



## TrustNode: Short Datasheet

Order and more information under <http://trustno.de>

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- **Atom processor** (E3845; 1.9 GHz Quad-Core with 4 GB of RAM)
  - Reference Linux distribution (OpenWRT)
  - 12 encapsulated, full functional Linux network interfaces
  - Easy software extension through packet management system and open source toolchain
  - FPGA configuration and setup through Netconf, Openflow, REST or SSH
- **FPGA** type: Xilinx Artix-7 200T: XC7A200T-2FBG676 (134.6 kLUTs, 269.2 kFFs, 12.8Mb BRAM) configured with the TrustNode router design, which can be modified or replaced by users. It consumes about 50% of the FPGA's resources
- **Ultra-low latency** of 2.5  $\mu s$  (cut through) and jitter below 1 $\mu s$
- **Interfaces** 12 Gigabit Ethernet interfaces, Console port, USB3.0 and USB2.0 ports, and SD-Card interface to the Atom processor
- **Integrated systems** monitoring and smart cooling
- **Robust design** surviving students activities
- Xilinx FPGA-based low-latency data path combined with Intel Atom processor for software-based data plane processing and for control plane processing
- Licensed reference FPGA design is a **low-latency IPv6** router/switch that can be controlled by the Atom processor, and might be extended using languages like VHDL, Verilog, HLS languages (C/C++/SystemC), or MyHDL
- FPGA design flow based on **free Xilinx Vivado Webpack** – no paid toolchain license necessary, no network connection to a license server required
- **SDN** support through OpenFlow
- **TSN** support
  - 802.1Qbv
  - 802.1Qcc
  - 802.1Qci (optional)
  - 802.1Qbu (optional)
  - 802.1Qca (optional)
- **linuxPTP** hardware-support 802.1AS(rev)
- Support of battery-backed encryption keys for the FPGA design
- **Size:** 19", 1.5U (W 440mm, H 69mm, D 228mm), 2.5 kg