

# Integration and Interoperability

## Evaluation Guide



### Building systems are becoming increasingly complex.

As technologies like AI continue to permeate how we interact with not only the digital world, but also the built environment, our expectations for what systems *can do* are also changing. Subsystems that work not just in conjunction with each other, but collaboratively to help make spaces more efficient, more comfortable and more responsive to occupants' needs will become the new normal. But not every supplier you select to accomplish your system integration goals will be the same. Finding the right team that not only understands how your building works, but that will also work to understand how you want to leverage it to achieve your goals is key.

At Trane, we believe that the first step to selecting the right system integrator is by evaluating your choices leveraging specified criteria. Based on nearly 50 years of building controls and management experience, we offer you the following guide to support this evaluation. You and your team can use these questions to find the team that will best meet your needs.



**Scope and Asset Planning**



**Data Access and Security**



**Productivity and Control**



**Communication Protocols**



**Ongoing Support and Service**



## Scope and Asset Planning

Knowing which systems to connect to one another and which to isolate or run independently from a larger system is a necessary first step that your selected supplier should help you navigate. Many building subsystems can operate in concert, but understanding where you'll actually create added value by connecting them is important. Look for vendors that can help you decide what to connect and how to reevaluate what is connected as your mechanical equipment ages and evolves over time.

Questions to Ask	Trane	Vendor 1	Vendor 2
<b>Which of my subsystems can you integrate with?</b>	Trane HVAC equipment and controls leverage BACnet, an open standard protocol for communication. This allows us to integrate with anything that also leverages that protocol, regardless of the manufacturer. The Trane controls architecture also supports Modbus and LonTalk and, by using bridges, can communicate to nearly any other communication protocol. This flexibility allows us to integrate other brands of HVAC equipment and controls, lighting systems, security and access control systems, fire suppression, energy meters, integrated workplace management systems (IWMS) and workplace experience management applications (WEMA) and more.		
<b>My building has multiple vintages of equipment. Can you help me bring all my equipment into a consolidated view and make sure we get the same amount of detail?</b>	Our goal is rarely to “rip and replace” HVAC. Where we can, we will pull native controller data to feed our BAS and BMS systems. When necessary, we can add additional zone sensors and/or field-applied programmable controllers to augment the data we can collect and visualize.		
<b>Our systems have already changed so much in the last few years. How do you ensure that whatever we add next will still work with what we have today?</b>	There is a lot of buzz around “future proofing” in the industry these days. While no one can truly predict the future, we have a dedicated team of application and design engineers who leverage trend reports, attend conferences and seminars and watch the B2C space for indicators of what is coming. This team is always working on new means of integration via APIs, new communication protocols and adaptive devices to ensure when you're ready to grow your system modularly, it works within the structure you're investing in today.		
<b>What other systems should we be thinking about integrating?</b>	The short answer to this question is that if you have something in mind, our team is happy to talk about the best approach to pull it in. The longer answer is that we are currently seeing lots of requests for energy aggregators, EV charging stations, PV systems and other renewables. There is also a big emphasis right now on integrated workplace management systems (IWMS) and workplace experience management applications (WEMA) as a means to provide better asset planning and employee satisfaction in commercial building portfolios. Whatever it is you're looking to integrate, our team will work with you to evaluate both the feasibility and the value of doing so.		



## Data Access and Security

Protecting your company's data is a top priority. Making sure that you have the remote access and data sharing functionality to enable cloud-based analytics and services can feel like it creates risk. Your integration vendor should have clear and documented approaches as to how, when and where they'll access your systems and what they'll do with the information available.

