

Create better business outcomes with an open BAS



How to minimize risk and maximize ROI with an open BAS architecture

There's a lot of talk in the industry these days about the concept of openness and how organizations and their facilities teams can benefit from having an open building automation system (BAS). But what exactly does that mean and how can openness add value?

In the world of building systems and technology, openness refers to the use of standard data formats and communications protocols in the design, delivery and use of building automation systems.

Standardization makes it easier to ensure compatibility across different systems and networks, maintain systems efficiently, and expand capabilities as technologies advance.

Within a building automation system (BAS), openness is typically associated with one or more of these characteristics:

1. Open Protocols
2. Open Procurement
3. Open APIs
4. Open Software Tools & Support

When applied to a BAS, these four aspects of openness can help facility teams create better business outcomes such as reduced energy spend or consumption; increased operational efficiencies; reduced IT security risk; and the ability to better maintain safe, comfortable and productive environments.

But opening the door to an open architecture does not come without its challenges.

This white paper explores the advantages and disadvantages of each of the four attributes of openness, and is designed to give BAS owners and users the information they need to consider what they're really looking for when they specify an open system.

1. Open protocols to support BAS integrations

Protocols are sets of rules that govern the exchange of data over a computer network. In the HVAC industry, the development of 'open' or standard protocols is led by a number of professional societies and member organizations. Common examples include BACnet/IP, TLS and OPC. The key is that they are not owned or maintained by a commercial entity – they are in the public domain.

Open protocols help BAS owners get more from their investments by creating a common language between systems and data, making it easier and more cost effective to integrate and expand, and broadening the pool of people with the knowledge and experience to maintain the systems efficiently.

The downside is this: Standard protocols are updated frequently. Keeping them in sync and managing different versions can be challenging—especially when multiple vendors are involved.

As you consider open protocols for a BAS selection or upgrade, it's helpful to focus on the goal. Do you have a master plan for your BAS? Do you know what you need it to accomplish both today and in the future? Do you have a sense of what upgrades or system integrations may be needed down the line? Document planned or potential use changes along with goals such as improving maintenance practices or monitoring electrical, water or energy usage.

ADVANTAGES OF OPEN PROTOCOLS

- Simpler integrations between competitive BAS
- Simpler integrations with meters, lighting, security, fire and other systems
- Common understanding of the network

DISADVANTAGES OF OPEN PROTOCOLS

- Version complexities
- Challenges to determine priority or lead among multiple systems in terms of supplying and servicing

When you begin with the end in mind, you can better ensure that the building automation system you choose will support open protocols and give you the flexibility to connect to controllers, devices and systems you'll need in the future.

If you have an existing BAS, it may be worthwhile to assess the protocols of your current system. Are they standard, open protocols that can easily support upgrades or expansion? Are the protocols up to date? By taking a closer look at the currently existing protocols, you'll be better prepared to make an informed decision (and specify open compliance, if needed) when the time comes to make a change.

2. Open procurement to build a BAS from multiple suppliers

Open procurement refers to the ability to purchase a product or products from multiple suppliers, a strategy often used by those who are concerned about being locked into a single vendor. There are definite advantages to making use of open procurement. It can create competitive pressures among suppliers and help keep costs down. It can help with sourcing when controllers or replacement controls are available from multiple sources. And open procurement can expand the talent pool, making a broader range of people available to develop, deliver, manage and maintain building automation systems.

Open procurement does have disadvantages, however. When working with multiple vendors, it can be difficult to hold individual suppliers accountable for issues, or maintain consistency during upgrades and expansion. Open procurement can also lead to multiple systems from multiple providers in a single buildings, each with their own tools for management and maintenance. And with the layered complexity of a BAS including sensors, equipment and servers, operators may have vastly different experiences with different components, making training and troubleshooting more difficult.

As you consider leveraging open procurement, start by doing your homework on potential vendors. Is their product proven in environments and applications similar to yours?

