XMOS Gigabit Ethernet application note

Ethernet connectivity is an essential part of the explosion of connected devices known collectively as the Internet of Things (IoT). XMOS technology is perfectly suited to these applications - offering future proof and reliable ethernet connectivity whilst offering the flexibility to interface to a huge variety of “Things”.

This application note shows a simple example that demonstrates the use of the XMOS Ethernet library to create a *gigabit* layer 2 ethernet MAC interface on an XMOS multicore microcontroller.

The code associated with this application note provides an example of using the Ethernet Library to provide a framework for the creation of an ethernet Reduced Gigabit Media Independent Interface (RGMII) and MAC interface for gigabit data rates.

The applcation note uses XMOS libraries to provide a simple IP stack capable of responding to an ICMP ping message. The code used in the application note provides both MII communication to the PHY and a MAC transport layer for ethernet packets and enables a client to connect to it and send/receive packets.

Required tools and libraries

The code in this application note is known to work on version 14.2.4 of the xTIMEcomposer tools suite, it may work on other versions.

The application does not have any dependencies (i.e. it does not rely on any libraries).

Required hardware

This application note is designed to run on an XMOS xCORE-200 series device. The example code provided with the application has been implemented and tested on the xCORE-200 Explorer development kit. There is no dependancy on this board - it can be modified to run on any xCORE-200 series device with gigabit Ethernet capability.

Prerequisites

- This document assumes familarity with the XMOS xCORE architecture, the Ethernet standards IEEE 802.3u (MII), the XMOS tool chain and the xC language. Documentation related to these aspects which are not specific to this application note are linked to in the references appendix.
- For a description of XMOS related terms found in this document please see the XMOS Glossary[1].
- For an overview of the Ethernet library, please see the Ethernet library user guide.

[1] http://www.xmos.com/published/glossary