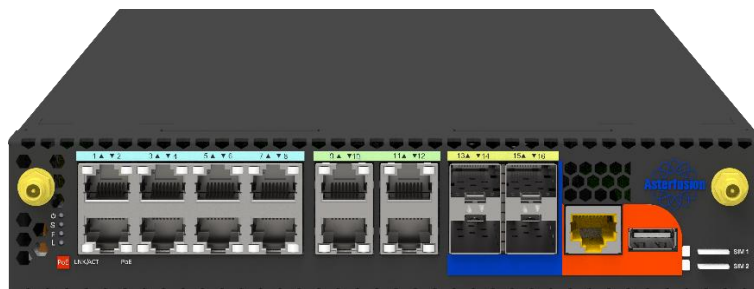


## Overview

The Asterfusion ET2500 is an AI-ready edge network platform designed for modern deployments, including routing, security, MEC, and edge compute applications. Powered by Marvell OCTEON 10 CN102XX processor featuring 8-core ARM 64-bit Neoverse N2 architecture, the platform combines high-performance computing, hardware-accelerated packet processing with up to 58Gbps networking throughput, inline security acceleration, and optional AI inference capabilities in a compact low-power appliance.

The platform supports major Linux distributions including Ubuntu, Debian, CentOS, and OpenWRT, enabling customers to deploy containerized edge applications and open-source software such as Nginx, iptables, UFW, and other edge services on a single device. Running Asterfusion's native AsterNOS-VPP router software, the ET2500 delivers enterprise-grade routing, secure VPN, firewall, and edge networking services optimized through VPP and DPDK acceleration.



ET2500

An optional AI acceleration module delivering up to 160 TOPS of compute performance and 24 GB of onboard memory further extends the ET2500 with intelligent edge capabilities. The ET2500 supports deployment of modern AI frameworks and large language models (LLMs) in the 30B parameter class directly at the network edge, enabling use cases such as intelligent operations, automated troubleshooting, anomaly detection, and private AI assistants. By combining networking, security, edge compute, and AI acceleration within a single platform, the ET2500 enables tighter integration between AI workloads and network services while reducing hardware complexity, power consumption, and operational overhead.

## Hardware Highlight

- Compact half-width 1U edge network appliance
- 8 x 2.5GHz ARM64 Neoverse N2 Core
- 16GB pluggable DDR5 SO-DIMM, up to 48G
- 4 x 10GE, 4 x 2.5GE and 8 x 1GE, optional 8 x 1GE PoE+, 4 x 2.5GE PoE++ @150W budget
- True inline crypto engine
- Optional AI accelerator module with 160TOPS INT8 computing performance
- Optional M.2 SSD up to 4TB
- 2 pluggable modules with M.2 form, extending support 5G/LTE, WiFi6E/7, Bluetooth5.3, GNSS, etc.
- Optional PTP/SyncE module with 20ns accuracy and OCXO holdover
- 50 Gbps intelligent data processing for routing, firewall, IPSec and SSL/TLS
- <60 Watt with FULL configuration and workload (w/o PoE)

## Application Scenarios

Based on the open hardware-software decoupled architecture, the ET2500 combines a rich array of open-source software for control plane with hardware-optimized data plane, and can connect to SSDs, 5G/LTE, WiFi6E/7, and other devices via M.2 and USB interfaces, thereby addressing diverse application scenarios. Here are some typical scenarios that can be used individually or in combination:

### ■ Router/VPN/Firewall: AsterNOS-VPP (SONiC-VPP)

- Hardware-optimized vector packet technology and DPDK accelerate data plane forwarding, delivering up to 58Gbps forwarding performance.
- Multi-WAN Routing across Ethernet and 5G/LTE uplinks with traffic steering and failover.
- Hierarchical QoS policies enable precise traffic for users, services, and applications.
- Hardware-accelerated VPN with encryption/decryption engine supports up to 50Gbps throughput.
- Advanced policy-based traffic control with GeoIP/Geosite-aware filtering.

### ■ Edge ARM Server: Standard Linux distribution with VPP/DPDK acceleration

- Powered by an 8-core 2.5GHz ARM64 Neoverse N2 processor optimized for networking and edge infrastructure workloads.
- Open Linux platform supporting standard software ecosystems, containers, and cloud-native applications.

