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PRESS RELEASE

Moxa Demonstrates Together With Intel and PORT Game-changing Solution for Next-level Time-sensitive Networking (TSN)

Joint Collaboration Between **Moxa, Intel and port GmbH** to Advance Deterministic Network Communication Over Standard Ethernet

Halle-Saale, Germany // Taipei, Taiwan, December 14, 2021— Moxa Inc. today announced a collaboration with Intel Corporation and port industrial automation GmbH to develop a platform that demonstrates the industry's first ready-to-use, application-to-application solution of time-sensitive networking (TSN). The solution combines Gigabit bandwidth and high performance, as well as enhanced reliability and security. The joint demonstration by an ideal combination of chip maker, device manufacturer, and software stack provider exemplifies the maturity and the potential of TSN capabilities and its readiness for being extended from wired to wireless networks. The wireless TSN will liberate standards-based, scalable, and highly flexible applications that are realizing Industry 4.0 and the Industrial Internet of Things (IIoT) everywhere.

The joint effort shows great promise that focuses on working on a truly unified and high-performance network infrastructure permitting all types of traffic to coexist. The development, one of the most complete applications of CC-Link IE TSN among the CLPA ecosystem, integrates CC-Link IE TSN-certified products, Moxa's TSN-enabled switches, Intel's latest generation of processor, 11th Generation Intel® Core™ i7 processors, and Intel I120 TSN-enabled platforms. In addition, the application is developed by port GmbH, who has one of the industry's first CC-Link IE TSN Class B-certified Master stacks and can demonstrate PROFINET capabilities over TSN through the first PROFINET CC-D remote station.

"As one of the pioneers in developing TSN standards, Moxa committed to collaborating with key industry players and customers to accelerate a unified network infrastructure for

communications at all levels including all kinds of industrial devices and protocols running on top of it," said **Zico Lee**, deputy general manager of Moxa Networking. "Working closely with Intel and port GmbH, we've achieved another milestone for advancing the development of TSN to the next stage as burgeoning consensus shows that TSN and wireless capabilities should combine to digest and react to data from multiple systems in real-time."

The unique proposition of the solution is the feasibility for the framework to integrate devices and protocols such as CC-Link IE TSN by CLPA, PROFINET over TSN (PROFINET CC-D), EtherCAT over TSN, and the upcoming OPC UA FX. There is also a neutral middleware developed for all kinds of industrial protocols over TSN to deliver synchronous communications between sensors, PLCs, and actuators, which are used in various industrial applications.

"Moxa's solution using TSN and real-time features on Intel Architecture Processors will enable the level of determinism required by Intelligent Industrial Edge systems where data is extracted, analyzed and actions applied real time. Using standard Ethernet based solutions accelerates digital transformation to Smart Factories, thus lowering total costs of ownership," said **Sunita Shenoy**, senior director of Industrial IoT Platforms, Intel.

"With TSN, there is finally an Ethernet-based technology available that can connect all kinds of devices on the factory floor using standardized Ethernet TSN infrastructure devices overcoming proprietary systems," said **Marcus Tangermann**, chief technology officer, port industrial automation GmbH. "TSN infrastructure components have better knowledge about all data streams within the network, which allows sophisticated planning of network traffic."

"The industrial Ethernet and networking expertise that Moxa brings to the industry has helped enable higher performance for precise control in manufacturing applications now and in the future, as well as higher bandwidth and real-time communications that empower evolving technologies such as edge computing, industrial AIoT, and machine vision for smart manufacturing," said **Eason Lin**, senior director of Advance Product Development, Orisol, which is a world-leading company for manufacturing equipment that produces footwear, as well as an automation solution provider, and a software and smart manufacturing solution service provider. "The collaboration announced today has also got us excited about the possibility of expanding our TSN applications to a wireless horizon."

TSN is a future-proof solution that improves determinism and reliability in industrial Ethernet-based communications across vertical markets. When it creates accurate time synchronization across a network and traffic prioritization, users can combine many types of traffic on a single network with no loss of performance. Moreover, the solution also supports time-critical, control-related tasks and improves the transparency of how information is processed to support quality and output. With the advent of the new paradigm of 5G and Wi-Fi 6/7 connectivity, it is now possible to expand deterministic communications over wireless networks.

Moxa's Commitment to the Development of Time-sensitive Networking (TSN) Technologies

Moxa has always been passionate about building innovative industrial connectivity technologies and solutions. As part of our commitment to developing TSN technologies,

Moxa is an active member of six of the world's most significant TSN interoperability testbeds to ensure that TSN solutions are stable and reliable before going to market. Moxa continuously participates in the evolution of TSN technologies, paving the way to IIoT and Industry 4.0 with unified and open standard Ethernet infrastructure for our customers. The six testbeds that Moxa participated in are:

- Industrial Internet Consortium (IIC) TSN Testbed
- Labs Network Industrie (LNI) 4.0 Testbed
- Edge Computing Consortium (ECC) OPC UA TSN Testbed
- Alliance of Industrial Internet (AII) TSN Testbed
- China Electronics Standardization Institute (CESI) TSN Testbed
- Taiwan Institute for Information Industry (III) TSN Testbed

About Moxa

Moxa is a leading provider of edge connectivity, industrial computing, and network infrastructure solutions for enabling connectivity for the Industrial Internet of Things. With over 30 years of industry experience, Moxa has connected more than 71 million devices worldwide and has a distribution and service network to serve customers in more than 80 countries. Moxa delivers lasting business value by empowering industries with reliable networks and sincere service. Information about Moxa's solutions is available at www.moxa.com.

About port GmbH

port is a leading supplier of industrial real time communication technologies like CANopen and Industrial Ethernet including the PROFINET, EtherNetIP, EtherCAT POWERLINK, CC-LinkIE TSN and TSN protocols. port GmbH has been located in Halle/Saale since 1990. For more than 10 years port has successfully provided Industrial Ethernet Technology such as PROFINET, EtherCAT, POWERLINK, EtherNetIP and CC-LinkIE TSN. port offers stacks, tools, middleware, workshops and integration support as well as custom hardware and software development, including manufacturing of electronic devices and systems.

Keywords:
Moxa, port GmbH, INTEL, CC-LinkIE TSN, PROFINET, PROFINET CC-D TSN, PROFINET TSN, PROFINET over TSN, CLPA, PNO, Intel® Core™ i7 processors, Intel I120 TSN-enabled platforms, TSN, OPC-UA, EtherCAT over TSN, EtherCAT

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