Multiplexing and Demultiplexing High-Speed Serial Links

Use Case

KEY CHALLENGES:

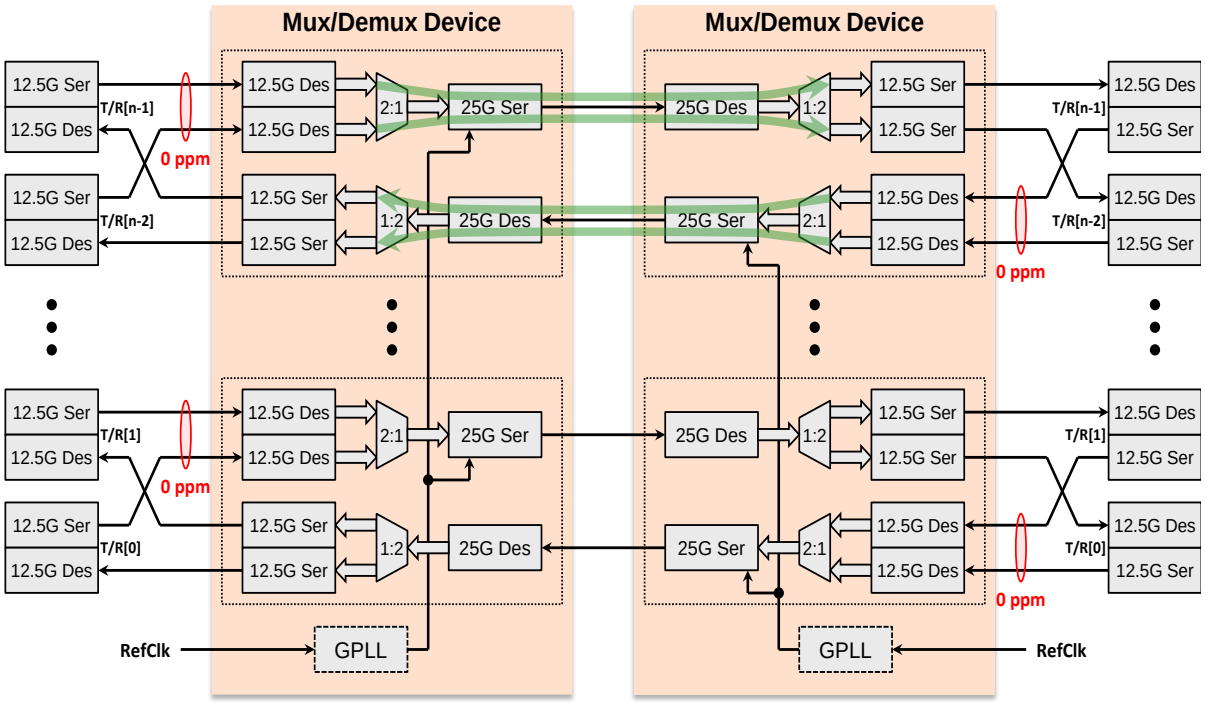
System designers face a never-ending challenge of increasing system throughput and density. By aggregating two lower speed serial links together with a serial Mux/Demux device, designers can:

- Halve the required number of physical lanes for the same throughput
- Double system throughput with the same number of physical lanes or pins

The below diagram illustrates how pairs of 12.5Gb/s links are combined to form a bi-directional 25Gb/s link. An example application includes multiplexing the 4x10G lanes of a 40GbE link to 2x20G, thus either doubling the density of 40Gb Ethernet ports or halving the number of signals.

KEY SYSTEM CONSIDERATIONS:

- Supports industry communication standards
- Protocol independent data payloads for datacom, telecom, storage, or other applications
- Strong signal integrity ensuring reliable data transfer
- Support Forward Error Correction (FEC) payloads for high-reliability
- Package and power options supporting line card, daughter card and module applications are key to system integration, power and heat issues



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THE MOSYS SOLUTION:

The MoSys MSH420S device is an ideal solution for multiplexing and demultiplexing high-speed serial links.

- Two serial links transported across a single faster (2x) serial link provides:
  - Half the required number of physical lanes for the same payload
  - Double the payload for same number of physical lanes
- Up to 5, Bi-directional, Mux/Demux channels in a single MSH420 device
  - Or up to 2 channels in a single, smaller MSH422S device (contact factory)
- Supports critical industry standards, such as:
  - IEEE and OIF 10G, 25G, 40G and 100G standards
  - Protocol independent payload supports Datacom, Telecom, Storage applications
- Independent PLLs per lane support different data rates per Mux/Demux channel within a single device
- Signal integrity is key to ensuring reliable transfer of data
  - MoSys self-adapting RX equalizers for ease of connection
  - Reduce board design and bring-up time by eliminating per-lane “tuning”
- Cost/performance must be considered in any system design:
  - *Some devices are available in volume at less than $50 each*

KEY POINTS SUMMARY:

- Mux/Demux of serial links can double the throughput or halve the number signals in your system design.
- Adherence to industry standards for interoperability with other available industry devices
- Strong signal integrity and package/power options support cable, backplane, printed circuit boards and module level solutions.

TYPICAL APPLICATIONS:

- Datacom, Telecom, 5G Networks
- Datacenter and Cloud Interconnects
- Storage and Data Acquisition Systems

ADDITIONAL RESOURCES:

Linespeed Product Line
Linespeed Product Brief
Linespeed Press Release

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