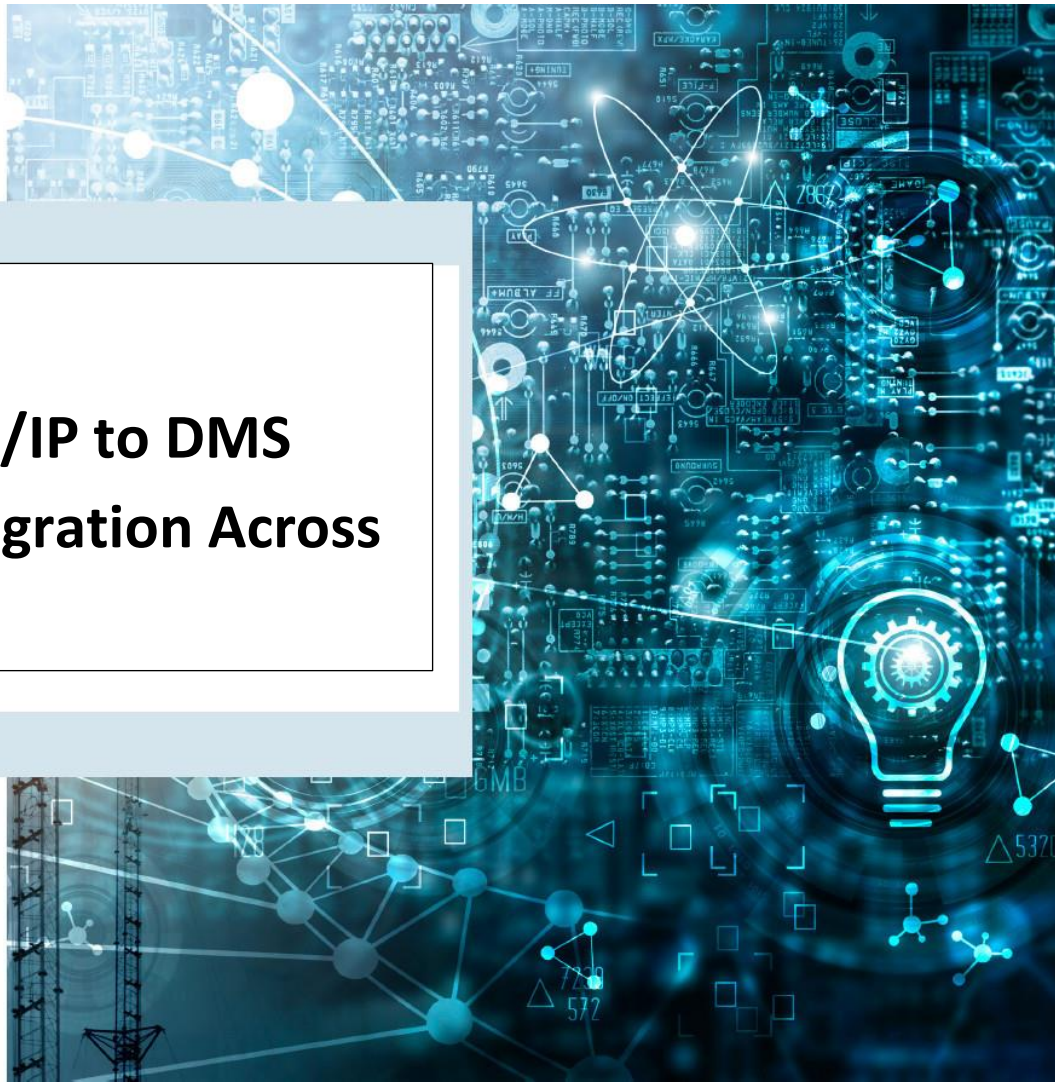
CHIPKIN



Case Study

# WebCTRL BACnet/IP to DMS Modbus/TCP Integration Across Remote Sites

## Overview

This case study revolves around a client's need to integrate data from 11 remote sites into their existing data management system (DMS). The sites are currently connected to an Automated Logic WebCTRL's Building Automation System (BAS) using the BACnet IP Protocol. To streamline data processing, the client needed the data converted Modbus TCP and integrated into their Datalake Inmation (DMS).


Across these 11 sites, a network of 41 BACnet IP controllers are bringing in nearly 4000 data points encompassing a diverse array of parameters, including but not limited to, pump statuses, amperages, and run times, alongside meter model specifications and PID controller information. The cumulative scope of instruments and equipment connected to the system was estimated to fall within the range of 500 to 600 units, encompassing vital components such as temperature sensors, pressure sensors, flow meters, energy meters, pumps, control valves, and boilers.

## Challenges and Solutions

One of the major challenges faced involved trying to use a singular QuickServer device (CAS-QS-3310-3207) to read data from 500-600 end devices with each device connected to one of 41 BACnet Controllers on many different subnets. The and the BACnet protocol has restrictions that does not allow for devices to communicate over different subnets.

Our solution to the subnet problem involved using the CAS BACnet BBMD application to poll the controllers, then set up a BACnet BBMD table within the FieldServer, as well as within each controller and WebCTRL. Initially, we encountered difficulties getting the FieldServer to extend beyond our .2 subnet. Chipkin dedicated considerable time to troubleshooting with Wireshark trying to determine the disconnect between the QuickServer, the WebCTRL and the edge devices. Eventually, we managed to connect to the WebCTRL system, and reach beyond the subnet issue. From here, we had to use the Routing Tables within the FieldServer to ensure communication between N1 (BACnet/IP) and N2 (Modbus TCP).

Another issue that we considered was whether a single Dual Ethernet QuickServer gateway could communicate with 500-600 end devices without causing communication issues. However, Once connected and testing, the QuickServer was able to integrate all 41 controllers and over 4000 points, with no indication of lag or lost transmissions. A testament to the quality of this product.

Lastly, although we were able to make the connections and get data from all 41 BACnet controllers, we faced null values and “Unknown Object” errors across 5 nodes. This was unusual because we were still getting BACnet data off those controllers which meant that there were no issues with the connectivity. Our assessment was that either the BACnet data type or address’ were wrong. Further troubleshooting pinpointed the problem to points that were not configured to be visible on the network. This was corrected by changing the settings on the WebCTRL side to allow these points to be visible. After this fix, we were able to read all Controllers and 4000+ points successfully and with no errors!

## Closing Remarks

Integrating this data into Inmation will allow the client to unlock insights regarding the performance of their district energy systems that were not previously available. The client will be able to view meaningful dashboard summaries of real-time data from any of these remote sites all through one centralized tool that is easy to use and navigate. In addition, engineers who are usually not given access to live control systems will be able to view this data in a read-only environment that is safe to use. This would not be possible without the FieldServer QuickServer. The integration was successfully completed.

**As a comment, the client provided Chipkin with the following kind words:**

“I want to extend a huge thank you to everyone on the Chipkin team that helped us out with this project. The support, responsiveness, and adaptability shown by Michael and Steven on the technical side is a standard I wish every automation company could provide. On the commercial side, René really listened to what we needed and connected us with the right people. The excellent service was noticed by everyone on my team, so I didn’t want this to go unrecognized.

I think Michael and Sasha are just putting the final touches on the project before we close it out, but wanted to say that I appreciate everyone’s help and hope we can work again together in the future! Sorry if I missed anybody on this distribution – please feel free to share with anyone else who touched out project.”

© 2024 CHIPKIN AUTOMATION SYSTEMS