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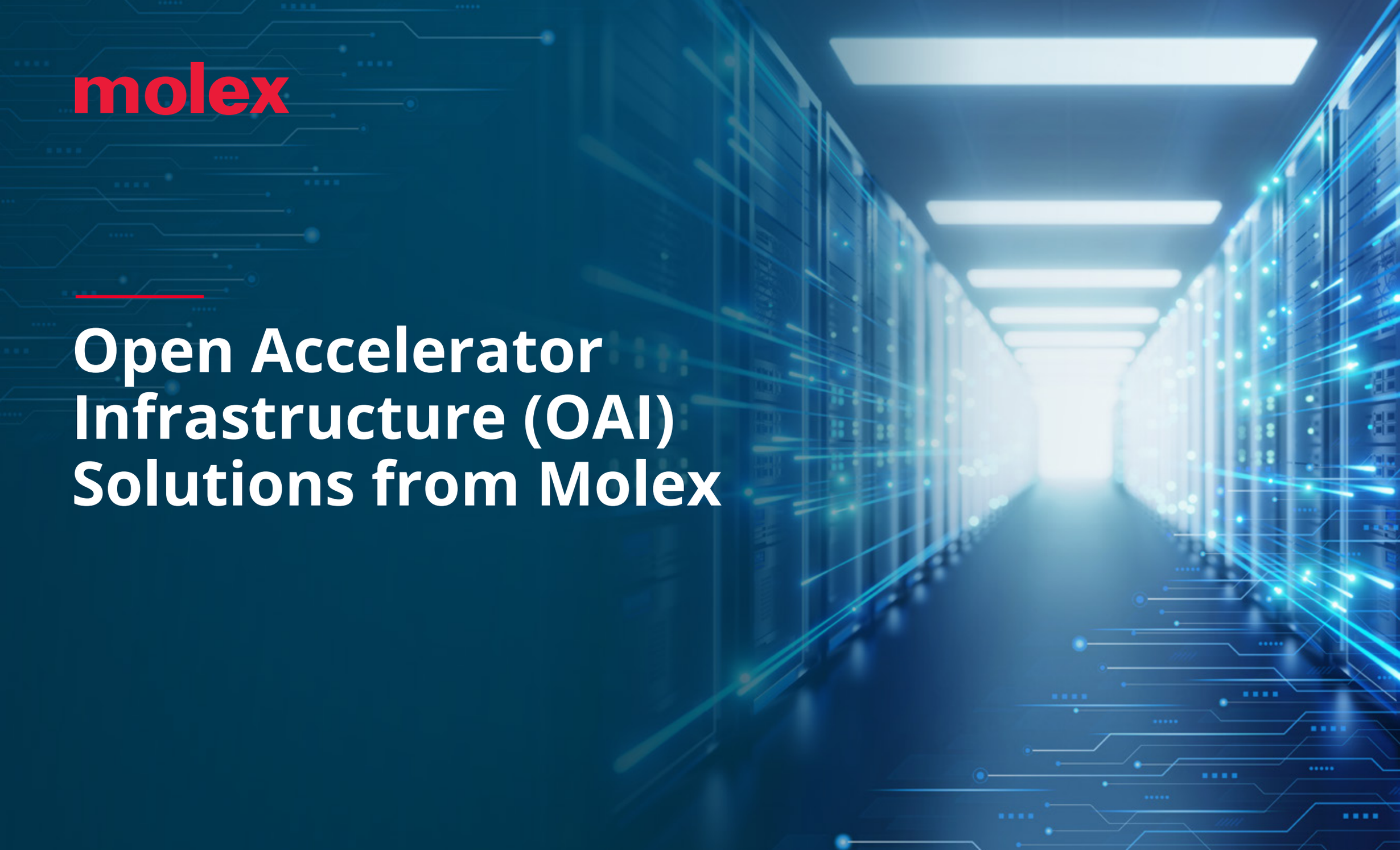
Open Accelerator Infrastructure (OAI) Solutions from Molex



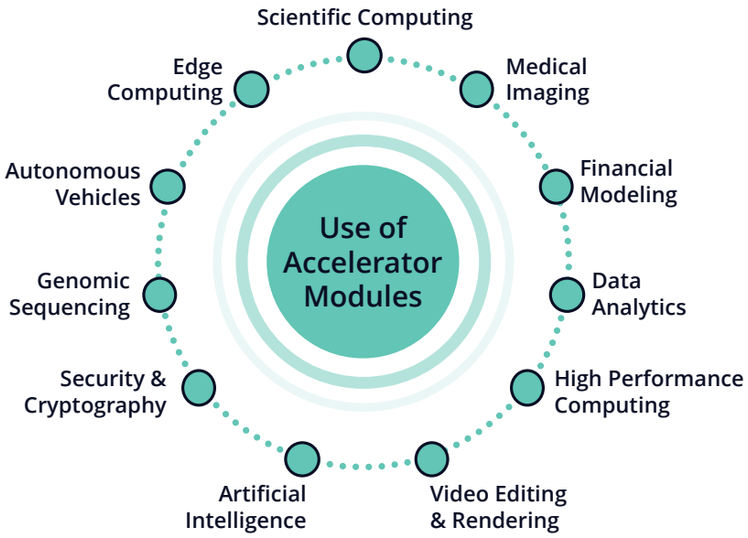
THE OPEN ACCELERATOR INFRASTRUCTURE (OAI) CHALLENGE

