

TSN is here to give you an Edge

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Edge computing is becoming increasingly more crucial to optimizing data-driven activities, supporting the implementation of innovative digital technologies and ultimately the creation of the smart factories of the future. By processing critical data close to its source, the Edge transforms raw information into actionable insights. Advanced network technologies form the bedrock of thriving enterprises that leverage edge computing to drive their competitiveness.

Tom Burke, Global Strategic Advisor at the CC-Link Partner Association (CLPA) Americas, looks at how to reap the benefits of the Edge with advanced industrial communication solutions.

Unprecedentedly high volumes of data are being generated by smart applications and technologies, providing the foundation to create an in-depth understating of equipment status, processes and activities. This, in turn, can be translated into unique actionable insights to improve productivity, performance and efficiency. Large datasets are another raw material required by competitive enterprises. But having a solid, reliable infrastructure to share process data, information and knowledge is equally important to succeed. Moreover, Edge computing is instrumental to creating frameworks that are capable of quickly and securely evaluating data.

This technology conducts analytics for real-time decision-making at the periphery of the network, close to where data is being created, while also supporting knowledge generation by filtering what should be sent to the Cloud or other higher-level systems. As a result, the Edge can reduce latency and network costs as well as optimize bandwidth usage, increase speed, security and scalability. Even more, enhanced transparency, flexibility and availability can also be achieved.

At the cutting edge of industrial networks

In order to take advantage of all the opportunities offered by Edge computing, it is important to set up a suitable network. More precisely, the ideal solution should be able to support the key aspects of this technology.

An ideal industrial communications system should support a converged architecture that allows real time process traffic and asynchronous process data to share the same network without compromising the overall function of the system. This is achieved with a foundation of determinism, ensuring that all data types flow across the network in a predictable manner to deliver the required performance.

The key to delivering this deterministic, converged architecture is Time-Sensitive Networking (TSN). This allows the critical data running the process to coexist with the equally critical but perhaps less time sensitive data about the process. It is this latter data type that is the lifeblood of the Edge server. Using TSN means that these equally vital but very different streams of traffic can use a single network architecture, saving cost, simplifying maintenance and reducing project time.

Secondly, companies should look for an open solution that can provide maximum connectivity. This means supporting communications with different devices, whether on the shop floor or higher up in the automation hierarchy. Openness, interoperability and an integrated solution for automation on different levels are therefore essential.

The CLPA has long been able to offer enabling network technologies for Edge applications. This began with CC-Link IE open gigabit industrial Ethernet. By leveraging a token-passing method and 1 Gbit/s bandwidth. The different versions of CC-Link IE networks, which supplement each other and cover different aspects of industrial communications, could connect the various parts of an enterprise needed to create Connected Industries.



The organization's latest advancement, CC-Link IE TSN, goes even further in its ability to support Edge computing, enhancing and expanding the capabilities of this solution by adding TSN, to deliver the capabilities discussed earlier. Ultimately, by selecting CC-Link IE TSN compatible components, businesses can gain a unique, competitive edge in the marketplace.

Image captions:



Image 1: In order to take advantage of all the opportunities offered by Edge computing, it is important to set up a suitable industrial communications network. (Image source: iStock-1459581852).

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About The CC-Link Partner Association (CLPA)

The CLPA is an international organization founded in 2000, now celebrating its 20th Anniversary. Over the last 20 years, the CLPA has been dedicated to the technical development and promotion of the CC-Link open industrial network family. The CLPA's key technology is CC-Link IE TSN, the world's first open industrial Ethernet to combine gigabit bandwidth with Time-Sensitive Networking (TSN), making it the leading solution for Industry 4.0 applications. Currently the CLPA has over 4,100 corporate members worldwide, and more than 2,000 compatible products available from over 370 manufacturers. Around 38 million devices using CLPA technology are in use worldwide.

Anyone interested in joining the organization can apply here: <https://www.cc-link.org/en/clpa/members/index.html>

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