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.

Contact us to learn more
www.DornerWorks.com
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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 (FQTSS) traffic schedulers for each QoS
- Ideal for both new devices and retrofitting legacy devices

IP available soon!
Pre-orders currently being accepted

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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.