ENET 4820ZXP/99 Flow Processor for Broadband Aggregation

Ethernity's ENET 4820ZXP/99 flow processor is specially optimized for Broadband Aggregation solutions, interfacing with between 8 and 24 modems through 10G G.999.1 channelized Ethernet and featuring an integrated XGS-PON ONU MAC or Ethernet P2P MAC, Carrier Ethernet switch, BBF WT-301, and EFM bonding. The flow processor is implemented on an FPGA SoC with integrated dual-core ARM CPU and programmable logic. The ENET Flow Processor also offers an additional 10G port that enables cascading to interface with a total of up to 48 modems.
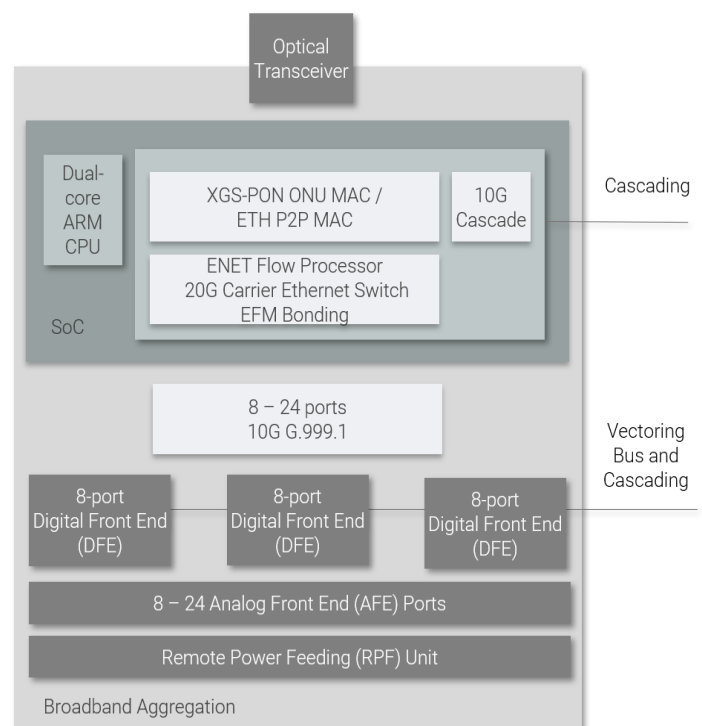
The technology is based on an extremely efficient architecture, resulting in 80% die size reduction, and can be integrated into a low-cost FPGA that is competitive with ASIC solutions. The ENET 4820ZXP/99 SoC is also designed for reverse power feeding (RPF), and it offers the lowest power solution for 10G uplink with in-house XGS-PON ONU MAC, further optimizing the overall solution cost.

The ENET4820ZXP/99 is the latest addition to the Ethernity ENET Z/99 Broadband Aggregation Flow Processor family, which also includes the scale-up ENET48xxZ/99, interfacing with up to 256 modems through G.999.1 over 10G interfaces, perfect for multiple port and chassis solutions. Additional customization of ports and throughput per device is also possible.

All ENET Broadband Aggregation SoCs offer a multi-service flow processor with unique functions targeted for broadband platforms and are fully compliant with Broadband Forum and MEF standards.

Product Highlights

- Broadband Aggregation flow processor with integrated XGS-PON ONU MAC to optimize $/Watt
- Flexible ENET Flow Processor, customizable to special market requirements and field upgradeable
- Interfaces with up to 24 ports over 10G G.999.1, with an additional 10G port to enable cascading, enabling interface with up to 48 modems in total
- Low power consumption – ideal for reverse power feeding (RPF)
- EFM bonding for increasing data throughput
- MEF-compliant advanced traffic manager, including support for flow policing and shaping per port
- Extended buffer space through DDR3
- Integrated dual-core ARM Cortex-9 CPU

Broadband Aggregation with advanced ENET 4820ZXP/99 SoC

Specifications

General
- Flow-based processor
- L2/3/4 flow classification,
- Carrier Ethernet switch
- EFM bonding
- TR101, TR-156, and WT-301
- Hierarchical traffic management, policing, scheduling, and shaping

Classification and Filtering
- Configurable per flow functional actions: filtering, trapping, mirroring, packet editing, QoS remarking
- Control filtering and forwarding
- ACL and mask configuration per field
- Rate dependent filters (e.g., limit rate of ingress IGMPv3 packets)
- Configurable control of MAC address learning per port/VLAN
- Configurable packet type rate limitation, e.g., rate of IGMPv3 packets

Switching
- L2 switching compliant with IEEE 802.1ad
- Configurable Per Flow Learning and forwarding
- L2 unicast up to 256K MAC table
- L2 multicast

Interfaces
- 2 x 10GbE supporting G.999.1
- 4 x DDR3
- XGS-PON ONU optical transceiver

Traffic Management
- Support of jumbo frames up to 9KB
- Hierarchical MEF 10 metering – on port/service/flow level
- Scheduler: hierarchical, 3-level schedulers
- Up to 48 virtual ports, each with 8 priority queues
- SP/WFQ, policer/WRED, shaper
- External buffering through DDR3

Packet Editing
- Bit-level and byte-level editing of first 128 bytes including QoS remarking, byte counts, sequence ID and DSCP, FCS calculation
- Header modification up to 48 bytes (push/pop/modify)

XGS-PON Subsystem
- US MAC
  - 64 Alloc-IDs, 512 XGEM ports, 8 XGEM ports per Alloc-ID
  - XGS-PON ITU-G.9807.1 support for all mandatory requirements
  - Encryption: AES-CTR 128
- DS MAC
  - XGS-PON ITU-G.9807.1 support for all mandatory requirements
  - Filter 128 UC XGEM ports, filter 64 M/C XGEM ports
  - Support for encryption modes: with and without encryption

CPU
- Embedded dual core ARM A9

Software
- ENET SDK and CLI
- Integrated DPU protocol stack

Ethernity ENET Z/99 Flow Processor Family

Ordering Options

Part Number	Description
ENET4820ZXP/99	XGS-PON-integrated SoC
ENET48xxZ/99	Switch controller with 2x10GbE uplink and 10GbE network interface, interfacing with up to 256 modems
ENET4200Z/99	Switch controller with 10GbE uplink and 10GbE network interface, interfacing with up to 24 modems
ENET3850Z/99	Switch controller with 2.5GbE uplink, interfacing with up to 16 modems