

## OTN Family | 100G SAR and Packet Mapper for P-OTS | TPOC415

Altera's OTN SoftSilicon® Family provides a complete family of optical network processors for metro/core OTN and packet networks covering applications from network interfaces over transponders and muxponders to large OTN cross connect or Packet-Optical Transport Systems (P-OTS).

The Altera SoftSilicon® solution provides maximum performance while optimizing customers' time-to-market, flexibility, risk profile, and cost-over-lifetime.

### Family Key Features

- All OTN networking applications covered
- Latest OTN/packet standards supported
- Maximum flexibility provided
- Low risk for system vendors and end users
- Low development cost and total cost of ownership
- 2.5 Gbps – 100 Gbps bandwidth
- G.709 OTN mapping, multiplexing, cross-connection, framing and FEC
- Client ports configurable to any rate and any protocol
- Support of ODU0 and ODUflex
- Built-in ODU cross connect for efficient sub-wavelength networking
- Stand-alone and switch-fabric applications
- Maximum flexibility and low risk for system vendors and end users
- Advanced and easy-to-use software API

### All Applications

Altera provides standard solutions for all applications in the packet optical space, ranging from simple, but efficient, framer/mapper interface components over stand-alone transponder and muxponder systems to 100G capacity, high density line cards on ODU cross connect and P-OTS.

### Fastest time-to-market

The Altera SoftSilicon® model with standard devices with a well-defined set of features, pin-out and software API validated on reference hardware guarantees shortest time to market.

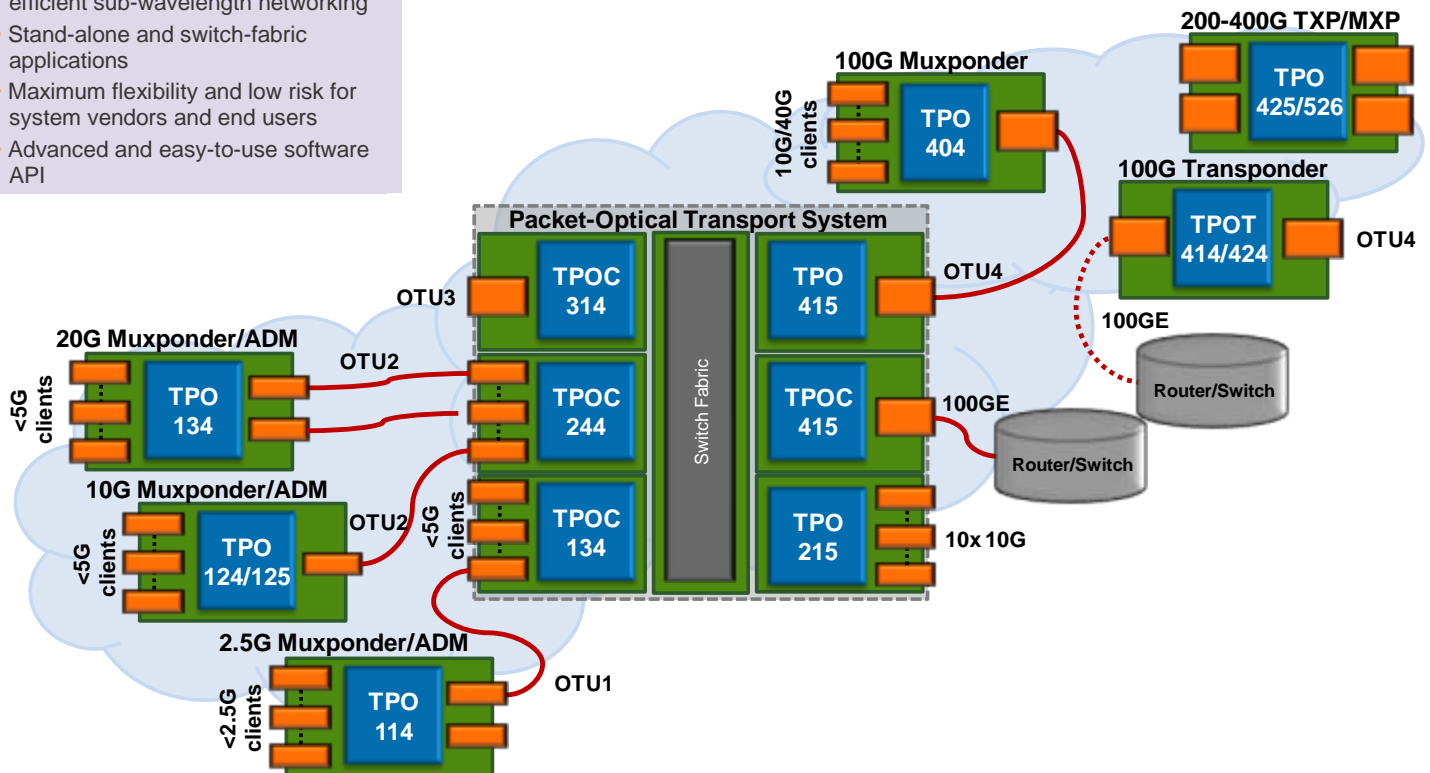
### Lowest Risk

Because SoftSilicon® devices have been built and validated on reference platforms that closely resemble the target application they minimize the

development risk for system providers. The FPGA platform mitigates the risk from new or changing requirements from end-customers or standardization bodies.

