

MTCA.4 PCIeexpress Uplinks - optical and copper

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Up to 16 PCIeexpress lanes inside and outside of a MTCA.4 system are demanded in application with high data throughput, low latency and huge computing requirements.

This presentation presents how to upgrade existing MTCA.4 systems inside the system with

- 16 PCIeexpress lanes to the local root complex as rear module behind the MCH

at the front-side with

- 16 lanes of optical PCIeexpress uplinks (128 Gb/s)
- two times 8 lanes of optical PCIeexpress uplinks (each 64 Gb/s)
- daisy chain with 8 lanes of optical PCIeexpress uplinks multiple MTCA.4 systems (64 Gb/s)

at the backside-side with

- 16 lanes of electrical PCIeexpress uplinks (128 Gb/s)

On new MicroTCA.4 system with new backplanes also a 16 PCIeexpress port can be routed to one AMC slot.

Summary

Existing standard MTCA.4 system have only 4 PCIeexpress lanes per AMC slot, which can become a bottleneck if only one CPU has to process data coming from up to 11 AMCs populated with high performance FPGAs DMAing data directly into the memory of the CPU.

If PCIeexpress clustering with up to 6 PCIeexpress cluster cannot be used due to the impossibility to distribute data to different CPUs, a bigger data path to the main CPU is needed.

If the AMC CPUs are not powerful enough and/or an GbE and 10 GbE interface creates too much latency, a high speed optical or copper PCIeexpress path to a powerful external computer is needed.

In this presentation available solutions to upgrade existing MTCA.4 system with up to 16 PCIeexpress lanes to the local CPU and/or to external computers via high performance, low latency PCIeexpress uplinks are shown.

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