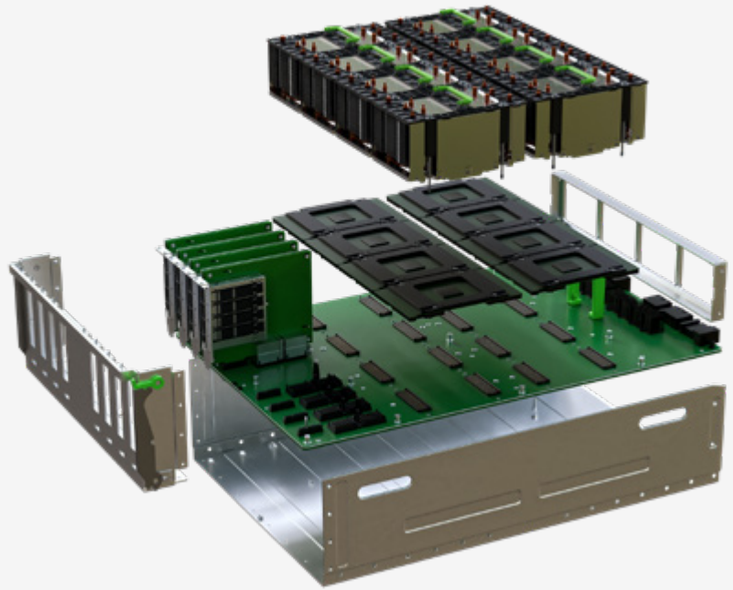
The transformative pace of data center growth is accelerating demand for optimization and a more agile response, especially within sectors that leverage high-performance computing (HPC) and artificial intelligence (AI). The ever-increasing pressure on data centers is pushing infrastructure to its limit, driving the need for adaptable solutions that can optimize performance across a broad range of workloads and extend the lifecycle of existing assets.

Accelerator modules have emerged as a key solution in this new landscape. They offer versatility, deliver a significant performance boost, surpass the capabilities of general-purpose CPUs and enhance efficiency across targeted workloads. With scalability and adaptability built into their design, accelerator modules seamlessly integrate into existing systems, catering to the evolving demands of a wide range of technologies and applications.

However, data centers are finding obstacles to efficient scaling with accelerator modules that employ the PCIe CEM form factor. These include:

- Significant signal insertion loss from ASIC to PCIe connectors
- Complex inter-card cabling that compromises robustness and serviceability
- Limitations on supported inter-ASIC topologies



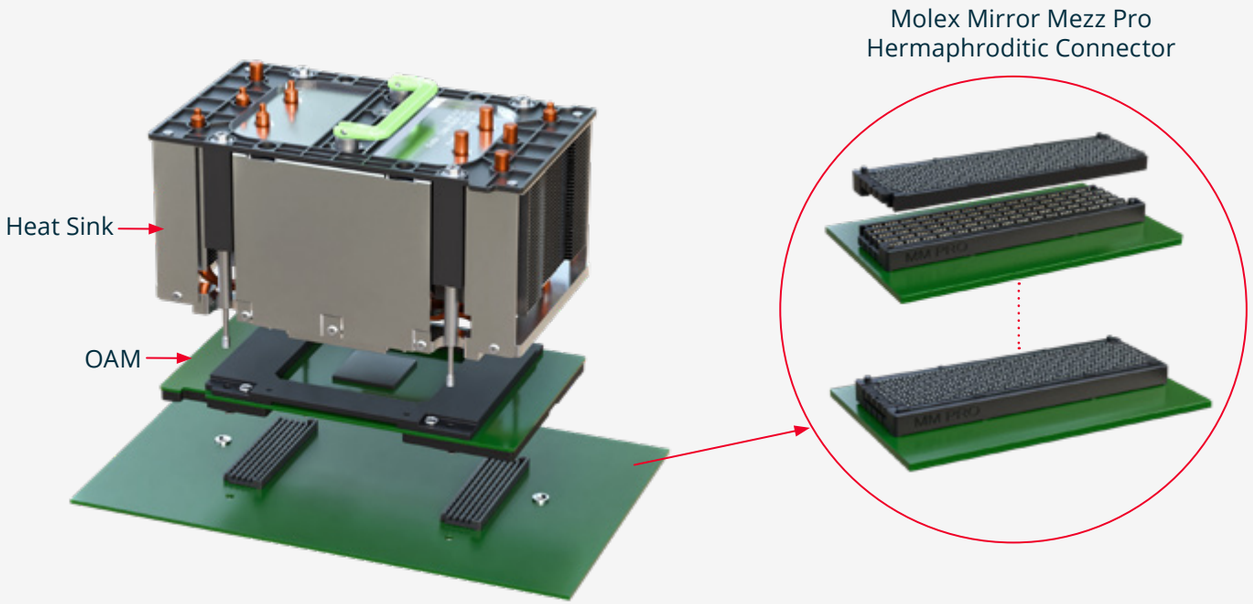


THE MEZZANINE SOLUTION

To address these challenges, the mezzanine form factor has emerged as a robust alternative. This style of interface, favored by the Open Compute Project (OCP) in its Open Accelerator Infrastructure (OAI) project, features high-density connectors that enhance I/O link performance while ensuring low signal insertion loss for high-speed interconnectivity.

