

# BACnet

International



## JOURNAL

Issue

10

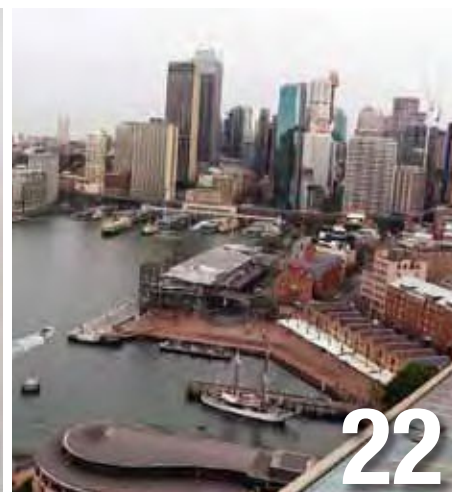
### This Issue

I Am BACnet

**I Am BACnet!**



**Global Testing of the Global Standard**



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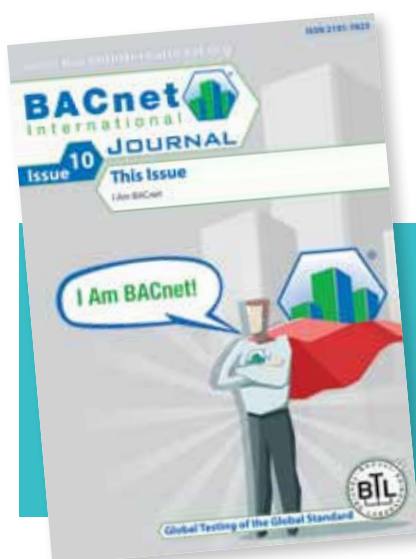
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## Issue 10 | October 2015

All issues can be downloaded from  
<http://www.bacnetinternational.org/journal>

# “Who is (the Future of) BACnet?”

As the theme for this issue of The Journal is “I Am BACnet,” by default, you are BACnet’s future. With this amazing responsibility comes the extreme danger of not doing enough because that will damage the future of BACnet. But our “baby” BACnet is now 20 years old; all grown up.

As the future of BACnet, you have been preparing your child for this day to meet the new world. You now need to allow your creation to go and grow. However, because of our limited understanding of how the new world may play out, we may inhibit the BACnet movement’s cultural growth. We need to help baby BACnet find its own way in a new IoT world.

The amazing legacy of BACnet has tremendous value, of course. But moving forward, it has the potential of becoming history if it doesn’t find itself being embraced and enhanced by the new kids on the block who are part of the IoT movement.

Indeed, we need to engage the new people that are the change. We need to attract self-learning assets to our industry with continuing self-learning growth. That is the goal we all wish to achieve in our people assets and our cultures because it is organic and natural. But most of all, it is sustainable.

In one of my previous editorial rants, I called for an investment in our people in the industry, and this certainly spills over to the BACnet camp. How do we attract people assets to ensure BACnet’s future?

Our online presence needs to contain attractive – actually seductive – self-learning pieces so that when the autodidactic folks we are looking for find our great description of purpose and culture, they want – no, need – to join us to further their education while they earn a living and grow their personal endeavors.

As an industry, we could do better in this area. Our online presence often does not attract the desired autodidactic assets and possibly not our potential clients either.

We need to clearly and precisely depict our IoT play and our ease of learning so both people assets and clients want to join us and become part of our learning machine and culture.

They need to answer the question: Are you able to make our products and self-learning systems better? It is everyone’s task, and we are all part of selling self-learning. Remember, people are our greatest assets.

Take, for example, this excerpt from a connected article to this editorial “Knowledge Sharing to Drive Learning:”

*If you can hire good people, train them well, and ensure they continue to learn throughout their career will we see industry, from the operators to the engineers, achieve the potential we all know is there.*

*Comes this wisdom:*

*The main lessons I took away are to: hire the best people you can find (even if you are not sure what you’ll do with them), hire people who cherish learning, and don’t be afraid of unconventional planning processes since we also face a pretty dynamic industry.*

*Now that we’ve come full circle, I’m starting to appreciate the real lesson in all of this: the volume of information, whatever the type, will continuously increase while the tools for coping with it will improve alongside. But only if you can hire good people, train them well, and ensure they continue to learn throughout their career will we see industry, from the operators to the engineers, achieve the potential we all know is there.*

To effectively answer the question about who the future of BACnet is, it is important to review the past of BACnet and understand how our industry’s people created BACnet and how those people – in addition to many more new people – are needed to morph this powerful global standard into a new and dynamic IoT world.

In an attempt to capture some of the history of building automation I prepared a LinkedIn Pulse connecting to resources that provide good recreational reading of how the industry evolved over the last 40 years, as seen through the eyes of me and my colleague Mike Newman – often referred to as the godfather of BACnet.

From the way-back machine comes this comment by Newman:

*The “final frontier” in recent years, since 1987, has been the effort to develop a standard communication protocol to replace all of the proprietary ones. (We have had 8 proprietary protocols communicating from the VAX concurrently!) This work has led to the adoption by the building control industry of “BACnet”, the “building automation and control networking protocol”. The protocol was developed within ASHRAE (the American Society of Heating, Refrigerating and Air-Conditioning Engineers) by a committee that I have chaired since its inception. There are now “BACnet Interest Groups” in the U.S., Europe, and Australia – all as a result of the Cornell-sponsored initiative!*

And when asked why he decided to write his new book on BACnet, Newman answered:

*For years, basically since the standard was first published in 1995, people have been asking for BACnet training. While there have been some face-to-face courses organized by ASHRAE, the University of Wisconsin, and BIG-EU in Europe, among others, there has never been a comprehensive book on BACnet in the English language. My good friend Hans Kranz wrote the first and, up until now, only full-length BACnet book in 2005 in his native German. It is an excellent work but tends to focus on doing BACnet jobs in the context of building automation projects in Germany with all of their particular building codes, bidding conventions, certification requirements, and the like. I just felt the time had come to write a definitive text on BACnet in English.*

Newman's lifelong crusade is described in this interview with then president of Contemporary Controls, George Thomas, on the 10<sup>th</sup> anniversary of BACnet.

*Meet the "Father of BACnet®". In an interview with Contemporary Controls, H. Michael Newman tells his story of leading the charge for adopting the BACnet® protocol, and the battles and victories that ensued. He describes the development of BACnet, its greatest strengths and much more.*

*This question helps us understand the creation of BACnet.*

*Thomas: Was ASHRAE initially receptive to your ideas and willing to initiate a committee?*

*Newman: At the recommendation of my boss, an avid ASHRAE supporter, I attended my first society-level meeting in January of 1981. I went immediately to sit in on the meeting of TC 1.4, Control Theory and Application, the technical committee that focuses on building automation and controls. Not a word was mentioned about the data communication issue. At the end of the meeting I spoke with the chairman, a gentleman from Johnson Controls, and asked him if there were plans to develop a standard for this emerging DDC technology. He said, in effect, "No, the vendors aren't interested in it." So I joined TC 1.4 and began advocating for a standard. It took six years, but in January 1987 the ASHRAE Standards Committee approved the formation of a Standard Project Committee to develop what we now call BACnet.*

*The rest is history. With the help of pioneers such as "BACnet Bill" Swan of Alerton/Honeywell, and the "Titan of Testing" Carl Neilson of Delta, and the support of their and many independent control companies Baby BACnet grew up strong and connected.*

What is now needed in our industry is transformational change; the process of altering the basic elements of an organization's culture, including the norms, values, and assumptions under which the organization functions. This change is being driven by a force outside of our industry called the Internet of Things (IoT), actually the Internet of Everything (IoE).

