10G OTN IP Solution

Altera's 10G OTN IP solution reduces time to market and costs associated with FPGA intellectual property (IP) development. Providing support for a variety of client rates, ranging from GE to OTU-2, the 10G OTN IP solution is fully customizable per user requirements.

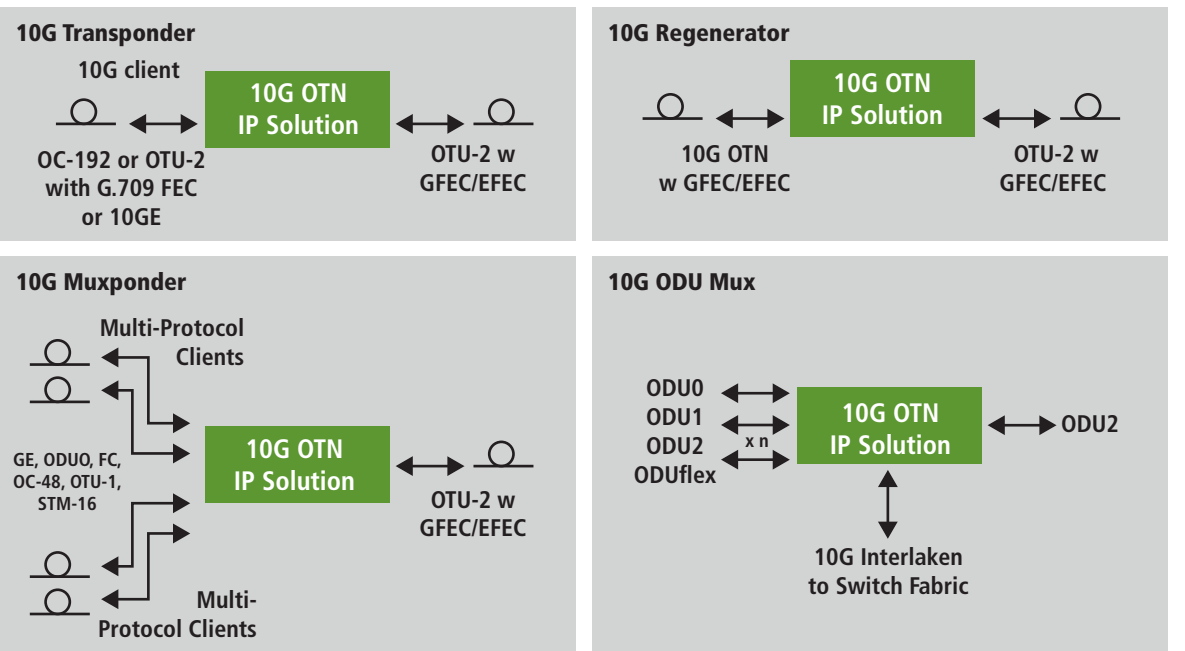
General Features

- 11.1G throughput
- A variety of client signal mapping into OTU-2
- Optional G.709 FEC or Enhanced FEC
- ODUflex support
- Full OTU-2/ODU2/OPU2 OH processing
- ITU-T G.709 and ITU-T G.798 recommendation compliance
- Supports IEEE 802.3 and 802.3ba Ethernet specifications
- GFP compliant with ITU-T G.7041 and G.supplement43
- Generic CPU interface for control and monitoring

Key Features

- Flexible 10G OTN IP solution of transponder, regenerator, muxponder, or ADM applications.
- Choice of Enhanced FEC or G.709 FEC
- Suitable for both FPGA and ASIC implementations

10G OTN IP Application



OTN Standards Support

Framing

- Frame alignment signal (FAS) used to frame up and to identify out-of-frame (OOF) and loss-of-frame (LOF) conditions
- Multi-frame alignment signal (MFAS) byte
- OTL4.10 – Lane alignment signal byte in the FAS

OTUk section overhead monitoring (k=1..2)

- Trail trace identifier (TTI) monitoring
- BIP-8
- Backward error indication (BEI)/backward incoming alignment error (BIAE) monitoring
- Backward defect indicator (BDI) monitoring

ODUk path overhead monitoring (k=0..2, flex)

- TTI, BIP-8, BDH, BDI, and BEI monitoring
- Tandem connection monitoring (TCM)
- Delay measurement insertion/monitoring

OPUk path overhead monitoring (k=0..2)

- Payload structure identifier (PSI)
- Payload type (PT)
- Justification control (JC)

Ethernet LAN PHY Support

Altera's 10G OTN IP solution supports Ethernet physical coding sublayer (PCS) and media access controller (MAC) statistics monitoring and status per IEEE802.3.

Forward Error Correction

- G.709 Forward Error Correction or Enhanced Forward Error Correction.
- FEC alternatives include ITU standards based codes (I.4, I.7, I.9) as well as high performance proprietary codes
- Altera offers a variety of choices for Enhanced FEC including standards based FEC algorithms with greater than 9.2dB of coding gain and 7% overhead.

SDH/SONET

Altera's solution supports standard SONET/SDH section path and line overhead monitoring.

GFP Mapping

In compliance with ITU-T G.7041 and ITU-T G.Supplement 43 recommendations, Altera's 10G OTN IP solution supports Ethernet LAN standard GFP mapping into OTU-2, GFP mapping per G.sup plement-43, and GFP LAN transparent mapping into OTU-2 overclocked with and without fixed stuffed bytes (OPU1e and OPU2e).

ODUMux

The ODUMux provides n-stage multiplexing capability for mapping/demapping low-order (LO) ODUs into high-order (HO) ODUs for direction towards the optical modules or towards the switch fabric interface through the GSAR block and Interlaken interface. Altera's 10G OTN IP solution accommodates both AMP mapping and GMP mapping.

Want to Dig Deeper?

For more information about Altera's 10G OTN IP solution, please contact your Altera sales representative or FAE, or visit **www.altera.com**.

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