Gen-Z Scalable Connector

October 2017

This presentation provides an overview of the Gen-Z scalable connector, it's high level features, and application flexibility.

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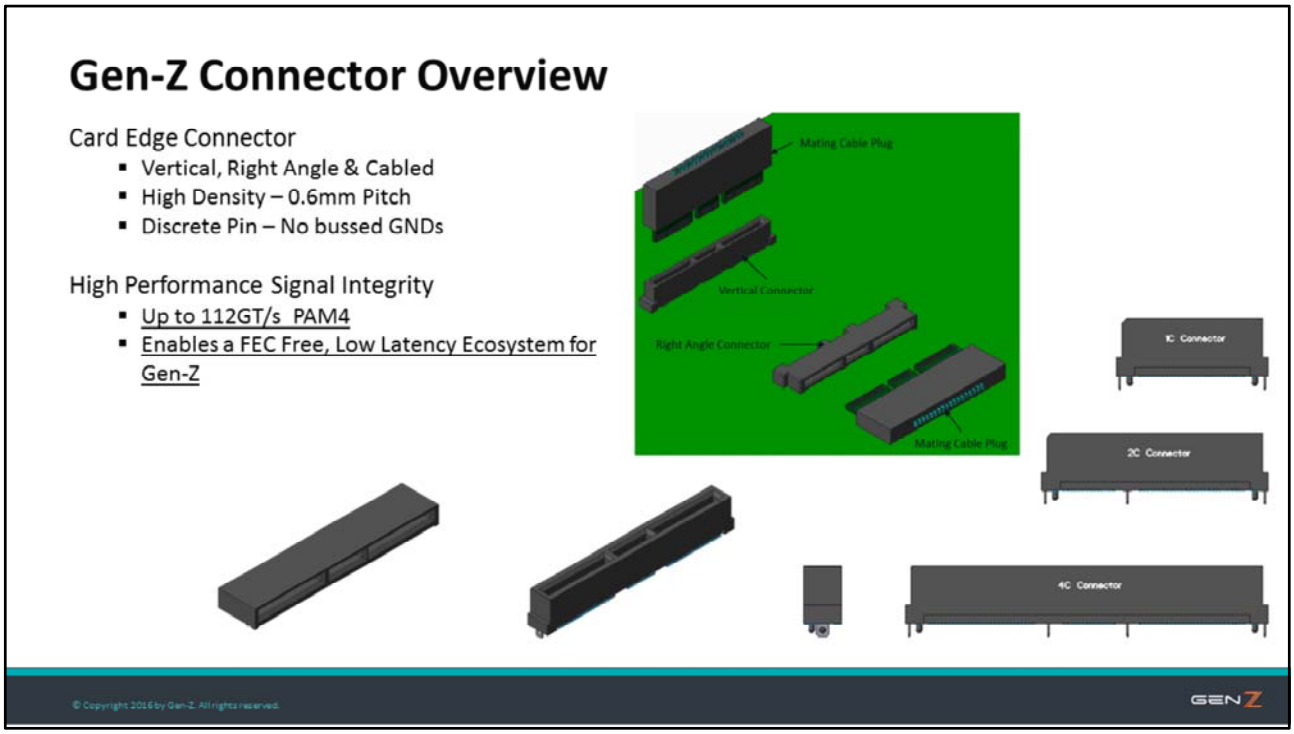
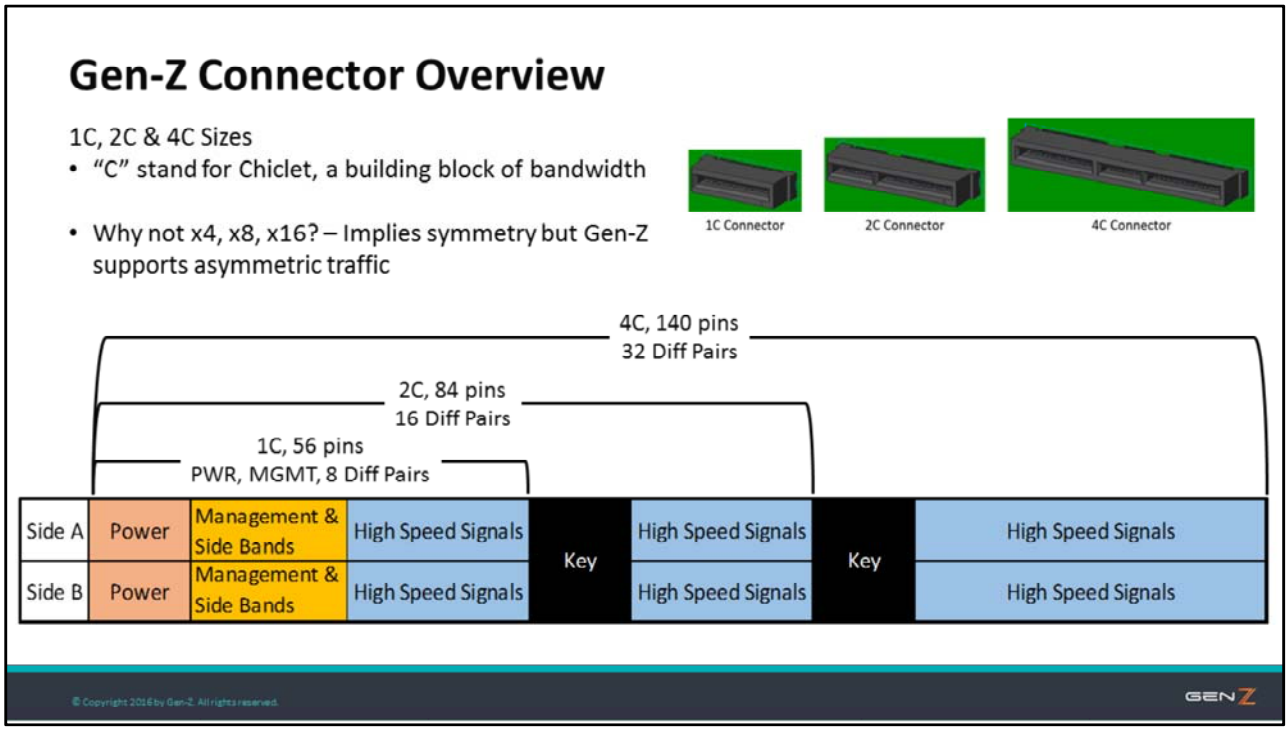