- Optimized for open software frameworks including DPDK, VPP, Nginx, featuring a hardware-based true inline crypto engine to boost cryptographic application performance.
- Delivers up to 58Gbps accelerated networking performance for packet processing.
- Maintains high energy efficiency, keeping total system power consumption below 60W even under full-workload operation.

■ **AI Inference for Edge Networking:** AI Framework+ Inference Engine +LLM

- Combines edge networking, security acceleration, and AI inference capabilities in a compact and power-efficient platform.
- Integrated AI module delivers up to 160 TOPS AI computing performance with 24GB LPDDR5 memory for edge AI workloads and local LLM inference.
- Compatible with popular AI frameworks and runtimes including PyTorch, llama.cpp, Ollama, vLLM, and TensorFlow Lite.
- Supports quantized AI models such as Llama 3 8B, GPT-OSS-20B-A3B, Qwen3 7B–30B, and other GGUF-based edge inference models.
- Running Qwen3-30B with 2048-token input delivers approximately 37ms TTFT (Time to First Token) and 30 tokens/s generation throughput, with support for up to 32K context length.

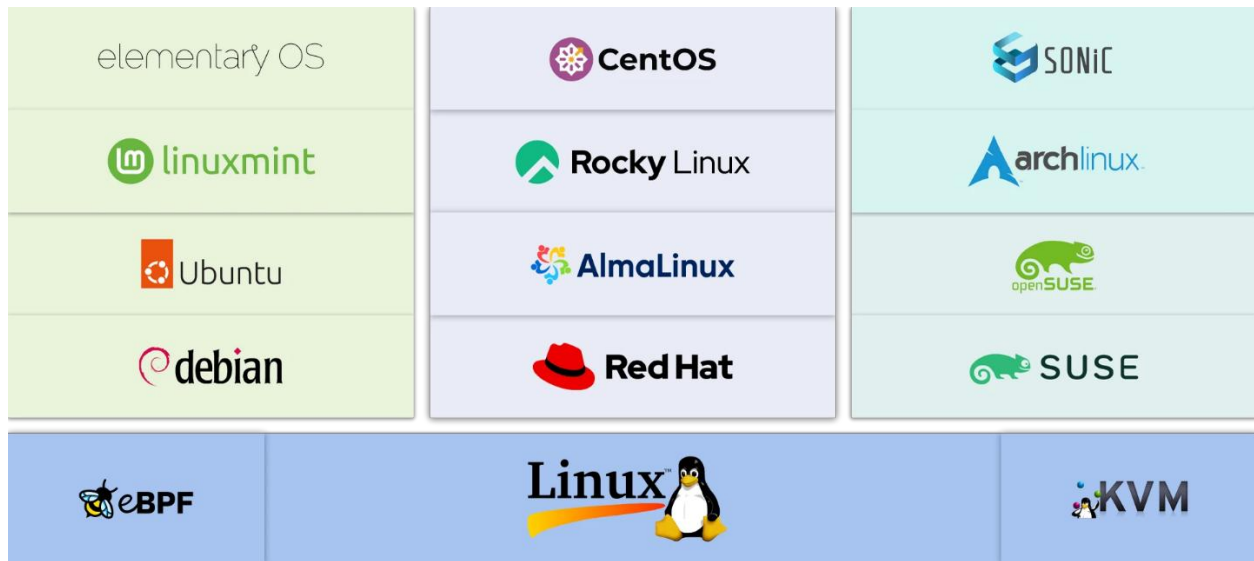
Additionally, users have the flexibility to install new software or develop their own software using the built-in toolchain as needed to address additional use cases.

