

## Gigabit Ethernet to SONET 2:1 Multiplexer

The GEOS-2 IP core multiplexes GbE and Fast Ethernet traffic into a single SONET stream, using frame-mapped GFP (Generic Framing Procedures). The GEOS-2 core is designed to interface with a 2x1GbE capable MAC/PHY (PMC-Sierra PM3386 S/UNI<sup>®</sup>-2xGE and a 2.488Gbit/s SONET/SDH Framer device (PMC-Sierra PM5381 S/UNI<sup>®</sup>-4x622), using Altera<sup>®</sup> POS-PHY Level 3 cores. The core is optimized for the Altera<sup>®</sup> Cyclone<sup>™</sup> device architecture.

Features	Interface and Protocols
<ul style="list-style-type: none"> <li>• Supports up to OC-48 bandwidth</li> <li>• Multiplexes up to 2 ports of Gigabit Ethernet (GbE) traffic SONET</li> <li>• Side band full duplex pause flow control</li> <li>• Configurable destination port address</li> <li>• Complies with Frame Mapped Generic Framing Procedures from ITU-T.</li> <li>• Provides GbE Traffic Statistics per port</li> <li>• Plug &amp; Play with Altera<sup>®</sup> POS-PHY Level 3 cores and Altera<sup>®</sup> Cyclone, scalable to 2 Gig-E</li> <li>• Optimized for integration with Dual-Port capable GbE MAC/PHY (PMC-Sierra PM3386 S/UNI<sup>®</sup>-2xGE) and a 2.488 Gbit/s SONET/SDH Framer (PMC-Sierra PM5381 S/UNI<sup>®</sup>-4x622)</li> <li>• Encrypted Netlist available</li> </ul>	<ul style="list-style-type: none"> <li>• POS-PHY Level 3</li> <li>• Atlantic Interface</li> <li>• AIRBus: 16-bit slave</li> <li>• Frame Mapped GFP</li> </ul>

## System Implementation

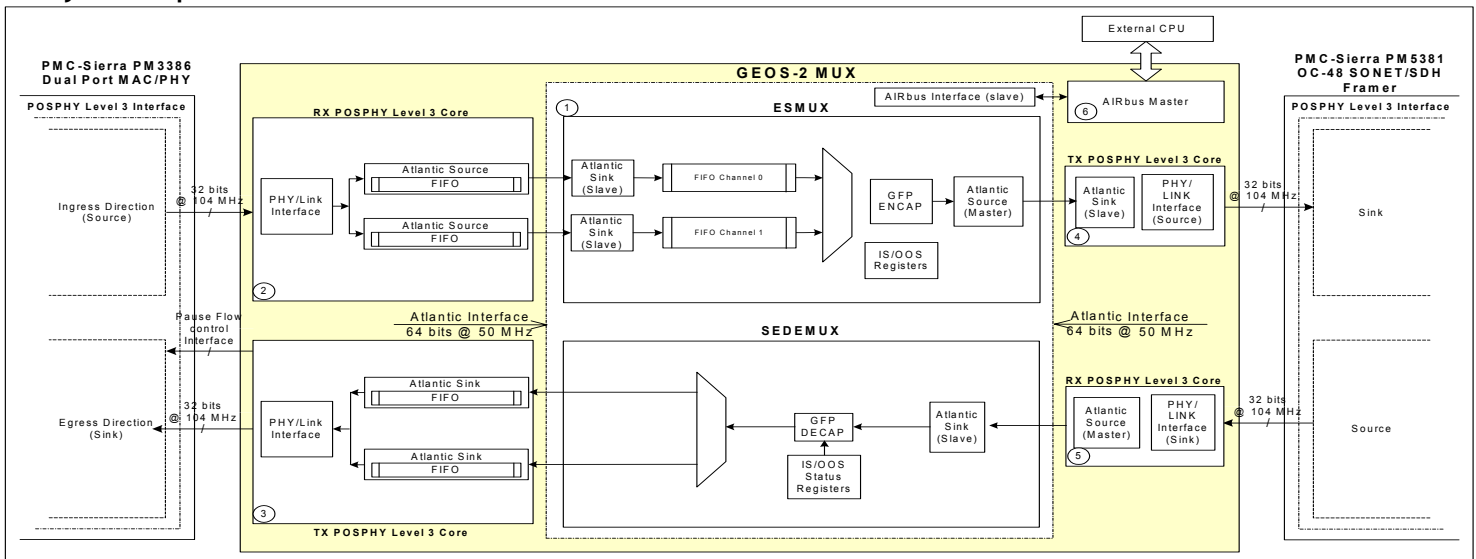


Figure 1: GEOS-2 Architecture

Data Flow	GEOS-2 Architecture Blocks
<p><b>INGRESS: Ethernet-to-SONET</b></p> <ul style="list-style-type: none"> <li>• Controlled by ESMUX module</li> <li>• Automatic generation of GFP header with destination port ID</li> <li>• Pause information transfer to destination ports</li> </ul> <p><b>EGRESS: SONET-to-Ethernet</b></p> <ul style="list-style-type: none"> <li>• Controlled by SEDEMUX module</li> <li>• De-multiplexes traffic from SONET side into 2 GbE Routes packets to their corresponding ports</li> <li>• Extracts pause information from control packets</li> <li>• Asserts/de-asserts “pause” signal on each GbE port</li> </ul>	<ol style="list-style-type: none"> <li>1) GEOS-2 core</li> <li>2) POS-PHY Level 3 Core, in RX mode, interfacing to a 2x1GbE capable MAC/PHY. This core is interfaced to the GEOS-2 core.</li> <li>3) POS-PHY Level 3 Core, in TX mode, interfacing to a 2x1GbE capable MAC/PHY. This core is interfaced to the GEOS-2 core.</li> <li>4) POS-PHY Level 3 Core, in TX mode, interfacing to an OC-48 single port SONET/SDH framer. This core is interfaced to the GEOS-2 core.</li> <li>5) POS-PHY Level 3 Core, in RX mode, interfacing to an OC-48 single port SONET/SDH Framer. This core is interfaced to the GEOS-2 core.</li> <li>6) CPU Interface Core, interfacing to the GEOS-2 through an AIR-Bus Interface.</li> </ol>