

UEP-60 Product Overview



Ethernity’s Universal Edge Platform (UEP) is the ideal programmable network appliance for telco/cloud network edge applications, offering high performance networking and security with modularity to support virtually unlimited flexibility in protocol and port configurations.

UEP-60 is targeted for network edge infrastructure solutions. It is uniquely positioned to serve as a wireless backhaul indoor/outdoor unit with integrated Layer 1 bonding, 5G fronthaul gateway, small cell aggregation, or Cell Site Gateway.

The base ENET UEP device offers up to 60Gbps of networking capacity and boasts virtually unlimited flexibility in protocol and port configurations, utilizing a single FPGA SoC equipped with a quad-core ARM processor for running the control stack.

Today, the number of users accessing network services is growing, and each subscriber may have multiple devices using apps that require high bandwidth and low latency. Moreover, with the growth of the Internet of Things (IoT), there can be tens of thousands of sensors sending and receiving data at any given moment, placing great strain on the network in terms of both performance and power demands.

Product Highlights

- Interfaces
 - 6 x 10GbE ports
 - 16 x 1GbE ports (8 RJ45, 8 SFP)
- Low space, low power – ideal for network edge infrastructure
- Programmable FPGA-based flow processor to handle fully compliant Carrier Ethernet switch/router demarcation services:
 - L2 MEF 3.0,
 - H-QoS
 - IPSec
 - OAM support
 - IPv4/IPv6
 - MPLS
- Quad-core ARM® Cortex™-A53 to manage control plane protocols
- Mezzanine card for E1, STM interfaces*
- IEEE 1588 and SyncE

(*) Hardware ready

Key Benefits	
<p>Multiple forwarding technologies FPGA-based state-of-the-art forwarding architecture for L2, L3 IPv4/IPv6 and MPLS service demarcation, and SyncE/IEEE 1588</p>	<p>Advanced traffic management and QoS H-QoS with three levels of traffic management and policing schemes</p>
<p>Design for 1GbE to 10GbE migration 1Gbps-to-10Gbps aggregation and demarcation</p>	<p>Ready for NFV integration & Acceleration The UEP-60 can integrate with and accelerate servers with NFV applications for mobile and access services</p>

The ENET UEP-60 is ready to meet this demand, with SFP+ interfaces that can be equipped with 10GbE or XGS-PON transceivers, along with an FPGA equipped with Ethernity’s ENET Flow Processor. It implements a complete Carrier Ethernet switch with hierarchical QoS, routing, and MPLS.

With its embedded ARM processing cores that handle the control plane, the ENET UEP-60 is a standalone switch/router device that offers powerful router and IPSec functionality.

The ENET UEP-60 optimizes modularity with its interchangeable mezzanine card, which enables the appliance to be designed to support other interfaces, such as E1 and STM, as well as other solutions, such as IoT aggregation elements or additional connectivity interfaces. The default ENET UEP contains 16 x 1GbE ports (8 x RJ45 and 8 x SPF), along with 6 x 10GbE SFP+ ports.

ENET UEP-60 Applications

UEP-60 Switch/Router

Thanks to its quad-core ARM® Cortex™-A53 MPCore, the ENET UEP-60 is able to handle all control functions, while the onboard FPGA handles the data path. By combining this control capability with the 1G and 10G ports, the ENET UEP is perfectly suited to serve as a switch/router network device for aggregation and demarcation of the WAN from LAN networks. Moreover, the FPGA enables full routing functionality and security as add-ons to the device, saving both space and cost at the network edge. The device can be arranged with up to 6 x 10GbE connectivity for LAG, ring, or cascading topologies, or it can have any number of 10GbE ports for failover backup.

