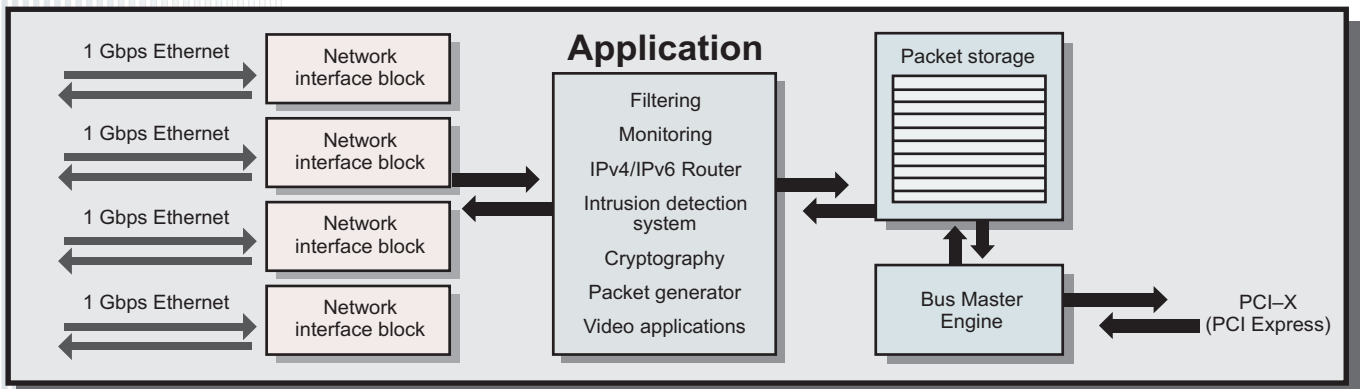


# Platform for Network Applications

The goal of the project is to realize a general platform for rapid development of network applications on the family of COMBO cards. The proposed platform includes network interface blocks (1 Gbps, 10 Gbps Ethernet), high-speed programmable bus master connection to the software layer via PCI-X or PCI Express bus and a generic interface to a potential co-processor for accelerating network application. The generic data transfer protocol between the network and co-processor interfaces allows an easy integration into the target application.

## Features

- High performance scalable platform for network applications in FPGA
- IEEE 802.3 compliant input and output network interface blocks
- Wire speed processing (4x1 Gbps Ethernet)
- High speed programmable bus master controller
- Full PCI-X and PCI Express throughput
- Set of IP cores with generic interfaces for simple data manipulation



The platform further offers a set of IP cores usable as basic building blocks for a wide range of network applications, including cores for packet analysis, classification, packet modification, precise timestamps, pattern matching, statistics etc.

## Network Interface Block

- Full IEEE 802.3 compliant MAC layer including CRC checking
- Generic packet buffers with programmable size and data width

## Busmaster Engine and High Throughput Internal Bus System

- Full duplex internal bus with packet oriented communication
- Tree architecture based on Root, Endpoints and Switches
- Link characteristics: Upstream and Downstream port, 128/64 data width at 125 MHz
- Programmable busmaster controller based on embedded PowerPC processor

## Developed IP Cores

- GENA - generic processor core dedicated for packet processing
- Precise timestamps generation
- Packet parsing
- Packet classification
- Pattern matching
- Packet editing

## Potential Applications

- NIC with hardware filtration
- Active/passive network monitoring
- Intrusion detection system
- IPv4/IPv6 router
- Packet generator
- Cryptography
- Video encryption/decryption

## HW Platform

