OPEN POSSIBILITIES.

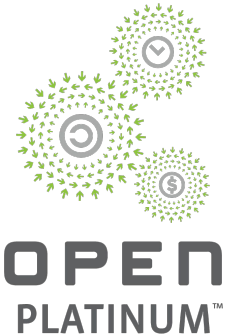
Zion Modular System Architecture Overview

OCP GLOBAL SUMMIT

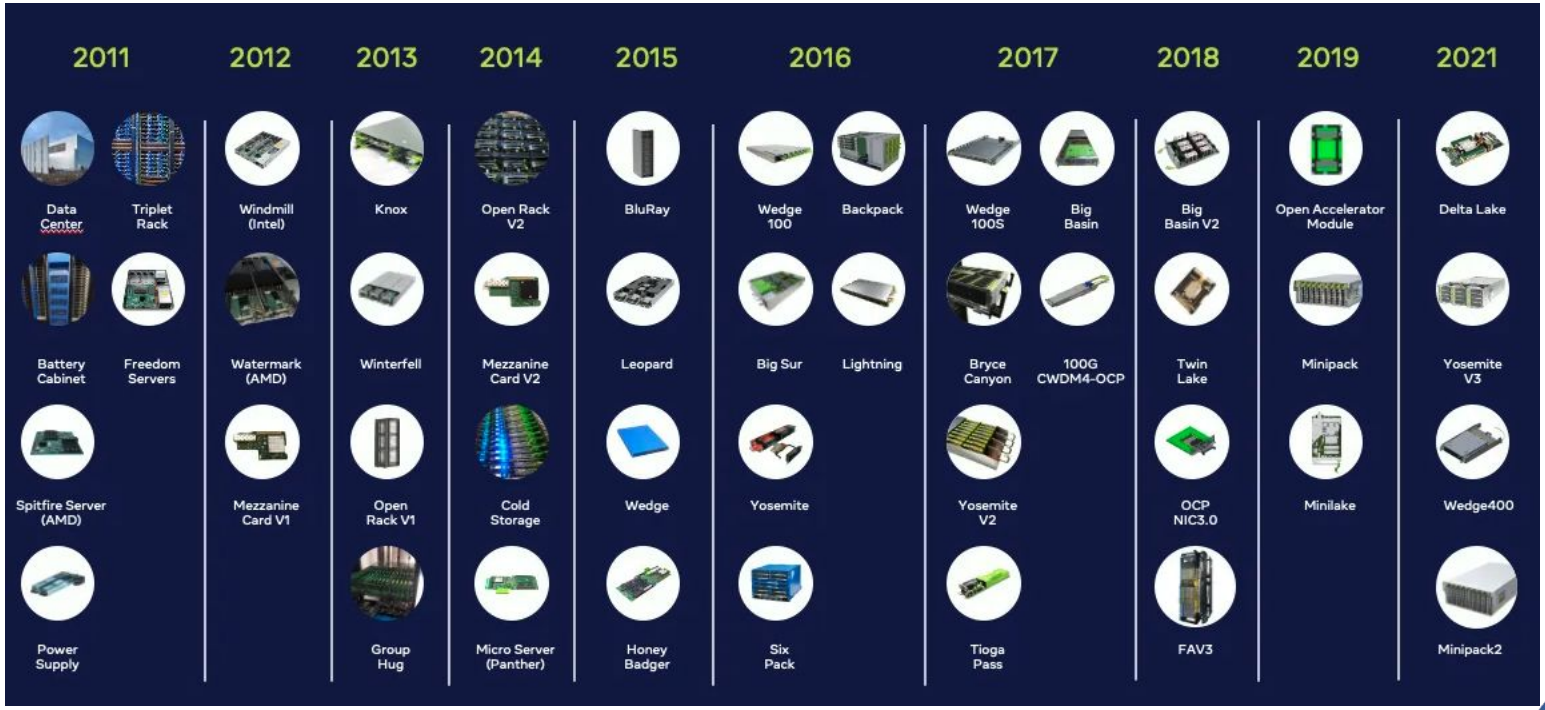
NOVEMBER 9-10, 2021

Zion Modular System Architecture Overview

Hao Shen, Hardware Engineer, Facebook
Michael Haken, Mechanical Engineer, Facebook
Tyler Hart, RTP Engineer, Facebook



Facebook Open Fleet



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AI in FB

SERVER

AI is used extensively in FB

Ranking

Content Understanding

Pattern Detection

Speech Recognition

Translation

Powerful AI Models need Powerful Hardware!

