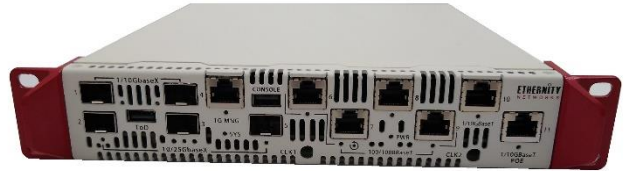




# UEP2025 Family

Ethernity's UEP2025 family of programmable network appliances for telco/cloud, Broadband and network edge applications offers high performance L2/L3 networking, PON OLT, security and Ethernity's patented Link Bonding for a wide variety of possible applications.



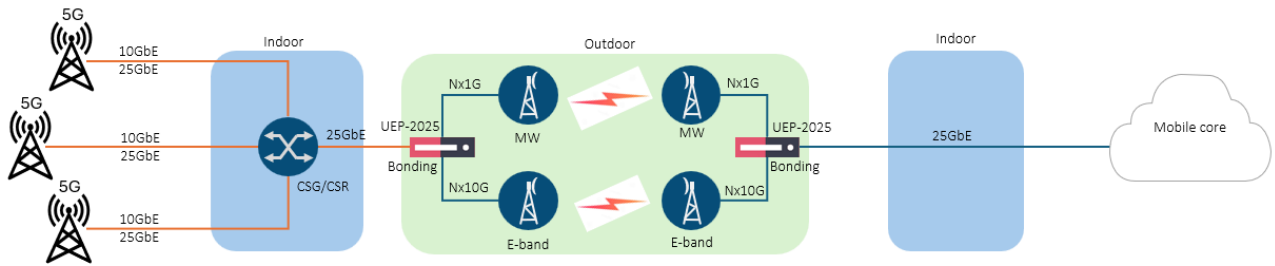
Ethernity's Universal Edge Platform (UEP) tackles the demanding needs of telco and cloud network edges. This programmable appliance delivers high-performance networking, robust security, and unmatched modularity for customized protocols and ports. The UEP2025 model is a versatile workhorse for various edge deployments. It seamlessly integrates into fronthaul/backhaul for service providers and excels in enterprise campuses. The UEP2025 is also 5G-ready, functioning as a high-performance indoor/outdoor wireless backhaul unit with Link Bonding for next-generation mobile networks. Furthermore, the UEP2025 boasts a full-featured PON/XGS-PON OLT, allowing service providers to scale their optical network infrastructure incrementally for maximum efficiency.

The UEP2025 is powered by a single, powerful Field-Programmable Gate Array (FPGA) System on Chip (SoC). This chip handles critical tasks like data path switching, IPsec and MACsec encryption, link bonding, and the PON OLT functionality. Combined with its versatile 1G, 10G, and 25G ports, the UEP2025 becomes the perfect platform for network appliances that manage the aggregation and demarcation.

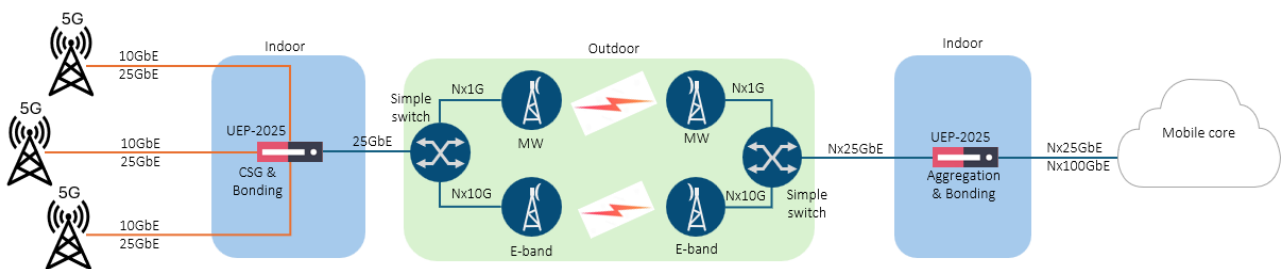
Ethernity's UEP2025 family stands out for its programmability. This means it can be customized to tackle diverse access network tasks efficiently. Both the hardware configuration and the built-in Field-Programmable Gate Array (FPGA) can be adapted to meet specific needs. This flexibility allows the UEP2025 to handle various networking functions, different transmission types, and security requirements – all while maximizing performance in a compact and cost-effective device.