ADVANTAGES OF OPEN PROCUREMENT

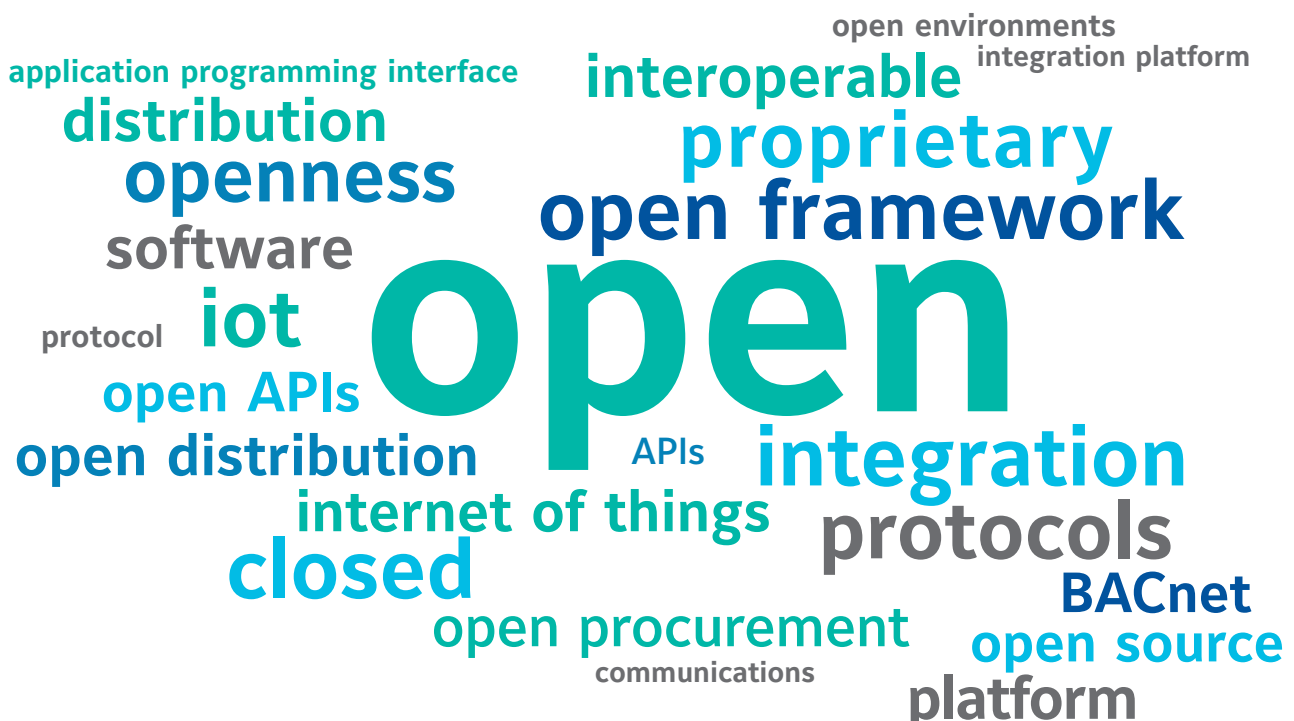
- Lower cost and increased competitive pressure among suppliers
- Multiple controllers sources
- Wider talent pool for BAS service

DISADVANTAGES OF OPEN PROCUREMENT

- Inconsistency, which can especially impact upgrades and expansions
- Steeper learning curves and system nuances in mixed systems
- Can be more challenging to service a BAS at all levels

Do the company's service providers have the training, knowledge and experience to consistently deliver throughout the warranty period and without hidden costs?

And if you choose to specify open procurement, one way to minimize risk is to make sure documentation is thorough and current. In specification documents, make reference to today's technologies and protocols. Insist, in writing, that vendors across the system follow guidelines you set for system backups, updates, and common practices. Lastly, clearly documented roles and responsibilities can ensure that there are no overlaps or gaps.



3. Open APIs for BAS customization

When a building automation system supports an open API (Application Programming Interface) that means it gives third-party developers the ability to create custom tools and applications based on data generated by the BAS. The use of APIs can be an effective way to integrate building system data with other software applications or tools, such as computerized maintenance management system (CMMS), and can shorten the time needed to develop customized applications to meet a user's unique needs.

But APIs can be risky. By inviting third parties to access BAS data, the system will be inherently less secure and more vulnerable to threats and hackers.

In addition, withdrawing an API can be painful for users of systems that need to be consolidated or retired, as they'll lose their data. And software that uses APIs heavily can be impacted by changes on either the BAS or application side, which can disrupt operations.



ADVANTAGES OF OPEN APIs
<ul style="list-style-type: none">• Third parties can provide additional offerings• Wider talent pool for customization work
DISADVANTAGES OF OPEN APIs
<ul style="list-style-type: none">• Security risk• User dependency

As you consider using open APIs for your building automation system, start by assessing whether your current BAS is capable of meeting the need so you won't have to assume the risk associated with opening your network to third-party developers.

If you do choose to leverage open APIs, you can minimize the risk by taking these steps. First, involve your company's IT team; they'll help to ensure that measures are put in place to protect against vulnerabilities. They can also help validate that applications developed by third parties are capable of recognizing threats. Second, ensure that there's a plan for supporting and training people who will use the third-party applications.



4. Open software tools and support for BAS updates

'Open software tools and support' refers to the practice of extending access to the building automation system beyond the original vendor, so that others (either the BAS user or other vendors) can reconfigure the BAS or connect it to other new or upgraded systems. Having open access to software and tools gives BAS users more service options, including self-service.

