

BACnet Paves the Way to Integration

About BACnet

BACnet, short for Building Automation and Control Network, is an open protocol developed by the building automation industry to facilitate more extensive integration of HVAC, lighting, security and other commercial building systems. As the industry's standard protocol, the ultimate goal of BACnet is to achieve interoperability of building control devices that may differ by application, manufacturer and vintage. Employing BACnet system integration leads to more cost-effective and reliable building automation systems that deliver greater energy savings and control.

One may wonder what makes BACnet so special. After all, there are other open protocols widely used and supported within the building automation industry. BACnet was the first protocol developed by the building automation industry purely for the purpose of building system integration. Consequently, BACnet broadly supports the interoperability of HVAC, lighting, security and other systems over a common network, and is widely adopted by manufacturers of building control devices.

Design Integrity

System integrity is critical. Designers and integrators need the assurance that a device will perform the functions that are desired. Those responsible for designing these systems will want to familiarize themselves with a document called a BACnet Protocol Implementation Conformance (PIC) Statement. This document, published by the device manufacturer for each BACnet control device, provides stakeholders with needed information about the capabilities of BACnet devices. Consulting engineers can specify BACnet controls from different manufacturers with greater assurance that systems will work together as designed.

Design Simplicity

Designing around BACnet compatible devices eases design and speeds implementation. BACnet simplifies the task of designing systems by providing a common language that various devices can understand. BACnet control devices may differ by application, manufacturer and vintage, but they share a common language that makes it possible to communicate and work together without the need for communication gateways and network bridges (Figure 1). Thus, real cost benefits are attained including:

- Lower design cost
- Quicker commissioning
- Reduced lifecycle cost
- Improved flexibility
- Increased scalability
- Better reliability

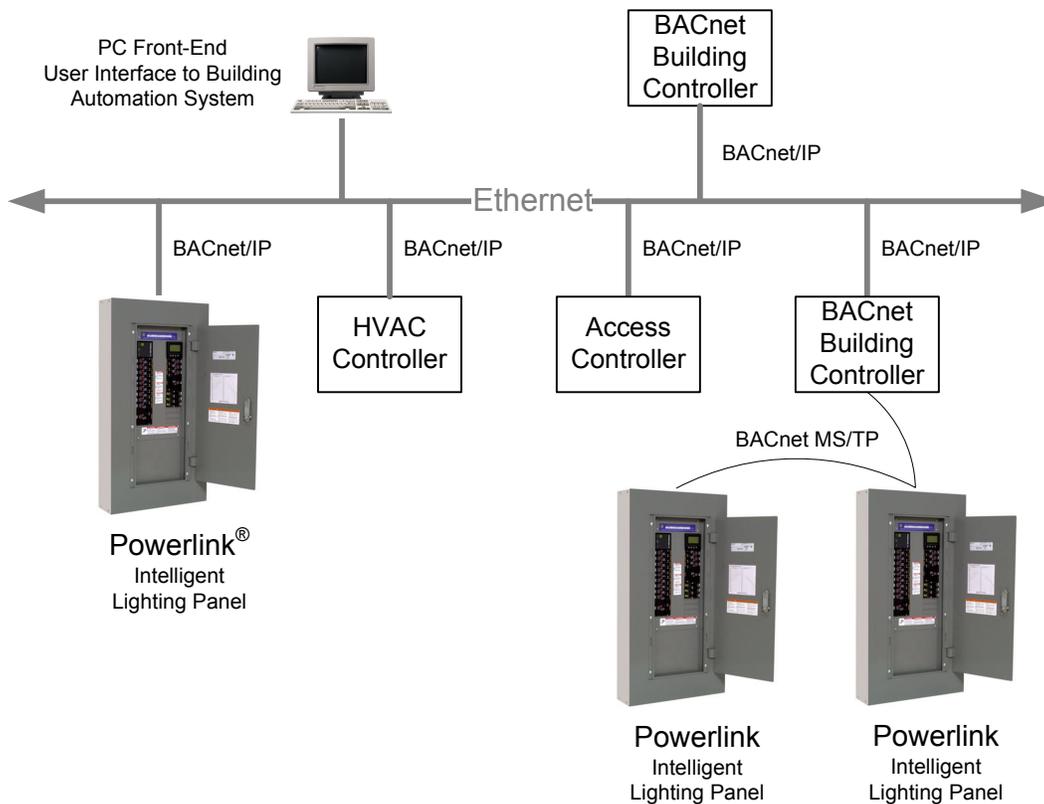


Figure 1. BACnet simplifies system communications – no gateways.

