PROFINET_Switch_ IP Core
PROFINET RT CC-B Line Structure support in FPGA
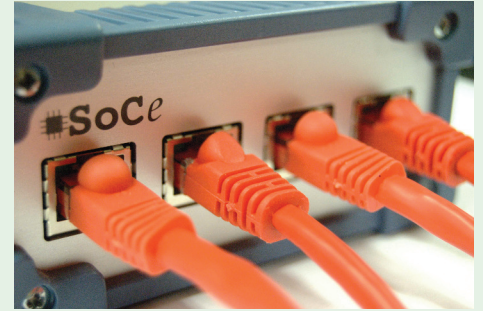
General description

The **SoC**_e_ **PROFINET**_Switch_ IP core is an Intellectual Property (IP) Core for FPGAs. It co-works with a PROFINET software stack running on an external or an internal CPU (Microblaze or ARM).

The reference design implements PROFINET RT CC-B Line Structure integrating PORT.DE Profinet Software Stack.

This switch allows wire-speed communication among all the ports. The switch buffers and verifies each frame before forwarding it.

It offers direct packet forwarding to certain port from the CPU port or it allows to be the autolearning MAC adress table who decides the destination port of frames.

PROFINET_Switch_ is an ideal solution for implementing flexible Profinet Automation equipments. It supports 10/100 Mbps Ethernet interfaces.

PROFINET_Switch_ can be used in combination with **SoC**_e_ **HSR–PRP**_Switch_ IP to introduce HSR and PRP capabilities in the ports that were required.

PROFINET_Switch_ IP key features

- *High Performance*: Hardware switching among ports implemented to allow maximum throughput.
- *Efficient*: Optimized to require few logic resources in order to allow the implementation on low-cost FPGA devices.
- *Port-based tagging support*: Identification of the received External CPU can know the source port of received frames.
- *CPU configurable*: MDIO slave interface to allow attached CPU to configure IP core and to access statistics.

- *Flexible*: Fully scalable and configurable
  - Buffers queue length.
  - Configuration and statistic registers.
- Adddress table with up to 1024 entries.
- Possible to work with different data rate (10/100 Mbps) for each port.
- *Extensible*: Zynq version available.

Applications

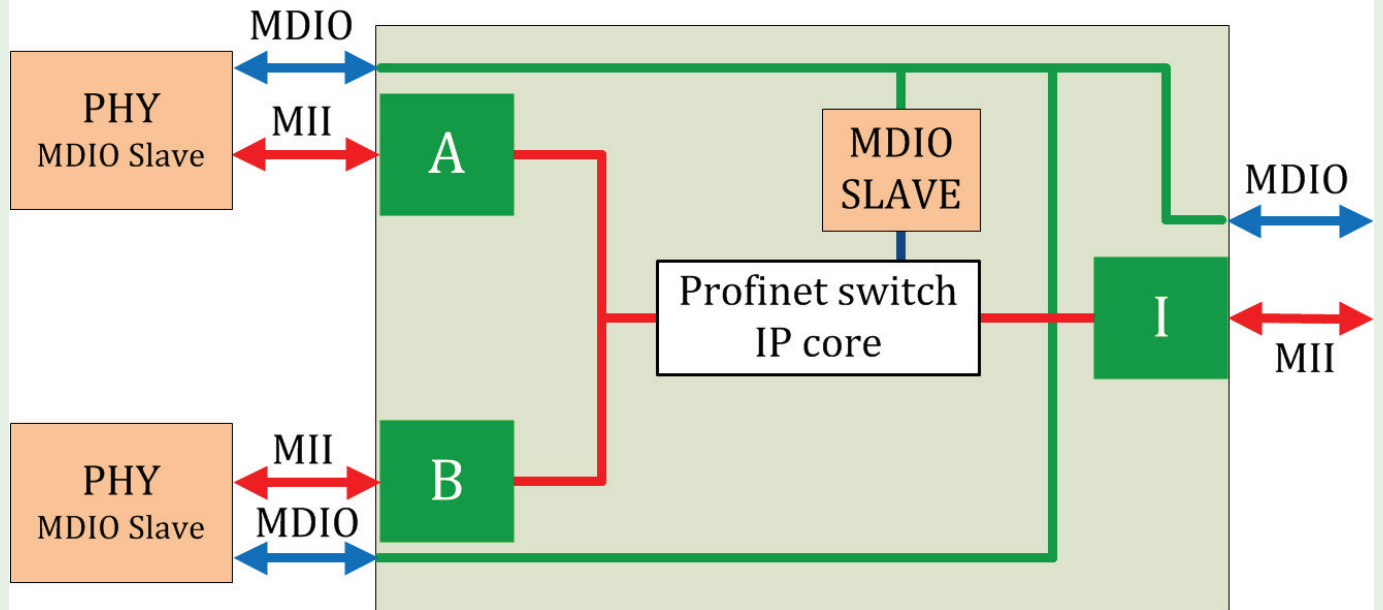**PROFINET**_Switch_ may be used in a wide range of products and applications.

- Industrial Networking
- Transportation

- Robotics
- Security
- Defense and Aerospace

Block Diagram

Reference and Evaluation Designs

Features implemented on the Reference Designs:

- 2 external port + 1 internal port switch
- Store capacity of up to 1024 MAC addresses
- MDIO slave interface

Reference Designs and Evaluation boards:

- **NET***box* : Contact **SoC***e*
- **SMART***box* : Contact **SoC***e*
- **SMART***Zynq* : Contact **SoC***e*
- ZEDBOARD: Contact **SoC***e*

Ordering information and contact

SoC*e* offers for **PROFINET***Switch* IP core the following licensing modes:

- 'One-shoot' encrypted VHDL source code - Site license
- 'One-shoot' netlist - Project License

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