



*Enabling a High Level of System Integration
and the Flexibility to Future Proof and Differentiate*

Stratix V FPGAs for Next-Generation PON Designs

Passive optical network (PON) technology is emerging as a key access technology due to its scalability and cost-effectiveness. The demand generated by consumer and business applications for more bandwidth and service diversity brings the need for new PON standards. As the next-generation PON requirements are being finalized, it is important to have a platform that not only meets the requirements, but also flexible to the future enhancements of the standards.

FPGAs such as Altera's 28-nm Stratix® V devices can play a key role in your next-generation PON systems. The flexibility of FPGAs provides an ideal platform for future-proof designs and allows you to implement unique features to differentiate against your competitors.

Single-Chip Next-Generation PON OLT Solution

Most of the current PON optical line terminal (OLT) line cards deployed in the network today utilize multiple components to achieve the required functionality. Altera's Stratix V FPGAs bring an unprecedented level of system integration on one device for your next-generation PON OLT line card through the following features:

- Abundant resources, with a high logic element (LE) count and large on-chip memory capacity
- Robust 14.1-Gbps transceivers, with native PON burst mode and 10GBASE-KR backplane support
- High-performance external memory interfaces

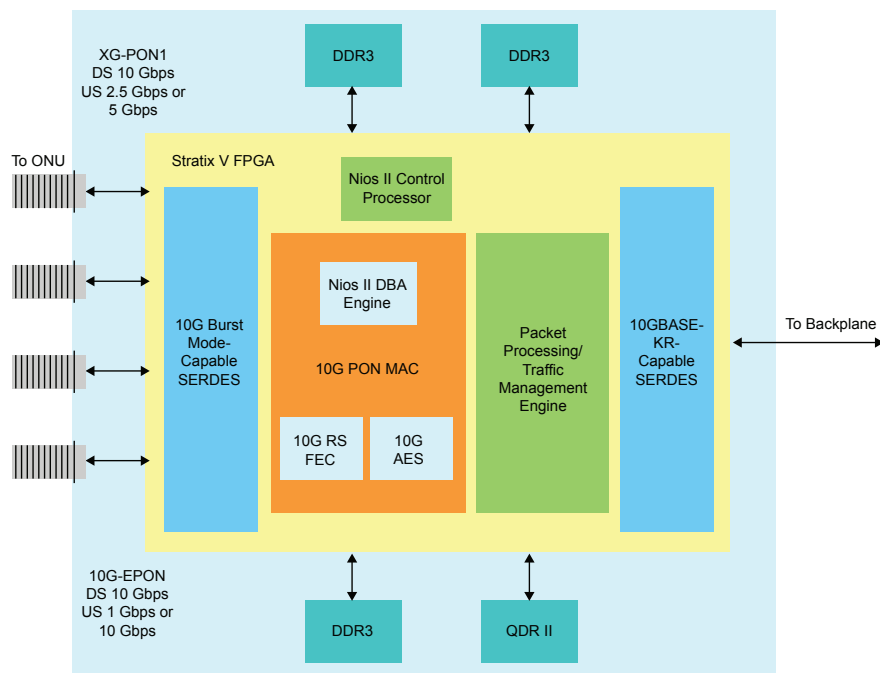
With these features and a list of intellectual property (IP) cores from Altera and our partners, you can implement the following functions—all on a single chip:

- An external PHY device
- A PON media access control (MAC) device
- A packet processing and traffic management engine
- A fabric interface chip

Altera and Partner IP Cores and Reference Designs

- Reed Solomon forward error correction (FEC) compiler
- Advanced Encryption Standard (AES) encryption and decryption
- Nios II soft processor for control path, dynamic bandwidth allocation (DBA), and packet processing
- Traffic management
- DDR/DDR2/DDR3 memory controllers
- Ethernet MAC
- PCI Express® protocol
- Interlaken
- IEEE 1588 Precision Time Protocol

A One-Chip Solution for 10G PON OLT Enabled on a Stratix V FPGA



With the easy-to-use partial reconfiguration capability in Stratix V FPGAs, you can easily change the core functionality of the design while other portions are still running. This enables a single programmable solution for current-generation and next-generation PON OLT systems because you can dynamically configure the lower speed ports to support higher speed in real time as your subscribers transition to the next-generation PON.

Altera's 28-nm Stratix V FPGAs help you achieve a higher level of system integration and save on the overall bill of material (BOM) cost, board space, and system power. Once the next-generation PON design stabilizes and you're ready to ramp up your design, migrating to our HardCopy® series ASICs further lowers system cost and power consumption.

Want to Dig Deeper?

For more information about Altera's solutions for your next-generation PON designs, please contact your local Altera FAE or sales representative, or visit www.altera.com/wireline.

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