

BACnet and Interoperability: *A coming of age*

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BACnet. This unassuming term might look to someone outside of the HVAC/controls world as a brand name for some sort of sporting equipment. Yet, in the world in which it originated, it represents a significant movement in the HVAC industry. A set direction towards a standard that, begun in 1987, resulted in:

Interoperability, Efficiency, Low Overhead, Highest Common Multiplier, Compatibility with other applications and networks, Layered OSI model Network, Flexibility, Extensibility, Cost Effective, Transmission Reliability, Apply to real-time processes, Maximum Simplicity, Allow priority schemes, Medium access fairness, and Stability under realistic loads. (<http://en.wikipedia.org/wiki/BACnet>)

Whew! Translation: an understandable and efficient protocol that works and promotes interoperability.

To any manufacturer who has seen it from its inception, BACnet is a protocol that stands as a momentous feat all on its own. Years of development and debate went into its creation. Its success rested on substantial agreement by individuals, many of whom were representatives of competing companies at the time. Even to this day BACnet relies on people coming together to test and play nice with each other for the good of the customer.

Since its published inception in 1995 as the ANSI/ASHRAE standard 135-1995 (now 135-2004), BACnet has spread roots that run deep and has matured into a protocol that has a broad representation and has become, to many, a truly interoperable open protocol. Yet, it is in this somewhere that a message can be overlooked. Open, to an extent, is “open” for interpretation. Within the protocol companies are still allowed proprietary objects and properties. This is not to argue that they should not be allowed to have this as a part of their product, as a standard without room for corporate uniqueness can dampen competitiveness. The point intended by this is that this freedom for corporate identity leaves a very interesting place for certain innovations in the marketplace; especially when combined with another very interesting gap in product functionality.

Currently, in the BACnet world there are (for the most part) two basic levels one can use to gain access to their system and make changes: a thermostat interface or a computer interface. Both have their pros in the face of the other’s cons. For example, in general, thermostats represent a low level user interface. They often only display the temperature for the room in which they are mounted. Changing set-points and values can be achieved, but often in cryptic and complicated manners, making a more sophisticated user interface desirable.

On the other hand, we have the front-end. These represent specific functionality created, in many cases, especially for the manufacturer’s devices in addition to the standard functionality adhered to through the BACnet standard. Although these products have

incredible functionality, they also require training and represent a significant cost. In truth, for what the end-user gets in functionality, the price they pay is worth it. But, with this functionality comes the necessity to have users/employees trained at a cost as well. Should an employer lose a trained employee, that cost must be incurred again. This also is the same for controllers that a user can interface through a standard web browser. They are powerful and sophisticated. Yet, there is an initial upfront cost and training associated with the device that may be more than what the user really needs.

Now we come to the in between space created by the existence of an open protocol and the non-existence of anything with more interaction capabilities than a thermostat and less functionality (and cost) than a front-end. As BACnet has continued to grow, a new level of BACnet products are starting to appear that represent the value of a heretofore unoccupied gap in the market combined with the interoperable promise: a BACnet interface that is made available to the general BACnet HVAC market that fits somewhere between the thermostat and the front-end.

For the first time, users need not be a “member” of the BMS BACnet participating manufacturer as products are now becoming available through distribution outlets. The BBC-SD (www.BACnetcontrol.com) is a prime example of this. In fact, it is one of the only current examples, as it is the first to take on this market space in this manner. This color touch-screen interface represents a product that appeals to the user who may not be the HVAC guru required to run a front-end as well as to the individual who needs a specific set of information at a local area that requires more than a thermostat.

The BBC-SD is a full color touchscreen interface that was designed to give users the ability to access and modify BACnet points. It has a backlit 16:9 widescreen LCD that is 480x272 pixels and capable of displaying up to 150 points on a network. The initial configuration of the BBC-SD is done through off-line (BBC-SD-PRO) software that only requires the user have minimal PC skills. Of course, there is the necessity of understanding BACnet. The product is capable of displaying standard objects and properties. Non-standard values can also be displayed if the BACnet identifier is known. In some circumstances it is even possible to create a template file to enable one to easily configure the non-standard properties. Once the device is installed it is intuitive enough for the end-user to understand with minimal explanation. It also offers multi-tiered password protection to ensure certain features can only be accessed by the proper user.

As products like this begin to emerge, unoccupied spaces on walls and other various places begin to take on a new meaning. A hospital operating room can now have important values displayed right outside of the door; ventilation rates and room pressurization, as well as exhaust conditions for a laboratory can be displayed and changed at the touch of a finger; receptionist or security areas can view and change occupancy status and temperature, as well as monitor alarms if needed; points to large devices, such as a built up air handler, can be accessed in easy to locate areas; the possibilities are immense!

As we move forward in the BACnet world, it becomes more apparent with each additional manufacturing member, and with each innovation, that BACnet is moving forward. It is a living entity that is constantly growing in ways that are directly proportional to the desired outcome of the customer and the perceived market value of new technology that utilizes the protocol. It is the hope of this author that the introduction of products that exemplify the interoperability of BACnet will help the protocol gain even more momentum and confidence from the customer as something that gives them, as BACnet International puts it, “more freedom than ever.”