White Paper

Edge Computing Shows IIoT Values with Instant Feedback and Response

The heated discussion around Industry 4.0 and smart factories has made the Industrial Internet of Things (IIoT) and big data analysis popular. The IIoT essence lies in providing instant response, adding values to applications through the interweaving of internet resources and data analysis. Mastering information and communications technology, Taiwan can be an IIoT leader with advantage of edge computing and IoT gateways.

Distribute Computing to the Edge for Timely Response

Despite the cloud and the Internet of Things (IoT) are in the limelight, the touchdown of big data analysis still needs to utilize field devices, according to Alex Perng, NEXCOM Chief Technology Officer.

With colossal amounts of data volume and variety, the cloud is swamped with data receiving and storing from end devices, not to mention data mining for valuable information and business intelligence which enable business owners to make timely decisions. Also factoring in data confidentiality and network availability, filtering and pre-processing field data before uploading it to the cloud for analysis would be a more feasible approach.

Edge computing is dispersedly deployed at the source of the data. With small amount of data to process, it can simultaneously filter, analyze, and interpret field data. Without waiting for analytical results from the cloud, edge computing improves response efficiency. Since the data has been refined and analyzed preliminarily, it not only uses smaller bandwidth but also simplifies initial data preparation, thus relieving cloud workloads.

IoT Gateways Intermediate for Timely Prediction

IoT gateways are apt for edge computing tasks. "They tightly connect the edge to the cloud. Besides data collecting, they possess processing capability required for edge computing to complement the cloud," said Perng.

Deployed in factories and critical infrastructure, IoT gateways help implement predictive maintenance with preliminary collecting and analyzing operating data. Based on analytical results, they interpret and identify if the equipment is operating normally, or if it is necessary to shift production lines, or to notify engineers to schedule parts replacement.

For on-site personnel, real-time information improves reaction time without unnecessary production interruptions. For owners, issues like information security or insufficient bandwidth are avoided since the edge computing works independently on IoT gateways instead of in the cloud. Owners can also use enterprise backend servers or cloud services in case there is a need for notification. Based on historical information from IoT gateways, the cloud can seek patterns among events and establish algorithms or computing models, allowing IoT gateways for more accurate judgments.

For simplified deployment, NEXCOM develops a web-based configuration tool, NEXCOM IoT Studio, which equips NEXC2C technology. End-to-end connection is easily configured with simple clicking, dragging, and connecting steps. Each piece of data can be viewed as an input for analysis, an event trigger, or a node linking to the cloud. Depending on applications, each node can be send to multiple clouds via built-in cloud connection, averting issues like incompatible data format or protocols.

Top global companies such as IBM, Microsoft, and Intel are viewing IIoT and big data analysis as one since extracting benefits out of field data is the approach to creating true business values. Through smart IoT gateways and NEXCOM IoT Studio configuration tool, edge computing

is brought to the front end for timely and responsive judgments. With technical expertise in IoT gateways, NEXCOM has been working with numerous businesses to take the lead in IIoT opportunities.

NEXCOM

The Intelligent Systems

Founded in 1992, NEXCOM integrates its capabilities and operates six global businesses, which are Multi-Media Solutions, Mobile Computing Solutions, IoT Automation Solutions, Network and Communication Solutions, Intelligent Digital Security, and Medical and Healthcare Informatics. NEXCOM serves its customers worldwide through its subsidiaries in five major industrial countries. Under the IoT megatrend, NEXCOM expands its offerings with solutions in emerging applications including IoT, robot, connected cars, Industry 4.0, and industrial security.

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