In an article titled "Road Map of the Possible for Connected Buildings," I attempted to enlist the industry to help map what the connected buildings of the future may look like. I stated the industry needs to do a better job selling the connected buildings and sharing ideas that unify our pitch to our clients. An excerpt from the article states:

*I just returned from a meeting with our local utility who organized a brainstorming effort to what a road map for connected buildings might look like. The discussion went many directions; we discussed several normal issues such as how the maturity of the smart grid for the utility will shape the connected building; how new movements involving buildings as a community all sharing their pride with benchmarking and complete transparency / visibility of everyone's data would bring radical change. Remote operation, big data, deep analytic, fault detection, the gamification for simpler connected interfaces was all discussed.*

This map will engage BACnet into the big data arena, expose the standard to the evolving social media movement in building well-being and satisfaction metrics of measurement and control. We all need to share our take on this and help BACnet find the path to transformational change. How will YOU help baby BACnet grow in the new world?


## Reading resources for this article

Attracting Self-Learning Assets. A continuing self-learning growth is the goal we all wish to achieve in our people assets and our company cultures because it is organic and natural but most of all sustainable. <http://www.automatedbuildings.com/news/apr15/editorial1704.html> Knowledge Sharing to Drive Learning Only if you can hire good people, train them well, and ensure they continue to learn throughout their career will we see industry, from the operators to the engineers, achieve the potential we all know is there. Brad White, P.Eng, MASc, Principal, SES Consulting, Inc.

Meet the "Father of BACnet®". In an interview with Contemporary Controls, H. Michael Newman tells his story of leading the charge for adopting the BACnet® protocol, and the battles and victories that ensued. He describes the development of BACnet, its greatest strengths and much more. [www.automatedbuildings.com/news/aug08/interviews/080730123202newman.htm](http://www.automatedbuildings.com/news/aug08/interviews/080730123202newman.htm)

## Road Map of the Possible for Connected Buildings

<https://www.linkedin.com/pulse/road-map-possible-connected-buildings-ken-sinclair?trk=prof-post>

"We all need to do a better job of selling the connected buildings and we need to share our ideas and unify our pitch to our clients." 

## ABOUT THE AUTHOR

Ken Sinclair is the founder, publisher and owner of AutomatedBuildings.com, an online magazine and web resource providing the news as well as connection to the rapidly evolving industry that automates and implement truly intelligent, integrated buildings. He has authored numerous industry articles on internet integration and convergence for several international magazines and have provided free automation seminars at each AHR Expo for the last 16 years.



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Alan Pong, president of Comfort International Inc.



Pacific Gas & Electric has recognized the valued role of Comfort International as a Trade Alliance Partner.



Company trucks at a customer site.

## I Am BACnet

An interview with Alan Pong, president of Comfort International Inc., located in San Jose, California.

**BACnet International: Could you describe your business model and the value proposition you take to your customers?**

**Pong:** Comfort International, Inc. is an energy efficiency organization that is primarily focused on achieving peak energy efficiency in existing commercial buildings with short returns on investment (ROI) and guaranteed energy savings measured at the utility meter. We have achieved the lowest energy metrics in the industry. Having honed our skills over decades, we are confident to back our performance by guaranteeing that we can achieve the energy savings measured at our customer's energy bill or we will write a check for any shortfall of savings.

I am proud that our team of professional engineers and highly skilled technicians have met our promise of energy savings and comfort with a 100 percent success rate. We not only achieve the lowest energy levels without any sacrifice to ideal comfort, we also provide ongoing HVAC maintenance and service to ensure the performance is sustainable.

**BACnet International: Is there a particular kind of customer you seek or where you have found success?**

**Pong:** Our unique, cost-cutting services optimize the entire building envelope looking at all aspects of energy usage from HVAC, lighting, LEED and Energy Star certifications, and any other ways to optimize the whole buildings energy usage. As a result, our customers have full control of the energy costs of the entire building. Customers can be either be tenants occupying the building or direct owners of commercial facilities.

**BACnet International: Could you explain what you do for each?**

**Pong:** For tenants, our value is straight forward: we cut 25 percent to over 50 percent of their annual utility spend and our ROI's are so short that they do not need to own the building to realize the savings. For building owners we not only reduce that operating expense, but we also increase the building value. For example, it is common for us to save \$1.50 per square foot annually in the energy costs in a typical office building and that translates to \$7 to \$10 of increased building value per square foot.

**BACnet International: Your area utility, PG&E, has recognized your efforts to help your customers cut their power usage. Could you speak to that?**

**Pong:** Yes. Most utility companies in California provide rebate incentives to help motivate customers to invest capital dollars to lower their energy usage. Comfort International Inc. is a Pacific Gas & Electric (PG&E) Trade Alliance Partner. We have also been their highest awarded trade partner having achieved the largest amount of energy savings and rebates in the commercial sector.

**BACnet International: Any particular examples you could offer?**

**Pong:** Well, we have saved one of our client's, TDK's Headway Technologies, over 5 million kilowatt-hours per year and over 424,000 therms annually. That resulted in PG&E's largest single rebate to date: \$633,500. It was a challenging project. The 115,000 square feet clean room production facility was completely optimized without disrupting their 24/7 operations nor deviating their strict requirements: +/- 1° temperature specification and their +/- 2.5 percent RH with no more than ½ RH maximum float per hour. (This project was also recognized by BACnet International in a published Success Story: <http://www.bacnetinternational.net/success/stories.php?sid=54>.)

And, as this particular company is passionate about continuous improvement, we're now beginning yet another phase of energy optimization.

Overall, we have a 100 percent success rate in obtaining rebates for our clients. More importantly, every project has met or exceeded our target energy savings at the meter.

**BACnet International: What role does BACnet play in your work to reach your peak efficiency targets with customers?**

**Pong:** It's the enabling technology; kind of the "Intel Inside®" of the automation and control arena.



Another satisfied customer, Risk Management Solutions, celebrates a utility rebate check for \$121,000.



Comfort International assisted TDK's Headway Technologies to achieve energy savings that entitled them to PG&E's largest rebate check to date: \$633,500.

#### BACnet International: How so?

**Pong:** Achieving the kind of energy savings that we have means that we need to be highly creative in optimizing building systems. Building automation represents one of the shortest ROI's available to obtain those savings. As a result, it is very important for us to use the industry standard open protocol. We use BACnet in our control optimization strategies to reduce the paybacks and make it easier to integrate controls with various pieces of equipment.

The brand of the controls is not important, as using BACnet is much more important to ensure that the completed solution utilizes technology that is not proprietary and easy to service. Before the days of BACnet, proprietary systems often became obsolete and unable to be maintained which led to systems not achieving their assumed useful life. That's not a very green or sustainable approach.

BACnet has eliminated issues like that and is a vital aspect for an energy service company like Comfort International. We want to provide our customers with comfortable buildings operating at the lowest possible energy levels with systems that are reliable and easy to maintain for the long-term.

**BACnet is key to that success.**



**BACnet International**

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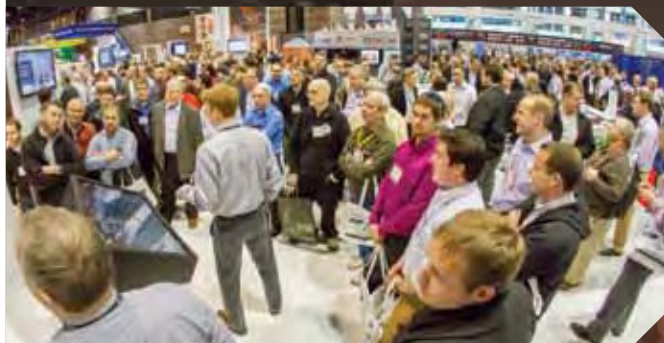
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# Cure for the 16-Hour Work Day

**Could BACnet integration be the solution for healthcare facilities managers?**

Healthcare facilities managers are delivering visible improvements to their building operations to such an extent that they are being given an expanded remit covering departments beyond traditional building control and maintenance. Departments such as environmental or culinary services may now suddenly become the responsibility of facilities management. This represents large increases in staff to oversee, more necessary reporting, and can be a steep learning curve for many facilities managers to climb. The 2015 Health Facilities Management Salary survey states that: “respondents also reported a 27 percent increase in the number of departments reporting to them” which Dale Woodin, senior executive director of ASHE, attributes to mergers, belt-tightening and an overall confidence in facilities staff.