The resulting definition from OCP, the Open Accelerator Module (OAM), provides ample space for accelerators, local logic and power components and supports versatile heat sink designs suitable for both air-cooled and liquid-cooled systems. The flexibility of this form factor extends to intermodule interconnect topologies as well, adapting to various design needs.

By embracing mezzanine-style modules, organizations can leverage enhanced modularity, scalability and compatibility, paving the way for seamless integration into diverse computing environments and driving innovation in high-performance computing and beyond.



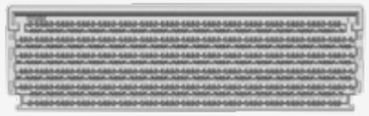
MIRROR MEZZ: SUPERIOR DESIGN FEATURES FOR ACCELERATOR MODULES

Mirror Mezz High-Speed Connectors from Molex redefine the landscape of open accelerator modules by presenting an innovative solution optimized for OAI. Mirror Mezz deploys accelerator modules through a hermaphroditic mating interface that ensures consistent and reliable connections. A mated set only requires one part number which simplifies procurement and assembly processes, enhances manufacturing efficiency and reduces complexities in bill of materials (BOM) managements.

The contact design is “stubless,” a feature that delivers superior signal integrity for the high-speed demands of today’s computing infrastructure.

Versatility is at the heart of the Mirror Mezz design, with an array of stack heights (11mm, 8mm and 5mm) that provide adaptability for various application requirements. Robust blind mating guidance coupled with pin shrouding help safeguard the connectors, ensuring precise alignment and protection against damage for improved longevity and reliability.

Furthermore, the incorporation of a low-profile ball grid array (BGA) surface mount technology (SMT) termination within Mirror Mezz connectors enhances flexibility and integration. This familiar termination technique is highly regarded by contract manufacturers and original design manufacturers for ease of use, facilitating a smooth manufacturing process that is both efficient and cost-effective.

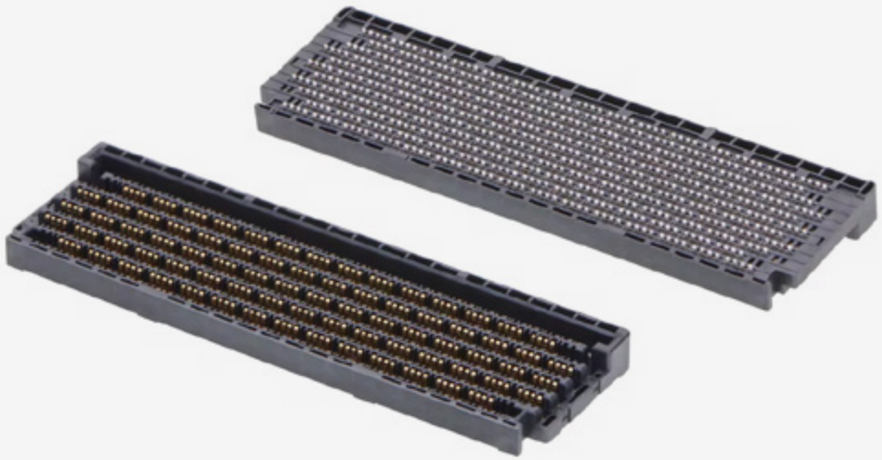
Types of Mirror Mezz	Overall MATED Dimension	Footprint	Full Differential Pairs	Single-Ended Pins	Total Pins
15x11 Standard MM 15x11 MM Pro 	SAME 22.00mm x 68.00mm	Standard MM and MM Pro – same footprint	161	44 SE	688
15x11 Mme (Mirror Mezz Enhanced) 		Different footprint compared to Standard MM and MM Pro	166	24 SE	688

A COMMITMENT TO OPEN INFRASTRUCTURE

As an active partner within OCP, Molex is an industry leader in the design and development of hardware defined by open infrastructure initiatives.

The incorporation of Mirror Mezz into the specifications of OCP and the Open Data Center Committee (ODCC) underscores its relevance and adaptability to current and future computing needs. With its superior, award-winning design and functional finesse, Mirror Mezz connectors enable a new era of open accelerator infrastructure to meet the needs of expanding data centers.

Explore Molex Mirror Mezz Solutions, **https://www.molex.com/mirror-mezz**



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