



How to preserve network bandwidth with IIoT edge IPCs

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The industrial internet of things (IIoT) and edge PCs are the buzzwords in industrial automation. Discussions about IIoT, however, often overlook the sheer amount of data that is potentially being generated by all those devices. In addition, all this data needs to be securely transmitted to and from the millions of devices already deployed today.

It's all about the data

In traditional automation systems, all the data is usually transmitted to a centralized data processing location, such as a central server or larger industrial computer (IPC). This requires a wired or wireless network connection. For distributed IIoT systems in remote areas, such as water pumping stations, oil fields, or similar assets, this might be an issue.

Providing you pass this first hurdle, the second one may be available bandwidth. If large amounts of data are being transmitted, it will reduce available network bandwidth and cause associated data delays or latency; or in the case of a network issue, it may prevent communication altogether. Lastly all this data needs to be protected from unauthorized access.

With compact IIoT-ready industrialized computers, you can distribute the processing power to the edge of the internet, also known as “the edge” for short. More importantly, you can reduce, or possibly eliminate, the transmission of large amounts of data via the cloud with the help of edge PCs that reside in remote locations.

Save the data

With an intelligent edge device, such as an edge IPC, you will no longer exclusively rely on a network connection to initiate crucial action remotely. The edge IPC will process and control the data locally, which also increases the speed of execution for critical processes by eliminating network latency.

Obviously, having a network connection via the cloud to and from these remote edge devices can be beneficial. It is no longer mandatory to be ultra-high speed, as any mission-critical tasks can be performed locally. This reduces the amount of data transmitted over the cloud, so it can help reduce the data volume, keep it more secure, and ultimately, lower the cost of data transmission itself. It also frees up the available bandwidth for other critical processes. Combine that with the potential for a lower-cost data plan, and you can achieve significant cost savings over the life span of the deployed asset

Energy-efficient, rugged and secure

Edge devices are often deployed in remote locations such as water/wastewater plants, pump stations in oil and gas applications, or in kiosks providing services to consumers. While the edge device is not directly exposed to the elements, it needs to be capable of handling the environmental conditions and provide 24/7 operation. Passively cooled, ruggedized “fanless” IPC systems featuring solid-state drives also eliminate any rotating parts, increasing uptime. Lastly a wide input voltage range and energy-efficient operation help in applications where the power is limited or comes from renewable energy sources.

Wired or wireless network connections can help to connect these remote devices to a central server for heartbeat or other diagnostics functions. While there is technically no need to transmit large amounts of data to a central location, it helps to monitor the remote assets for proper operation or predictive maintenance. If a network connection is needed, it needs to be secure. Features like integrated hardware encryption such as Trusted Platform Module support (TPM 2.0) and secure boot mechanisms should be part of an edge IPC's capabilities to prevent unauthorized data access. While these features do not replace antivirus/anti-malware software and dedicated hardware firewalls, they do provide an additional layer of security.

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An example of such an edge IPC is the new, ultra-compact embedded BL2 BPC 1500 box IPC series from Phoenix Contact. It is the perfect fit for IIoT edge applications, small machine control, or decentralized data collection/processing in remote assets.

The future is here

With IIoT in full swing, the deployment of edge IPCs has already started. Companies need to meet stricter regulations for monitoring and collecting data in the future, so the number of such devices will grow even further as more edge applications are deployed.

Preserving bandwidth by using remote IIoT edge devices like the BL2 BPC 1500 is crucial. Keeping the network connection secure is existential. Now is the time to review your edge automation needs and to future-proof them. This will ensure that your distributed assets will operate reliably and securely for their intended service lifespan.

To learn more about the new Phoenix Contact BL2 BPC 1500 edge IPC, please visit:

www.phoenixcontact.com/compactIPC

