



*Flexible, Scalable, and Ready for Deployment*

## GPON Solutions from Altera

While meeting new standards and time-to-market requirements remains important, you also need to lower cost and power consumption in your gigabit passive optical network (GPON) or Ethernet passive optical network (EPON) applications. Our transceiver FPGAs and ASICs enable flexible, scalable platforms that meet all of these challenges for a variety of GPON and EPON applications and functions.

Our newest transceiver devices—Stratix® IV GX FPGAs, Cyclone® IV GX FPGAs, and HardCopy® IV GX ASICs—join a custom logic portfolio that delivers transceiver speeds from 155 Mbps to 11.3 Gbps, with the capability to support 2.5G, 5G, 10G, 20G, and 40G applications. All families feature a wide range of logic elements to support increasing port densities in GPON systems platforms.

To further save on time and costs, we offer with our partners a variety of intellectual property (IP) cores. So, whether you need building blocks or custom solutions, you'll find design resources to raise your productivity.

### Applications

- Optical line termination (OLT)
- Optical network termination (ONT)
- Multi-dwelling unit (MDU)
- Multi-service access equipment

### Functions

- 2-Gbps to 40-Gbps packet processing
- 1-Gbps, 2.5-Gbps, and 10-Gbps Ethernet media access control (MAC)
- 1-Gbps, 2.5-Gbps, and 10-Gbps GPON MAC
- 2-Gbps to 40-Gbps traffic aggregation and management
- 2.5-Gbps and 10-Gbps Reed-Solomon forward error correction (FEC)
- 2.5-Gbps and 10-Gbps advanced encryption standard (AES)
- Flexible data rate Ethernet in backplane, supporting standards including Gigabit Ethernet, XAUI, and Interlaken
- Dynamic bandwidth allocation (DBA)

### GPON OLT Line Card Requirements

Technical Requirements	Business Requirements
<ul style="list-style-type: none"> <li>• Packet processing               <ul style="list-style-type: none"> <li>- Interworking</li> </ul> </li> <li>• OLT MAC               <ul style="list-style-type: none"> <li>- 1.25/2.5G GPON</li> </ul> </li> <li>• Traffic management               <ul style="list-style-type: none"> <li>- Proprietary techniques</li> </ul> </li> <li>• Backplane interface               <ul style="list-style-type: none"> <li>- Non-standard backplanes</li> <li>- Backwards compatibility</li> <li>- Gigabit Ethernet</li> </ul> </li> <li>• Chip-to-chip interconnect               <ul style="list-style-type: none"> <li>- Bridging</li> <li>- Serial protocols</li> </ul> </li> <li>• Burst-mode compliant transceiver</li> <li>• Increased port density</li> <li>• New standard for 10G GPON and 10G EPON</li> </ul>	<ul style="list-style-type: none"> <li>• Support evolving requirements</li> <li>• Meet aggressive cost/power budgets</li> <li>• Reduce total cost of ownership</li> <li>• Accelerate time to market</li> <li>• Deliver scalable architecture</li> <li>• Develop competitive differentiation</li> <li>• Manage risk</li> </ul>

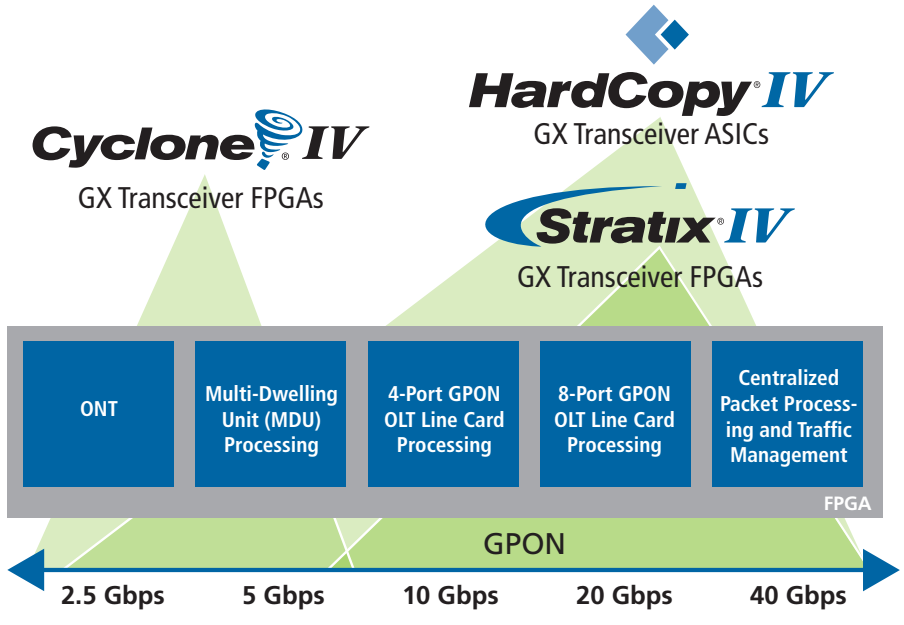
### Cost and Power Savings

A cost-effective option for ONT and MDU applications is the Cyclone IV GX FPGA with embedded 3.125-Gbps transceivers. The Cyclone IV GX FPGA requires only two power supplies in a substantially simplified power distribution network, and can save you time, board space, and costs.

Another cost-effective option is to prototype your design in Stratix IV FPGAs. When you are ready for volume production, migrate your design to a HardCopy IV GX ASIC. This seamless design flow results in an architecture that's high in performance and low in both cost and power consumption for applications such as optical network termination (ONT).

## GPON Platforms

Altera's transceiver-based custom logic portfolio supports a cost-effective platform for GPON applications.



### Altera IP partners for GPON applications

- Sarance Technologies
- Ethernity Networks
- MoreThanIP
- GDA Technology

### Altera and Partner Offerings for Your GPON Application

GPON Application	Solutions
PON MAC	<ul style="list-style-type: none"> <li>• GPON MAC</li> </ul>
Ethernet MAC	<ul style="list-style-type: none"> <li>• 10/100/1000 MAC and 10-Gbit MAC</li> </ul>
Encryption	<ul style="list-style-type: none"> <li>• AES cores</li> </ul>
FEC	<ul style="list-style-type: none"> <li>• Reed-Solomon FEC</li> </ul>
Traffic management	<ul style="list-style-type: none"> <li>• Scalable traffic management reference designs and IP cores</li> <li>• High-speed packet memory controllers</li> <li>• Multi-level schedulers</li> <li>• Queue managers</li> </ul>
Packet processing	<ul style="list-style-type: none"> <li>• Packet processing modules</li> <li>• Complete packet processor</li> </ul>

### Want to Dig Deeper?

If you have wireline system design questions or ideas to share, please contact your local Altera FAE or sales representative, or visit [www.altera.com/wireline](http://www.altera.com/wireline).

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