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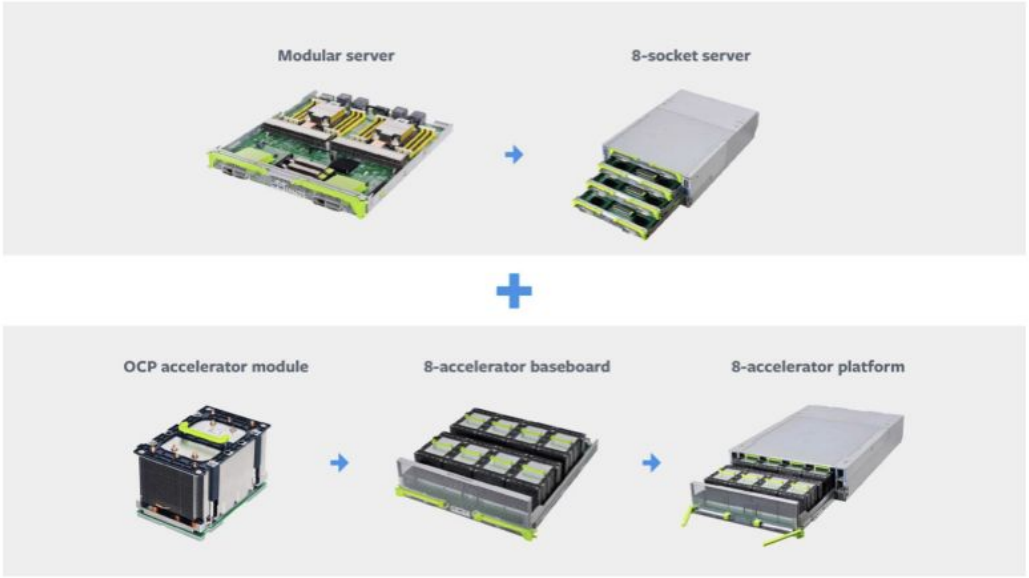
Zion System Overview

SERVER

Zion is designed to support AI workload.



Presented in 2019 OCP Summit

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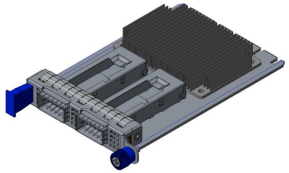
Zion System Overview

