

Leo CXL[®] Smart Memory Controllers

Portfolio Brief

Asteralabs is a worldwide leader in purpose-built connectivity solutions for AI and cloud infrastructure. It is at the forefront of software-defined architectures that are both scalable and customizable. With PCIe[®], CXL[®], and Ethernet-based semiconductor solutions, Asteralabs addresses data, memory, and networking bottlenecks while fostering trusted partnerships with hyperscalers and the broader data center ecosystem.

Benefits and Features

Leo CXL® Smart Memory Controllers

- High memory bandwidth for CXL 1.1/2.0 processors (up to x16 PCIe 5.0 lanes)
- Increase memory capacity up to 2TB with multiple DDR5 channels
- Flexible and scalable memory interface with a low-latency data path
- Up to 5600 MT/s per memory channel to fully utilize available CXL bandwidth
- Best-in-class customizable security features to ensure end-to-end data integrity and protection
- Seamless interoperability with all major CPU, GPU and memory vendors for cloud-scale deployment
- COnectivity System Management and Optimization Software (COSMOS) suite for extensive link management, fleet management, and RAS features

Aurora A-Series Smart Memory Hardware Solutions

- All the benefits and features of Leo CXL Smart Memory Controllers
- PCIe x16 CEM add-in card form factor
- Lower TCO via more granular serviceability—can replace a single failing DIMM
- Configurable memory capacity with plug-and-play DIMM slots
- Up to 4x DDR5 RDIMMs supporting up to 2TB
- On-board debug connectors for fleet management on Cloud Servers
- High-volume, production-qualified solutions with robust supply chain
- COSMOS suite supporting comprehensive fleet management capabilities such as: temperature reporting, health monitoring of Leo Memory Controller, RDIMM fault isolation and error detection/correction, etc.

Applications

- Cloud servers with compute-intensive workloads such as Artificial Intelligence and Machine Learning
- Heterogeneous CPU, GPU, and accelerator servers
- General-purpose compute servers

Description

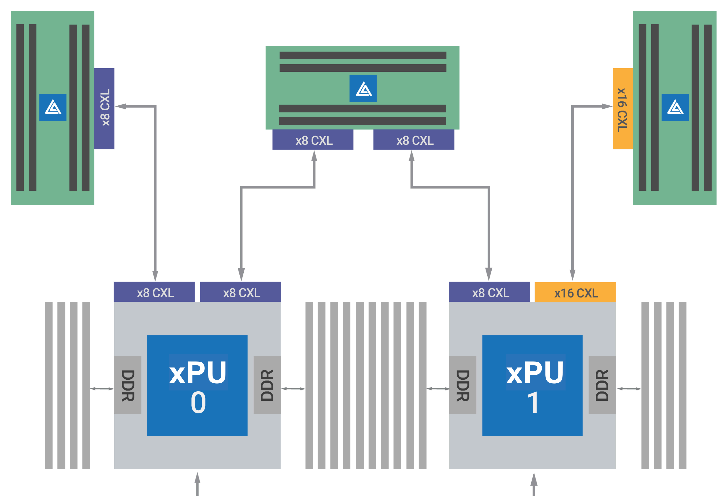
Leo CXL Smart Memory Controllers supports memory expansion, pooling, and sharing to eliminate bandwidth/capacity bottlenecks, reduce TCo, and optimize memory utilization for cloud and AI infrastructure. Leo includes a comprehensive portfolio of controllers and hardware solutions.

Leo enables robust memory expansion and disaggregated memory pooling and sharing for processors, workload accelerators, and smart I/O devices. Leo eliminates the need to overprovision memory thereby reducing overall TCo and optimizing CPU efficiency and application performance for computational workloads.

