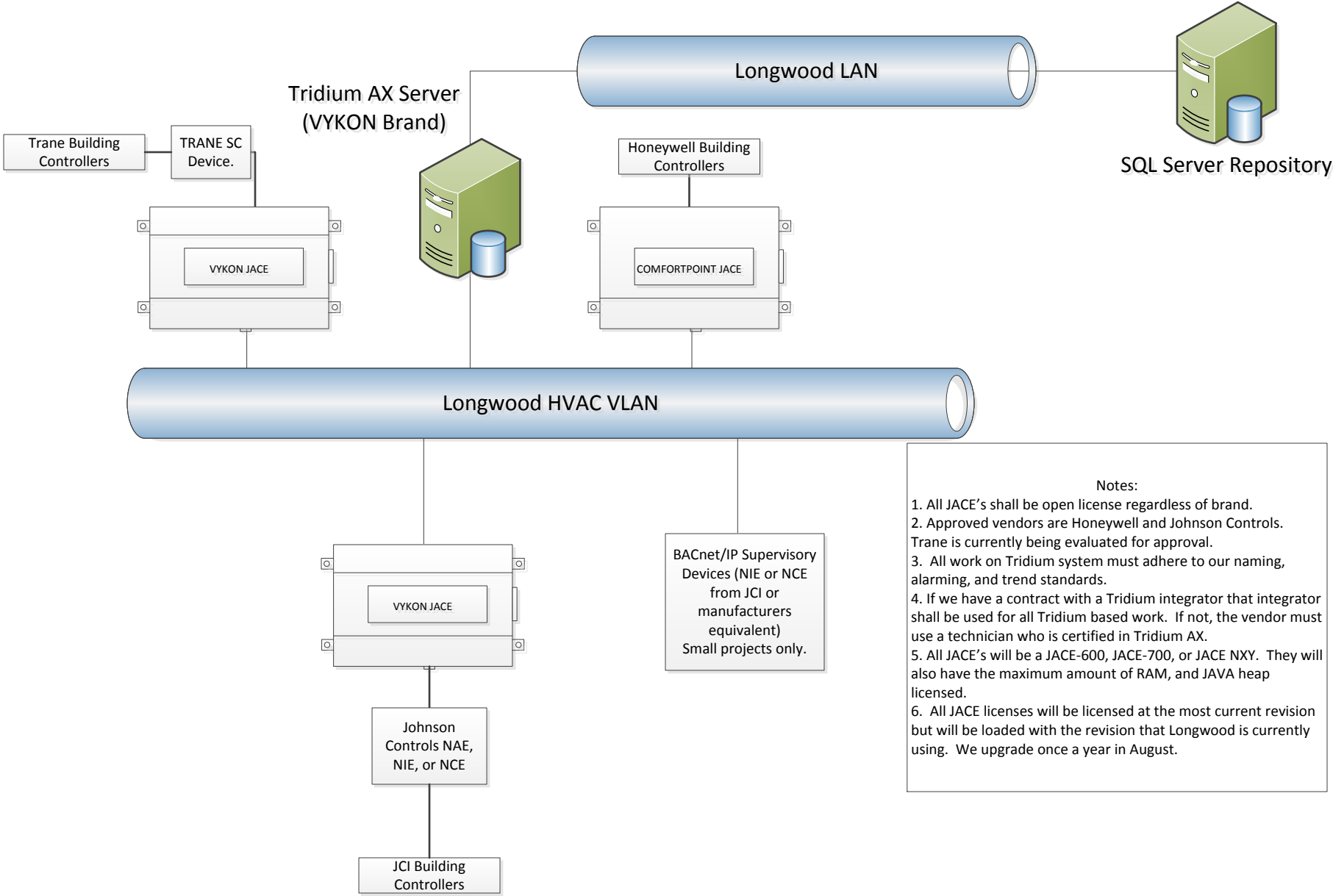
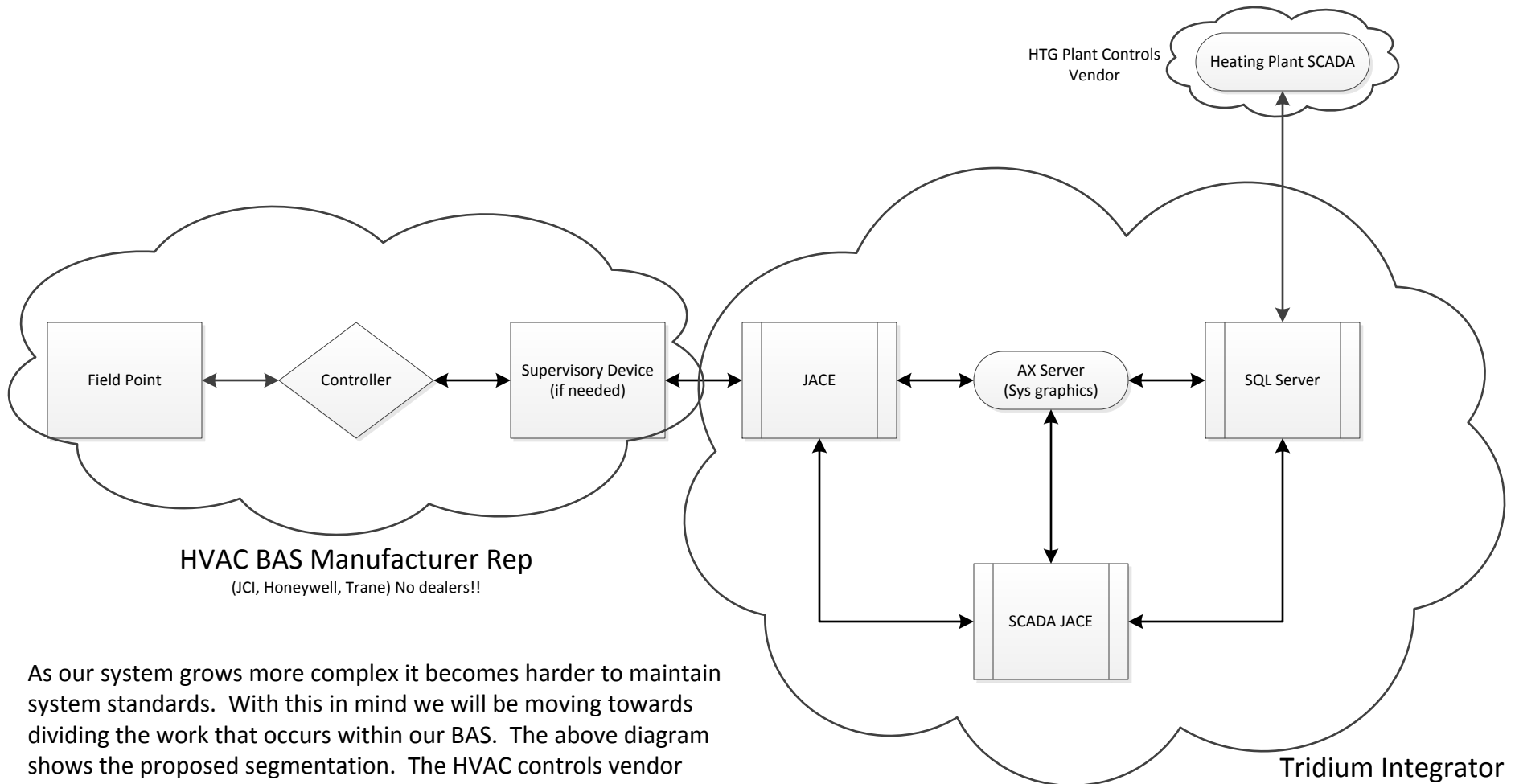


