board storage media without compromising system performance. Eight internal 2280 M.2 drives are used for OS boot or protected application software. Intel VROC software RAID is available for NVMe U.2 SSDs.

With an incredible 11 PCIe expansion sites, Velocity 2U’s capability can be expanded to support the latest GPU, I/O, and FPGA technology, making Velocity a decisive real-time sensor data processor and recorder.



Unique features in the overall “Velocity” 1U/2U server family are dual GPGPU accelerators such as NVIDIA® V100 Tesla artificial intelligence / data mining cards (four GPGPUs in 2U), a DVD R+W or Blu-Ray unit, GMS zero-charge NRE modification policy. For example, both “Velocity-1U” and “Velocity- 2U” can incorporate MIL-STD-704 power hold-up (via supercaps) or an auxiliary power unit battery.

Designed and built with GMS RuggedDNA™ design methodology, all “Goliath” servers are air-cooled using GMS-proprietary “TwoCool™” fan control. The server uses our proven egg-crate ruggedization technique that stiffens the chassis to provide exceptional shock and vibration for a rackmount server. A 3-year warranty is standard, along with GMS’s made-in-America end-of-life component monitoring and long-lifecycle sustainment policy. Custom versions can be developed with full programmatics and certifications.

IO AND EXPANSION OPTIONS

- 11x PCIe Gen 3 add-in slots
- Up to 20x NVMe/SATA/SAS individual removable SSDs
- Eight M.2 sites (NVMe/SATA) internal
- Quad 10 GbE ports
- Four Dual 10/40 GbE ports, 8 ports total
- Four 100 GbE ports standard, 8 ports optional
- BMC with IPMI and port access through 1 GbE and RS-232 ports
- VGA for console video
- Optional HDMI/DP video ports with PCIe add-in card
- Four USB ports: 2x USB 2.0, 2x USB 3.0
- Optional DVD-RW/Blu-ray player
- CRPS Dual-redundant 3000 W PSUs (110/220/240 VAC, 60 Hz)

ENVIRONMENTAL SPECS

- SWaP-E:** Rack server with unmatched density in one footprint
- Size:** 1U x 30 inches deep
- Weight:** as low as 50 lbs.
- Power:** As low as 1000 W
- MIL-STD:** MIL-STD-810G, MIL-STD-1275D, MIL-S-901D, MIL-STD-461E, DO-160D, IP 54 compliant
- Temperature:** 0° C to +55° C
-20° C to +75° C (optional)
- Ruggedness:** Available in R1-R2 ruggedization level

RUGGEDIZATION LEVELS

	TEMP	SHOCK	VIBRATION	MAX IP LEVEL
RUGGED 1	0° - 55° C	20 G	.0001 g ² /Hz	54
RUGGED 2	-20° - 75° C	20 G	.0008 g ² /Hz	64



	VELOCITY-1U	VELOCITY-2U
Height	1U	2U
Depth	30 inches	
Processors	Intel® Scalable Xeon®, Gold/Platinum, up to 28 cores (non-embedded SKU)	
# CPUs	2	4
# UPIs, between CPUs	2	6
Compute architecture	Workload-balanced, flow-through data: HPC, SMP, NUMA	
Max memory/CPU (2.0 TB/CPU with select SKUs)	1.0 TB/CPU	
# DDR4 DIMM Slots up to 2933 MT/s (w/ECC)	8/CPU	
Add-in cards	6	11
# x16 (FLFH) slots	2	4
# x8 (FLHH) slots, low profile	2	4
PCIe speed: 8 GT/s, Gen 3	PCIe Gen 3	
Max number of SSDs (incl. M.2 2280)	16	28
# M.2 2280 slots	4 total (2 - x4, 2 - x2)	8 total (6 - x4 and 2 - x2)
# SSD hot-swap slots, (SAS/SATA/NVMe)	12 (7 mm max)	20 (15mm max)
Optional Intel VROC software RAID (key is required)	Yes (excludes M.2)	
Hardware RAID 0,1,10,50, other (Required for SATA/SAS drives)	Yes (uses FLHH slot)	
Ethernet Service port (copper, 1 GbE) – front panel	1 for BMC	
Ethernet (copper, 1/10 GbE)	4	
Ethernet (fiber, 1/10/40 GbE), QSFP+ (copper, fiber inserts) add-in card uses one HHFL slot 1/10 GbE requires adapter cable with insert	4	8
Ethernet (fiber, 100 GbE), QSFP28 (copper, fiber inserts)	2x standard, 4x optional	4x standard, 8x optional
NVIDIA® co-processing GPGPU for vector apps, AI or data mining (Tesla V100 or Titan V, dual-slot)	2	4 (double-slot, up to 250 W/slot) (requires power management)
USB 2.0 (rear)	2	
USB 3.0 (rear)	2	
Optional DVD/Blu-ray	1	
VGA, 2D video (rear) (+ KVM video redirection up to 1080p)	1	
BMC with Ethernet port (rear)	1 BMC with dedicated 1 GbE port	
Optional Audio	Mic In/Stereo Out	
Optional General Purpose I/O	8	
Optional Serial Ports (RS-232/422/485)	1	
Dual-redundant PSUs	2x, 1000 W each (req. 220 VAC) or 2x, 800 W each, 110 VAC	2x, 3000 W each (req. 220 VAC) or 2x, 1600 W each, 110VAC
Cooling	5x, Convection-cooling GMS TwoCool™ fans	
Connectors	COTS/commercial-style	
Optional SecureDNA™ Zeroize, Status, SourceSafe™ BIOS (Note: BIOS erasure may be destructive and requires RMA to GMS.)	Yes	
Temperature, standard	0 °C to +55 °C	
Temperature, optional (excl. add-ins)	-20 °C to +75 °C	
Optional FlexPanel™ I/O customization	Consult Factory	