Energy Code Compliance

Energy Code Compliance is a major concern of consulting engineers. The most prevalent energy codes and standards in the United States require automatic lighting shutoff of all interior lighting in commercial buildings greater than 5,000 sq-ft. A lighting control system is usually required by local building codes to shutoff lighting based on a schedule, an occupancy sensor or a signal from another system indicating the area is unoccupied. Employing a BACnet lighting control solution, when another system is intended to signal a shutoff command, is an excellent way of effectively using a BACnet system. An example is shutting off the interior lights when the security system is armed (Figure 2). Employing BACnet controls allows the security controller to signal the lighting controller over a common network, rather than requiring a hard connection between the security system and the lighting controller.

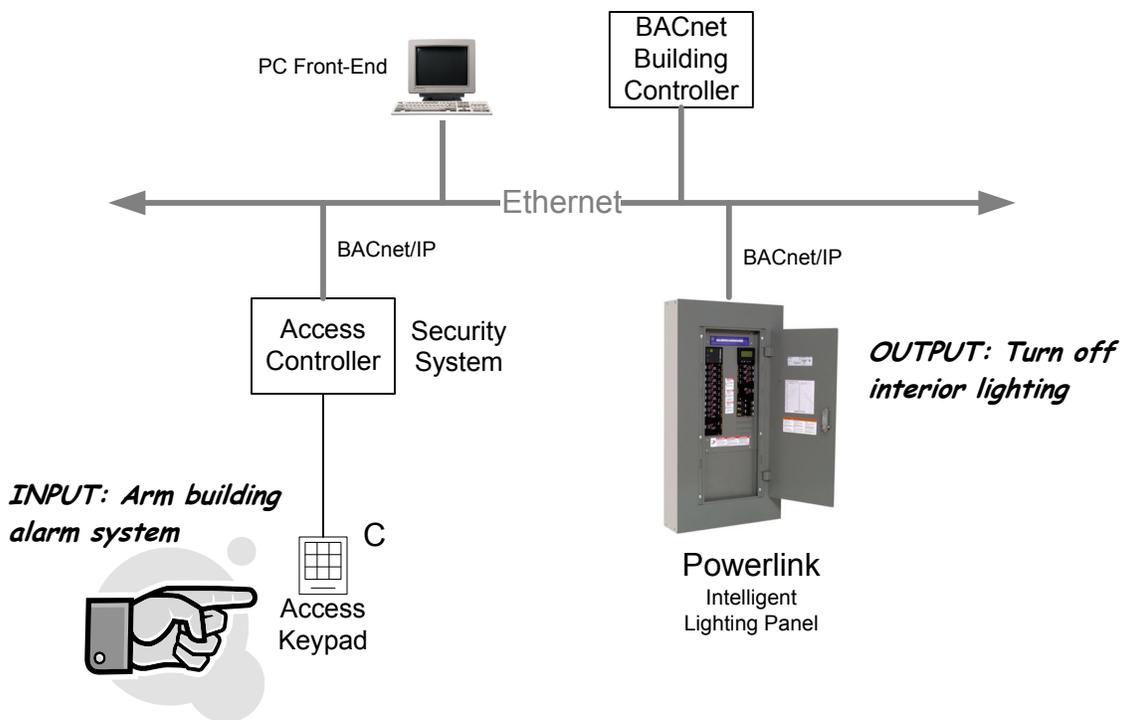


Figure 2. Security system input shared with lighting controller.

Space control is another common requirement of today's energy codes and standards. Spaces having schedule-based lighting control are usually required to have a way for occupants to override the schedule (usually for not more than 2 hours), turning the lights on when they would otherwise be turned off. With a BACnet lighting control solution, an override initiated from a

button press to turn on lights can also be shared with the building control system. In response, the building controller commands the HVAC system to heat or cool the area while the lights are on (Figure 3). Override events, like tripped circuit breakers and other events, can easily be logged for later reporting to facility management.

