

The Mafia 1U PQC Gateway Series is a high-performance cybersecurity gateway engineered to enable seamless adoption of Post-Quantum Cryptography (PQC) for existing enterprise and industrial infrastructures. Powered by Intel® Core™ processors supporting 14th, 13th, and 12th Gen platforms, it delivers validated low-latency PQC processing with approximately 2.3% handshake overhead and support for up to 20,000 concurrent connections, while preserving existing server architectures through a non-intrusive reverse proxy deployment model. With enterprise-grade hybrid TLS, TPM 2.0 private key protection, hardware bypass networking, High Availability (HA) support, and Syslog-compatible logging capabilities, the Mafia 1U Series provides a future-ready security platform for defense, finance, telecommunications, healthcare, and critical infrastructure.



Features, Advantages and Benefits

Features

- 1. Ready Computing Platform**
Powered by Intel® Core™ processors supporting 14th, 13th, and 12th Gen platforms (up to 24 cores), providing robust cryptographic processing performance required for demanding Post-Quantum Cryptography (PQC) workloads.
- 2. Enterprise-Class Power Redundancy**
Supports a 300W 1+1 hot-swappable redundant power supply (100–240V AC), allowing continuous system operation in the event of a single PSU failure.
- 3. Enterprise-Class Trusted Security**
Provides hardware-backed security through onboard TPM 2.0, Secure Boot, and LUKS disk encryption, with TPM-based private key protection for enhanced system integrity and cryptographic key security.
- 4. High Availability & Fail-Safe Networking**
Supports High Availability (HA) deployment and hardware bypass networking for enhanced service and network resilience, with Syslog-compatible logging for enterprise management and SIEM integration.

Advantages

- 1. Enterprise-Class Network Expansion**
Supports PCIe Gen4 x16 expansion for 10GbE and 25GbE network interfaces, including hardware bypass configurations, enabling flexible high-bandwidth connectivity and enhanced network resilience for enterprise and critical infrastructure environments. (*Note: Customer infrastructure is required to support SNMP/IP management for bypass network routing.)
- 2. High-Density 1U Deployment**
Optimized for standard 19-inch rack environments, delivering high-density cybersecurity deployment and simplified cable management in a compact 1U footprint to maximize server rack space utilization.

Benefits

- 1. High Availability Architecture**
Combines dual-Gateway High Availability (HA), 1+1 redundant power, and hardware bypass networking to enhance service availability, power resilience, and network path continuity for mission-critical deployments.
- 2. Seamless PQC Integration**
Enables existing servers and network infrastructure to adopt Post-Quantum Cryptography (PQC) protection through the Mafia 1U PQC Gateway Series without replacing existing hardware or redesigning system architecture.
- 3. Validated Low Latency & High Concurrency**
Delivers only ~2.3% additional PQC handshake latency while supporting 20,000 concurrent connections and over 1.55 million ML-KEM handshakes in endurance testing.

Mafia 1U PQC Gateway Series

2026/08/21

Specifications

CPU	Intel® Core™ 14th / 13th / 12th Gen Processors (LGA1700, 35W TDP Recommended)
System Memory	2x 260-pin DDR4 3200 MHz SO-DIMM, Max. 64GB
PQC Optimization	Designed for high-performance Post-Quantum Cryptography (PQC) gateway applications
External I/O Port	1x HDMI 2.0b, 2x DisplayPort 1.4a 1x Line-out, 1x Mic-in 2x 2.5GbE RJ45 LAN Ports 4x USB 3.2 Gen 2 (Rear), 2x USB 2.0(Optional Front)
Expansion	1x PCIe Gen4 x16 Slot via 1U Riser Card, supporting 10GbE / 25GbE network interfaces and hardware bypass configurations *Note: Customer infrastructure must support SNMP/IP management for bypass deployment.