2-socket modular server

2 or 4 socket platform

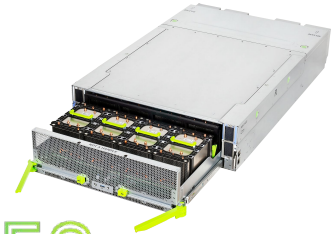
OCP NIC + Storage Modules



Expander Box

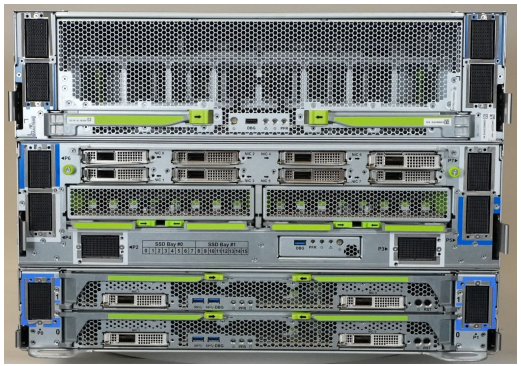
Open Accelerator Module

8 Accelerator Platform



SERVER

ZionEX system



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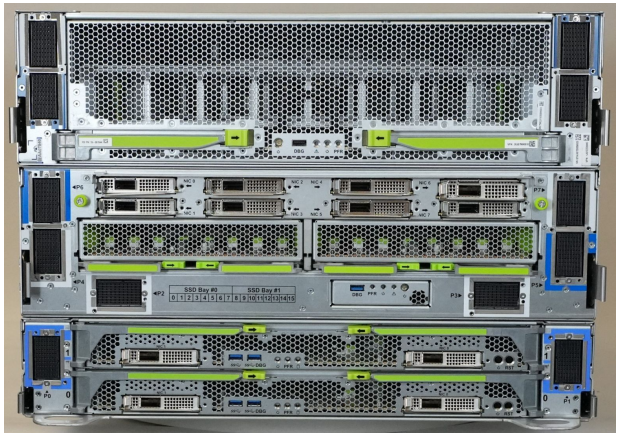
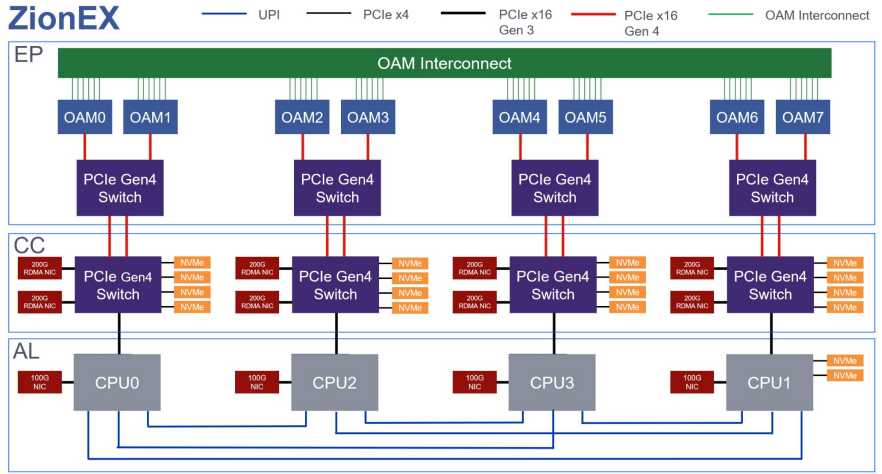
Zion System Overview

Zion is designed to support AI workload.



SERVER



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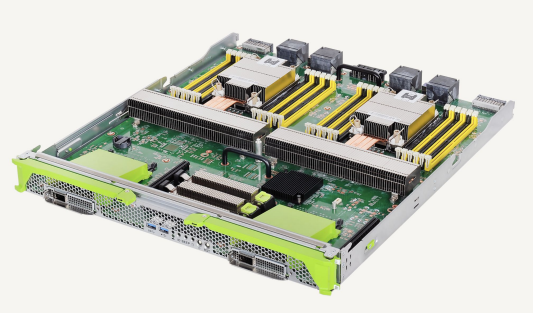
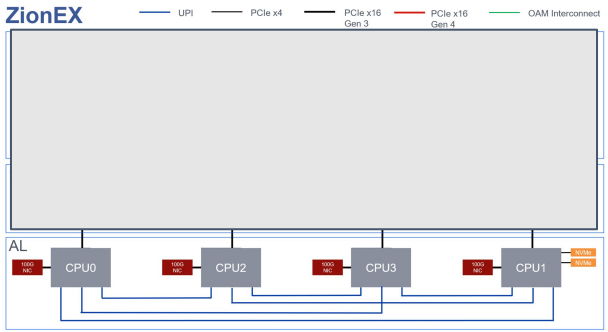
Angels Landing





SERVER

- Up to 4 socket Intel Cooperlake CPUs
- 4x 100G OCP3.0 NICs
- 1.5TB DDR4 RAMs
- Fully connected UPI through backplane

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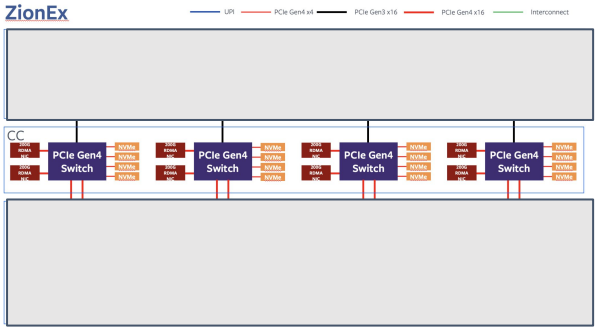
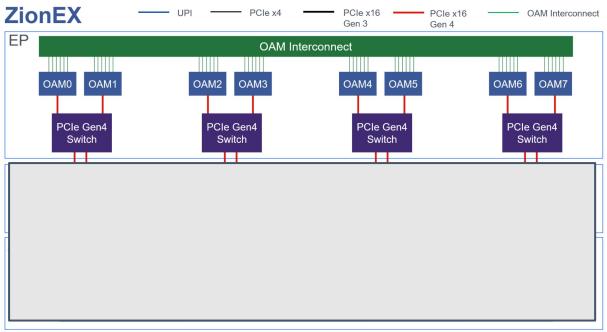
Clear Creek



SERVER

- 4x PCIe Gen4 Switch
- 8x 200G NICs for scale out
- 16x E1.S/M.2 SSDs

Emerald Pools



SERVER

- 8x Open Accelerator Modules
- OAM interconnections support high speed communications between accelerators