The Gen-Z connector is a card edge, high-density, discrete pin connector that supports vertical, right angle and cabled installations.
The connector provides high-performance signal integrity that is capable of supporting line rates up to 112GT/s PAM4 without requiring Forward Error Correction (FEC). This enables Gen-Z to deliver low-latency communications.

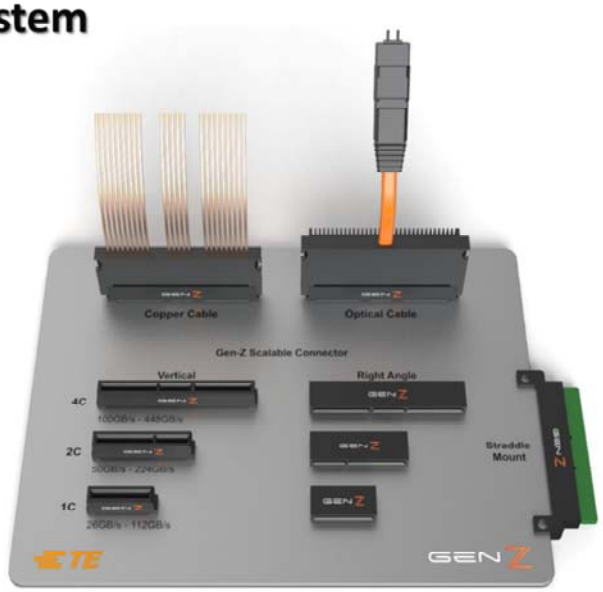


The Gen-Z Connector is available is in 3 sizes: 1, 2 and 4 "chiclets". A chiclet, refers to a common building block of bandwidth defined as 8 differential pairs. This nomenclature is used rather than traditional terminology like x4, x8 or 4 lanes, 8 lanes, etc. because this traditional terminology implies symmetry in the data traffic. Gen-Z, however, also supports asymmetric traffic, so differentials pairs can be dynamically assigned as transmit or receive based on workload need.

