

Network Timing Solutions for Next-Generation Networks



Challenges in Building Next-Generation Networks

- Delivery of high-quality video, voice, and data services over packet networks
- Transport of legacy telecom services over new packet networks
- Error-free hand-off of wireless signals between cells
- Above premium services require Accurate Time throughout the networks

Network Timing Solution based on Xilinx Spartan™-3 FPGAs

- Flexible and cost-efficient Spartan-3 FPGA accurately distributes time and frequency
- Carrier-class NTP (Network Timing Protocol) provides Stratum 3/3E timing over packet networks
- Risk mitigation through field upgrade capability

The Carrier-Class Network Timing Solution

Communication networks require accurate timing to deliver high-quality, reliable services. The Network Timing solution jointly developed by Xilinx and Brilliant Telecommunications implements carrier-class NTP (Network Timing Protocol) to provide Stratum 3/3E timing over IP networks. The programmable Xilinx Spartan-3 based solution is field upgradeable to PTPv2 (IEEE 1588 - Precision Timing Protocol version 2.0). The timing solution can also be embedded in larger Xilinx Virtex™-5 FPGAs.

Accurate Time for Wired and Wireless Networks

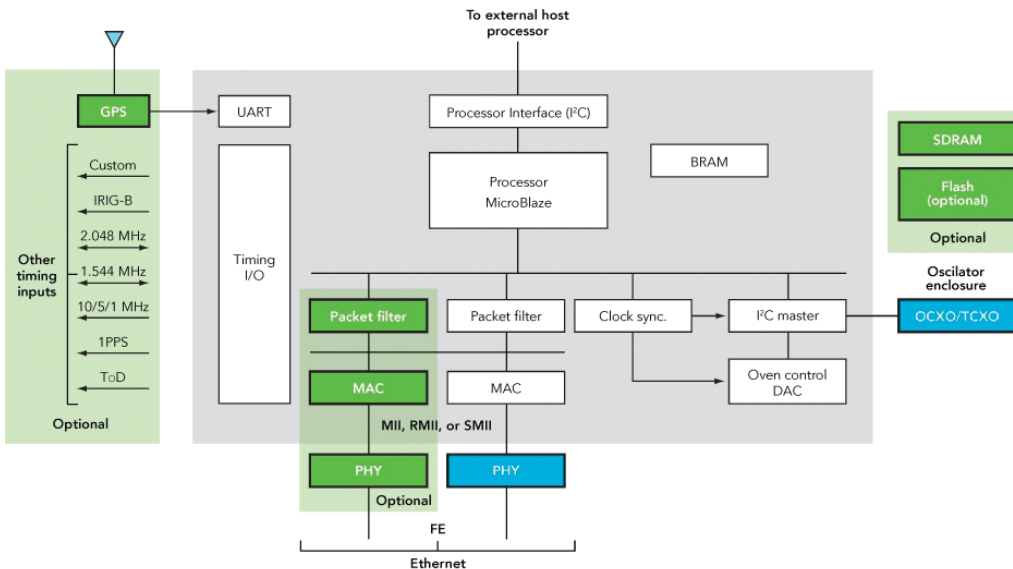
The delivery of premium IP-Television, VoIP, and Data Services requires accurate time and frequency synchronization throughout the network. Target platforms for Network Timing are packet routers/switches, carrier Ethernet, and pseudo-wire emulation equipment. Wireless networks also need accurate timing for error-free hand-off. Clean hand-offs enable carriers to offer Unbroken Voice Calls, Mobile Data, Mobile Video, and Femtocell-based Universal Internet services. The target platforms in wireless are cellular base stations and Femtocell Access Points.

Collaborating with The Timing Technology Leader

The Xilinx-Brilliant Telecommunications collaboration offers two timing products: NGNTime® and FemtoTime®. NGNTime is a generic architecture that can be quickly customized to build application-specific, accurate timing solutions. FemtoTime is a Spartan-3 based, cost-efficient, accurate timing solution for Femtocell access points.

Flexible and Customizable Platform

Network timing standards and synchronization algorithms are constantly evolving to achieve ever-higher levels of accuracy and security. The Xilinx FPGAs offer a field upgradeable platform for quick compliance with the latest standards.



High-Speed Processing of Timing Packets

At the heart of this design is the highly customizable, on-board 32-bit MicroBlaze™ soft processor. MicroBlaze eliminates the need for an external host processor allowing ultra-fast processing of timing packets. Traditional NTP solutions use software time-stamping, which induces operating system delays. The Xilinx FPGA fabric assists in hardware time-stamping of packets to eliminate operating system delays.

Numerous Standard and Custom Clocks

Telecommunication equipment requires a variety of clock frequencies for different applications. ASSP- and ASIC-based solutions cannot provide multiple frequencies without increasing package size and power consumption. The Spartan-3 network timing solution can be quickly customized to meet customers' specific clock requirements.

End-to-End Timing Solution for Assured Interoperability and Accuracy

Brilliant Telecommunications offers both server and client timing products. The availability of both server and client from the same vendor assures interoperability and high accuracy.

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For more information on Network Timing Solutions, please contact your local Xilinx sales representative.



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