



UEP2025 Networking Devices

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



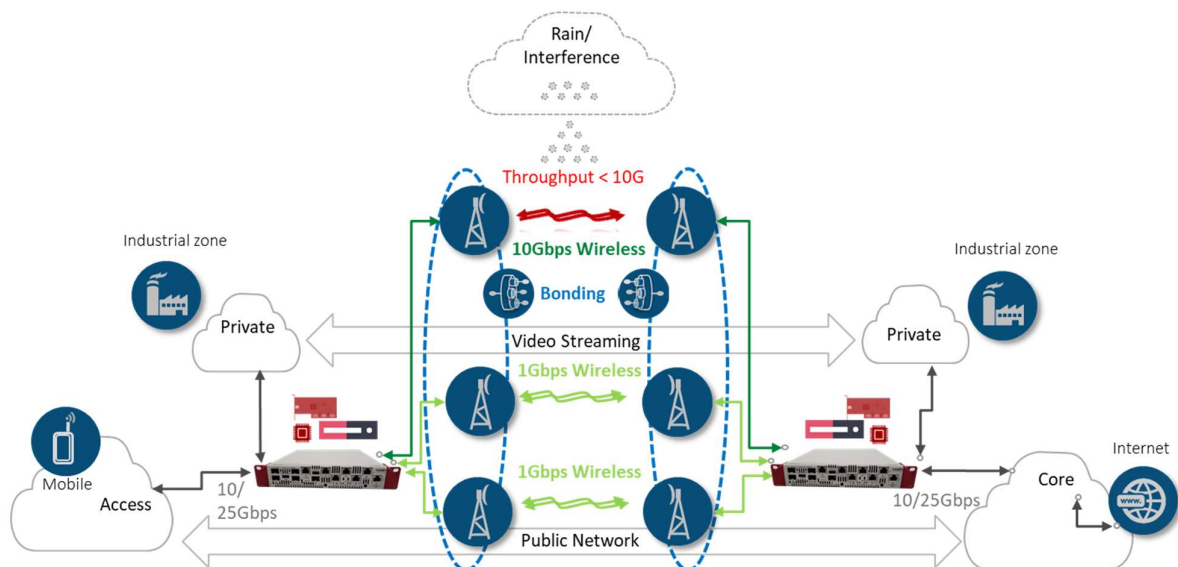
UEP2025 devices are targeted for fronthaul and backhaul network edge infrastructure solutions and enterprise campus connectivity. Furthermore, it is designed for 5G networks as a wireless backhaul indoor/outdoor unit with integrated Link Bonding.

The devices utilize a single FPGA SoC to run the switch data path, IPSec, MACSec, and the link bonding architecture. By combining this control capability with the 10G and 25G ports, UEP2025 devices are perfectly suited to serve as network appliances for aggregation and demarcation of the WAN from LAN networks.

The beauty of the UEP2025 family is that it is customizable toward a specific purpose within the network. Both the hardware configuration and the FPGA can be customized to meet the demand for various networking functions, different transmission types, and security requirements (as all ports are connected through the FPGA), while achieving maximum performance in a compact, affordable device.

Ethernity's Patented Link Bonding

Ethernity has patented an innovative new way of bonding 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. 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.

Specifications Table

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

Specification	UEP2025
Layer 2 Functionality	<ul style="list-style-type: none"> • Provider Bridge • Multicast IGMP Snooping • ACL rules • Tag swap • LACP • Advanced QoS • OAM/CFM • xSTP • ELPS - G.8031 • ERPS - G.8032 • MAC limit per VLAN/port • Up to 256K MAC table
Sync-E (optional feature)	<ul style="list-style-type: none"> • 2 x SMA female connectors RJ45 for RS422
PoE (optional feature)	<ul style="list-style-type: none"> • Up to four ports of power over Ethernet
Footprint	1RU Desktop (½ 19" width)
Weight	1.1 kg
Dimentions (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

Features List

Layer 1 Functionality

- Port mirroring
- Port protection
- Port reflection (LIN)
- Port advertising (Speed /Duplex)

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)
- ACL rules
- Tag swap
- Uni-directional link detection protocol (UDLD)
- Link layer discovery protocol (LLDP)
- <50ms protection LACP 1+1 (802.3ad)
- MSTP (802.1s)
- ELPS - G.8031/Y.1342
- ERPS - G.8032/Y.1344 v2
- OAM Protection and fault recovery
- 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.
- TR101, TR-156

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)
- Four ME levels of TR-101

MEF Services

- E-LINE, E-TREE, E-LAN, E-ACCESS
- MEF 2.0 certified

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

General

- Flow-based processor with L2 flow classification, hierarchical ACL
- Search engine up to 256K entries
- Switch, link bonding, and load balancing functions
- Five-level packet header & payload manipulation and marking:
 - QinQ (PB)
- Different editing on duplicated packets/multicast
- Supported encapsulations:
- LAG (L2, L3, L4 distribution)
- ERPS, ELPS

Link Bonding

- Vendor-agnostic wireless bonding over different wireless technologies
- 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
- Even distribution of all packets between group ports

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)
 - Ethernet statistics (Group 1)
 - History (Group 2)
 - Alarm (Group 3)
 - Event (Group 9)
- 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 Number	Product Description	Ports	Optional Features	Networking Features
UEP2025B	UEP2025 forwarding Ethernet base device	<ul style="list-style-type: none">• 2 x 25/10G SFP28/SFP+• 1 x 1G/10G SFP• 2 x 1G BaseT	<ul style="list-style-type: none">• Clock Sync• 1 x 10GE copper for PoE	<ul style="list-style-type: none">• Wireless Bonding
UEP2025S	UEP2025 forwarding Ethernet standard switch device	<ul style="list-style-type: none">• 2 x 25/10G SFP28/SFP+• 1 x 1G/10G SFP• 2 x 1G BaseT	<ul style="list-style-type: none">• Clock Sync• 1 x 10GE copper for PoE	<ul style="list-style-type: none">• Wireless Bonding• Layer 2
UEP2025E	UEP2025 forwarding Ethernet extended switch/router device	<ul style="list-style-type: none">• 2 x 25/10G SFP28/SFP+• 3 x 1G/10G SFP• 4 x 1G BaseT	<ul style="list-style-type: none">• Clock Sync• 2 x 10GE copper for PoE• 2 x GbE PoE	<ul style="list-style-type: none">• Wireless Bonding• Layer 2• Layer 3

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