The success of facilities means that healthcare administrators are now also turning to their facilities managers and expecting them to demonstrate a meaningful impact on key performance indicator measures such as disease control and overall patient satisfaction.

This makes the impact and recognition of facilities visible to the highest management levels and marks a success for the function. These new accountabilities can come with some welcome benefits like pay increases and better job satisfaction. But these significant responsibilities can mean long hours crunching through building performance data and reporting on new KPIs. We need a way to protect the success that these facilities managers have been achieving, and they need a way to maintain visibility and control over an ever-growing number of systems. Facilities managers will be looking to the systems that they are familiar with to start pulling together all this data. Typically, a facilities manager comes in contact with work order generation software, asset management tools, and BAS software connected to a building protocol such as BACnet. The key to pulling these systems together may lie in the most familiar of places for a facilities manager. As the open systems leader, BACnet has become the leading choice in integrating building systems and data from different sources.

“As we quickly advance in this age of Big Data and the IoT, the ongoing advancements in the BACnet protocol will prove to be an invaluable

tool for facilities managers and the C-suite executives,” said Raymond Rae, board member for BACnet International and vice president of Delta Controls. “This evolution of the BACnet standard is guaranteed by the ASHRAEs’ Standing Standards Project Committee process of continuous maintenance and enhancement.”

So what do facilities managers do when they are suddenly told that they are being given more responsibilities and new challenges from unfamiliar disciplines? Respondents in the survey reported being asked to oversee patient transport, valet services and even mailroom operations. Facilities managers are being given a marginal increase in compensation and more training to try to cope with the new challenges; but is training the cure for a 16-hour workday?

Should we be concerned that we are heading towards an application of the Peter Principle and pushing our facilities managers beyond their limit? Normally the Peter Principle applies when someone is promoted to the point where they lack the skills needed to do their job. In this case, the facilities managers may continue to have the skills for their positions, but they may lack the time and infrastructure to make continued excellence possible.

The leading contributor to their possible failure will be facing numerous systems that aren’t connected to each other in any way. They will be expected to generate reports, spot inefficiencies, track staff and perform the other myriad of tasks they were doing for facilities management. To accomplish these tasks they will be given new software with separate and unfamiliar interfaces across different departments, each one presenting new challenges and considerations.

The tools that healthcare facilities managers use to do their jobs will need to evolve and become more efficient to accommodate the increased workloads. With all these new duties, the formerly organized facilities managers are like mechanics whose tools have been scattered all over the shop. Each new reporting system or asset management software platform is a misplaced tool. It’s impossible to continue being a good mechanic in a chaotic environment. What they need is a way to get all the tools in one box. That’s where BACnet Web Services







(BACnet/WS) comes in. Past BACnet chair and Delta Controls Project Leader Carl Neilson provides insight into the development of BACnet/WS. “BACnet/WS was developed to bridge the gap between building automation and enterprise data,” Neilson said.

He goes on to state that its strengths are in being protocol independent, supporting complex, rich data definitions and providing standardized data modeling.

What that means is that BACnet/WS empowers BACnet to pull information from systems that would not normally fit under the typical building automation umbrella. Standardized data modeling allows information to be interpreted in a way that the BACnet systems can understand, so that it can then be displayed and reported upon.


“These features support integration with a wide variety of systems including those with data much more complex than normally found in a BAS,” said Neilson. “Bringing non-BAS data sources together with the BAS data into a common ecosystem allows for centralizing the FM’s activities and reducing learning curves.”

Facilities managers can use the tools that they are familiar with to perform their new job tasks, resulting in less downtime switching between tools for different departments.

So why use BACnet and BAS software as the unifying platforms? Facilities managers are the ones being tapped to take on these new responsibilities, and the software they’ve been trained on their whole careers is BAS software. Furthermore, while BAS software is flexible when labeling diverse data types, customizing reports and archiving data, no other software platforms are as adept at being able to incorporate the functions of the BAS. BACnet has been investing a considerable amount of effort to become a universal integration platform, and what will drive innovation in those fields is need. BAS systems

are already starting to integrate more diverse systems and with the help of advancements such as BACnet/WS; those integrations are only going to get more diverse.

The job description of healthcare facilities managers is broadening rapidly. BACnet is paving the way for new systems to become integrated into BAS systems and ease the transition for newly burdened facilities staff. In healthcare, we could be integrating the patient paging systems that lets patients in waiting rooms know when it’s their turn to see a doctor. The same types of metrics that need to be recorded are measured in our BAS systems today. Disparate facility scheduling and work order management systems are already being integrated with BAS systems. The integration requests are going to change very quickly in the healthcare field. As facilities grow to encompass more systems, it will become more efficient to incorporate those systems.

This means that facilities managers from every facet of our industry will be processing integrated data from new sources that affect every aspect of a business. Integration in our industry has already grown to mean quite a bit more than just pulling in packaged air handling units or connecting two separate DDC systems. In your field, whether it’s your job description or integration platform that’s evolving first, we can all agree that need is driving change rapidly and that the landscape of integration is evolving as well. 

#### ABOUT THE AUTHOR

Working in the controls field for over 15 years, Shane Murphy works as the technical marketing specialist for Delta Controls. Shane uses his years spent as a field technician and an engineer to bring value to his recent roles in sales and now marketing. Shane now produces video, online, and print media for Delta Controls ([www.deltacontrols.com](http://www.deltacontrols.com)).



**Shane Murphy**  
Technical Marketing Specialist | Delta Controls  
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# BACnet:

## The World's Building Protocol Standard



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**Leading the World in Building Protocol Standard:** BACnet plays a significant role in building automation projects worldwide. In 2015, the open communication protocol for BACnet celebrated its 20th anniversary of being ANSI standard.

This follows the 10th anniversary in 2014 of BACnet being published as DIN EN ISO standard. Today, there are thousands of product models and millions of devices speaking BACnet.

**BACnet**  
International



**Improving Interoperability:** BACnet International is an industry association that facilitates the successful use of the BACnet protocol in building automation and control systems through interoperability testing, educational programs and promotional activities.



**Achieving the Mark of Distinction:** The BACnet Testing Labs (BTL) Mark provides users with assurance that a product has passed the industry standard BACnet conformance tests conducted by a recognized, independent testing organization. The BTL Mark is a mark of distinction, achieved by more than 600 products, that many building owners and control system designers look for as a must-have in order to be eligible for a project.

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# BAS Cyber Threats: Are You Protected?

Cyber security is a shared responsibility – shared between technology providers, system integrators and end users. The following is an interview with Marc Petock, Vice President, Marketing, Lynxspring

**BACnet International: We are seeing an increase in coverage about BAS cyber security. Is it good or bad for the industry?**

**Petock:** I believe it is good for a number of reasons. It is calling attention to an issue that is part of the new reality we are faced with. It is enabling us to gain a greater understanding of the challenges associated with cyber threats as it relates to building automation systems and networks and it is causing us as an industry to address it. I also believe it has woken up many end users and providers to the need for better cyber security protection for building automation systems and networks.

**BACnet International: What are the misconceptions about cyber security and threats on building automation systems?**

**Petock:** That cyber threats against building automation systems are not just about being able to turn the lights on or off or raising or lowering the temperature a degree or two. It is way more than that. Characterizing possible disruptions to lighting or HVAC controls as a little harmless mischief dramatically underestimates the value of these systems to productivity, safety and the business. Threats and breaches to building systems can also be entry points into the company's network and become a pivot point that can bypass many existing network defenses. A hacker can use a BAS device as a jumping off point to get onto other devices and systems, introduce malware, viruses and worms or engage in other detrimental activities.

The Building Automation Network and IT network should NOT be treated differently when it comes to cyber security and threat protection. One needs to ask themselves more than just "Are we secure?" You need to be asking, "How do we know we're not compromised today? How would we know? What would we do about it if we were?" Are we prepared to face the threat?

