

Case Study: College Campus Integration

Partner: Jarrell Mechanical Contractors, Inc.

Equipment: JCI Metasys®, Trane Tracer Summit, S4 Open: BACnet-N2 Router

Customer: Linn State Technical College in Linn, MO



Linn State Technical College is a small, Midwestern educational community dedicated to the development of the potential of each student. Class sizes are purposely kept small to encourage adequate individual attention and faculty-student interaction. The student body consists of traditional students who recently graduated from high school as well as working adults making a career shift or enhancing technical skills. While the majority of students are from Missouri, increasing numbers are from other states and countries.

Building Owner's Goals

Linn State Technical College challenged Charles E Jarrell Mechanical Contractors to integrate controls in their two existing buildings with the control system in a newly constructed building. The current systems were Johnson Controls Legacy Metasys® N2-based installations. The new building control system installed by Jarrell Mechanical Contractors was an open system using Trane LON devices. The project called for all buildings to be connected using the existing LAN network with remote access and alarming through the internet.

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Equipment to be replaced

Jarrell Mechanical Contractors' design included replacing a Johnson Controls DX9100 digital controller and several MS-FEC field controllers. There were communication problems with the Johnson Controls controllers that they replaced. In addition to removing this equipment, they decided to replace the four Johnson Controls N30 supervisory controllers and one Johnson Controls NAE supervisory controller since the Trane Tracer Summit would be taking over the building level control functions. Deciding on a supervisory controller replacement strategy instead of co-existing with the legacy supervisory controllers allowed them to save costs by supporting multiple N2 buses with a single S4 Open: BACnet-N2 Router. The tradeoff was that all Metasys® supervisory controller logic and services had to be immediately replaced by the new Trane technology.

Approach by Jarrell Mechanical Contractors

This was the first time the company attempted this type of integration within a building. Steven Spicer, Service Technician, explained, "I spent a lot of time researching solutions and putting together a solution that would work for Linn State Technical College."

The building owner, Linn State Technical College, reported to Jarrell Mechanical Contractors that they have never had this level of controllability with their two previous control systems. The fact that everything is integrated into one control system, instead of three separate systems, is a real positive for them.

Steven Spicer spent time investigating approaches using Field Server technology and using a JACE by Distech. After researching both of these options, he concluded that the tech support might not be readily available.

"I decided on the S4 Open: BACnet-N2 Routers. I like the auto discovery feature and the fact that I could alter or create my own templates. There was a lot less set up required to use the S4 Open product. However,

one of the main outstanding benefits of going with this solution is that Steve Jones and Brian Jones really delivered on service," added Steven Spicer.

ComBus Quick Tester

The project team from Jarrell Mechanical Contractors did not have blueprints of the building, so they did not know the number of devices on the different legacy N2 buses. The ComBus Quick Tester enabled the team to count the devices on each N2 bus, identify N2 controller and N2 bus failures that needed repairing before starting the integration process. It was also used in the N2 and MSTP configurations. Steven Spicer is very happy with the ComBus Quick Tester and has since used it on several other service calls.



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Project Outcome

The final project architecture is the Trane Tracer Summit Software working as the head end. A central workstation hosts the customer interface. It supports BACnet IP out of one NIC card to access the automation network and supports internet access out of another NIC. There is one Trane BTMX BCU controller supporting 30 LON devices and communicating back to the head end with BACnet. Another Trane BTMX BCU controller is talking to four LON devices and communicating back to the head end via BACnet. One Polarsoft BACnet/MSTP to BACnet IP router enables communications with 29 BACnet/MSTP devices. Two S4 Open: BACnet-N2 Routers with single Downstream N2 Interfaces each support about 22 N2 devices and the third is equipped with two Downstream N2 Interfaces supporting 40 N2 devices. All N2 devices are TEC-1100 and TEC-2102 controllers.

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About Jarrell Mechanical Contractors

Jarrell Mechanical Contractors, founded in 1954, offers a unique engineering philosophy that combines the best of Design-Build and Plan and Spec. The intelligence, education and experience of their people reflect this philosophy, and the quality of their solutions consistently delivers exceptional results for their customers.

Jarrell is a full-service mechanical contractor, and they are consistently among the top 100 largest mechanical contractors in the country. They've been listed as the second largest mechanical contractor in the St. Louis area for the past two years by the St. Louis Business Journal. Their success is due to our emphasis on relationships and putting customers' needs first.