## **Ethernity's Patented Link Bonding**

Ethernity has patented an innovative new way of bonding any combination of wireless or wired links, offering the ability to load balance a single flow's traffic over multiple ports, with support for reordering to compensate for differentiated delay. This enables connecting multiple point-to-point wireless radio devices, with an option to include other transport interface types (eg fiber). This bonding technology ensures optimum performance and improves the transmitted throughput by dynamically distributing data along multiple wireless links of different speeds and technologies. This allows operators to increase the maximum transmission distance and overcome interruptions or slow wireless transmission due to inclement weather.



ENET Virtual Bonding redefines E-band load balancing with a cost-effective, intelligent approach. Replacing bulky outdoor bonding hardware with a standard switch minimizes upfront costs and power consumption. The powerful indoor ENET UEP-2025 acts as the network's bonding control unit, analyzing real-time data on radio link performance (jitter, latency, throughput). This data empowers intelligent load balancing decisions, optimizing performance for high-capacity 5G base stations. The UEP-2025 efficiently distributes traffic across multiple VLANs using a single 10/25G uplink, maximizing network utilization and minimizing bottlenecks. Furthermore, the system dynamically creates virtual ports and constantly measures available bandwidth for efficient, adaptive load balancing based on real-time conditions. This simplified architecture, with the outdoor switch handling basic VLAN distribution, eases deployment and ongoing network management.



## Specifications Table

Specification		UEP2025
Ports and Interfaces *	UEP2025 Base Configuration	<ul style="list-style-type: none"> <li>• 2 x 25G SFP+</li> <li>• 1 x 10GbE copper and POE</li> <li>• 2 x 1GbE RJ45</li> <li>• 1 x 1GbE/10GbE SFP</li> <li>• 1 PPS and TOD input interface</li> </ul>
	UEP2025 Extended Configuration	<ul style="list-style-type: none"> <li>• 2 x 25G SFP+</li> <li>• 2 x 10GbE copper and POE</li> <li>• 4 x 1GbE RJ45</li> <li>• 3 x 1GbE/10GbE SFP</li> <li>• 1 PPS and TOD input interface</li> </ul>
High Level Features		<ul style="list-style-type: none"> <li>• Carrier Ethernet Switch</li> <li>• Advanced Hierarchical QoS</li> <li>• 1588-BC/TC</li> <li>• Sync E</li> <li>• CFM/OAM</li> <li>• Patented Link bonding</li> <li>• IPSec (optional)</li> <li>• MACSec on Radio links (optional)</li> <li>• CPRI to eCPRI (optional)</li> <li>• Power Over Ethernet (optional)</li> </ul>
Flow Classification and Actions		<ul style="list-style-type: none"> <li>• Forwarding rules per flow</li> <li>• QoS Marking</li> <li>• Metering</li> <li>• Header editing</li> <li>• Filtering</li> <li>• Mirroring</li> <li>• Lawful interception</li> </ul>
Management		<ul style="list-style-type: none"> <li>• Command line interface (CLI) via serial, TELNET, or SSH v1 and v2</li> <li>• SNMPv1, v2, and v3</li> </ul>

Specification	UEP2025
Layer 2 Functionality	<ul style="list-style-type: none"> <li>• Provider Bridge</li> <li>• Multicast IGMP Snooping</li> <li>• ACL rules</li> <li>• Tag swap</li> <li>• LACP</li> <li>• Advanced QoS</li> <li>• OAM/CFM</li> <li>• xSTP</li> <li>• ELPS - G.8031</li> <li>• ERPS - G.8032</li> <li>• MAC limit per VLAN/port</li> <li>• Up to 256K MAC table</li> </ul>
Sync-E (optional feature)	<ul style="list-style-type: none"> <li>• 2 x SMA female connectors RJ45 for RS422</li> </ul>
PoE (optional feature)	<ul style="list-style-type: none"> <li>• Up to four ports of power over Ethernet</li> </ul>
Footprint	1RU Desktop (½ 19" width)
Weight	1.1 kg
Dimensions (H x W x D)	32.73 mm x 181.2 mm x 190.93 mm
Power	48VDC or 110-240VAC
Humidity	85%, non-condensing
Power Consumption	90W
Operational Temperature	-40°C to 65°C

\* Note: The product can also be ordered without 25G ports. Contact Ethernity for more information.