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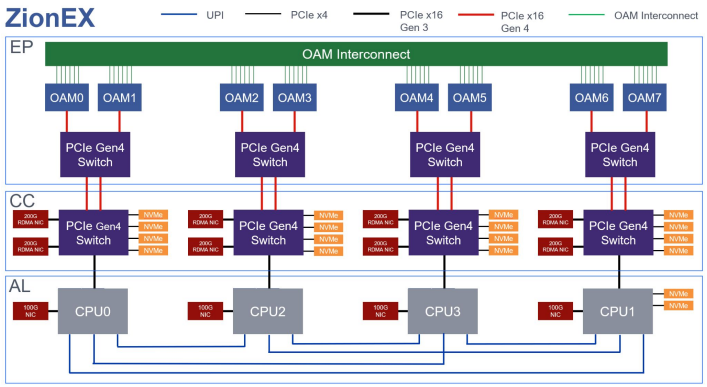
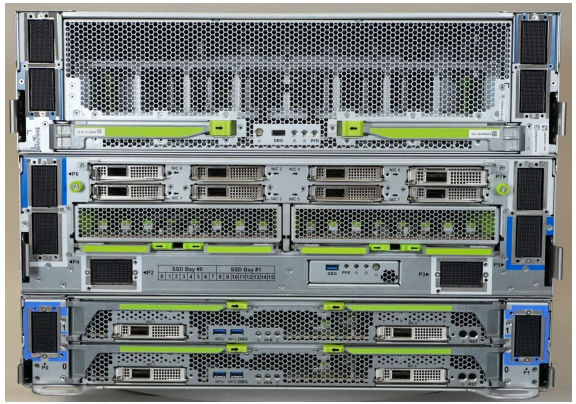
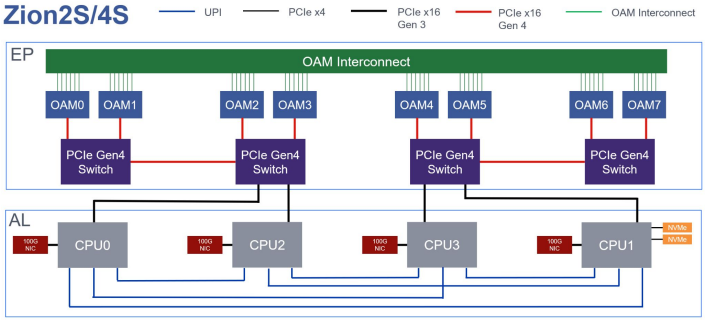
Flexible Configurations







SERVER

Modular system designs enable hardware to be tailored for each AI use case

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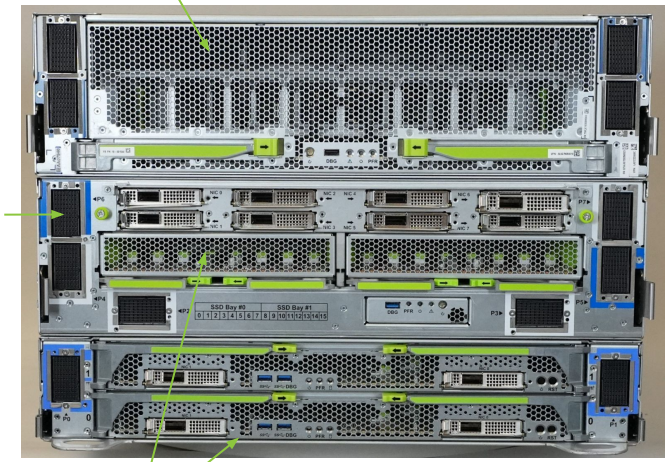
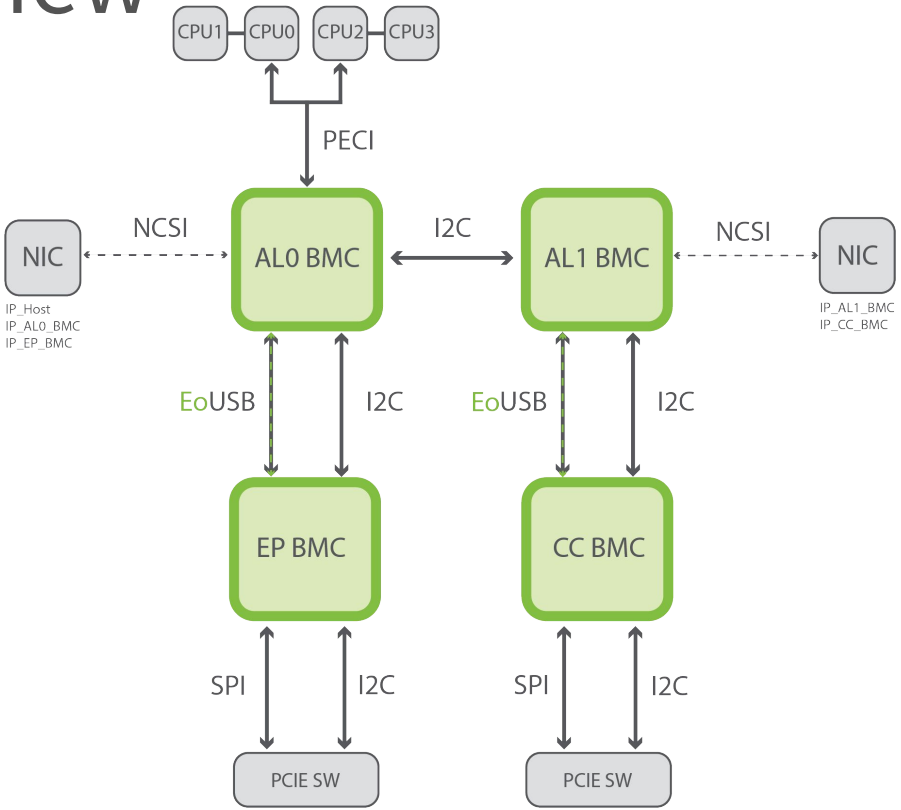
Designed for Field Service

