CHIPKIN

Case Study

BACnet MS/TP to OPC UA in Pharmaceutical Manufacturing

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Overview



A pharmaceutical manufacturing facility in Quebec needed to integrate its existing BACnet MS/TP controllers with an OPC UA-based industrial monitoring system. The facility's two BFC controllers communicated over BACnet MS/TP, while its supervisory system used OPC UA. The challenge was to make the controller data accessible to the supervisory system without replacing the existing equipment.

Chipkin provided a protocol conversion solution using FieldServer QuickServer gateways, configured to communicate with the existing BACnet MS/TP controllers over RS-485 and expose their data through OPC UA over Ethernet. A dedicated gateway was used for each controller, allowing the facility's supervisory system to access the required data at one-second polling intervals.

The integration was successfully completed, with both gateways operational and providing access to the facility's existing controller data. The solution enabled the customer to incorporate its existing equipment into its industrial monitoring system while avoiding the cost and disruption of replacing functional controllers.

The Integration Challenge

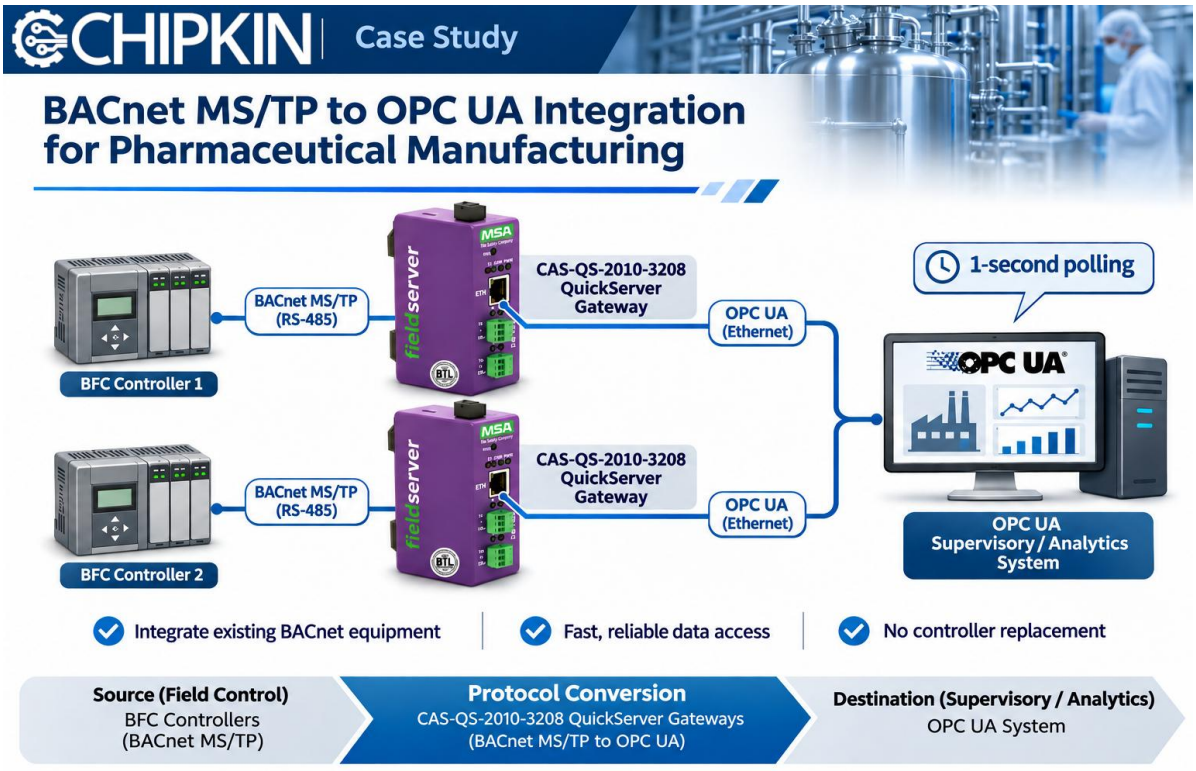
The facility operated two BFC controllers communicating over BACnet MS/TP (RS-485). These controllers contained operational data required by the facility's industrial monitoring system, but the supervisory platform used OPC UA and could not communicate directly with the BACnet devices.

The customer's OPC UA system operated with a one-second scanning cycle, requiring consistent data availability and accurate mapping of BACnet points. Each BFC controller operated on a separate RS-485 network, so the integration needed to support both devices independently.

The challenge was to bridge the two communication protocols while preserving the existing controller configurations and minimizing changes to the operational equipment. The solution also needed to support the customer's monitoring requirements without introducing unnecessary complexity into the existing automation system.

Chipkin's Solution

Chipkin implemented a BACnet MS/TP-to-OPC UA integration using two CAS-QS-2010-3208 QuickServer gateways, with one gateway dedicated to each BFC controller. Each gateway communicates with its controller over RS-485 and operates as an OPC UA server, making the controller data available to the facility's supervisory system over Ethernet.



Chipkin configured the gateways to read the required BACnet objects and map them to corresponding OPC UA data points. The configuration included operational parameters such as airflow and filter load, allowing the supervisory system to retrieve the information needed for monitoring. The integration was designed to accommodate the customer's one-second OPC UA scanning cycle.

The solution connected the existing BACnet controllers to the OPC UA monitoring platform without replacing the controllers or modifying the facility's existing automation infrastructure. The dedicated gateway architecture also allowed each controller to be integrated and managed independently.

Product Used: CAS-QS-2010-3208 – OPC UA to BACnet MS/TP QuickServer Gateway

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Project Results and Benefits

The BACnet MS/TP-to-OPC UA integration was successfully completed, with both CAS-QS-2010-3208 QuickServer gateways operational. The facility's supervisory system can now access data from the two BFC controllers through OPC UA, enabling centralized monitoring of equipment parameters that were previously available only through BACnet MS/TP.

By integrating the existing controllers rather than replacing them, the customer avoided unnecessary equipment costs and disruption to its pharmaceutical manufacturing operations. The solution also preserved the existing automation infrastructure while making its data accessible to the facility's industrial monitoring and analytics system.

The dedicated gateway architecture allows each controller to operate independently, simplifying system configuration, troubleshooting, and future expansion. The project demonstrates how existing BACnet MS/TP equipment can be integrated into modern OPC UA environments without requiring a complete controls system upgrade.

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