

EtherCAT Approach Supported by Key TSN Switch Vendors

The approach to TSN as introduced by the EtherCAT Technology Group is now supported by key TSN technology providers and major switch manufacturers: Moxa, Hirschmann, Hilscher and Xilinx will all implement the EtherCAT TSN stream adaptation functionality in their TSN switches and infrastructure products. This will allow users to directly connect EtherCAT slave devices and entire networks to heterogeneous TSN domains without any change or modification to the EtherCAT devices.

In November 2017 the EtherCAT Technology Group (ETG) was the first major fieldbus organization to publish a TSN profile that specifies how EtherCAT will make use of TSN technologies. Because EtherCAT uses TSN streams for deterministic communication through heterogeneous network environments it is used where it makes the most sense: above the EtherCAT segments. This means that all the high-performance features of EtherCAT are fully preserved, and EtherCAT devices do not have to be modified for TSN at all. The TSN stream adaptation feature that connects the EtherCAT segment to the TSN network can be placed in the TSN switch or in the first EtherCAT device. Now, key TSN technology providers are announcing their support for this approach.

For ETG Executive Director Martin Rostan this shows that the ETG is on the right track with the organization's TSN integration approach: "Even though TSN has not yet arrived in real-world applications, key technology providers have already committed themselves to the EtherCAT approach."

Jack Lin, Product Manager at Moxa, is convinced that TSN expands the field of possible EtherCAT applications: "Moxa is dedicated to driving the evolution of the manufacturing industry by actively developing innovative technologies like TSN. TSN technology ensures reliable delivery of critical data and opens up exciting new possibilities for EtherCAT. It is for this reason that we are strongly committed to providing support for the EtherCAT TSN approach."

This is further underlined by Oliver Kleineberg, Global CTO of Industrial Networking with Hirschmann, a Belden Brand: "The TSN stream adaption functionality allows the proven and well established EtherCAT technology to seamlessly interface with TSN networks. This means EtherCAT can immediately utilize the benefits of TSN networks, creating a feasible way forward to address the requirements of demanding automation applications now and in the future."

Hilscher CEO Hans-Jürgen Hilscher adds: "Hilscher supported EtherCAT from the beginning and has seen big growth rates over the years. On the other side we see the upcoming TSN technology which brings us real-time Ethernet as part of an IEEE standard. Both technologies fit together perfectly and their combination is a great opportunity for the industrial communications market. With our network controller netX we already have the technology in-house today to build TSN switches with integrated EtherCAT bridges. That's why it is a must for us to expand our gateway portfolio with this technology."

Christoph Fritsch, Industrial IoT, Scientific, & Medical Business Unit Director of Xilinx, explains the support from Xilinx as follows: "New automation technologies need embedded platforms

with adaptable services and the right connectivity. TSN is a breakthrough that helps create new business models and EtherCAT's impressive ecosystem provides proven field devices. That's why Xilinx's engineering teams and the networking specialist company SoC-e brought EtherCAT and TSN onto Xilinx® Zynq® SoCs for a successful deployment of TSN that has already been established today.”

The EtherCAT Technology Group is coordinating the TSN-related EtherCAT specifications through a liaison with the IEEE 802.1 Working Group. As a result, the ETG Technical Working Group can access draft IEEE 802.1 specifications and ensure that the EtherCAT TSN profile follows all the latest developments. The stream adaptation feature in the profile describes the use of standard TSN features and does not make any changes to TSN, nor does it require any changes in standard EtherCAT devices.

About EtherCAT Technology Group (ETG):

The EtherCAT Technology Group is an organization in which key user companies from various industries and leading automation suppliers join forces to support, promote and advance the EtherCAT technology. With over 4,700 members from 65 countries the EtherCAT Technology Group has become the largest fieldbus organization in the world. Founded in November 2003, it is also the fastest growing fieldbus organization.

About EtherCAT®:

EtherCAT is the Industrial Ethernet technology which stands for high-performance, low-cost, easy to use with a flexible topology. It was introduced in 2003 and has been an international IEC standard and a SEMI standard since 2007. EtherCAT is an open technology: anyone can implement or use it.

➔ For further information please see: www.ethercat.org

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