CONTEMPORARY CONTROLS®

For immediate release

Contact: Kathleen Thomas, Marketing Supervisor   **NEWS RELEASE**
               1-630-963-7070
               katthomas@ccontrols.com

BACnet Routers Offload Building Controller Communications

Overview

The eye-catching Henderson 688 is a "BEAM Plus" platinum award winning building located in Shanghai, PRC. The high-end office building caters to international tenants and has 24 floors above ground and 3 floors below.

The Challenge

A new Building Management System (BMS) installed at Henderson was based on BACnet/IP with the intent of accommodating future expansion plans. It needed to be cost-effective and dependable. The BMS chosen was a Honeywell Webs system with a Niagara AX Supervisor, Webs building controllers commonly referred to as JACEs, and Spyder controllers. The Webs building controllers communicate up to the Supervisor using BACnet/IP over Ethernet, while typically communicating down to Spyder controllers over BACnet MS/TP. Investing in enough JACEs to supervise the numerous Spyder controllers to be used on the job represented a significant cost to the project. The System Integrator (SI) was seeking a solution that would reduce the number of JACEs needed for the project and Contemporary Controls had a solution.

The Solution

The installed BMS included one Niagara AX Supervisor, 4 JACE-600 building controllers and 1,800 Spyder VAV controllers, and 100 Spyder unitary controllers. Typically, there were 75 VAV controllers per floor that would require supervision from building controllers.   The JACE-600 has only one serial port that can be used for MS/TP communication although two more serial ports can be obtained at additional cost by installing a dual-serial port card. There was also one other issue. The Spyder data sheet recommends at most 40 Spyder devices per MS/TP segment which would require two MS/TP segments per floor. This would mean that two JACE-600s per floor for a total of 48 JACEs or one JACE-600 equipped with expansion card for a total of 24 JACE-600s.

There is another way of communicating to the MS/TP VAVs from the JACE-600s. The JACE-600 has two communication ports – one Ethernet port for BACnet/IP and one serial port for BACnet MS/TP. Instead of connecting the VAV MS/TP segments directly to the JACE-600s, the segments were connected to Contemporary Controls' BASrouter which routes BACnet MS/TP traffic to BACnet/IP. The BASrouter also has two ports – one Ethernet port for BACnet/IP and one serial port for BACnet MS/TP. Once all the

VAVs appear on the BACnet/IP network they are "discovered" by the JACE-600s resulting in communication between building controllers and VAVs over BACnet/IP instead of BACnet MS/TP. The building controllers "think" the VAVs are on the BACnet/IP network.

While the JACE has the ability to route MS/TP traffic over one of its serial ports, handling the overhead of the BACnet MS/TP token passing protocol burdens the JACE's CPU. This results in increased CPU usage that could be used for other functions possibly requiring a change to a higher-powered JACE. Contemporary Controls has conducted tests in its laboratory to prove this point.

Two BASrouters became responsible for two MS/TP segments per floor. Instead of installing 24 or 48 JACE-600s just to handle MS/TP traffic, the SI used 51 of Contemporary Controls' BASrouters. Each BASrouter ended up servicing 28-48 Spyders per segment. The cost savings were significant with the result that only 4 JACE-600s were used on the job.

By using Ethernet as the BACnet/IP network, the BASrouters can tap into any available Ethernet switch port. The SI decided to use Contemporary Controls' CTRLink line of Skorpion 8 and 16-port 10/100 Mbps Ethernet switches which are DIN-rail mountable and can be powered from 24 VAC control panel power. The Niagara AX Supervisor, the JACE-600s and all the BASrouters all share the same Ethernet network.

Installing and operating the BASrouter with several Honeywell Spyder controllers is simple and straightforward. Once the BASrouter is properly installed and configured using a web browser, all the connected Spyder controllers can be accessible from BACnet/IP. Spyder controllers auto-baud. They wait until a head-end device — usually a building controller — sends out frames so connected controllers can "wake-up" and set their speed to that of the building controller. The BASrouter takes the place of the building controller so its data rate must be set during configuration thereby allowing the Spyder controllers to automatically match their data rate with that of the BASrouter.

Conclusion
The JACE CPU usage can be decreased by offloading the MS/TP token passing to external BACnet MS/TP to BACnet/IP routers. This is especially important when the JACE is required to handle multiple MS/TP networks as with the Henderson building. By using Contemporary Controls' BASrouters project costs are reduced and the performance of the remaining JACE building controllers improves.

About Contemporary Controls

For more than 40 years, Contemporary Controls has been designing and manufacturing the system building blocks used to automate buildings, machines and processes. Our BASautomation BACnet routers link IP networks to BACnet MS/TP. Gateways adapt other protocols such as Modbus to BACnet. BACnet/IP controllers — Powered by Sedona Framework or Niagara Framework — do the work. Once on Ethernet, our CTRLink family — with its collection of managed and unmanaged Ethernet switches, media converters, wired and wireless IP routers — can complete the connectivity process. Contemporary Controls has manufacturing locations in the United States and China, and additional support offices in the United Kingdom and Germany.

For more information, visit www.ccontrols.com, call 630-963-7070 or email info@ccontrols.com.