



# QorIQ® Layerscape® LX2160A Communications Processor

The Layerscape LX2160A SoC delivers the high-performance needed for compute-intensive networking applications. Equipped with sixteen Arm®v8 Cortex®-A72 CPU cores, 28 GHz SerDes technology and low FinFET power, this processor supports up to 100 Gbit/s Ethernet and the latest PCIe Gen4 technology.

## OVERVIEW

The LX2160A has everything needed for compute-intensive networking applications in a single chip. Sixteen 64-bit Armv8 A72 cores, high integration, and low power make it well-suited for applications that install datacenter-like processing into the highly-constrained power and board space budgets of networking equipment. An innovative caching structure stores packets on-chip until software is ready, minimizing external memory usage for lower latency, lower power, smaller footprint, and lower cost solutions. General-purpose processing capability is complemented with a 50 Gbit/s security engine and a 100 Gbit/s compression/decompression engine. The wire rate I/O processor has 18 integrated MACs including dual 100 Gbit Ethernet ports and a 130Gbit/s L2 switch. The LX2120A and LX2080A are pin-compatible family members that support 12 and 8 cores, respectively.

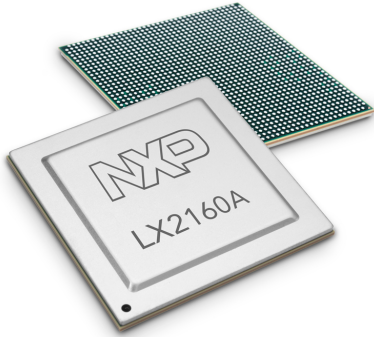
## FEATURES

- ▶ 16 64-bit Armv8 Cortex-A72 CPU cores, running up to 2.2 GHz
- ▶ 16MB cache
- ▶ 2 x DDR4 72b including ECC, to 3200 MT/s, maximum capacity of 256 GB
- ▶ 2 MB packet caching buffer
- ▶ 24 SerDes lanes, operating up to 28 GHz
- ▶ Up to 16 Ethernet ports
- ▶ Supported Ethernet speeds include 1, 2.5, 10, 25, 40, 50, and 100 Gbit/s
- ▶ 130 Gbit/s Layer 2 Ethernet switch
- ▶ Up to 24 PCIe Gen4 lanes, supporting ports as wide as x8
- ▶ 50 Gbit/s security accelerator
- ▶ 100 Gbit/s data compression/decompression engine
- ▶ 4 x SATA3.0
- ▶ Secure boot and Arm TrustZone technology
- ▶ SD, eMMC, 2 x DUART, 6 x I2C, 2 x USB3.0, 2 x CAN (FD optional)



## TARGET APPLICATIONS

The LX2160A addresses traditional networking control and data plane applications as well as networking equipment running virtualized network functions.



APPLICATION	EXAMPLES	RELEVANT FEATURES
Network function virtualization	<ul style="list-style-type: none"> <li>Enterprise customer premise equipment</li> <li>Service provider edge routers</li> </ul>	<ul style="list-style-type: none"> <li>DPDK, OVS, Virtio application interfaces</li> <li>Direct assignment</li> <li>Virtualized acceleration</li> <li>Standard install environment: UEFI, ONIE, ACPI, uboot</li> </ul>
White box switching	<ul style="list-style-type: none"> <li>Control plane for L2 switches in TOR and EOR applications</li> <li>Host VMs on the switch</li> </ul>	<ul style="list-style-type: none"> <li>50 Gbit/s IPsec offload</li> <li>Datacenter-friendly 25 GE ports</li> <li>ONL, ONSL Switch APIs</li> </ul>
Storage controller	<ul style="list-style-type: none"> <li>RAID controller</li> <li>All flash arrays</li> <li>Intelligent storage accelerator</li> </ul>	<ul style="list-style-type: none"> <li>100 Gbit/s compression</li> <li>50 Gbit/s IPsec</li> <li>Dedup</li> <li>RAID 5/6</li> </ul>
5G packet processing	<ul style="list-style-type: none"> <li>C-RAN</li> <li>Macro base station</li> </ul>	<ul style="list-style-type: none"> <li>PDCP, transport, MAC/RLC software</li> <li>High performance IPsec elephant flow</li> <li>LTE Air crypto</li> <li>Hardware QoS</li> </ul>

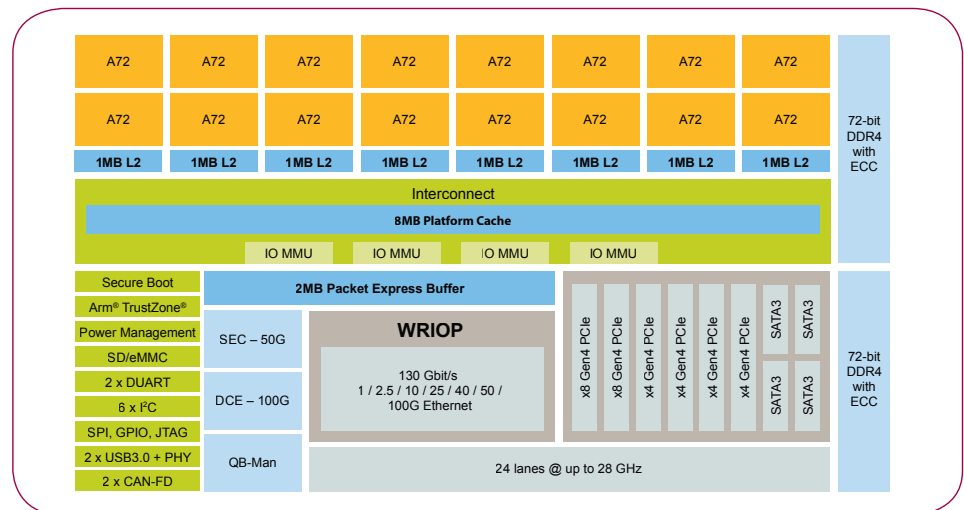
## RELATED SOFTWARE

► Linux® SDK for QorIQ® Processors

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CodeWarrior® Development  
Software for ARMv8 64-bit based  
QorIQ Series Processors

## LAYERSCAPE LX2160A BLOCK DIAGRAM



## LAYERSCAPE LX2 FAMILY MEMBERS

	LX2160A	LX2120A	LX2080A
Cores	16	12	8
L2 cache	8 MB	6 MB	8 MB
SerDes	24 at up to 28 GHz		
PCIe	6 x Gen4		
DDR	2 x DDR4, 3200 MT/s, 256 GB capacity		
Plat cache + PEB	10 MB		
WRiop	130 Gbit/s L2 switch 2 x 40/50/100 GE + 16x 1/2.5/10/25 GE		
SEC	50 Gbit/s		
DCE	100 Gbit/s		
Package	40 x 40 mm, 1517 pins		

[www.nxp.com/LX2160](http://www.nxp.com/LX2160)

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