**BACnet International: What about the business implications; can you elaborate a little more on this?**

**Petock:** Absolutely. There is occupant comfort, safety and productivity to operational disruption including interruption of key services and shutdown of operations. On the physical side, there is the potential damage to equipment and the building structure and accessibility to the facility. On the business side, there is the potential exposure of sensitive information, financial loss caused by interruptions and equipment replacement and repair, negative publicity, tenant loss, loss of customer confidence and potential lawsuits. And there is the risk of physical harm to occupants.

**BACnet International: What are the key risk areas?**

**Petock:** I categorize risk areas into three types; PEOPLE (Owners, Operations, Users, Occupants), SYSTEMS (Technology) – Comfort, Safety, Security (Access and Intrusion) and OPERATIONS (Technical & Business). Buildings are mission critical environments. As such the risks associated with people, systems and operations need to be understood and appropriately managed and mitigated.

**BACnet International: So at the end of the day, who is responsible for BAS cyber security?**

**Petock:** Cyber security is a shared responsibility between technology providers, system integrators and end users. Technology providers should take every step to increase the security quality and reduce the attack surface as much as possible. When an incident is discovered, they need to inform their customers, address the issue quickly and comprehensively. Also, incorporate cyber security practices related to their technology into their training and deployment practices.

For system integrators discuss the importance of cyber security with the end user; be proactive about it; automatically include as part of the solution you design and deploy and ensure that the security capabilities of all system components are used and configured properly. And end users demand and insist on cyber threat protection. Make sure your overall system security levels are adequate.

**BACnet International: Any final thoughts?**

**Petock:** Cyber security is a complex issue. It is one that must not be ignored or done through obscurity any longer. Building automation networks should have policies and procedures just as an IT network does. Security must continuously be addressed throughout the whole system lifecycle using multiple layers of defense and protection. Cyber security and threat protection should be an integral part of the design of intelligent buildings and today's building automation system and not an afterthought; it has gone from a nice-to-have to a must-have.



## ABOUT THE AUTHOR

Marc Petock is vice president of marketing at Lynxspring and Connexx Energy where he leads corporate and product marketing strategy and execution, brand management, public relations and communications to support both companies strategic and growth initiatives. Petock is a contributing author, noted speaker and recognized industry leader having earned several industry accolades. Petock serves on the board of directors of Connexx Energy and Project Haystack; is an advisor to the Realcomm Organization and a contributing editor to Automatedbuildings.com.



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# A Tale of Two Successes: Ohio State University and Ohio University

Over the years, Ohio State University (OSU) in Columbus installed various building automation products in the buildings around campus. In recent years they felt the need to more efficiently control their buildings without compromising comfort. With roughly 10 or more different vendor's products in over 100 buildings, it wasn't feasible to do a rip and replace on every building. For them it made more sense to leave what they already had and expose it to a campus-wide BACnet network by means of a BACnet gateway or router. With every building talking BACnet it could be brought in to a BACnet front end graphics, event notification and management.

With all the different products throughout campus, the need to standardize on a protocol that most vendors can support requested. BACnet



was the ideal choice for this scenario. By utilizing BACnet as the protocol of choice on campus, they enabled the ability of choice. This choice would provide them with options on which product to use, which contractor to use as well as which front end to use. As a result, the power to hold contractors accountable for completion of projects was in their hands.

A true BACnet support product allows for the integration into the front end of choice. Most well-known products out there today support BACnet to some level, if they don't focus entirely on BACnet. If, by some small chance, you have a product that doesn't offer a BACnet gateway, there are several gateways to choose from that can provide means to do just that.

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## TIME CONNECTOR

### Heat rooms only when they are in use!

**TIME CONNECTOR** – a software tool that transfers your appointments from Outlook, Google, etc. to the BACnet world.

- Adapts your room temperature quickly and flexibly to the actual requirements
- Up to 23% Energy Saving possible (Study of the TH Nürnberg)





FieldServer, S4 and Tridium are three most common and most robust gateways to providing you options with communicating to legacy controls equipment.

OSU has required that any and all new work support BACnet communications, as well as the read/write capability through this integration. The campus is divided into three main teams, Facilities Operation, Student Life and OSU Medical Center. At this point, the majority of are all communicating to a BACnet head end and being managed internally by the facilities staff. Each of the campus subnets are equipped with a BACnet router. To avoid conflicts with routing the decision was made to use only one product for the BACnet backbone. The key to this decision was ease of BACnet routing management. The specification was narrowed down to only products that truly offered non-restricted, native BACnet support to assure the compatibility with the integrated network.

To avoid network addressing conflicts each device installed on the network is carefully assigned a network number and device instance that corresponds with the other equipment in the building. This not only makes it easier to identify which building a controller serves based on the name and address, but also makes for a clean, uniform navigation tree. This addressing scheme is managed internally by the facilities management team and any contractors doing work on site know the procedure to use before granted access to connecting their controllers to the network.

Similar to OSU, it wasn't feasible for Ohio University (OU) in Athens to do a rip and replace on every building in their portfolio that needed to more efficiently control their buildings without compromising comfort. Rather, they decided to look into the integrating the existing equipment into a centralized head end.

The end goal was to utilize this head end to not only manage the facilities related assets on campus, but also to help them measure energy related projects, as well as be notified in case of an issues in any of the buildings. With all the different products throughout campus, the need to standardize on a protocol that most vendors can support requested. BACnet was the ideal choice for this scenario. By utilizing BACnet as the protocol of choice on campus, they enabled the ability of choice. This choice would provide them with options on which product to use, which contractor to use as well as which front end to use.

OU modified their specification for any and all new work to require the product to support BACnet. At this point, over 65 buildings are all communicating to a Delta BACnet head end and being managed by the IT team. Each of these more-than-65 buildings are on different subnets, therefore each of them is equipped with a BACnet router. Due to the diversification of products across campus, the decision was made to keep the primary vendor in any given building. For example, if the primary product in building one is Automated Logic, then Automated Logic would be the controller of choice for that building. The specification was narrowed down to only products that truly offered non-restricted, native BACnet support to assure the compatibility with the integrated network.

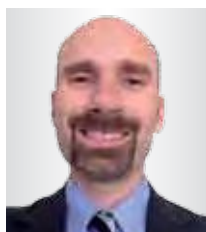
BTU meters and electric meters were also installed in roughly 30 of these buildings as part of the campus wide chilled water plant upgrade. The goal of metering was to aid in the benchmarking of energy efficiency related upgrades and to help with capturing the actual cost savings incurred as a result of this project. An energy dashboard was also installed to help illustrate these savings to the public and is utilizing BACnet trends created in the various systems across campus to populate the data used in these calculations.

Just as with OSU, to avoid network addressing conflicts at OU, each device installed on the network is carefully assigned a network number and device instance that corresponds with the other equipment in the building. This not only makes it easier to identify which building a controller serves based on the name and address, but also makes for a clean, uniform navigation tree.



#### ABOUT THE AUTHOR

Bryan Upperman has over 10 years of experience in the fields of Information Technology and Building Automation. Currently he works as a software/network engineer for Building Control Integrators, where he continues to support large-scale system BACnet integrations. Some of these solutions are comprised of some or all of the following technologies: building automation equipment, business analytics systems, networking equipment, data warehousing and software API's. Each market has unique needs and goals they look to get out of their technology and Upperman takes pride in being a part of helping them achieve the most reliable, cost effective solution possible.



**Bryan Upperman**  
Software/Network Engineer | Building Control Integrators



# BACnet Stack: Functionality and Reliability

Develop BACnet-compatible applications on all important software platforms: Linux, QNX, Windows and Embedded. Powered by MBS

With the BACnet stack, CS-Lab is continuing the proven functionality and reliability of the MBS software. The BACnet stack supports developers in the development of BACnet-compatible applications that run on Linux, QNX, Windows and Embedded applications – this applies to both 32-bit and 64-bit applications. CS-Lab has compiled a library that supports programmers in the use of BACnet for particular tasks (automation station, building management system). As routines perform the actual operation of the BACnet protocol, programmers can concentrate on the actual application. Another advantage of the BACnet stack is that it guarantees BACnet protocol conformity, in other words the accurate implementation of the BACnet protocol.