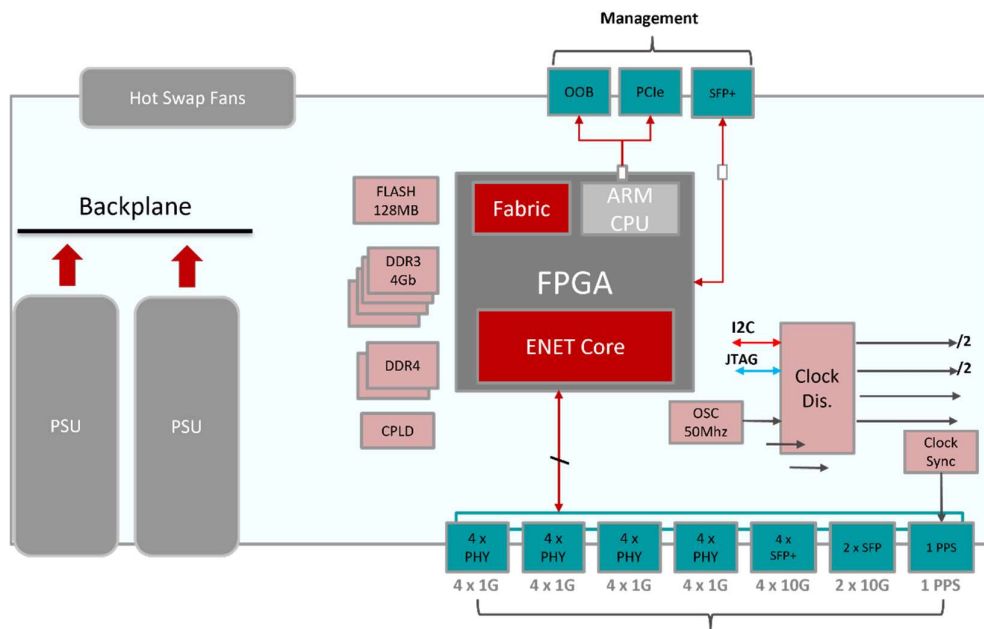


Figure 1: UEP-60 as Disaggregated Virtual Router

Fully Customizable

The beauty of the UEP is that it can be customized to a specific purpose within the network. Both the hardware configuration and the FPGA can be customized to meet various demands, while achieving maximum performance in a compact, affordable device. Layer 2 Carrier Ethernet and routing software are available in various configurations, including support for OSPF, BGP, ISIS, VPN, and enhanced MPLS tunneling.

Specifications Table

Specification	UEP-60
Ports and interfaces	6 x 10G SFP+ 8 x 1GbE RJ45 8 x 1GbE SFP 2x Hot Swap PSU
Footprint	1RU Desktop (½ 19" width)
Weight	1.1 kg (2.4 lb)
Dimensions (H x W x D)	(32.73 mm, 181.2 mm, 190.93 mm)
Typical power consumption	125W AC-12VDC or 110-240VAC Power Adapter

Specification	UEP60
Management	RS232 and PCIe
Sync-E	2 x SMA female connectors RJ45 for RS422
Storage temperature	-40°C to 70°C / -40°F to 158°F
Humidity	85%, non-condensing
Operating temperature	-40°C to 65°C

Features List

General

- Flow-based processor with L2/3/4 flow classification, hierarchical ACL
- Search engine up to 256K entries
- Switch, router, MPLS and load balancing functions
- Five-level packet header & payload manipulation and marking:
 - MPLS
 - QinQ (PB)
- Different editing on duplicated packets/multicast
- Supported encapsulations:
 - LAG (L2, L3, L4 distribution)
 - ERPS, ELPS

MPLS Support

- L2 VPN
- L3 VPN
- SR service over IP/MPLS
- EVPN over MPLS
- VPWS
- VPLS

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

IPSec

- 10Gbps IPSec encryption and authentication
- AES128/256
- Firewall and DDoS engine

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

Layer 1 Functionality

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

Layer 2+ Functionality

- 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
- Tunnel L2 protocols
- Learning table limit per VLAN/port
- Link aggregation (EtherChannel)
- Up to 256K MAC table
- L2 multicast up to 2K active multicast groups
- TR101, TR-156

Layer 3 Functionality

- Protocols: OSPFv2, OSPFv3, BGP4/BGP4+, IS-IS
- ECMP
- VRRP, and IP tracking for VRRP
- Multicast IGMP Snooping
- Multicast routing PIM SP
- IPv6 routing
- BFD
- VRF-Lite
- DHCP (client, server, relay, snooping)

Interfaces

- 6 x SFP+
- 8 x RJ45
- 8 x SFP
- PCIe Gen3 x4
- 1 PPS for precision time

Timing

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

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)
- NETCONF YANG
- 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

Software

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

CPU

- Quad-core ARM® Cortex™-A53 MPCore

Please contact
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 for UEP60 ordering
 options.