## Operating System

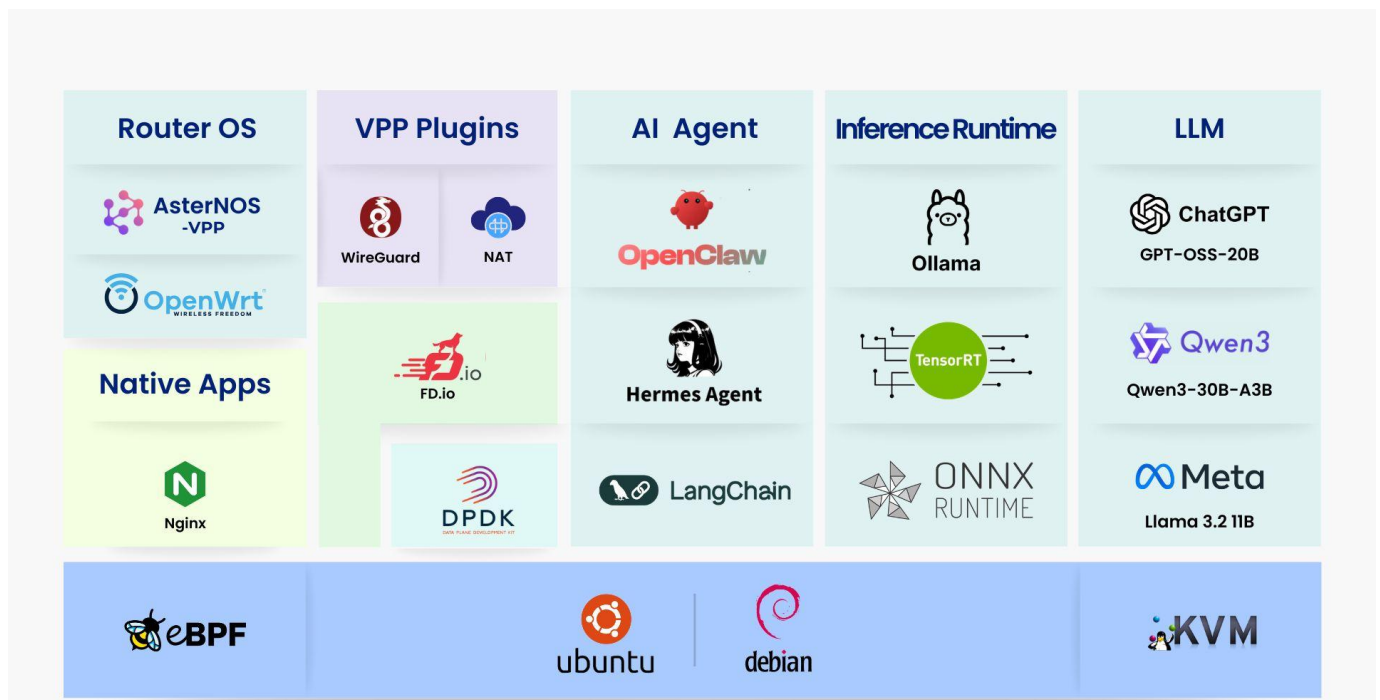
- Supports Ubuntu, Debian, SONiC and other Linux distribution, such as CentOS, OpenSUSE, Arch Linux, AlmaLinux, Rocky Linux, Linux Mint and Elementary OS.
- Install and upgrade the OS using a USB disk with Arm Trusted Firmware and UEFI.
- Embedded eBPF (extended Berkeley Packet Filter) in Linux kernel via XDP.

## Software Ecosystem

- Optimized DPDK (Data Plane Development Kit) tied to HW Acceleration.
- Open-source routers, including VPP (Vector Packet Processing), AsterNOS-VPP, OpenWRT, etc.
- Open-source firewalls, including iptables, UFW, nftables, FirewallD, etc.
- Cloud-native deployment with Docker, Kubernetes, and containerized edge applications.
- Open-source load balances, including Nginx.
- Rich VPP plugins, including Marvel device plugin, QUIC, SRv6, LLDP, NAT64, SRTP etc.
- GCC, GDB, BinUtils, Buildroot and other tool chains.
- C/C++/Python/Go/Rust/Java/Lua and other programming languages.
- AI software ecosystem supporting PyTorch, TensorFlow Lite, Keras, ONNX Runtime, llama.cpp and Ollama.
- Applications from other Linux distributions on Ubuntu/Debian using Docker with direct access to the host network.
- Any software for ARM64 + Linux.