### Low Development and Maintenance Cost

Altera provides an easy-to-use unified software API for the various solutions even when chip sets are used. This makes it efficient for software teams to integrate their solutions into the system software and makes software maintenance much easier, particularly if hardware solutions are migrated to more integrated implementations and new process nodes over time.



# TPOC415 | 100G SAR and Packet Mapper for P-OTS

## Specifications

### Interfaces

- Interlaken, 24 lane @ 6.25 Gbps or 12 lanes of 12.5 Gbps/10.125 Gbps, 82 channels, 100G OTN capacity / 100GE packet capacity, any mix of packet and OTN
- 12x 11.4 Gbps Mate

### SAR Function

- 100G capacity SAR function for ODUk/flex over packet in accordance with OIF IA

### Packet Mapping

- 100GE capacity
- 80 channel Packet → GFP-F → ODUk/flex, any k, any flex
- 10x ETH Packet → 10GE MAC/PCS → ODU2e BMP mapper

### OTN Overhead

- Full OTN overhead processing at TCM (1 - 6) and PM levels for ODUk/flex
- Full OTN overhead add/drop

### Driver Software

- Driver API software provided for easy integration with application layer software

## TPOC415 Applications

The figure below illustrates applications of TPOC415.

To the left is shown how the TPOC415 processor can work as a 100G packet mapper on a server or client switch card to map Ethernet or MPLS channels from an NPU or switch to ODUk/flex containers before they are cross-connected / protected by an ODU cross-connect system.

For hybrid switching systems based on packet switch fabrics with Interlaken interface TPOC415 will work in conjunction with TPO415 to implement an OTU4 line card with ODUk/flex to ODU4 multiplexing, segmentation-and-reassembly (SAR) function for cross-connection of the ODUk/flex channels by means of the switch fabric and a packet mapper function for mapping of ETH/MPLS packets from the switch fabric.

In a similar manner the TPOC415 device can work together with the TPO215 processor to implement high density 10G cards with ODUk multiplexing to ODU2, with mapping 10G clients to OTN or with pure Ethernet switching interfaces in any mix.

## TPOC415 Functions

The TPOC415 contains a 100G SAR function.

The SAR function will segment the ODUk signals into cells with a payload size below 256 bytes and with header information on e.g. timing, packet length, sequence number and client status. The ODUk signals are then transported over logical channels of the Interlaken interface. On the egress side there is a buffer to compensate for different cell delays through the switch fabric.

Another part of TPOC415 is the packet mapper.

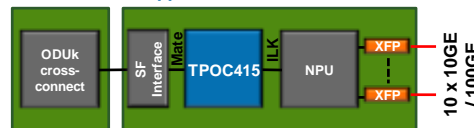
Ethernet/MPLS packets can be GFP-F encapsulated and mapped into ODUk/flex. Up to 80 channels and any k, any flex-size is supported.

Alternatively Ethernet packets may go through a 10GE MAC/PCS function and be mapped synchronously into ODU2e containers as a Constant Bit Rate (CBR) signal.

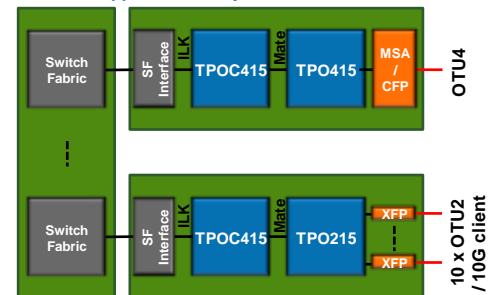
TPOC415 supports any mix of ODUk channels whether they are passed through the SAR function or terminated in the packet mapper functions.

## TPOC415 Applications

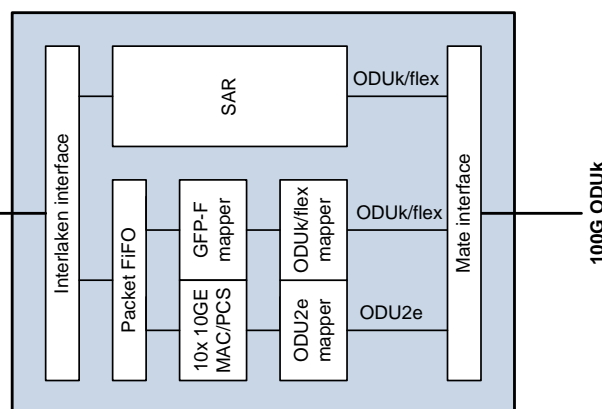
### TPOC415 datamapper in OTN cross-connect



### TPOC415 application in hybrid P-OTS



## TPOC415 Block Diagram



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