Storage & Expansion	1x M.2 Key M (2242, PCIe Gen4 x4 / SATA3 SSD) 1x M.2 Key M (2242/2260/2280, PCIe Gen3 x4 NVMe SSD) 4x SATA3 (6Gb/s, Supports RAID 0/1/5/10)
Operating System	Ubuntu Linux
Security & Management	• TPM 2.0 + Secure Boot + LUKS Disk Encryption • PQC-Enabled Hybrid TLS with TLS 1.3 / TLS 1.2 Compatibility • Security Audit Logging & Syslog SIEM Export • High Availability (HA) Deployment Support

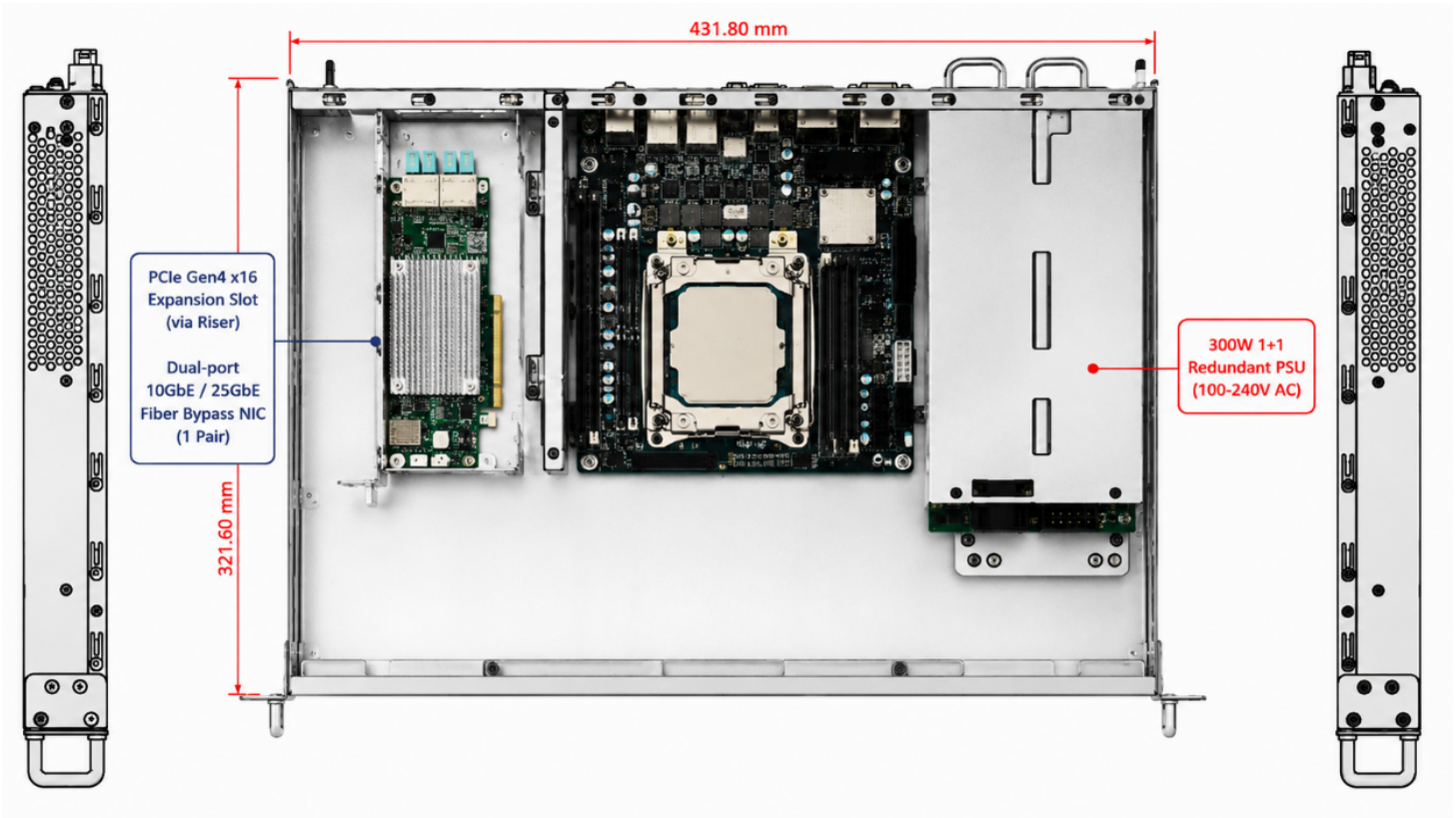
Environment	
Power Input	300W 1+1 Hot-Swappable Redundant Power Supply (100–240V AC Input)
Dimensions	431.8 (W) x 321.6 (D) x 44.0 (H) mm
Weight	TBD
Certification	FCC / CE Class A Certified
Operating Temp	0°C to 45°C
Storage Temp	-20°C to 60°C
Humidity	10% to 90% (non-condensing)