## BACnet stack at a glance

### Powered by MBS

With the BACnet stack, CS-Lab is continuing the functionality and reliability of the MBS software.

### Routines for operation

Routines of the BACnet stack take over the actual operation of the BACnet protocol.

### On all platforms

The BACnet stack can run on Linux, QNX, Windows and Embedded applications.

### Protocol revision 14

The CS-Lab BACnet stack supports the protocol revision 14, making it a global market leader.

### Auto-fallback

For reading out arrays element by element without time-consuming intervention in the source code.

### Protocol conformity

The BACnet stack guarantees the accurate implementation of the BACnet protocol.

### Backup & restore

Backup and restore devices with just one "click".

### CoV registration

Automatic value change of the data points, eliminating complex programming of the value changes.

### Performance

Designed for large volumes of data and high performance.

### .Net Wrapper

.Net Wrapper for client functionality allows the easy incorporation of libraries.

### "high-level" über API

Receiving and communicating write commands at "high level" via the API.

### Managing objects

Objects can manage themselves because values are saved and can be read out when required.



### CS-LAB GmbH

info@cslab.de, www.cslab.de

More information: www.bacnet-stack.com



# Multi-Port BACnet L-IP Router



*The LIP-ME204 is a perfect alternative to installing four separate routers.*

The new LIP-ME204 BACnet Router is a true multi-port MS/TP router that comes with two Ethernet ports and four MS/TP ports. It has an LCD display with jog-dial operation for simple device setup. Each of the four MS/TP ports is routed to BACnet/IP and can serve a full-blown MS/TP channel. Communication settings as well as detailed MS/TP token passing statistics are available on the Web interface for each MS/TP port. The port configuration provides four MS/TP port tabs, on which the ports can be enabled or disabled independently.

The LIP-ME204 provides all the standard features known from the BTL-certified LIP-ME201, including BBMD function for up to 100 devices, foreign device mode, time master, slave proxy with automatic and manual entries, and device restart notifications. A custom BACnet/IP access control list allows restricting the access to the BACnet/IP network for defined IP address ranges. All configuration tasks can be done directly on the Web interface under the BACnet Config menu. The remote Wireshark packet capture feature is also available on each

of the MS/TP ports. This makes the LIP-ME204 a perfect alternative to installing four separate routers, reducing space and cost. The two Ethernet ports of the LIP-ME204 can be operated in switch mode, which allows a daisy-chain installation of IP devices and reduces cabling effort. In addition, the LIP-ME204 is also equipped with enhanced security features like a built-in firewall and a secure Web interface for installations using HTTPS with self-signed or installable CA certificates known from L-INX or L-GATE devices. By configuring separate IP networks on the two Ethernet ports, the building's BACnet network on the LAN can be entirely isolated from the configuration interface on the WAN. On top of that, the built-in firewall allows concise definition of available protocols on each IP interface. This makes security hardening a simple task. For perfect integration into building management software such as the LWEB-900 by LOYTEC, the LIP-ME204 offers an embedded OPC UA server with full-featured certificate authentication. This server exposes important operational parameters as OPC tags. For enhanced maintainability by IT departments, the LIP-ME204 provides the

same data also through an integrated SNMP server. Together with the LWLAN-800 adapter, the LIP-ME204 can operate BACnet/IP on the WLAN. By setting up an access point on the BACnet/IP network, the device can be used to distribute MS/TP channels on a wireless network.



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# Meet the New BACnet: Committee Roster Changed

ASHRAE's Standing Standard Project Committee (SSPC) 135, well known as the BACnet Committee, is in charge to maintain ANSI/ASHRAE Standards 135 "BACnet" and 135.1 "BACnet Conformance Tests." By that it effectively also maintains the ISO Standards 16484-5 and 16484-6, including numerous regional or national adoptions.

With the end of the ASHRAE Annual Meeting in Atlanta, the BACnet Committee roster underwent a number of changes, including a shift in the office. After successful and effective three years of leading the committee and doing enormous and outstanding work for it, Carl Neilson of Delta Controls stepped down as chairman. He is continuing to serve the committee as a non-voting member. **The new chairman of the BACnet Committee is Bernhard Isler of Siemens and former vice chair. The new vice chair is Michael Osborne of Reliable Controls and former secretary.**

A new person was to be found to take on the secretary position. The typical office track started with a four-year term as secretary, then a next term as vice-chairman, and a third term as chairman, totaling in a 12 years path and commitment. The committee therefore considered shortening these office terms to make the track shorter, and also more flexible. Coleman Brumley of PolarSoft, who served the committee in various other roles over many years, agreed to take on the secretary position.

Since the BACnet Committee is connected with BACnet International through people that belong to both organizations, the roster changes do not affect the connection. BACnet International is a very important player for BACnet's success, in supporting and evolving the BACnet marketplace. On technical level, persons from the BTL-WG are continuously providing input to the committee to improve not only the test standard 135.1, but also the BACnet standard 135. Through that, learnings from BTL conformance testing do flow into the standard efficiently.

The maintenance and evolution processes of the BACnet standards must adhere to ANSI and ISO rules. ASHRAE's procedures are designed for that. This includes that voting members of the BACnet Committee need to be balanced among

producers, users, and general interest persons. While it is easy to appoint members of the producer category, the BACnet Committee is always interested in appointing persons of the other categories. If you as a user or a general interest person would like to be part of this, please contact the new chairman.



## CHAIR

Bernhard Isler works for Siemens Building Technologies as system architect, at its headquarters in Zug, Switzerland. He got first involved in BACnet in about 1992, when evaluating BACnet, available as its second public review draft at that time, for application in fire detection systems. Few years later he wrote a first proposal for better support of fire systems in BACnet, ultimately ending in the today life safety objects of the BACnet standard. Isler was heavily involved in adding physical access control capabilities to BACnet. He was convening the Objects & Services Working Group for more than seven years. This time included the alarming revision initiative that led to BACnet revision 13, and the completion of the additions to the standard for elevator monitoring. Isler served the committee as a voting member, as secretary, as vice chairman, and is now chairman. His committee office career started with an email received from Dave Robin, chairman at that time, after the Louisville meeting in 2009. This email was asking if Isler would be available as secretary, starting the office track towards chairman. Given he is living in Switzerland this was completely unexpected for him. Since there was support by his employer, and Isler was already a passionate BACnet supporter with some history in the committee, he stepped into this endeavor.

Bernhard Isler completed a professional education as an electro-mechanical engineer with a Swiss national certification, and holds a BA in electrical engineering from the University of Applied Sciences in Rapperswil, Switzerland. At that time, this was the only way after profes-

sional education to study computer and communication engineering, which were his focus disciplines. In 2011, he was the recipient of the first Swan Award, established in honor of Bill Swan. In 2013, he successfully completed the Siemens certification program as system architect. Bernhard Isler lives in Wilen, close to Wollerau near Lake Zurich in Switzerland, with his wife Karin and three children now at university or already in their own professional career.

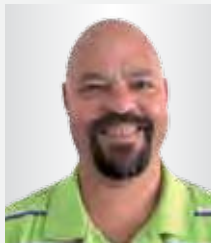


## VICE CHAIR

**Michael Osborne,**  
P.Eng, Reliable Controls Corporation

I was born a Sourdough! A Sourdough is a person that was born in Yukon or spent 20 years there. Since I was both born and spent the first 20 years of my life in Whitehorse I am a Sourdough, squared. I spent my youth hiking and fishing and trying to stay warm in the winter while watching the northern lights dance in the sky. My first stint out of high school was unloading trucks. Although it paid well, I wanted to use my brain a bit more and my back a bit less, so I moved to Calgary Alberta and went to technical school to become an electrical engineering technologist. I tried maintaining 1970s vintage tracking systems for the military, which was painful to say the least. I tried fixing high-speed industrial printers, which was interesting for a while, but in the end I needed more. The night I quit I applied to the faculty of engineering at the University of Victoria. Five years later I was an electrical engineer testing advanced power meters, changing diapers and dreaming of becoming a hardware engineer. I did become the hardware engineer and also wrote a little embedded code. After my fifth hardware design and another set of diapers I realized I liked writing embedded code way more than hardware and for the next bunch of years I plied my craft on advanced power meters, solar powered wireless crosswalks, automatic sprinkler systems and finally HVAC controllers for Reliable Controls Corporation and one more set of diapers. After a few


years of doing my stuff and implementing BACnet I was asked by the owner of Reliable Controls Corporation, Roland Laird, to accompany him to a SSPC 135 meeting in Dallas, Texas. I guess I did well because Roland stepped away from the SSPC 135 meetings and I started to attend regularly. Over the next few years I learned a lot about how the BACnet standard ticks. I guess I was a bit noisier than others at the meetings or maybe it was my lack of hair but in 2012, I was asked to become the secretary of SSPC 135. Three years of listening to recordings and doing minutes, and now I'm the vice-chair. Oh, and somewhere along the line I was promoted to people management and no longer get to play with my beloved embedded code.



