

Introduction

The MorethanIP Switch solution implements a highly programmable and flexible platform with an embedded RISC processor and support for the emerging IEEE1588 version 2 timing control protocol. The MorethanIP Switch provides an ideal highly integrated platform to develop a wide range of applications (Industrial, AVB) to support emerging standards (AVB, IEEE1588).

The Switch implements, per port, up to four prioritized queues, which provide Quality of Service (QoS) to critical class of services. The Switch is programmable to classify traffic from the 4-Bit VLAN priority field on the VLAN info field, 6-Bit DiffServ Layer 3 Code Point (Ipv4) or the 8-Bit Class of Service (Ipv6) and each physical port can also be weighted.

To meet the stringent latency requirements of Industrial and AVB (Audio, Video Broadcast) application and to better support triple play application, the Switch implements a low latency cut-through operation option that provides fast, and predictable, Frame forwarding.

Advanced domain and storm protection options provide efficient user traffic management and reduce superfluous traffic.

For industrial automation, Telecom or AVB applications the IEEE 1588 standard is becoming the main technology for precise time synchronization on Ethernet networks. IEEE1588 provides accurate clock synchronization for distributed control nodes to overcome one of the drawbacks of Ethernet.

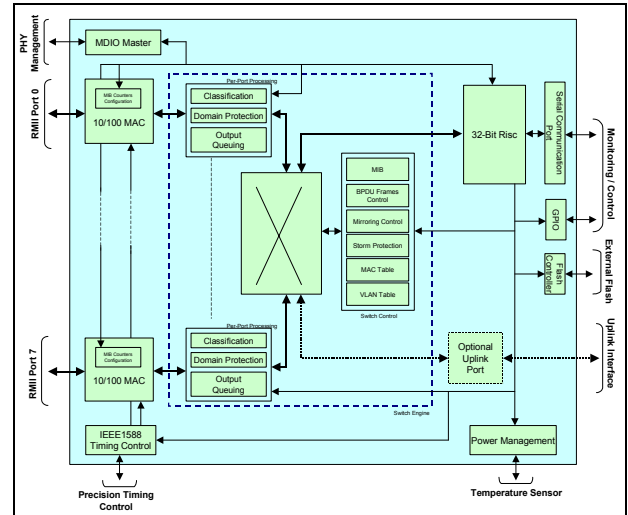
The Switch provides support for IEEE 1588 version 1 ordinary and boundary clock schemes and also implements IEEE 1588 version 2 transparent E2E (End to End) and P2P (Peer to Peer)

The Switch implements full featured 10/100Mbps Ethernet MACs compliant with the IEEE802.3-2002 standard. The MAC layer provides compatibility with Full Duplex Ethernet LANs and legacy Half Duplex Ethernet LANs.

The Switch can, optionally, implement an Uplink interface and MorethanIP provides a wide range of system (e.g. PCI Express) and Telecom interfaces (e.g. GMII, RGMII Gigabit, XGMII 10Gigabit interfaces) for unprecedented flexibility.

The embedded RISC processor can be used for management (e.g. SNMP), for high level networking functions such as Spanning Tree, Rapid Spanning Tree and can terminate TCP/IP connections. The embedded processor removes the need of an external processor.

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8-Port Switch with IEEE1588 Block Diagram

8-Port Switch with IEEE1588 Key Features

System Level

- Large scale integration with Embedded 32-Bit RISC processor
- Efficient power management with chip temperature sensing
- High port density with Low pin count RMII interfaces
- Advanced line monitoring and management features

Switch Engine

- Filters and forward traffic at wire-speed on all ports
- Layer 2 MAC switching with Learning, Aging and Migration
- VLAN switching with per input / output domain protection and domain translation for efficient user traffic management
- Up to 8K MAC address and VLAN table
- Port, VLAN or IP Based Quality of Service (QoS) for prioritization of different traffic types
- On-chip per output frame buffer with efficient queue management
- Flexible Ingress and Egress traffic Mirroring
- IEEE802.1q, IPv4 DiffServ and IPv6 COS classification with up to four priority levels
- Efficient programmable storm protection to reduce superfluous traffic
- Sub 100us low latency cut-through switching option

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Ordering Code

MTIP-8XFSX-F484

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- BPDUs processing for IEEE802.1d Spanning Tree and Rapid Spanning Tree algorithms
- Per-queue tail-drop congestion management

10/100 Ethernet MAC

- Preamble and SFD (Start of Frame delimiter) insertion and deletion
- Support VLAN and stacked VLAN according to IEEE 802.1Q
- Programmable Half Duplex or Full Duplex network operation
- Automatic Flow Control with Pause Frame generation and termination
- Per Channel MIB Network statistics

IEEE 1588 Support

- Support for all IEEE 1588 Frames for V1.0 and V2.0 applications

Embedded Processor Software Support

- Switch Management and Control Firmware
- Spanning Tree and Rapid Spanning Tree protocols
- PHY management with line diagnostic for National Semiconductor DP83849 Dual 10/100 PHY
- Can operate Third Party IEEE1588 PTP (Precise Timing Protocol) Stack
- Can operate Third Party TCP-IP Stack

Optional Uplink Interface

- Application specific custom or standard interface (e.g. PCI Express, Gigabit Ethernet, 10Gigabit Ethernet)

Development Boards

- MorethanIP Switch Stratix II development and prototyping Board