

Deterministic Ethernet Solutions

Achieve highly accurate time-synchronization, behind the scenes

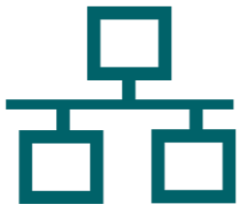
A gigabit COTS network provides a low-cost, high-speed, and scalable way to communicate amongst your devices. But without traffic scheduling and accurate time-synchronization, your devices will never communicate efficiently. Existing options for synchronizing devices require complicated software, specialized or high-end hardware, and provide limited accuracy due to non-synchronized or *unpredictable* process scheduling and preemption.



They're also burdened by slow start-up and synchronization, and often inconsistent implementation of protocols. DornerWorks provides an **IEEE standards-based MAC with traffic prioritization** and bandwidth scheduling that performs high accuracy time-synchronization "*behind the scenes.*"

Reliable deterministic communication requires:

- Low latency *and* high throughput
- Support for multiple types of heterogeneous traffic over a common network to reduce infrastructure costs
- Traffic prioritization
- Accurate time-synchronization
- Bandwidth reservation and enforcement



As demonstrated in hundreds of other successfully launched products, DornerWorks engineers are experienced at implementing time-synchronization and deterministic communication of devices across a COTS network, drawing on a mastery of **hardware, software, and custom logic development.**

DornerWorks provides an AVB-capable 1G MAC IP core with built-in high-accuracy time-synchronization and features to support deterministic communication, and help you complete your next project successfully, leaving you *free to concentrate on what you do best.*



Let's Talk

Together, we will determine a customized solution that fits your needs.

IP available soon!

Pre-orders currently
being accepted

Contact us to learn more
www.DornerWorks.com
sales@dornerworks.com
616-245-8369

Standards-based MAC IP

- Conforms to IEEE 802.3 for 1 Gbps full-duplex over copper on a COTS network
- Xilinx AMBA/AXI4 Lite and Stream interfaces
- RGMII and MDIO interfaces to COTS PHY
- Verified on quad-port Ethernet FMC mezzanine (Marvell 88E1510 PHYs) on the ZedBoard 7020

Key Capabilities

- IEEE 802.1AS-REV industrial profile (slave-only)
- Compatible with emerging TSN standards
- Synchronizes to a grandmaster with +/- 8-ns accuracy (double hop)
- Rapid time synchronization convergence in under 10s
- Conforms to IEEE 802.1Q-2014
- 8 QoS priority levels / traffic classes
- Configurable strict-priority and credit-based (FQTS) traffic schedulers for each QoS
- Ideal for both new devices and retrofitting legacy devices

FPGA Expertise at Work

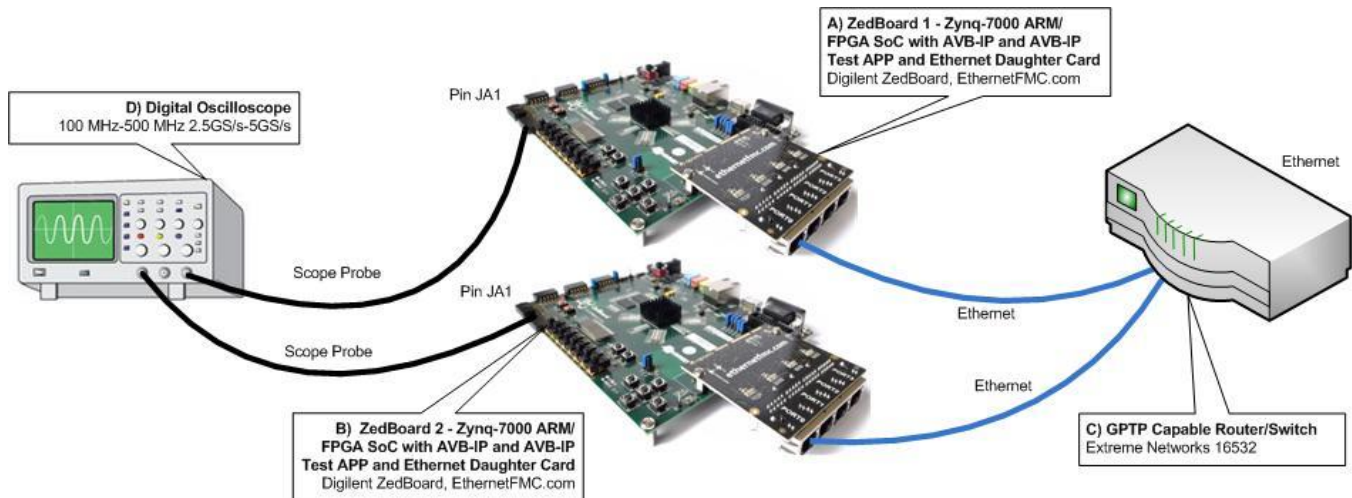
The FPGA logic in DornerWorks Deterministic Ethernet solution was developed using Xilinx Vivado for the Xilinx Zynq-7000 All Programmable SoC and has been verified on a COTS Marvell PHY.

Key Benefits

- High-accuracy automated time-synchronization of networked devices that happens “behind the scenes”
- Low latency and highly deterministic transmission
- Traffic prioritization and bandwidth reservation and enforcement (ensures most important traffic will not be affected by least important traffic)

Target Applications

- Develop simple or low-cost devices with time-synchronization and high speed network capabilities
- Adding time-synchronization and high-speed network capabilities to legacy devices
- Potential markets include:
 - Automation including industrial, manufacturing, and vehicle networks
 - Safety-critical including medical, aerospace, and defense



Launch your next project with DornerWorks

Get a trusted partner with these three easy steps:

1. We will listen to your needs and give you a quote for your project.
2. We will collaborate with you on the best ways to meet your goals.
3. You will receive a true development partnership for your product.

