CHIPKIN

Case Study

BACnet IP to DNP3 Serial Integration

Overview

A client came to Chipkin looking for a protocol converter to integrate BACnet IP data from their Generator over to their front end that communicated using the DNP3 Serial protocol. Their utility engineers wanted to monitor and command the data points from their control room HMI.

The client wanted to send a write command from the DNP3 Serial side to one of the points which was a data type Binary Output (BO) on the BACnet IP side. This is a unique situation not often experienced in DNP3 Serial Integrations.

Within the DNP3 protocol, there are various methods which are followed by different DNP3 platforms/tools to send the write commands on a Binary Output point. Methods such as Latch model, Pulse model, Activation model, etc.

The client, in this project, was able to do either the Latch model or the Pulse model.

Chipkin's approach to the solution

Chipkin recommended a FieldServer QuickServer gateway and custom configuration services as a solution to complete the integration.

Using this solution, Chipkin began by generating a configuration file based on the client's input information. The file encompassed all the desired monitoring points, as well as one Binary Output point where the client intended to execute commands from their DNP3 serial front end.

In the initial configuration file, Chipkin mapped the Binary Output points in the standard manner, just as they are usually done for serving over from the DNP3 side.

Due to communication issues, Chipkin took the initiative to arrange a remote login troubleshooting session. This session involved key participants, including DNP3 Serial side technicians, Client's site technicians, and Chipkin's Support Engineer. The purpose was to assess the communication viability by conducting tests on various configuration settings. The complexity arose from the presence of other object types, such as Analog Inputs (AIs) and Binary Inputs (BI), which required intricate data conversion in the configuration. Chipkin organized this collaborative effort to address the challenges and find effective solutions.

In the meeting, Chipkin checked and confirmed with the clients that they were able to read all the points coming from BACnet IP via FieldServer QuickServer into their DNP3 Serial front end. Then Chipkin offered the clients to take the troubleshooting to the next and final segment which was to establish and confirm that the clients were able to send the write commands on that Binary Output point using one of their preferred methods – i.e., Latch model or Pulse model.

The clients were instructed to send write commands from their DNP3 Serial front end to the FieldServer QuickServer, employing one method at a time. First, they were asked to use the Latch model, and then the Pulse model.

While the clients performed these command (writing) exercises, Chipkin processed diagnostics logs in the background of the data communications exercises to record the communication logs.

Based on the diagnostics logs, Chipkin determined that when the clients sent write commands using the Latch model, the FieldServer QuickServer effectively processed those commands and conveyed them over to the BACnet IP network.

Chipkin reported the above conclusion to the clients and thus reached a successful completion of this project.

Impressed with Chipkin's support services, the client provided the following kind words:

"I wanted to share with you my appreciation of the support from your team that has spanned a number of projects. Hitarth has been an excellent technical resource in helping us through some challenges that were beyond our capability to resolve - projects were successful only through his enthusiastic participation.

The support delivered by Hitarth has resulted in Chipkin not just being our "go to" but our standard in future projects.

Thank you - not just as a sign off but sincerely,"