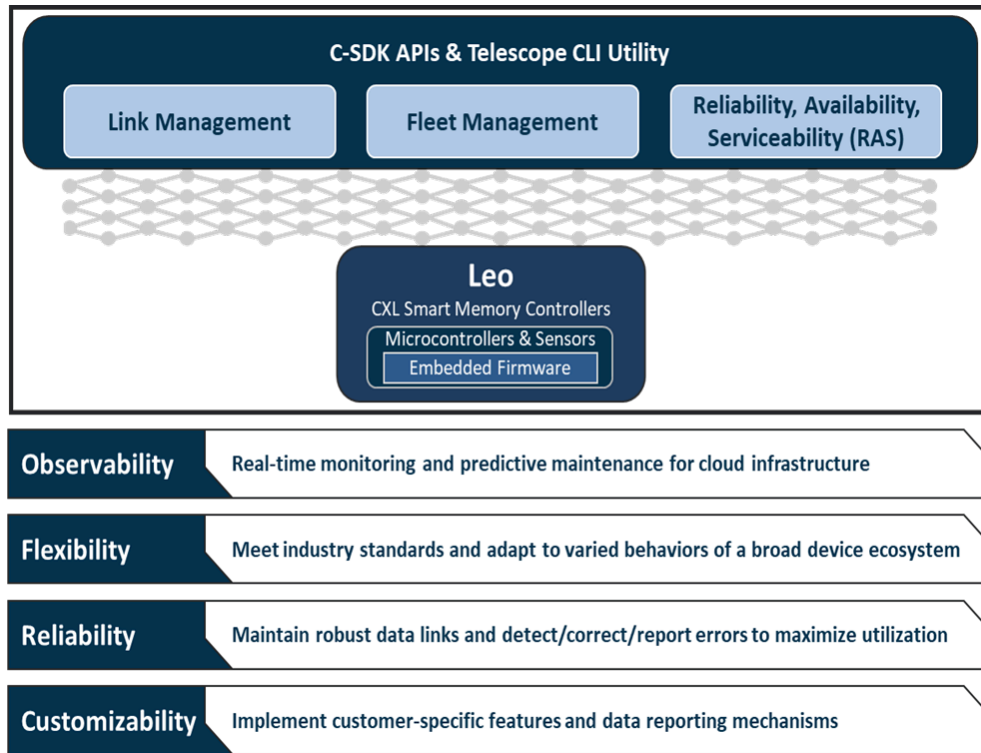
Aurora A-Series CXL Smart Memory Hardware Solutions offer all the benefits of Leo Controllers and enable quick plug-and-play CXL deployment with faster time-to-market for system OEMs and data centers.

Astera Labs' CoSMoS suite for Leo CXL Smart Memory Controller comprises of an embedded firmware that operates in on-chip microcontroller as well as software components that runs on system software stack for device diagnostics and management. These software components are provided as SDK APIs and CLI utility called Telescope. It enables system baseboard/system management controllers BMCs/SMCs) to utilize an array of customizable diagnostics and telemetry features which are useful for managing and optimizing a large fleet of systems.

Typical Application Block Diagram



COSMOS for Leo CXL Smart Memory Controllers



Leo CXL Smart Memory Controller Portfolio

Product	Part #	CXL	Memory	Expansion	Pooling/Sharing
Leo E-Series CXL® 2.0 x8 Smart Memory Controller	CM50852LA0ER	CXL 1.1/2.0 x8	2ch DDR5 up to 5600MT/s, 2TB	Yes	No
Leo E-Series CXL® 2.0 x16 Smart Memory Controller	CM51652LA0ER	CXL 1.1/2.0 x16	2ch DDR5 up to 5600MT/s, 2TB	Yes	No
Leo P-Series CXL® 2.0 x16 Smart Memory Controller	CM51652LA0PR	CXL 1.1/2.0 x16	2ch DDR5 up to 5600MT/s, 2TB	Yes	Yes
Aurora A-Series Smart Memory Hardware Solution	A1000-1254AB	CXL 1.1/2.0 x16	4x DDR5-5600 RDIMM slots, 2TB	Yes	Yes