# XSIGHT LABS E-SERIES E1

## 800 GE Infrastructure Processor with Linux Data Plane for the Hyperscale Cloud and Edge

## OVERVIEW

The Xsight Labs E1 Infrastructure Processor is a highly integrated compute, networking, and storage platform, designed for cloud and data center infrastructure workloads.

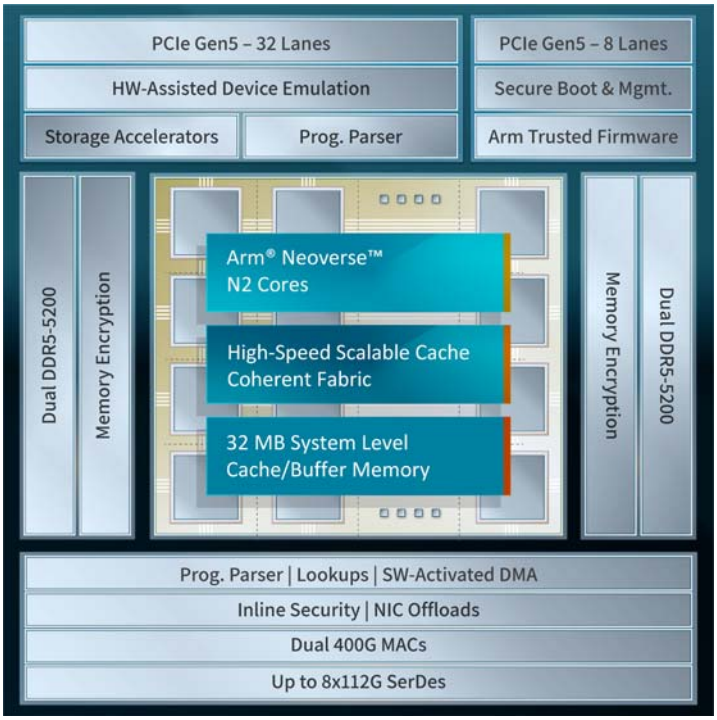
Featuring the industry's only programmable Arm®-based data plane DPU, with up to 64 N2 cores, the E1 integrates 800 Gbps of accelerated networking, wire-speed inline security, storage offloads, and a customizable PCIe fabric.

The E1 is supported by an open, standards-based, and extensible programming model.

The E1 integrates a high speed coherent-interconnect and 32 MB of internal RAM, presented as a configurable mix of latency-deterministic direct-mapped memory and DRAM-backed system level cache, passing every packet through the E1 processing array, while supporting large control structures.

Its scalable, multi-core architecture brings a standard software development model to DPUs and allows for unified, coherent, control and data planes. Native support for in-kernel and user-space networking frameworks such as XDP and DPDK/SPDK democratizes SDN and SDS feature development and portability.

As a host, the E1 delivers best-in-class performance per watt and TCO metrics for memory intensive, scale-out workloads associated with edge cloud architectures.



# TARGET APPLICATIONS

## Cloud Data Center, Infrastructure Edge

### Networking, Storage, and Security

- Multi-host optimized Smart-NIC with flexible buffering
- AI/ML/HPC RDMA, local/remote storage connectivity
- Smart Switch DPU architectures supporting up to 200 Mpps and 20M connections per second
- Data path offload for virtual switching in bump-in-wire configurations
- Full hypervisor offload and bare metal provisioning
- Full stack offload for NVMe-oF and NVMe/TCP storage initiator and target
- TLS/DTLS Termination with TCP and QUIC Proxy
- Scalable, full featured TLS/kTLS offload
- Stateful distributed firewall architectures

### Edge Compute Platform

- Up to 4x improvement in performance/watt for memory-intensive, scale-out edge workloads
- Fully integrated computational storage node
- CDN/WebServer, distributed software load-balancer

# FEATURES

### Compute and Memory

- Up to 64 Arm Neoverse N2 v9.0-A cores
- 32MB of internal RAM, presented as System Level Cache or direct-mapped memory, with NUMA and MPAM support.
- Up to 4 DDR5 at 5200 MT/s supporting 166GB/sec bandwidth and full inline memory encryption with AES-XTS
- High Speed coherent interconnect

### Programmable PCIe Fabric

- 32 PCIe Gen5.0 lanes, 8 dual-mode controllers
- PCIe configuration space emulation
- Software based MMIO space emulation
- SR-IOV with up to 64K PF/VFs and scalable IOV
- Up to 4 hosts/device
- Peer-to-peer PCIe switching with address translation

### Accelerated Networking, Storage and Security

- Up to 800 Gbps networking throughput with eight 112/56/25/10G SerDes
- 2x400G, 4x200G or 8x100G/50G/25G/10G port configurations
- Protocol-independent programmable parser and multi-stage exact match lookup with DRAM-backed tables
- Line rate AES-GCM network crypto supporting IPsec ESP and UDP SEC
- Software-activated 3 Tbps DMA engines with cache stashing
- Stateless offloads: Checksum, RSS, TSO, RoCEv2 iCRC
- Line rate block storage crypto with AES-XTS
- Storage Protection Information offloads including T10-DIF/DIX, CRC GMAC and SHA2/3, and scrub CRC

### Open, Standards-based, Extensible Software

- UEFI Secure boot with Arm Trusted Firmware (TF-A)
- Arm SystemReady certification for running unmodified Linux distros
  - + Debian, Ubuntu, SONiC, Lightbits Labs LightOS™
- Linux Netdev, VirtIO and Xsight Network Adapter (XNA) drivers
- Custom SDN data planes with Linux, XDP and DPDK/SPDK programming models
- Infrastructure software and reference applications
  - + Emulated NVMe, RDMA and Network devices as DPDK/SPDK applications
  - + SONiC with DASH data plane
  - + Virtual Switch, RoCEv2

### Secure Management

- 8 PCIe Gen5.0 management lanes, 2 dual-mode controllers
- 2 x 1 GbE for out-of-band provisioning
- Arm-based firmware processor with UEFI secure boot, hardware root-of-trust
- I2C/I3C/SMBus, SPI/QSPI and SMI interfaces
- UART, GPIO, 1588 RTC, JTAG interfaces

# E1 SYSTEMS

Xsight Labs E-Series solutions are available in multiple form factors, depending on deployment needs. The E1 PCIe add-in card is a full height, half-length solution supporting up to 800 Gbps of network connectivity, configurable in different modes such as 2 x 400G, 4 x 100G, and 8 x 50G.

As a discrete solution, the E1 devices can be deployed as DPUs to handle distributed services, or as a host for scale-out edge compute use-cases. For more information on the PCIe solution, refer to the E1 DPU Product Brief.

# E-SERIES FEATURE TABLE

The E1 product family is offered in three different variations all sharing the same software and feature-set and interoperability. For additional product information, contact sales@xsightlabs.com.

| Feature | E1-32 | E1-64 |
|---|---|---|
| Arm Cores | 32 | 64 |
| System Level Cache | 16 MB | 32 MB |
| Memory | 2 x DDR5-5200 MT/s | 4 x DDR5-5200 MT/s |
| TDP | 65 W | 90 W |