A 1 chiclet, or 1C, connector supports power, management and 8 differential pairs of high speed signals. A 2C connector maintains the functionality of the 1C connector, but supports an addition 8 differential pairs, and likewise the 4C connector supports an additional 16 differential pairs.

Gen-Z Universal Connector System

- Vertical, horizontal, right angle, straddle mount
- Same connectors for memory, I/O, storage, etc.
- Cabled solutions: for copper & optical
- Eliminates "hard choices"
  - Universal connector eliminates industry fragmentation
    - Simplifies supply chain—drives volume and lowers cost
  - Any component, any slot, any time
    - Any mix of static and hot-plug modules
  - Multi-connector option to provide added scalability
    - 80W incremental power
    - Incremental bandwidth
  - Supports internal and external cable applications
    - Enables modular system design
    - Enables system disaggregation
    - Eliminates expensive board materials
  - Multipath—can bifurcate connector into multiple links
    - Aggregate bandwidth, resiliency, no stranded resources
    - Support multiple topologies—point-to-point, daisy-chain, mesh

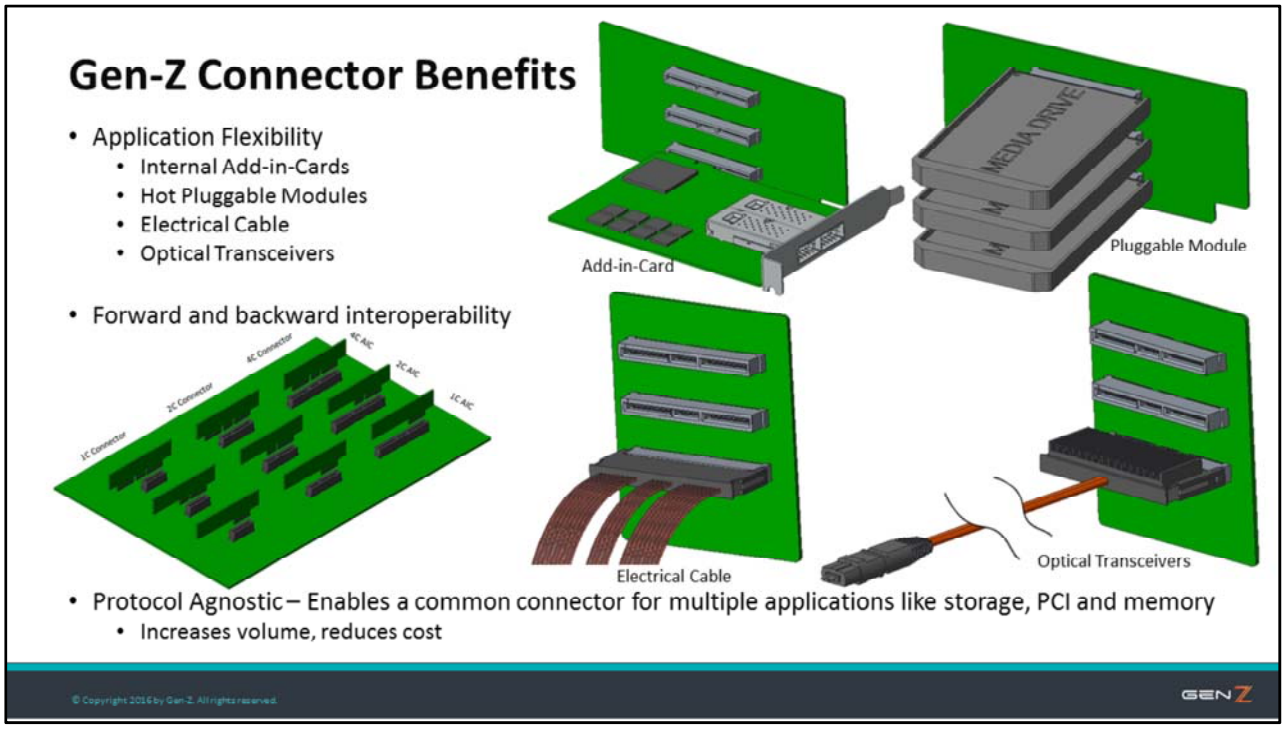


Gen-Z Connector Size and Bandwidth Comparison

- High Performance Signal Integrity - Up to 112 GT/s PAM4
- High Bandwidth Density