## SECRETARY

**Coleman Brumley** is software architect and BACnet evangelist for PolarSoft Inc. He currently serves as Secretary and voting member of ASHRAE SSPC-135, and has been actively involved with BACnet for over 15 years.

Brumley has also served as convener of the ASHRAE SSPC-135 Internet Protocol Working Group for five years. Brumley is both a philosopher and product developer and widely recog-

nized speaker, teacher and contributor in multiple BACnet forums. He was the recipient of the prestigious 2015 Swan Award. He has over 20 years of experience in database, communications and human interface technologies. Brumley holds a BA in computer science from West Virginia University as well as an AS in business administration from Penn State University. Brumley lives in Greensburg, PA with his wife and two children. 

# Torch Passed to the New SSPC 135 Office

## Bernhard Isler

In May, the ASHRAE SSPC 135 BACnet committee assembled for the spring interim meeting at the Lutron Experience Center in Plantation, close to Ft. Lauderdale, Fla. Now the second time in Florida, the committee was excellently hosted by Lutron again. Aside providing outstanding meeting infrastructure, Lutron took every effort for the comfort of the participants. Thanks to Lutron, also for its offer to host the committee again in spring of the next year.

The ASHRAE Annual Conference took place in Atlanta, Ga., in June, where usually the committee meets for its fall interim meeting. This led the committee to meet in the city of Coca-Cola and CNN in summer this time. In both meetings, there was intensive work on addenda. Public review comments were resolved, and next versions of addenda for coming public reviews or publication were prepared and approved. Following, the state and content of the addenda are detailed.

At the end of the meeting in Atlanta, the torch was passed to the new office of the committee. Carl Neilson of Delta Controls, who led the committee for the past three years, received big thanks, appreciation and applause for the enormous work he did as chairman. He will keep being member of the committee. New chairman of the committee

is Bernhard Isler of Siemens Building Technologies and former vice-chairman. New vice-chairman is Michael Osborne of Reliable Controls, former secretary. Coleman Brumley of Polarsoft was welcomed to the office as new secretary. In his initial speech, Bernhard Isler pointed out that he sees the priorities in the adoption of new technologies, but also in closing the gaps of conformance testing. Find a more detailed introduction of the new leadership team in this issue (page 16).

## Addenda Recently Published

Latest, four addenda to the BACnet standard 135-2012 were published by ASHRAE. These addenda make up protocol revision 1.17.

- Addendum 135-2012ai Network Port Object Type
- Addendum 135-2012al Gateway Best Practices, New BIBBs and Device Profiles
- Addendum 135-2012as Command and Value Source Information
- Addendum 135-2012ay Timer Object Type

With this protocol revision, the Network Port object type got finally out the door, and therefore addendum 135-2012al, having been ready for publication for a while, could be published, too. Also, this

allows addendum 135-2012aj (Virtual Link Layer for IPv6) to be brought forward. Aside, one smaller addendum to the test standard 135.1-2013 has been published as well:

- Addendum 135.1-2013o  
SubscribeCOVProperty Error Tests

For getting familiar with the content of these addenda, they are available for free at ASHRAE's website ([www.ashrae.org](http://www.ashrae.org)), but also at the committee's website ([www.bacnet.org](http://www.bacnet.org)).

Further, addendum 135-2012aq is finished and ready for publication. Since the committee does not want the revision number to increase too fast, this addendum will be published together with other addenda that will complete their public review process soon.

- Addendum 135-2012aq  
Elevator Monitoring and COV Multiple Reporting

## Addenda Approved for Public Review

During the Fort Lauderdale and Atlanta meetings, a number of addenda were approved for a first or next public review. With the publication of this journal, some of these addenda completed the review already. Others may still be in review.



- Addendum 135-2012aj PPR5  
Virtual Link Layer for IPv6
- Addendum 135-2012am PPR3  
BACnet XD and RESTful Web Services
- Addendum 135-2012ba PPR4  
BACnet XD for classic BACnet Devices
- Addendum 135-2012bc PPR2  
Various BIBB Updates
- Addendum 135-2012be PPR1  
BIBBs and Device Profiles for Lighting
- Addendum 135-2012bf PPR1  
Enhancements to the Network Port object
- Addendum 135-2012bg PPR1  
Miscellaneous Changes
- Addendum 135-2012bh PPR1  
Segmentation Enhancements

Addendum 135.1-2013p to the test standard was voted out for its first public review a while ago. It will add some new EPICS consistency tests. The time this review will start will need to be determined.

- Addendum 135.1-2013p PPR1  
EPICS Consistency Tests

Addendum 135-2012aj introduces a new BACnet Virtual Link Layer (BVLL) for IPv6. With this, BACnet will be capable of running over IPv6. BACnet routers will be used to integrate BACnet devices on IPv4 and other datalinks with those on IPv6 networks.

Addendum 135-2012am has two major parts. Fundamental is the introduction of a common extended data model for BACnet (BACnet XD). This extension will enable BACnet to represent complex data structures such as provided by the "Facility Smart Grid Information Model" (FSGIM, ASHRAE 201P). The new powerful and secure RESTful Web Services will be used to access the entire extended model.

Addendum 135-2012ba enables classic BACnet devices to contain or refer to a static description on an external server, based on BACnet XD. New properties are introduced that provide semantic information on objects and relationships in object structures.

Addendum 135-2012bc collects a larger number of BIBB and device profile updates. Among those are:

- Amendments of BIBBs and workstation device profiles for the revised event reporting.
- New BIBBs and device profiles for life safety panels, user interfaces and workstations.

- New BIBBs and device profiles for physical access control devices, user interfaces and workstations.
- A new device profile for a cross-domain advanced workstation (B-XAWS) that includes all features of the advanced workstation device profiles for HVAC, Access Control and Lighting.

The life safety domain is excluded on purpose from the new cross-domain advanced workstation. Life safety workstations are usually subject to codes and regulations. The committee does not want to make such a requirement to the cross-domain advanced workstation. However, life safety support can easily be specified in addition, through the new family concept for device profiles.

### Addenda First Time in Public Review

Addendum 135-2012be adds new BIBBs and Device Profiles for the lighting domain. It introduces new device profile families for lighting workstations, lighting user interfaces, and lighting devices. The device profile family concept, as introduced with addendum 135-2012al, enables the inclusion of lighting functionality in specifications, independently from functionality required for e.g. comfort control. Together with addendum 135-2012bc, the BIBBs and device profiles of the standard will cover device functionality specifications across all building control domains supported by BACnet.

Addendum 135-2012bf enhances the Network Port object type. It adds additional properties for more configuration items of an IP stack, and adds few other configuration items of other datalinks. But more important, it enables the structuring of Network Port objects, so that they become able to represent the complete protocol stack structure and layering of a device, including shared parts such as the IP stack. Aside this, the addendum includes a smaller number of modifications of BACnet/IP in Annex J, for alignment with the Network Port object.

Addendum 135-2012bg is a collection of smaller corrections and amendments. Worth to name, aside some new engineering units, are some new selectable dates relative to the end of a month in Schedule objects, the configurability of the UTC offset, and some clarifications on Log objects and the ReadRange service.