## Features List

### General

- Flow-based processor with L2 flow classification, hierarchical ACL
- Search engine up to 256K entries
- Switch, link bonding, and load balancing functions
- Different editing on duplicated packets/multicast

### Layer 2+ Functionality

- Carrier Ethernet Switch
- Provider Bridge
- Non-blocking architecture
- MEF services and certifications
- All ports can serve as UNI/NNI
- Jumbo frames (up to 9,000 bytes) on all ports
- Q-in-Q, (802.1Q/802.1ad) , provider bridge
- ACL rules
- Tag swap
- LAG (L2, L3, L4 distribution)
- MSTP (802.1s)
- ELPS - G.8031/Y.1342
- ERPS - G.8032/Y.1344 v2
- Link aggregation (EtherChannel)
- Up to 256K MAC table
- L2 multicast up to 2K active multicast groups

### Interfaces

- 2 x 25G SFP+
- 2 x 10GbE copper and POE
- 4 x 1GbE RJ45
- 3 x 1GbE/10GbE SFP
- 1PPS and TOD input interface

### Timing

- For mobile deployments, the UEP offers Sync-E and IEEE 1588v2 with ordinary, transparent, and boundary clock capabilities.

### OAM

- Service OAM 802.1ag CFM (MEP, MIP)
- Service OAM ITU-T Y.1731 PM (latency, jitter)
- Link OAM -802.3ah EFM
- Integrated OAM packet generator and analyzer
- RFC 2544
- OAM fast protecting (failover in microseconds)

### MEF Services

- E-LINE, E-TREE, E-LAN, E-ACCESS
- MEF 2.0 certified
- TR101, TR-156

### Packet Editing

- Mapping 802.1p and DSCP QoS to queues
- Marking Priority 802.1p, IP ToS / DSCP bits
- Byte counts and FCS calculation
- VLAN modification (push/pop/modify)
- Header modification up to 48 bytes
- L2 and L3 loopbacks, including swap of MAC SA and DA, swap of IP

### Software

- ENET driver with ENET CLI with Application Guide
- ENET NPS full switch network protocol suite

### Link Bonding

- Vendor-agnostic wireless bonding over different wireless technologies
- Virtual path based bonding with variable speed over single port or physical bonding over up to 8 ports.
- Bonding within a group of ports of different speeds
- Dynamic adjustment of rates per port according to the actual forwarding rates
- QoS-aware bonding scheme
- Link capacity adaptation through OAM Bandwidth notification or by utilizing Ethernity's link capacity algorithm that measure latency and loss per link or path under the bonding group

### Traffic Management

- Support of jumbo frames up to 9KB
- Hierarchical QoS (H-QoS):
  - Three-level scheduler per MEF10
    - On port level
    - On service level
    - On flow level
  - Any combination can be mapped to a specific meter
- 256 virtual ports, each with 8 priority queues
- 2K queues
- Egress shaper per queue and each hierarchy:
  - Packet level

### Classification and Filtering

- Packet classification based on first 196 bytes in packet (can be extended)
- Configurable per flow functional actions:
  - Filtering
  - Trapping
  - Mirroring
  - Packet editing
  - QoS remarking
- Hierarchical ACL, and mask configuration per field
- Rate dependent filters (e.g., limit rate of ingress IGMPv3 packets)
  - Byte level
- Configurable MTU per priority queues
- Scheduling
  - Strict priority
  - 2 levels of WFQ

### Management

- Command line interface (CLI) via serial, TELNET, or SSH v1 and v2
- Simple network management protocol (SNMPv1, v2, and v3)
- Remote monitoring (RMON)
- Configuration files upload with FTP and SCP
- Time of day + calendar + time zone
- Internal syslog

### CPU

- Quad-core ARM® Cortex™-A53 MPCore

### UEP2025 Family Ordering Options

Product Description	Ports	Optional Features
UEP2025 forwarding Ethernet base switch device	2 x 25/10G SFP28/SFP+ 1 x 1G/10G SFP 2 x 1G BaseT	<ul style="list-style-type: none"><li>• Clock Sync</li><li>• 1 x 10GE copper for PoE</li></ul>
UEP2025 forwarding Ethernet extended switch device	2 x 25/10G SFP28/SFP+ 3 x 1G/10G SFP 4 x 1G BaseT	<ul style="list-style-type: none"><li>• Clock Sync</li><li>• 2 x 10GE copper for PoE</li><li>• 2 x GbE PoE</li></ul>

Note: Versions without 25G ports are available.

For more details and configurations, contact your Ethernity Networks representative.