Press Release

EBV Elektronik, NXP, and Fraunhofer IOSB-INA, Present Interoperability of Real-time Ethernet Protocols with Time-Sensitive Networking (TSN)

TSN demonstrator shows interoperability of different real-time Ethernet protocols on TSN

Poing, Germany, 17th December 2019 – EBV Elektronik, an Avnet company (NASDAQ: AVT), together with NXP® Semiconductors and Fraunhofer IOSB-INA, present TSN applications to support multiple real-time industrial Ethernet protocols. The TSN demonstrator is based on NXP's Layerscape LS1028A industrial applications processor, which is deployed in multiple LS1028ARDB reference design boards for the demonstrator. The microprocessor-based solution allows customers to implement TSN without using FPGAs.

"Ethernet TSN is a key technology that can enable industrial networks to support a mix of OT and IT traffic," said Christian Wiebus, NXP senior director of new business and innovation. "We are happy to work with EBV Elektronik and Fraunhofer to demonstrate TSN's potential based on the NXP LS1028A and showcase the flexibility of devices leveraging TSN."

Karl Lehnhoff, Director Vertical Segment Industrial at EBV Elektronik adds: "Our goal is to bring technology closer to our customers and demonstrations such as those developed with NXP and Fraunhofer IOSB-INA to create significant decision-making aids for customers."

Dynamic networked production, frequent reconfiguration of machines and systems, as well as the use of cloud technology and data-based smart services for Industry 4.0 applications. requires continuous, powerful, and flexible communications from the field level to the Internet, in which different protocols can be used simultaneously. Under the name Ethernet TSN, IEEE is developing standards for Ethernet-based real-time communication that can achieve this. The use of Ethernet TSN for industrial automation will be defined in the IEC/IEEE 60802 TSN-IA profile standard.

In the current demonstration, the communication class "isochronous cyclic communication with bounded low latency" is tested based on "scheduled traffic" (maximum QoS - Quality of

Service). The test network is built with components from different manufacturers (multi-vendor) and with link speeds of 100 MBit/s and 1 GBit/s (mixed link speed). The demonstration shows how several protocols (PROFINET and OPC UA) can be transmitted over a TSN network without influencing each other, even in the highest QoS class. The basic TSN mechanisms used are time synchronization, frame preemption, and time-aware traffic shaping.

"Interoperability is essential for communication solutions - with increasing networking, its importance continues to grow massively - so we test hardware and software systematically for broad interoperability. Cross-company cooperation is an important basis for the successful development and market launch of industrial communication systems," comments Carsten Pieper from Fraunhofer IOSB-INA. "The standardization process of the TSN profile for industrial automation under the IEC/IEEE 60802 standard is underway and results from projects such are crucial to developing good standards."

"Thanks to this collaboration, NXP and its partners illustrate how they can help industrial original equipment manufacturers converge industrial time-sensitive Ethernet communications to a single network, even with existing protocols," said Sylvain Gardet, director of the Industrial Competency Center at NXP. "The advanced LS1028A processor with a TSN-enabled Ethernet switch gives OEMs the capability to leverage four integrated TSN ports with built-in next-generation services such as frame preemption or cut-through switching. The LS1028A brings exceptional full TSN support with a flexible and cost-optimized 64-bit Arm®v8 architecture."

About EBV Elektronik
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