

Gigabit Ethernet to SONET 10:1 Multiplexer

The GEOS-10 IP core multiplexes GE traffic into a single Packet over SONET (POS) stream, using frame-mapped GFP (Generic Framing Procedures). The GEOS-10 core is designed to interface with POSPHY Level 4 cores in order to interface to Gigabit and SONET (OC-192) PHY chips.

Features

- Supports up to OC-192 bandwidth
- Multiplexes up to 10 ports of Gigabit Ethernet traffic into SONET
- Configurable destination port address
- Complies with Frame Mapped Generic Framing Procedures from ITU-T.
- A Link Layer function
- Provides GE Traffic Statistics per port
- Plug & Play with POS-PHY Level 4 or POS-PHY Level 3 cores for variety of system solutions with different bandwidths
- Verilog HDL register transfer level (RTL) code available

Interface and Protocols

- Atlantic Interface
- AIRBus: 16-bit slave
- Frame Mapped GFP

Block Diagram

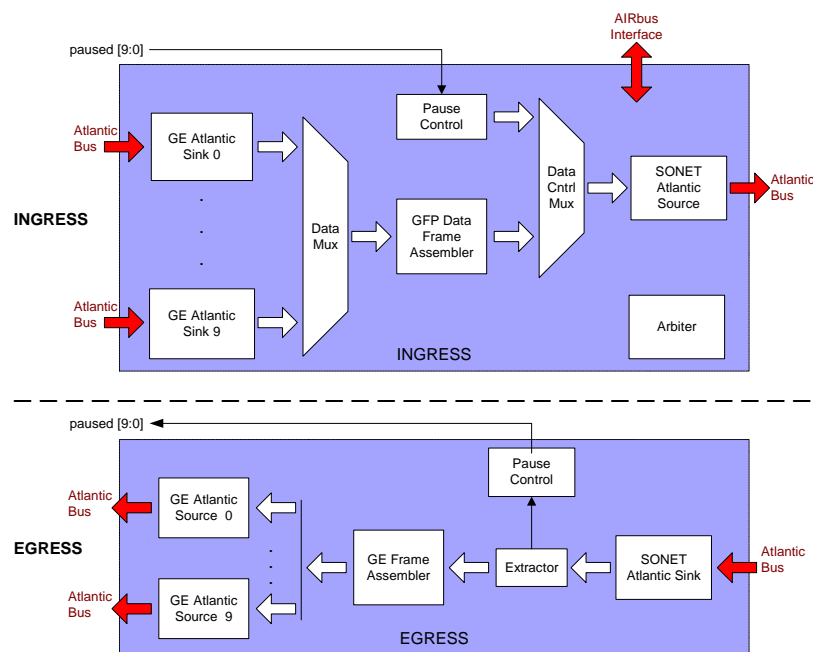


Figure 1: GEOS-10 core

INGRESS: Ethernet-to-SONET Flow Control

- Controlled by ESMUX module
- Automatic generation of GFP header to packet w/ destination port ID
- Pause information transfer to destination ports

EGRESS: SONET-to-Ethernet Flow Control

- Controlled by SEDEMUX module
- De-multiplexes traffic from SONET side into 10 GE ports
- Routes packets to their corresponding ports
- Extracts pause information from control packets
- Asserts/de-asserts "pause" signal on each GE port

System Implementation

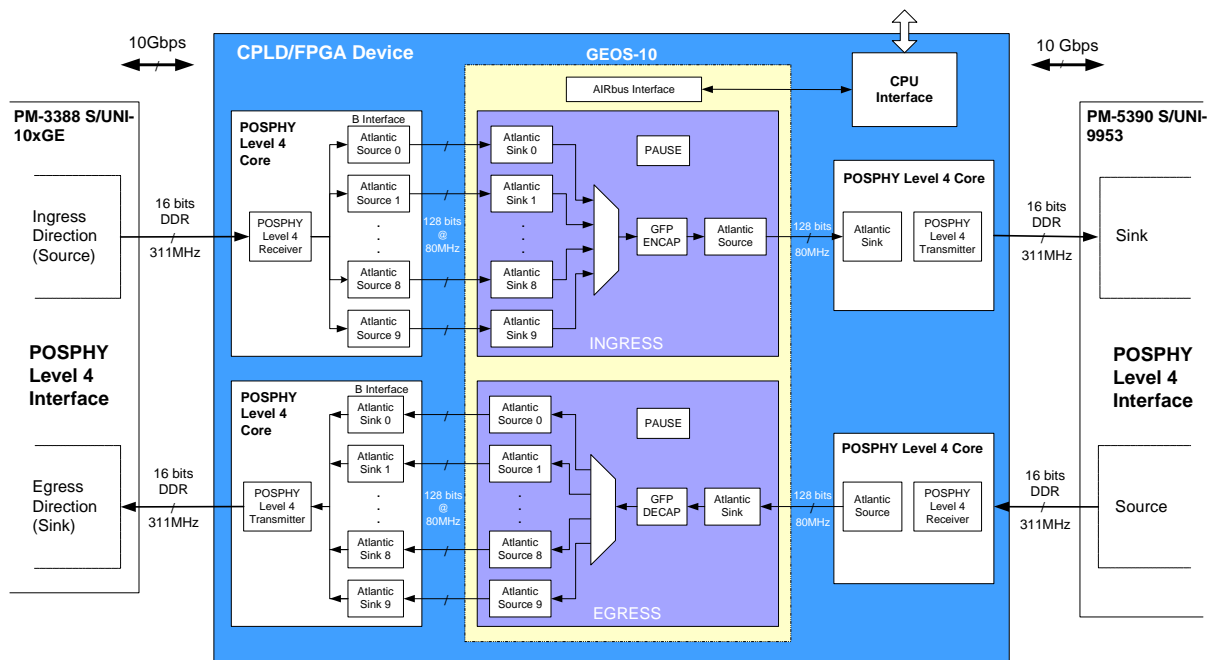


Figure 2: GEOS-10 core in system

The system illustrated in Figure 2 contains the following cores:

- 1) GEOS-10 core
- 2) POS-PHY Level 4 Core, in RX mode, interfacing to a 10x1GE multi-port capable PHY. This core is interfaced to the GEOS-10 core through 10 Atlantic Interfaces.
- 3) POS-PHY Level 4 Core, in TX mode, interfacing to a 10x1 GE multi-port capable PHY. This core is interfaced to the GEOS-10 core through 10 Atlantic Interfaces.
- 4) POS-PHY Level 4 Core, in TX mode, interfacing to an OC-192 single port PHY. This core is interfaced to the GEOS-10 core through a single Atlantic Interface.
- 5) POS-PHY Level 4 Core, in RX mode, interfacing to an OC-192 single port PHY. This core is interfaced to the GEOS-10 core through a single Atlantic Interface.
- 6) CPU Interface Core, interfacing to the GEOS-10 through an AIR-Bus Interface.