CDC Trigger Merger

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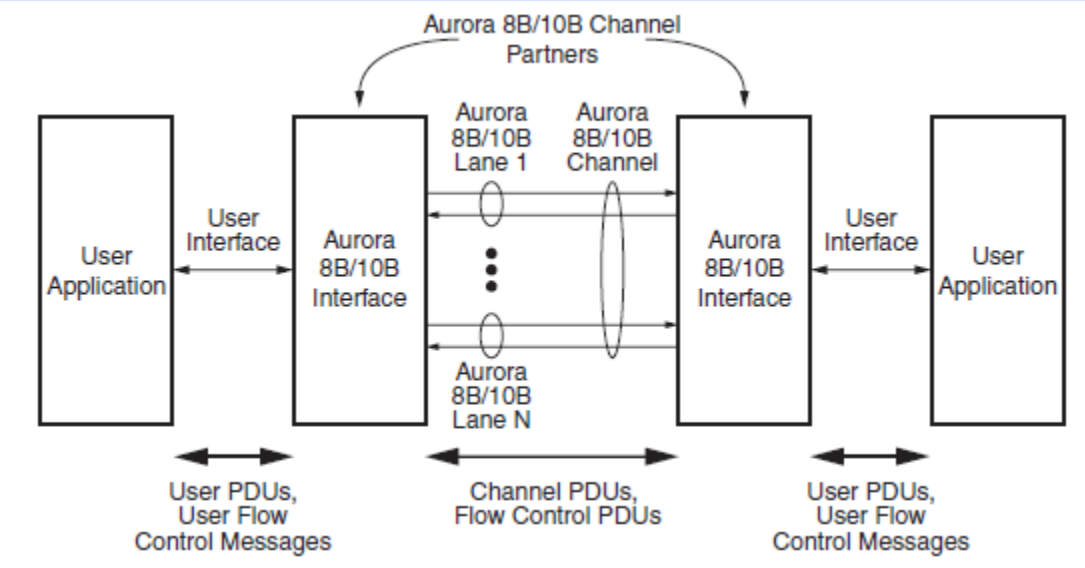
Outline

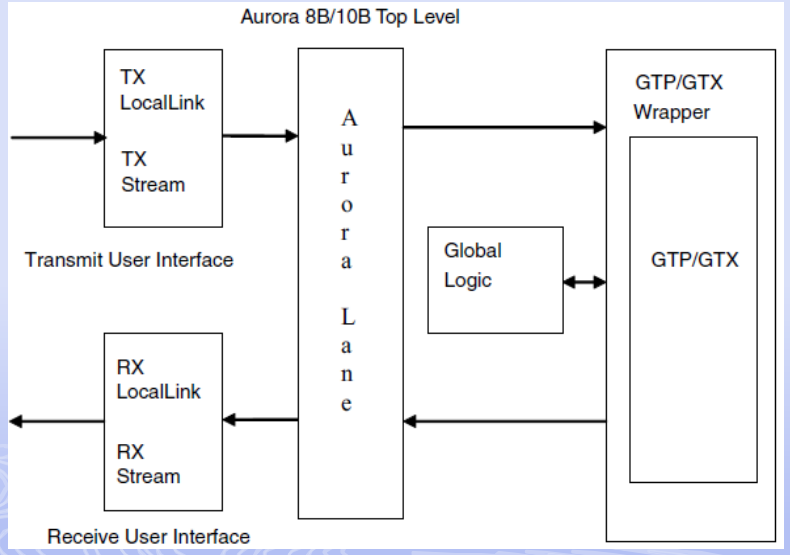
- Multi-lane Aurora protocol in Altera
- Aurora protocol link test results
- Merger prototype
- Summary

Multi-lane Aurora Protocol in Altera

- multi-lane can be combined as one Aurora channel to use.



- Multi-lane structure in Xilinx and Altera
  - Deskew FIFO in Altera transceiver can't be used in basic mode, so we add our Deskew FIFO.