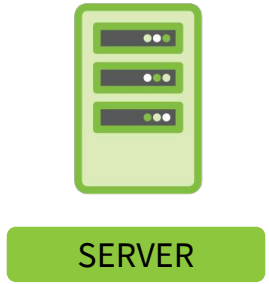
SERVER



1. All field replaceable units (FRUs) with significant failure rates are accessible without removing cabling
2. PCIE cabling is routed from the back of each board, around the sides and to the front of each system
3. The OAMs are accessible from a sliding rail kit
4. CPUs, DIMMs, and storage modules are accessible on front accessible trays

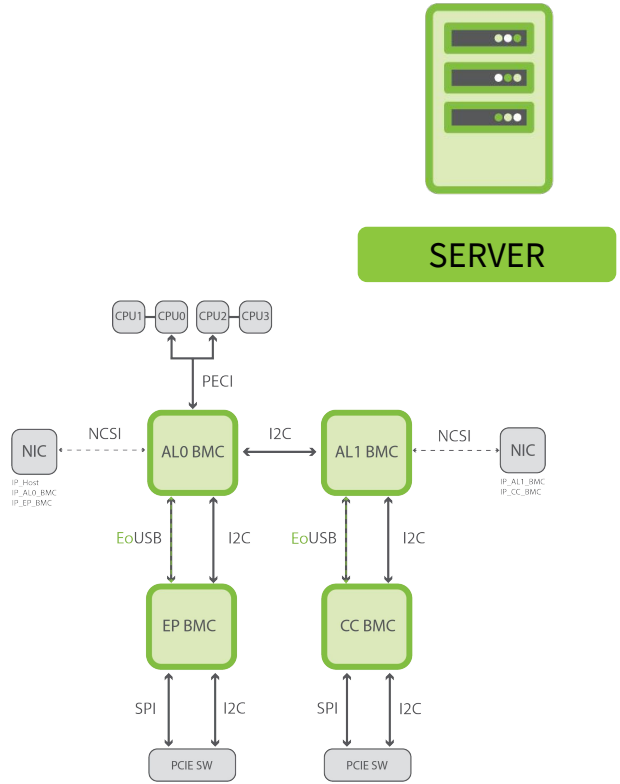
BMC Overview





Autonomous Crash Dump

1. CATERR pin triggered, SEL created in AL0 BMC
2. AL0 BMC starts crash dump collection
3. MC Banks collected, sensors recorded
4. Crash dump log saved into BMC flash
5. Logging service extracts crash dump to database



Call to Action

- FB are contributing Zion system, Angels Landing, Clear Creek and Emerald Pools Specification to OCP Server/OAI group
- QCI will contribute the design collaterals soon.
- Zion System is already in MP stage.

Where to buy: https://www.opencompute.org/products

Project Wiki with latest specification : http://www.opencompute.org/wiki/Server/OAI

Mailing list: http://lists.opencompute.org/mailman/listinfo/opencompute-server

Thank you!

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