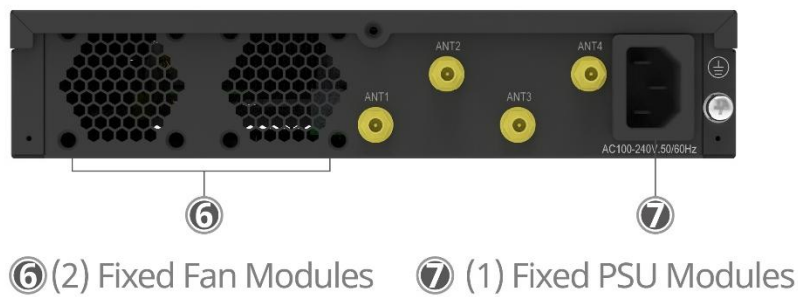
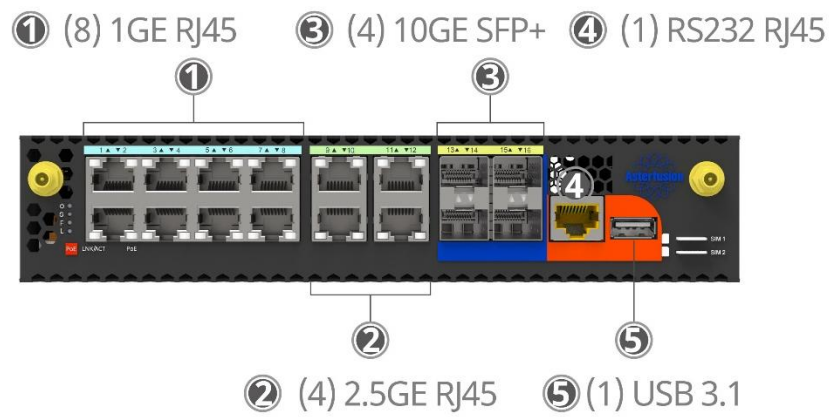