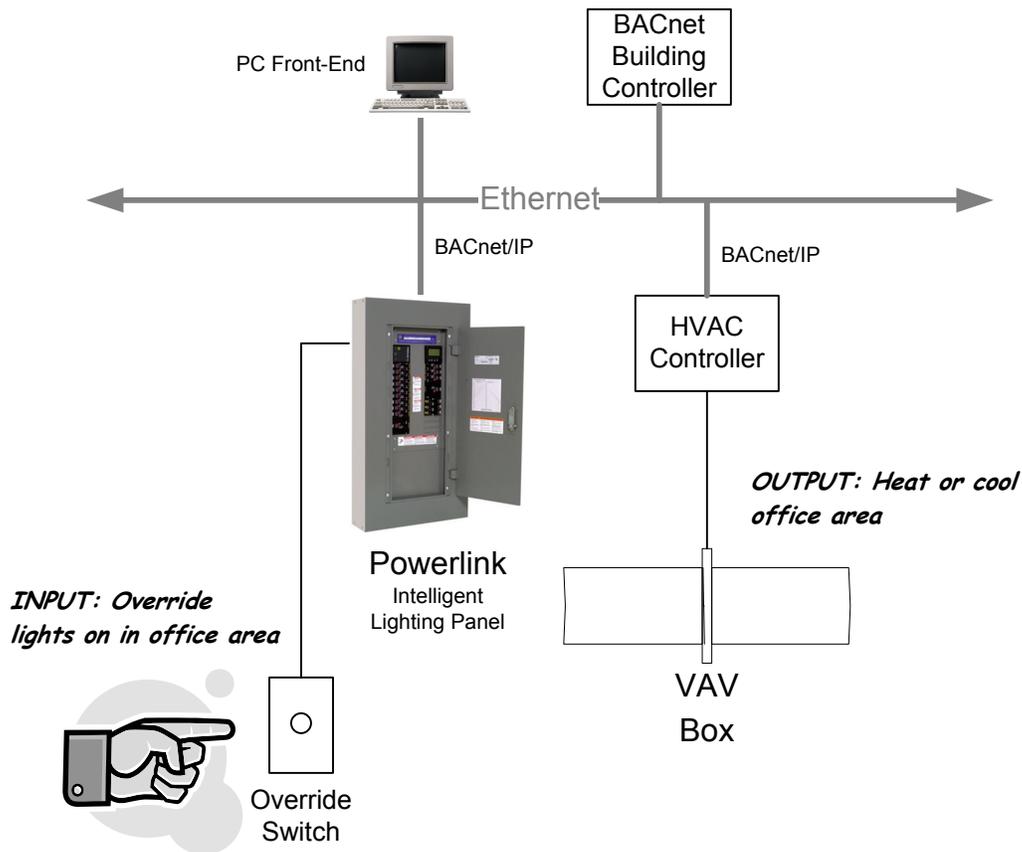


Figure 3. Lighting input shared with HVAC controller.

The growing demand for electricity threatens the ability of utilities to supply uninterrupted power to its customers during peak demand periods. Utilities, in turn, penalize commercial and industrial customers for exceeding peak demand allowances set by the utilities. Therefore, owners and facility managers are eager to find ways to avoid high demand charges, while at the same time, minimizing the impact such cost avoidance measures might have on facility operations and occupants.

Load shedding is a strategy implemented to control peak demand. By measuring demand, when it threatens to exceed the utility allowance, the building automation system can automatically curtail demand – shedding non-essential loads (Figure 4).

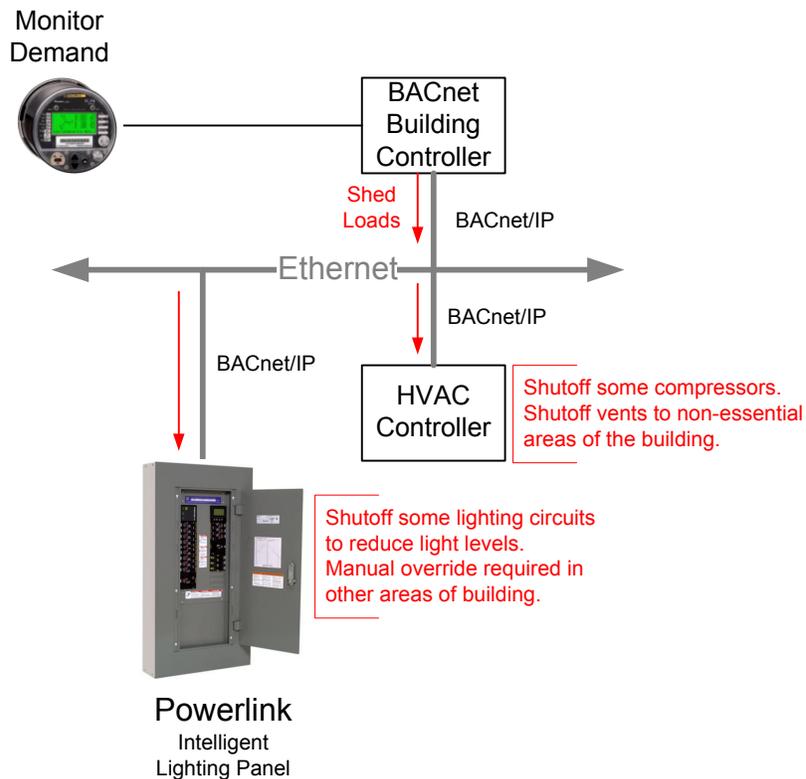


Figure 4. Load shed with BACnet building system.

Conclusion

BACnet was developed by the building automation industry to support large scale integration of building systems, including HVAC, lighting and security. As such, building automation manufacturers have widely adopted BACnet, and supply the industry with a growing selection of BACnet control devices that can easily be integrated across applications, manufacturers and vintage. BACnet delivers on the promises of design simplicity, energy efficiency, reliability, design integrity and energy code compliance.