

## ENET Cell Site Router Solution

Ethernity Networks' ENET Cell Site Router (ECSR) solution combines Ethernity's patented packet processing and traffic manager design ported onto FPGA with optimized software to provide a high-performance data plane ideal for cell sites that need to support next-generation 5G networks.

Delivering 5G Quality of Experience (QoE) and spectrum efficiency requires high bandwidth, low latency, dense connectivity, and precision timing from the radio access network (RAN). The exceptional performance of the ECSR delivers these capabilities in a fully programmable data plane.

ECSR supports both Carrier Ethernet and IP networks, secure VPNs, and both traditional routing protocols (OSPF, BGP, etc.) and new SDN control planes. Important to 5G business models, the ECSR enables network slicing with extensive multi-tenant control and with service partitioning and isolation features.

The low latency data plane provided by the ECSR enables profit-generating Multi-access Edge Computing (MEC) services over Ethernet and IP. The solution also supports precision timing for frequency and phase synchronization via packet network timing protocols.

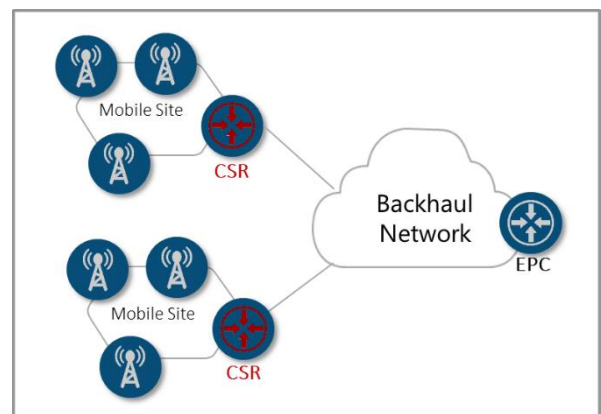
### Solution Integration Options

- FPGA SoC
- SmartNIC

### Solution Highlights

- 5G/IMT-2020 ready
- 10/25/40/100GbE ports
- High bandwidth services
- Low latency services
- Ultra-dense connectivity for IoT
- Precision timing
- Network slicing
- Fully programmable FPGA-based solution
- Security, including integrated crypto engine
- Per flow SLA and performance monitoring
- SDK for application development
- Full Switch-Router Control Stack

Unlike fixed-function data plane solutions, the fully programmable ENET ECSR solution adapts to unique service provider requirements and evolves with changing application requirements. This flexibility will be essential as innovative business models emerge around 5G deployments. The ECSR's unique combination of performance and flexibility is enabled by Ethernity Network's patented ENET Flow Processor technology, which extracts exceptional performance from merchant FPGA silicon at price points competitive with proprietary network processor ASSPs.



# Features

## IP Routing

- IPv4/IPv6
- OSPF, BGP
- Virtual Routers
- Policy-Based Forwarding

## MPLS and VPN Services

- MPLS-based Segment Routing
- Seamless MPLS
- MPLS Label Stack Encoding
  - MPLS LER
  - MPLS LSR
- Encapsulation Methods for Transport of Ethernet over MPLS Networks
- Virtual Private LAN Services (VPLS) using Label Distribution Protocol (LDP) Signaling
- 3GPP (GTP & GRE) awareness and classification

## Resiliency

- Ethernet Automatic Protection Switching (EAPS)
- ITU G.8032v2 Ethernet Ring Protection
- STP/Rapid Spanning Tree Protocols
- ECMP
- Link Aggregation
- RSVP-TE LSP protection
- Bidirectional Forwarding Detection (BFD) based LSP protection
- VRRPv2/v3

## Multicast Routing

- IPv4/IPv6 Multicast
- PIM-SM/SSM
- IGMP v1/v2/v3
- MLDv2

## Solution Options

System-on-Chip (SoC) with 10/25/40/100G interface options with or without ENET Router Control Stack
ACE-NIC smart network interface card (SmartNIC) with various port configuration options with or without ENET Router Control Stack

## Ethernet/Carrier Ethernet

- 802.3 Bridging
- Hardware MAC Learning
- 802.1Q VLANs
- 802.3ad LAG
- BVI
- 802.1ad QinQ
- Provider Bridging
- Broadcast/Multicast Storm Protection
- Jumbo Frames (>9600 bytes)
- MEF CE 1.0/2.0 Compliant
- E-Line, E-LAN, E-Tree, E-Access
- MEF 9,10 & 14

## Timing/Synchronization

- Synchronous Ethernet
- IEEE 1588v2
- ToD & 1 PPS Interfaces

## Quality of Service (QoS)

- Deep Packet Buffering
- Hierarchical Queuing/Shaping
- Strict Priority and weighted Fair Queuing (WFQ)
- RED/WRED
- Policing (1r3c, 2r3c)
- 802.1p
- DiffServ
- MPLS EXP Bits

## OAM and Monitoring

- IEEE 802.1ag Connectivity Fault Management
- ITU-T Y.1731 (DM, SLM, and Throughput)
- IPv4/IPv6 BFD
- Ingress Port/Flow Mirroring
- RMON, sFlow, and data capturing engine

## Security

- In-line IPsec Crypto
- AES-128/256, GCM, CBC, SHA-256
- NAT/NAT-PT
- ACLs
- DDoS

## Control Software

- ENET Software Development Kit
- Ethernity Protocol Suite with CLI and WEB interface can be customized per final product
- Documentation