Addendum 135-2012bh is proposing a number of new features of the protocol stack, to improve performance of slower networks such as MS/TP in transferring segments of a message.

### Other Addenda in the Works


A number of addenda are in work for a subsequent public review. The Application Interfaces working group works on renewing Addendum 135-2012ap on the base of semantic tags. The MS/TP working group is resolving comments it received in the first public review of addendum 135-2012bb, and is preparing a new version for a next public review. The Lighting Applications working group is working on comments to addendum 135-2012bd and the next version of the addendum.

- Addendum 135-2012ap PPR2 Application Interfaces
- Addendum 135-2012bb PPR1 MSTP Zero Config
- Addendum 135-2012bd PPR1 Staged Value Object Type

Addendum 135-2012ap, Application Interfaces, is currently on hold. The Applications Working Group is now working on an approach in which the application interfaces are defined and identified through semantic tags. This includes some alignment with the Project Haystack.

Addendum 135-2012bb adds zero configuration capabilities to MS/TP devices. With this mechanism, MS/TP master devices can determine their MAC address automatically.

Addendum 135-2012bd adds a new Staged Value object type to the standard. This new object type represents a functionality which is typically found in lighting systems, but is not limited to this. The object controls a set of binary values in other objects, based on a commanded analog value. Configurable limits cut the range of the analog value into adjacent stages. For each stage, the pattern commanded to the binary values can be configured.

Public review and final versions of addenda are available at no cost from ASHRAE (<http://www.ashrae.org>) as well as on the BACnet website (<http://www.bacnet.org>). To stay up-to-date on public reviews, publications, and interim meetings, you can subscribe to the weekly ASHRAE Standards Actions electronic newsletter, or read it, at the ASHRAE website <http://www.ashrae.org/standards-research--technology/standards-actions>. 

# BTL-Listed Products Growing and Proving Critical to Interoperability

The BTL (BACnet Testing Laboratories) was established by BACnet International to support compliance and interoperability testing activities, publishing BTL-Listings, and granting the authorization to use the BTL Mark to successfully tested products. The BTL-Listing and BTL Mark indicate that a product has successfully passed rigorous verification by testing and demonstrates that the product correctly implements rules and interoperability of the BACnet protocol. More and more product specifiers are requiring BACnet as a “must-have” for system requirements. There are now 112 distinct manufacturers with BTL Listed Products. Specification of BACnet as the protocol, and requiring BTL Listed products is becoming THE benchmark for project specifications to ensure interoperable installations.

The BTL Mark may be displayed only on products that have successfully passed BTL Testing. Testing ensures that the device correctly implements all of the BACnet functionality it contains as governed by ASHRAE standard 135.1. The BTL Working Group defines the BTL Test Plan and governs the testing.

To apply for BTL Testing, please submit three forms to [btl-coordinator@bacnetinternational.org](mailto:btl-coordinator@bacnetinternational.org): BTL Checklist, BTL Testing Application, and BTL Testing Agreement. These forms and instructions for the entire testing process may be found at: [http://www.bacnetlabs.org/test\\_documentation](http://www.bacnetlabs.org/test_documentation) under the heading BTL Test Package v14.0. The signed BTL Testing Agreement and the \$750 Application Fee are required to secure a place in the testing queue. The testing queue is currently around 4 weeks but may vary depending on the number of applicants at any given time. The BTL Checklist and BTL Testing Application determine the testing which will be performed. An Application Acceptance letter will be supplied that includes a formal estimate for the amount and time of testing and a test entry date. Testing fees are billed at conclusion.



BACnet International member companies at Silver level or higher received a discount on testing fees (the Testing Application fee is the same for all applicants). Participants may apply for Testing and Listing of a family of devices that share underlying BACnet software in order to minimize testing costs.

If you have any questions, please contact [btl-coordinator@bacnetinternational.org](mailto:btl-coordinator@bacnetinternational.org).



**Emily Hayes**  
BTL Coordinator  
[btl-coordinator@bacnetinternational.org](mailto:btl-coordinator@bacnetinternational.org)



## Honeywell

- a1 UC
- 301C
- CPO-PC-6A 2.2.3
- CP-CORE
- CP-IPC
- CP-IPC 2.2.3

## SAUTER

- Flexotron
- modu521

## AB

- Regin EXOcompact
- Regin RCF-230
- Regin Regio

## Vector

- CS1

## CtrlAppl

- LT
- LT-PQ-GR-MC

## ASI

- 1-6100
- 1-8100
- ASIC-3

## Yaskawa

- Z1000U

## FieldServer

- FS-Router

## Kieback

- DDC4000e

## WAGO

- 750-829

## S-1

- S1DDC

## Siemens

- TC24
- APOGEE PXCIPMSTP
- APOGEE IP
- APOGEE MSTP
- TALON
- TALON MSTP
- PXC24
- Desigo
- PTEC

## Price

- PIC

## SierraMonitor

- FS-Router

## Distech

- ECY Series

## Airtek

- DSC-DSF

## ABB

- ACH550
- ACS320
- E-Clipse

## E+E Elektronik

- GmbH EE210D

## Trane

- UC210
- BCI
- TracerSC
- UC600
- UC400

## SE-Elektronik GmbH

- E-DDC3.3

## VACON

- 100 series

## Invertek

- ODV-3

## Kamstrup

- MULTICAL-602

## LG

- AC-Smart

## Strato

- BACplus-IP

## Midea

- CCM08

## Alerton

- ACM-GC

## Ebtron

- GTC116
- GTM116

## MIRAE

- MRS-NAVI00x

## Pegasus

- SS
- SA

## Delta Controls

- DAC-E

## Carrier

- WTC BACnet Series

## Schneider

- SE8000
- iEM3000
- SpaceLYnx

## Shina

- VCM-100A
- FCU series

# BACnet Roadshow: Learning a Great Deal



John Ringness,  
International Facility Management Association (IFMA)



Carl Neilson,  
BACnet Committee Chair 2012 – 2015

The BACnet Roadshow is an added value for the entire BACnet community. Thankful participants and excellent presentations characterized the recent events in Seattle, Abu Dhabi, Warsaw and Berlin. But the Roadshow achieved even more results: New cooperations with facilities management organizations; start-up assistance for the BACnet groups in Poland and Middle East; and ministerial congratulations on the 10<sup>th</sup> anniversary of BACnet as an ISO standard.

At the opening event of the BACnet Roadshow in Seattle on April 21 it was evident that BACnet is more than ever the global lead to reliable investments in building automation. "I just returned from the BACnet Global Roadshow in Seattle with great presentations by all," recorded Ken Sinclair at [automatedbuildings.com](http://automatedbuildings.com).

"I wanted to express my appreciation for allowing me the opportunity to experience the BACnet Roadshow in Seattle," said visitor David Miller. "I learned a great deal and thought that the presentation was very informative."

Lyle Bicknell, planner of the city of Seattle, and John Ringness from the International Facility Management Association (IFMA) presented the requirements of smart and efficient buildings.

Steve Bushby, National Institute of Standards and Technology (NIST), highlighted the role of BACnet for the governments' energy concepts. Future directions were reported by the chairman of the BACnet Standardising Committee (ASHRAE-SSPC 135), Carl Neilson.

"BACnet has evolved from the initial application in areas of HVAC, and is now the decisive success factor in building automation." Raymond Rae, vice president of Delta Controls, made as a strong point for BACnet's future success. "The global ISO 16484-5 standard proves itself in numerous applications, which is why an open and manufacturer-independent building automation with BACnet is the key to success for economically and ecologically sustainable building operation."

Andy McMillan, president of the BACnet International, raised the numerous benefits of BACnet certification for users and manufacturers alike. How and where BACnet fits best into the Internet of Things (IoT) was outlined by Rick Fellows, KMC Controls.

"The BACnet community should not fear the IoT movement," said McMillan. "It should embrace it, as it has been part of the movement since its inception. BACnet is validated in the IoT world because it is very well elaborated."