Operating System



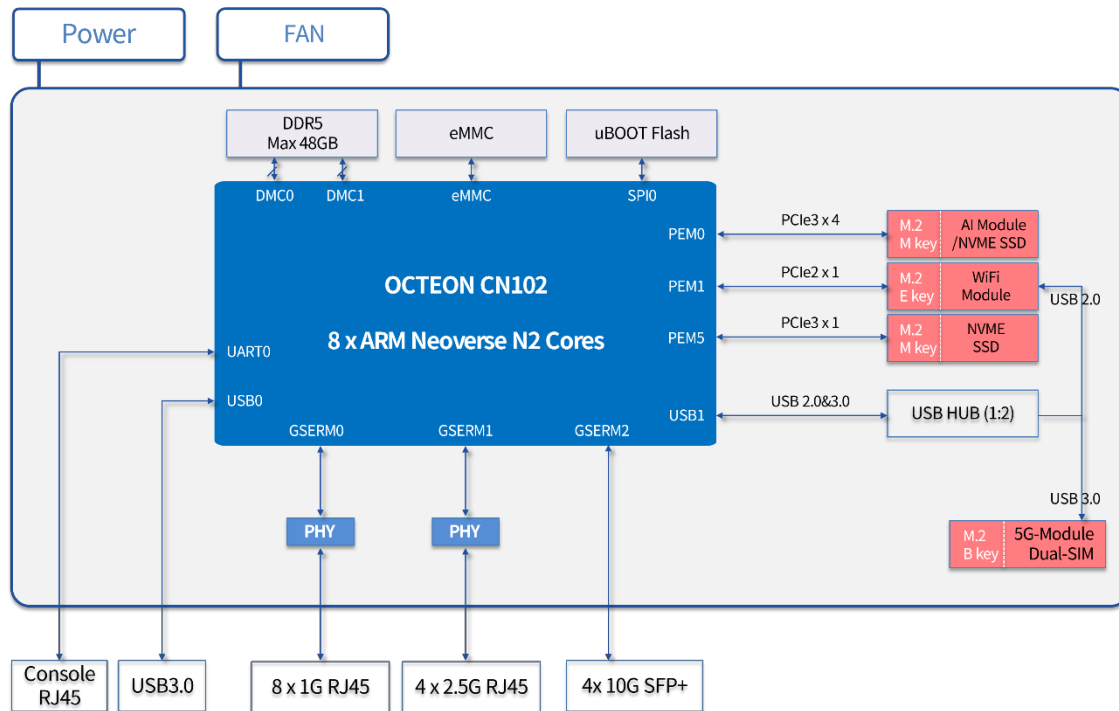
Software Ecosystem

## Interfaces



ET2500

## System Architecture



ET2500 Edge Network Appliance system architecture

## ET2500 Platform Specification

| Product Model              |                                    | ET2500                                                          |
|----------------------------|------------------------------------|-----------------------------------------------------------------|
| Processor                  | CPU                                | 8 Core ARM64 N2 @2.5 GHz                                        |
|                            | Cache                              | L2 8MB, L3 16MB                                                 |
| Memory and Storage         | RAM                                | 16GB DDR5 SODIMM, up to 48GB                                    |
|                            | Flash                              | 64GB eMMC 5.1                                                   |
|                            | NVME SSD (Option)                  | up to 4TB, M.2 M key, one share slot with AI accelerator module |
| Network Interface          | 10GE (SFP+)                        | 4                                                               |
|                            | 2.5GE (RJ45)                       | 4                                                               |
|                            | 1GE (RJ45)                         | 8                                                               |
|                            | PoE                                | 2.5GE ports POE++, 1GE ports POE+                               |
|                            | WiFi (Option)                      | WiFi6E/7, M.2 E key                                             |
|                            | 5G/LTE (Option)                    | 2 SIM cards, M.2 B key                                          |
|                            | Antenna                            | 6                                                               |
| Network Performance        | Routing capacity                   | 58Gbps                                                          |
|                            | Encryption and Decryption capacity | 50Gbps                                                          |
|                            | PTP/SyncE accuracy                 | 20ns                                                            |
|                            | PTP/SyncE holdover                 | > 8hours                                                        |
| Diagnostic Interface       | USB                                | 1 x USB3.0                                                      |
|                            | Console                            | 1 x Console RJ45                                                |
| Electrical Characteristics | Fan                                | 2                                                               |
|                            | Power Module                       | 1 x 150W (w/o PoE)<br>1 x 270W (PoE)                            |
|                            | Input voltage                      | 100~240VAC                                                      |
|                            | Maximum power consumption          | 60W (FULL configuration and workload)                           |
|                            | PoE budget                         | 150W                                                            |

|                             |                            |                           |
|-----------------------------|----------------------------|---------------------------|
| <b>Dimensions</b>           | Height                     | 1U                        |
|                             | Dimensions (W x H x D, mm) | 220 x 44 x 310            |
| <b>Operating Conditions</b> | Operating temperature      | 0 – 45°C                  |
|                             | Relative humidity          | 5% - 95% (non-condensing) |

## AI Acceleration Module Specification

| Model                                       | M2-AI-INFERENCE-24GB                                                                                                                |
|---------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| <b>AI Compute Perf.</b>                     | <ul style="list-style-type: none"> <li>Up to 160 TOPS elastic AI computing performance</li> <li>Up to 100 TFLOPS @ bFP16</li> </ul> |
| <b>Memory</b>                               | <ul style="list-style-type: none"> <li>24 GB LPDDR5 / LPDDR5X</li> <li>Memory bandwidth: 153.6 GB/s</li> </ul>                      |
| <b>Storage</b>                              | 1 × 32 MB NOR Flash                                                                                                                 |
| <b>Interface Type</b>                       | M.2 Key M                                                                                                                           |
| <b>PCIe Interface</b>                       | 1 × PCIe Gen4 interface<br>Supports up to x4 lanes, compatible with x3 / x2 / x1<br>Maximum bandwidth up to 8 GB/s per interface    |
| <b>UART</b>                                 | Supports 2 × UART interfaces<br>Standard baud rates supported, up to 921600 bps                                                     |
| <b>I2C</b>                                  | 1 × I²C controller<br>Supports 100 kHz and 400 kHz communication rates                                                              |
| <b>Dimensions (mm)</b>                      | 22 x 80 x 2.58                                                                                                                      |
| <b>Weight</b>                               | 9 g (±10 g)                                                                                                                         |
| <b>Operating Temperature</b>                | -10°C to +60°C                                                                                                                      |
| <b>Operating Humidity</b>                   | 10% RH – 90% RH (non-condensing)                                                                                                    |
| <b>Supply Voltage</b>                       | 3.3 V ± 5%                                                                                                                          |
| <b>Maximum Continuous Operating Current</b> | 9 A                                                                                                                                 |