GEN Z

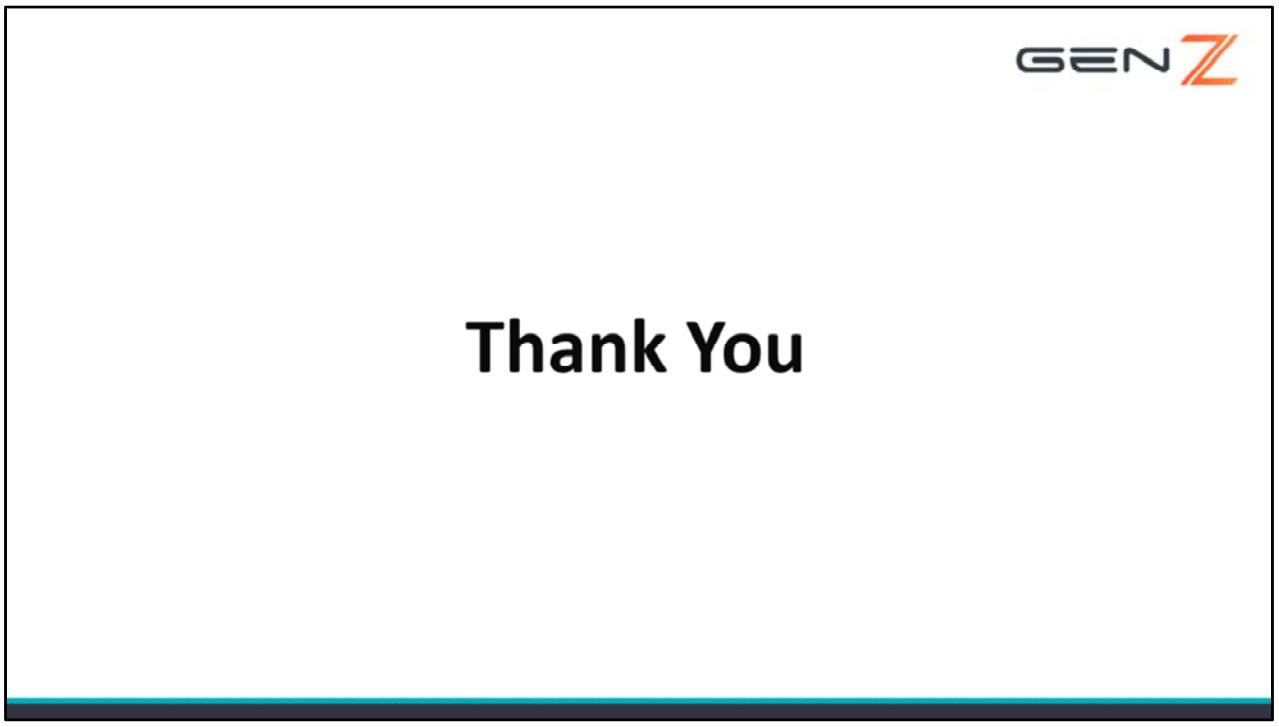
The Gen-Z Connector supports line rates up to 112GT/s PAM4. Combined with a high pin density, this delivers a bandwidth density unmatched by legacy interconnects.



As previously mentioned, the Gen-Z connector supports multiple applications, such as internal add in cards, hot pluggable modules, and both electrical and active optical cables shown here. This enables system configuration flexibility, while leveraging connector volumes across these use cases for maximum cost savings and design simplicity.
In addition, the Gen-Z connector supports full forward and back interoperability between connectors and plugs. This allows systems to be configured for multiple use cases and freedom for end users to upgrade as bandwidth needs increase.

Finally, the Gen-Z connector is, at it's core, a high performance and flexible connector that is protocol agnostic. This allows it to be leveraged into other application such as storage, both SAS and NVMe, PCIE, and memory. By establishing a common interconnect across the maximum number of use cases within the datacenter, the Gen-Z connector can take advantage of economies of scale to become a truly cost optimized high performance solution for cutting edge high speed data rates.

The Gen-Z connector's full mechanical and electrical details were developed by the Gen-Z consortium, and contributed to SFF under SNIA, in the form of SFF-TA-1002. Please visit SNIA for the latest revision and more details. For additional specifications and news from the Gen-Z consortium, please visit the consortium website at genzconsortium.com. Thank you.



This concludes this presentation. Thank you.