Longwood University BAS System Diagram

Jan. 11, 2013





As our system grows more complex it becomes harder to maintain system standards. With this in mind we will be moving towards dividing the work that occurs within our BAS. The above diagram shows the proposed segmentation. The HVAC controls vendor will be responsible for the programming of all field controllers within the building. Their work will then end there. The Tridium Integrator will then perform all of the work on the JACE and related systems. They will also be responsible for the Tridium system maintenance and upgrades.

We also want to move from using equipment dealers and towards using the manufacturer's local branch. An example would be that we would not want a JCI dealer that sells their FX brand but rather the JCI branch selling Metasys.

Longwood University has invested in the Tridium Ax line of products. We utilize JACE's (JACE-600, JACE-700, and JACE-NXT only) at each building to bring data to a central server, currently the VYKON brand. This server is where the system graphics, trending, and alarm console will reside. The trend data is then pushed from the server to a SQL server database for reporting and archive purposes. Utility related data is also sent to our SCADA JACE located in Jarman Hall. We maintain all of the Tridium equipment on our system at the same revision level to avoid confusion. We upgrade to the most current revision available in August of every year. Any equipment being installed should be licensed to the most current available revision but should have the software installed at Longwood's current operating revision level. All licenses for any BAS equipment shall be open and not require annual licensing fees.

HVAC control equipment within the building should be of the same brand throughout. BACnet and LON are the only authorized protocols on campus. BACnet is preferred between the two. The field controllers should be capable of being programmed remotely or through the JACE or vendor supervisory controller. If not, then the vendor will provide Longwood with all software, cables, and training necessary for our controls technicians to service the system. Web based controllers are preferred. Wireless solutions are allowed but should be a self-healing mesh network with little or no maintenance required for batteries. If batteries are installed on the equipment then the device shall have the ability to alarm the system when the battery is getting lower than the required voltage.

All field panels shall have the wiring organized in panduit and terminal strips. No wire nuts are allowed in the system, only WAGO style connectors. No t-taps are allowed on the communication wire of the system. All BAS control wires will adhere to the following color code:

Blue=Communication Wire

Yellow= Analog Input

Tan= Analog Output

Orange= Digital Input

Purple= Digital Output

White= Universal/ Unassigned

All wires will be labeled at all termination points (field device and in the panel). All panels will have laminated drawings in an envelope on the inside cover to include panel drawings, PID loops, and I&C drawings.