At the BACnet Global Roadshow, BACnet International and the BACnet Interest Group Europe (BIG-EU) present together with their members the latest news and innovations around the global standard in building automation. The range of applications is growing, and more and more users understand the multiple benefits of the internationally standardized protocol.

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### Elections in Abu Dhabi

"It was a good show for us," summarized Contemporary Controls, exhibitor in Abu Dhabi. Highlight on June 2 in Middle East was the live presentation of an interoperability workshop. "We had good consultants, contractors, as well as BACnet vendors, at this event," said Vijay Kumar, former BIG-ME vice president.

Much attention was given to the presentations of the Middle East Facility Management Association, of the Green Building Council and of the ASHRAE Falcon Chapter Activities.

The event concluded with the election of a new BACnet Interest Group Middle East (BIG-ME) presidency. Salman Kalam from Value Controls was elected as president; Anu Sivaprasad from Belimo was elected as vice president.

### BACnet on the move in Poland

The Roadshow event on June 9 in Warsaw left a significant mark in Poland. Fifteen visitors applied to join the new BACnet Interest Group Poland (BIG-PL) and elected Marcin Ploski, Global Control 5, as representative.

Pawel Klimczak from the Polish Chapter of the International Facility Management Association, sees the need of further cooperation. Scientific support was assured by the AGH University of Science and Technology in Krakow, represented by Marcin Pawlik.

BIG-EU representative was advisory board member Frank Schubert. He gave a highly regarded update on current developments in standardization and certification.



*A bridge between open building automation and facility management. 80 visitors followed the discussion with IFMA Polska at the BACnet Roadshow in Warsaw.*

### Berlin remains BACnet hub in Europe

"We need reliable protocols like BACnet", confirmed the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety on June 16 in Berlin.

Karl Heinz Belser, BIG-EU executive board, moderated the event. One hundred and forty visitors were attracted with topics ranging from the Berliner Schloss to the future directions in BACnet standardization.

"I went through the presentations" commented BACnet Pioneer Mike Newman. "There were really some very excellent ones! Congratulations!"

After the launch of BACnet in the German Parliament Buildings many years ago the city of Berlin also today remains a BACnet hub. Visitors asked for more events like this to get and to stay in touch with BACnet.



*The Roadshow event in Berlin attracted 140 visitors.*





*A view of Sydney central, looking south from the Harbour Bridge.*

## BACnet Down Under: A Conference Report

In June of this year, BACnet International was invited to provide a speaker for a building automation and controls conference held in Sydney, NSW, Australia (<http://www.buildingautomationandcontrols.com.au/>). Ben Dorsey of BACnet International's marketing committee got the nod. This is his report.

This event, known as Building Automation & Controls 2015, differed from standard industry conferences of North America in two significant ways:

- Unlike the many free – or nearly free events – we might find here, there was a considerable price tag for this one: \$3,500 AUS per person.
- As a result, it was also a much more intimate gathering than we might see in North America.

Still, I was amazed at the diversity of attendees. I met representatives of all of the following groups: architects, consulting engineering firms, contractors and other service providers, owner represen-

tatives, facility managers, real estate investment and management firms, city council representatives, academia, not-for-profit companies, and NABERS (the green building rating system for Australia).

The diverse audience led to varying views of automation. Among some, for example, automation and control systems generally have a poor reputation due to such factors as complexity and limited life cycles (such talk set the stage for me to address the sustainability benefits of BACnet.) Others discussed the value of building-related data and how to properly evaluate a control system.

Over the two days of the conference, a theme emerged: implementing the right level of automation and control based on business drivers. Such drivers included first costs, operating expenses, energy savings, and owner/occupant demands.

My gracious host for this event was also one of the conference sponsors, Alerton Australia, a business unit of The Oberix Group (<http://www.oberix.com/>). Will Kenna, sales & marketing director for

The Oberix Group, helped me to put these business drivers in context.

"Energy costs are very high here compared to North America," he said. "It is the primary reason that building professionals seek greater levels of automation. Energy savings is the only message we need to sell."

Another theme emerged among the pragmatic Aussies: "keep it simple." In other words, do only what is necessary to achieve the desired results. System integration, therefore, trails behind what might be more common in North America and elsewhere. While not unusual, HVAC and lighting integration are not common and integration beyond this is even less common.

Gary Whatling of JLL reinforced the notion of simplicity in talking about the complex dashboards that seem to be emerging everywhere.

"A facility or property manager only has time to consider three things of importance each morning during coffee," he said. "The BMS has to present these, and only these."





*A view of the Sydney Opera House looking east from the Harbour Bridge.*



*A view of the Sydney Harbour Bridge looking north from historic Sydney Observatory Hill.*

One notable exception to the “keep it simple” rule – in addition to my own lofty talk of building intelligence through BACnet – came from Rodd Perey of Architectus. Perey reviewed a case study of a significant property known as 1 Bligh Street, Sydney (<http://www.1bligh.com.au/>).

To achieve the owner’s vision, virtually all building systems were integrated by BACnet International member company, Schneider Electric. I toured this impressive structure later in the week and found it to be inviting, comfortable, and illustrating leading-edge technology.

There was a cost to achieve the owner’s vision in this case, however. Rodd explained that automation represented about 1.5 percent of the overall project cost. I learned from Kenna that the automation percentage is typically about 1 percent. So, 1 Bligh Street represented a 50 percent premium over norm.

BACnet is well entrenched in Australia and is the go-to communication protocol for virtually all automation projects. This is due in part to

work of various BACnet International member companies who have a presence in this market.

During the conference and another trade event that week, I interacted with representatives from all of the following member companies: Automated Logic, Reliable Controls, Distech Controls, AIRTEK, Daikin, Honeywell, Optergy, ABB, LG, Belimo, and probably others I’ve forgotten.

I’d apologize to those I’ve forgotten. But, I’ve formally adopted the Aussie approach: “No worries, mate.” 🇦🇺

#### ABOUT THE AUTHOR

Ben Dorsey has worked exclusively in the B2B technology arena as a marketing executive, writer, and speaker. He stays close to building industry trends, sustainability issues, and, of course, BACnet.

A few hundred Sydney-area industry professionals gather for a trade night event sponsored by AIRAH (Australian Institute of Refrigeration, Airconditioning, and Heating).




#### Ben H. Dorsey III

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BACnet International community membership includes a who's who list of top tier companies and industry professionals involved in the design, manufacturing, installation, commissioning and maintenance of control and other equipment that use BACnet for communication.

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## Calendar of BACnet International Events

Dates 2015	Location	Event	Highlights
October 27 – 28	Orlando, FL, USA	NFMT Orlando and BACnet International Conference	BACnet International booth and education track. Visit us in booth 613
November 16 – 20	Shenzhen, China	BACnet Golden Week China	Educational forum, BACnet training and Asia Pacific PlugFest
Dates 2016			
January 25 – 27	Orlando, FL, USA	AHR Expo 2016	BACnet International booth. Visit us in booth number 1042
March 13 – 18	Frankfurt, Germany	Light+Building 2016	BACnet booth
March 22 – 24	Baltimore, USA	NFMT 2016	

Information about all events: David Nardone, BACnet International: [david@bacnetinternational.org](mailto:david@bacnetinternational.org) or at [www.bacnetinternational.org](http://www.bacnetinternational.org)

## BACnet International Journal 10

The BACnet International Journal is a global magazine for building automation based on BACnet technology. Experts, practitioners and professionals show the way in applying and developing the BACnet standard – from building automation trends to devices and application projects; from qualification and training to testing and certification; from who's who in the BACnet community to useful information on events and publications. Special attention is given to members and activities of BACnet International.

### Distribution

This Journal can be ordered free of charge by BACnet users as well as partners, members, media representatives and friends of BACnet International. Order the BACnet International Journal by e-mail at [info@bacnetinternational.org](mailto:info@bacnetinternational.org)

### Online distribution

The BACnet International Journal is posted as a Portable Document Format (PDF)-File to [www.bacnetinternational.org](http://www.bacnetinternational.org)

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