The disadvantage is this: When a number of different individuals are allowed to make changes to a BAS, inconsistencies can be introduced.

ADVANTAGES OF OPEN TOOLS AND SUPPORT
<ul style="list-style-type: none"> • Wider talent pool for BAS work or service (including "do it yourself" options) • Access to factory training and factory support
DISADVANTAGES OF OPEN TOOLS AND SUPPORT
<ul style="list-style-type: none"> • Inconsistency • Ability to circumvent training or certification

As you consider granting open access to software tools and support, start by making sure the original BAS contractor provides, installs and sets up all the software tools necessary for a trained person to configure and program the building automation system.

Next, assess whether your organization has experienced, trained technicians who can add to or make changes to the BAS. If not, it may be more cost effective to consider external vendors. Either way, establish guidelines for who will be allowed to make changes to the system.

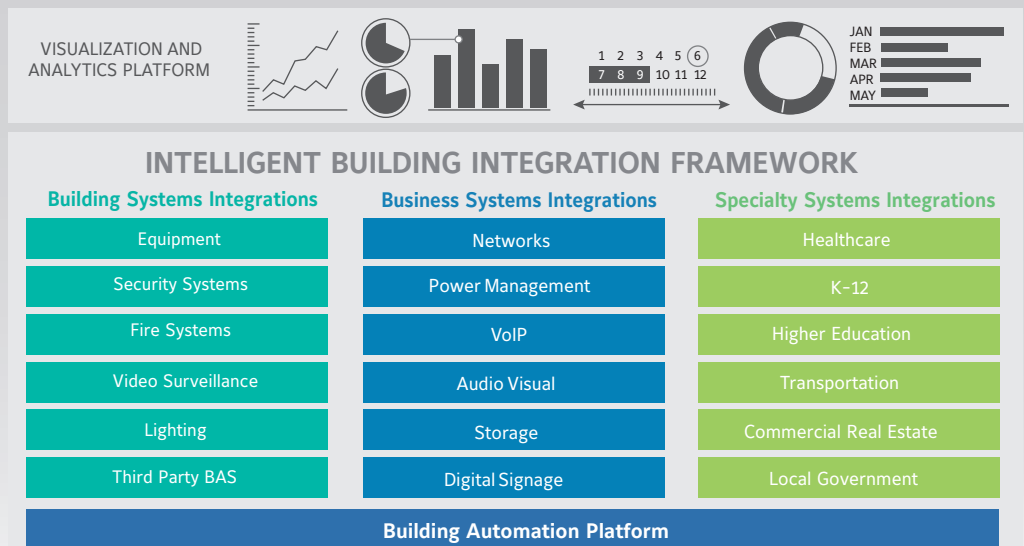
Document the level of experience you'll require and develop standards within which the vendors (or your own employees) must work.

And keep in mind, as new projects are taken on, it will be important to determine and document who provides the tools and who owns the software licenses.

Open, intelligent infrastructure

Over the past 10 years there has been a move to integrate systems and technologies and converge them onto a single network to take advantage of what we are now calling Internet of Things or (IoT). It all starts with an open BAS, and in most use cases the BAS is directing and scheduling the other system interactions to deliver desired outcomes. Until now, these single network integrations have been risky and costly largely due to the fact that systems didn't 'talk' to each other and complex building solutions were very customized. Now we are seeing the ability to integrate traditional building systems with business and vertical market specialty systems, taking advantage of the open BAS and its ability to direct workflow and operations to make the building do more.

Owners are looking for their buildings to do more. They're looking for their hospitals to become an instrument of care, or for their building to become a better learning environment in schools. IoT and open BAS are right in the center of delivering these outcomes. Owners and occupants alike have come to expect these IoT outcomes—like safety, comfort, productivity and efficiency.



Open BAS: Helping facilities professionals achieve their goals

Building owners and facility managers are constantly looking for ways to obtain greater control and create greater efficiency in their buildings. An open BAS is one way to achieve those goals.

Tapping into the power of openness—through standard and open protocols, procurement, APIs and software tools—makes it easier to ensure compatibility across different systems and networks, maintain systems efficiently, and expand capabilities as technologies evolve.

By its very nature, however, an open architecture presents a number of challenges. It can be difficult to maintain consistency, eliminate version complexities and ensure

system security within an open system. The key to minimizing these risks is to know your BAS goals, and to clearly document roles, responsibilities and processes across vendors, systems and users.

That's why it's so important to approach open BAS with your eyes wide open. By taking steps to minimize risk, you can use open BAS to create better business outcomes such as reduced energy spend or consumption; increased operational efficiencies; reduced IT security risk; and the ability to better maintain safe, comfortable and productive environments.



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