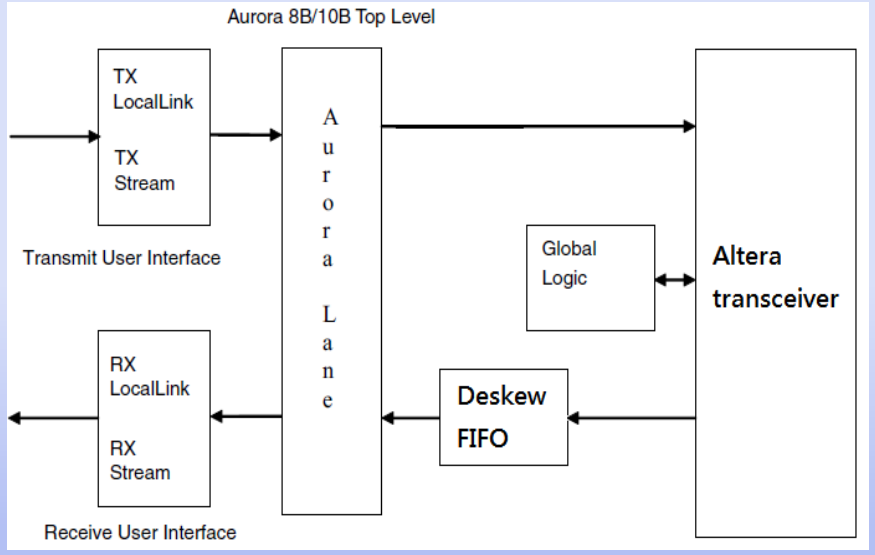
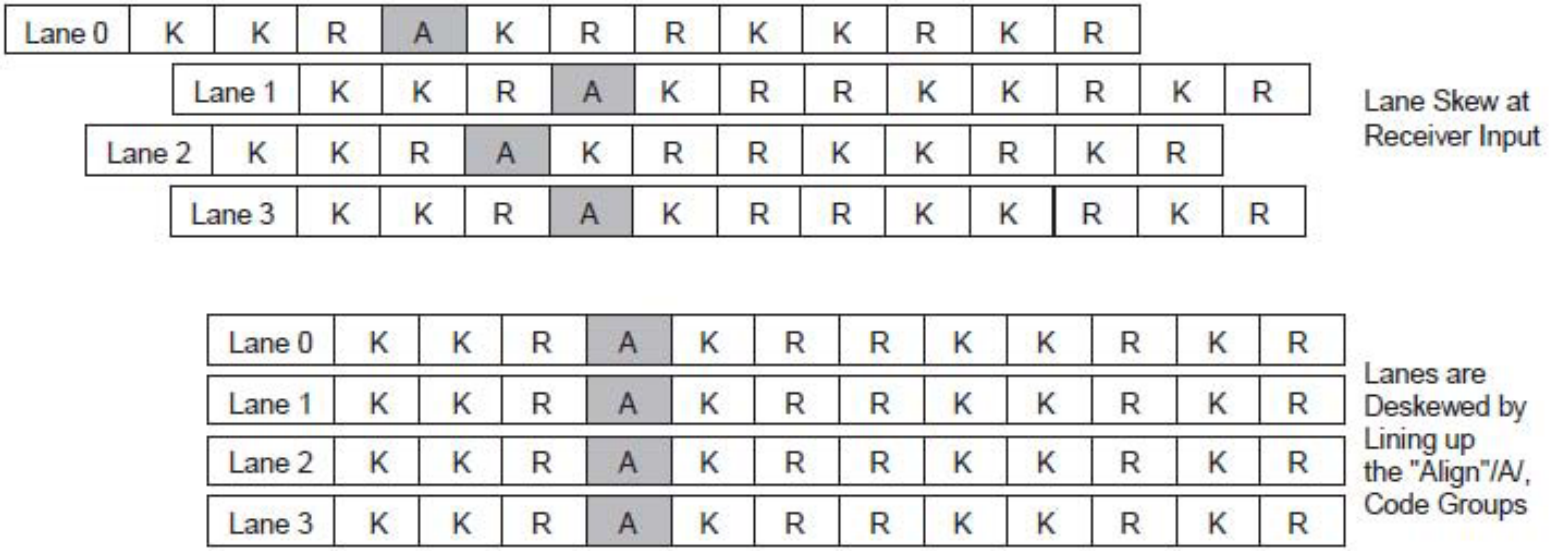


Figure 1–58. Deskew FIFO—Lane Skew at the Receiver Input



Aurora Protocol Link Test

- 1 channel 1 lane

Data rate	Altera chip feedback test	Link test with Xilinx chip
2.5 Gbps	Successful	Successful
3.125 Gbps	Successful	Successful
5 Gbps	Successful	Successful
6.25 Gbps	Successful	Successful

- 1 channel 2 lane

Data rate	Altera chip feedback test	Link test with Xilinx chip
5 Gbps	Successful	Successful
6.25 Gbps	Successful	Successful

- 1 channel 4 lane

Data rate	Altera chip feedback test	Link test with Xilinx chip
6.25 Gbps	Testing	Testing

1 channel 4 lane Aurora protocol in Altera system is still testing, we need to make it work more stable.

Merger Prototype

- Chip : Altera Arria II GX
  - EP2AGX95EF29I3N
  - Limited ECC function
- Buffer
  - 128M bits or more, DDR or DDRII
- I/O :
  - 3.125G transceiver *8(Optical connector)
  - 6.25G transceiver *2 (Optical connector)
  - 6.25G transceiver *2 (SMA)
  - Button(System reset, Aurora reset, test option)
  - LED Indicator(link status, error detect)
  - TTL,LVDS signal(flexible test I/O)

- Clock source
  - 50MHz system clock on board
  - 156.25MHz MGT clock on board
  - 1~2 external clock input
- Down-load
  - JTAG
  - USB-blaster chip, Ethernet-blaster chip on board
  - Remote upgrade system(TCP/IP)
- Power supply
  - 5V,12V DC input
  - Transformer module on board

Summary

- Aurora protocol link test will be finished soon.
- We are currently working on the prototype boards design and layout . We plan to have them in Oct.
- The final Altera Arria V chips should be available in the end of this year.
- Another prototype with Arria V is planned early next year.