Intel® Aggregation Solution for Ultra Long-Haul Transmission

Utilizing Intel® IXF30007, IXF6192, LXT16748/49 and LXT16596/97

Application Overview

The explosive growth of Internet and data services have been the driving force behind the need for an optical networking infrastructure and network architectures that map easily to the long distance characteristics of data flows. Internet and network infrastructure solutions must:

- Allow a variety of heterogeneous types of signals to be transported directly across multiple wavelengths on optical backbones.
- Enable flexible and transparent management of the Operation, Administration, Maintenance and Provisioning (OAM&P) information in each optical link and each wavelength as a discrete optical channel.
- Have the ability to aggregate existing SONET/SDH networks to the ultra long-haul Optical Transport Networks (OTN) so equipment manufacturers can improve system performance and reduce costs.

Intel's highly integrated and flexible aggregation solution for ultra long-haul transmissions combines the Intel® IXF30007 enhanced digital wrapper with the Intel® IXF6192 OC-192 bandwidth manager, Intel® LXT16748/49 and LXT16596/97 Serializer/Deserializer (SerDes) chipsets. This solution allows equipment manufacturers to quickly design and aggregate existing SONET/SDH networks to ultra long-haul OTN over thousands of kilometers.

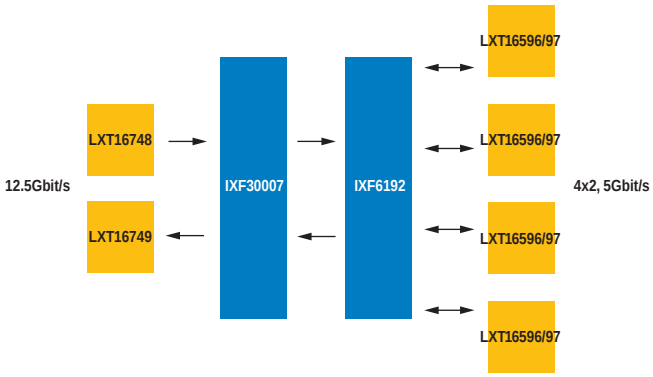
The Intel IXF6192 is a stand-alone OC-192/STM-64 SONET/SDH Overhead Termination (OHT) device as well as an OC-48 to OC-192 multiplexer with STS-1 level cross connect granularity. The IXF6192 incorporates all STS-192/STM-64 and STS-48/STM-16 SONET/SDH standards requirements for add/drop multiplexers and cross connect equipment and allows full STS-1 level pointer processing for inter-network connectivity and re-timing. This allows full implementation of cross connect and ADM functions with one device.

The Intel IXF30007 targets optical transmission applications where the coding gain achieved by standard Forward Error Correction (FEC) algorithms does not meet ITU-T G.975 or ITU-T G.709 standards. The core FEC technology is the concatenation of two Reed-Solomon codes, with inner and outer codes that are both configurable in their error correction capability and block length. Outer and inner RS-codes are concatenated by the use of an interleaver, which allows correction of high input-error rates as well as burst errors typically found in multiple-wavelength-DWDM systems. The Intel IXF30007 supports coding gain configuration between 0 and 30% overhead.

The Intel 12.5G LXT16748/49 and LXT16596/97 OC-48 are high performance MUX/DEMUX chipsets based on well-proven silicon bipolar technology. They are fully ITU-T and OIF compliant and offer the performance, stability and reliability that customers require for optical communication systems.

Intel's knowledge of ultra long-haul OTN, with the advantages of Intel SONET/SDH building blocks solutions, provides a successful solution for aggregation of existing SONET/SDH networks to the incoming OTN for ultra long-haul transmissions. This allows customers to implement their equipment with very high integration as well as a high level of flexibility and performance.

Application Block Diagram



Intel® Internet Exchange Architecture

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Features	Benefits
■ Bridges SONET/SDH networks to ultra long-haul OTN	■ Existing SONET/SDH networks can be reutilized, providing cost savings for equipment manufacturers
■ True OC-48/12 to OC-192 aggregation.	■ Existing OC-48/12 networks can be reutilized
■ Enhanced FEC capability (9dB of coding gain)	■ Cost effective optics; increased carrying capacity and robustness on existing fiber
■ OC-192/STM-64 client type processing related to OTN functions and applications	■ Compliance with existing standards reduces development time
■ Bi-directional solution (synchronous or asynchronous)	■ Compact system design, reduced cost, lower power consumption, different clocking schemes from which to choose
■ High jitter performance solution	■ High integration, better system performance

Support Collateral

- Intel® IXF6192—Product Brief, Data Sheet, IXD6192 Evaluation Board, FAQs, Software Drivers
- Intel® LXT16748/49—Product Brief, Data Sheet, LXD90748/49 Evaluation Board
- Intel® LXT16596/97—Data Sheet, LXD90596/97 Evaluation Board
- Intel® IXF30007—Product Brief, IXD80103 Evaluation System with GUI, FAQs
- Solutions for SONET/SDH Aggregation to OTN Application Brief—Intel IXF6192, Intel LXT16596/97
- Building Block Solution for SONET/SDH Network Elements and Aggregation Application Brief—Intel IXF6192, Intel LXT16596/97
- Ultra Long-Haul G.709 Optical Transport Network Node Interface Elements and Interconnects Application Brief—Intel IXF30007, Intel LXT16748/49

Intel® Internet Exchange Architecture

Intel® Internet Exchange Architecture is an end-to-end family of high-performance, flexible and scalable hardware and software development building blocks designed to meet the growing performance requirements of today's networks. Based on programmable silicon and software building blocks, Intel® IXA solutions enable faster development, more cost-effective deployment and future upgradability of network and communications systems. Additional information can be found at www.intel.com/IXA

Intel Access

Developer's Site	http://developer.intel.com
Intel® Internet Exchange Architecture Home Page	http://www.intel.com/IXA
Networking Components Home Page	http://developer.intel.com/design/network
Other Intel Support:	http://developer.intel.com/design/litcentr
Intel Literature Center	(800) 548-4725 7 a.m. to 7 p.m. CST (U.S. and Canada) International locations please contact your local sales office.
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