## Supported LLMs:

The AI module supports stable inference of large language models in the 7B–30B parameter range, using modern quantization (INT4/INT8).

- LLM: Qwen3-14B, Qwen2.5-7B, deepseek-8B, Qwen3-30B-A3B, GPT-OSS-30B-A3B, etc.
- MLLM: minicpm-o-2\_6
- VLM: Qwen2.5-VL-7B, Qwen3-VL-2B, Qwen3-VL-4B, Qwen3-VL-8B, Qwen3-VL-30B-A3B

## Ordering Information

| Part Number                    | Description                                                                                                                                    |
|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>ET2508-4S4M8</b>            | Edge Network Appliance, 8 Core ARM64 N2 CPU, 16GB DDR5, 64GB eMMC, 4 x 10GE + 4 x 2.5GE + 8 x 1GE, 150W Power                                  |
| <b>ET2508-4S4M8-SWP</b>        | Edge Network Appliance, 8 Core ARM64 N2 CPU, 16GB DDR5, 64GB eMMC, 4 x 10GE + 4 x 2.5GE + 8 x 1GE, 4 x PoE@150W on 2.5GE/1GE ports, 270W Power |
| <b>ET2508-4S4M8-2</b>          | Edge Network Appliance, 8 Core ARM64 N2 CPU, 32GB DDR5, 64GB eMMC, 4 x 10GE + 4 x 2.5GE + 8 x 1GE, 150W Power                                  |
| <b>ET2508-4S4M8-2-SWP</b>      | Edge Network Appliance, 8 Core ARM64 N2 CPU, 32GB DDR5, 64GB eMMC, 4 x 10GE + 4 x 2.5GE + 8 x 1GE, 4 x PoE@150W on 2.5GE/1GE ports, 270W Power |
| Optional components and spares |                                                                                                                                                |
| <b>M2-AI-INFERENCE-24GB</b>    | AI Accelerator Module, 160 Tera-Operations Per Second, 32MB Flash, 24GB LPDDR5 with memory bandwidth 153.6GB, M.2 M Key 2280                   |
| <b>SSD-M2-NVME-1TB</b>         | SSD,1TB, NVME, M.2 M Key 2280, PCIe3 x4                                                                                                        |
| <b>SSD-M2-NVME-2TB</b>         | SSD,2TB, NVME, M.2 M Key 2280, PCIe3 x4                                                                                                        |
| <b>SSD-M2-NVME-4TB</b>         | SSD,4TB, NVME, M.2 M Key 2280, PCIe3 x4                                                                                                        |
| <b>5G-M2-5Gbps</b>             | 5G Module, PCIe 3x1, M.2 B key, 5G NR, LTE, GNSS, 5.0Gbps (DL) / 650Mbps (UL)                                                                  |
| <b>WiFi7-M2-9Gbps</b>          | WiFi6E/7 Module, PCIe 3x1, M.2 E key, Tri-Band 802.11be/ax, Bluetooth 5.3, 6-Stream 9.3Gbps                                                    |
| <b>PTP-20ns</b>                | PTP module, 20ns accuracy, BC support with holdover > 8hours                                                                                   |
| <b>SVC-Basic-1Y-ET</b>         | Basic H/W Service and Warranty                                                                                                                 |

## Warranty and Service Support

Asterfusion ET2500 series come with 2-year Basic H/W service and warranty.

To acquire more info about company, products, and solutions: [www.cloudswit.ch](http://www.cloudswit.ch)  
Sales: [bd@cloudswit.ch](mailto:bd@cloudswit.ch)

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