Software	
Operating System	Ubuntu Linux
Core Engine	Reverse Proxy, PQC TLS Module, Legacy TLS Support, ML-KEM (FIPS 203)
Hybrid Handshake	Automatically negotiates PQC-enabled TLS with compatible endpoints and maintains legacy TLS compatibility when PQC support is unavailable.
Certificate Management	Independent Gateway Certificate for handshake identity verification; the protected server certificate remains unchanged.
Audit Logging	Connection Log, Access Log, Syslog-compatible forwarding, CSV / JSON export
Management Interface	Web UI, CLI, High Availability (HA) Support

Ordering Information	CPU	Network Interface	Memory	Storage
MAFIA-G5135	Core™ i5-13500TE	10GbE	16GB DDR4	128GB SATA SSD
MAFIA-G7137	Core™ i7-13700TE	25GbE	16GB DDR4	128GB SATA SSD

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FRONT PANEL

FRONT & REAR I/O OVERVIEW

FRONT PANEL I/O

No.	Item	Description
1	2x USB 3.2 Gen2 (Type-A)	Up to 10Gbps
2	PWR LED (Green)	Power Status
3	HDD LED (Amber)	Storage Activity
4	Power Button	System Power On/Off

REAR PANEL

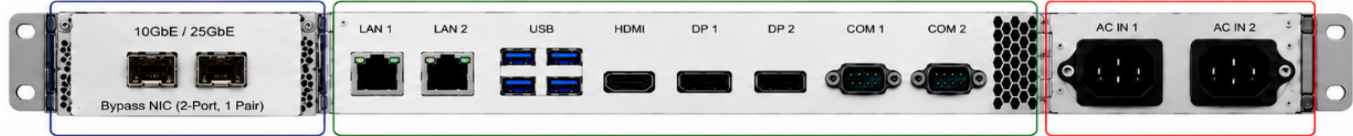
Expansion Area

PCIe x16 via Gen3 Riser

Motherboard Rear I/O Area

Redundant Power Area

300W 1+1 Redundant



1	2	3	4	5	6	7	8	9	10
PCIe x16 Expansion (via Gen3 Riser) 10GbE / 25GbE Bypass NIC (2-Port, 1 Pair)	LAN 1 2.5GbE RJ45	LAN 2 2.5GbE RJ45	4x USB 3.2 Gen2 (Type-A)	HDMI 2.0b	DisplayPort 1.4a (DP1)	DisplayPort 1.4a (DP2)	COM 1 RS-232/422/485	COM 2 RS-232/422/485	Dual AC Inputs 300W 1+1 Redundant PSU
For 10GbE / 25GbE Fiber Bypass NIC (2-Port, 1 Pair)	Intel I226-IT	Intel I226-IT	Up to 10Gbps	3840x2160 @60Hz	3840x2160 @60Hz	3840x2160 @60Hz	BIOS Selectable	BIOS Selectable	100-240VAC Redundant