Questions to Ask	Trane	Vendor 1	Vendor 2
<b>Do I own my data?</b>	<p>Yes! During the system design phase, you will work with one of our controls specialists to establish which data points will be collected and at what frequency. During this phase we'll also establish where your data will be stored and who will be able to access it. We can set up role-based access to allow your team, our team or other contractors enough remote access to be productive without opening the entire system up.</p> <p>We can also help you document means for exporting it if that were ever to become necessary.</p>		
<b>What are you doing to protect against cybersecurity risks?</b>	<p>As a company we've aligned our procedures and policies to third-party standard setters. Our core controls portfolio is SOC 2 compliant; all Trane controls devices are BTL certified, and Trane's cloud offerings are TX-RAMP certified.</p> <p>What does that mean for you? In short, it means that we are aligning to established industry best practices and policies for designing security safeguards into our products from the earliest conceiving phases.</p> <p>We regularly review our policies and offer ongoing training to our field offices, including an established Field IT team that serve as in-office experts available to our sales teams at a moment's notice.</p>		
<b>How are you helping to make sure our team doesn't inadvertently open our system up to risk?</b>	<p>There are features built into our HVAC equipment and controls that will help you and your team keep cybersecurity top of mind. But even more important than what we enable in our products is how we can help support your team as you implement our offerings. You will have on-demand access to Trane experts who are committed to answering your questions and available for regular system reviews when you need them. With Trane, you're not in this alone.</p>		



## Productivity and Control

At Trane, we take pride in our over 100 years of earned building expertise. We know how systems work together, how changes in one area can negatively impact another and how to avoid that. But you know your building better than anyone. We believe the idea of a single pane of glass view for all your systems is only as valuable as it is configurable to your needs. No two buildings are alike, and while we can leverage lessons learned to apply best practices, we know you need to be able to adjust based on what works for you. Your system integrator should offer you guidance on when/where to configure or customize your systems and where standards can be applied to help save time, money and future headaches.

### Questions to Ask

#### Trane

#### Vendor 1

#### Vendor 2

<b>Am I able to modify my system in a way that makes sense for my needs?</b>	Absolutely. Much of Trane's portfolio of equipment and controls can come pre-configured for enhanced performance, but the installation and commissioning team can modify the points lists, sequences of operations, schedules, setpoints and more to accommodate your needs. More importantly, those modifications are tracked in the system. You won't be reliant on the same team members to come back and remember how they named components and what programming "tricks" they applied. Anyone on your team will have access to the modifications and will be able to see how changes cascade through your system. When needed, the Trane team can access the system to help as well. This transparency coupled with clear documentation on configuration and setup will give you what you need to have total control of the system, no matter who is working in or on it.		
<b>How much can I do on my own?</b>	With the exception of a few programming tools that Trane technicians have exclusive access to for servicing our most complex applied and unitary systems, you have complete unfettered access to your systems. Almost everything you could want to do (changing schedules or setpoints, creating dashboard views for data trending, running reports on system performance to name just a few) can be done through a browser directly in our system without the need for any special tools or programs. For more advanced configuration you can work with any Trane technician or trained contractor to make updates. At any time if you need to make changes or reconfigure your system and you can't manage the changes on your own, a network of over 1,500 OEM-trained technicians can help you — ensuring you get the results you're looking for while protecting the performance of the system overall.		
<b>How can I ensure the system is operating efficiently, and, when it isn't, will it tell me so I can fix it?</b>	At Trane, we'll work with you to establish the metrics that matter to you, and we'll decide together how to measure and track progress against your goals. We can also set up alarms within your system to alert you when equipment falls outside of the parameters you establish, giving you early indications something may be amiss. Need even more support? We have a suite of connected service offerings that can provide a virtual link to your HVAC equipment allowing for remote troubleshooting which leads to streamlined service, improved asset performance and cost savings.		



## Productivity and Control

(continued)

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Will the system help me triage issues?	We recognize that not everything is urgent, nor would it make sense to address every alarm or alert your HVAC system provides. Our systems are set up to group and prioritize alarms to streamline your review. For your most critical equipment and applications we can make it so that you, your team and your service partners are alerted if anything seems off. For terminal devices or other system components that may have a higher volume of lower-priority informative alarms, we will work with you to catalog the data so you can keep an eye on the trend but present it in a way that doesn't create unnecessary noise day in and day out. Your Trane service team can help determine when or if those informative alarms require additional intervention.		



## Communications Protocols

Buildings, just like any connected or smart technology, speak a language. In fact, most speak many languages. At Trane, we have aligned to the open standard protocol of BACnet — an industry-created, -accepted and -approved communication protocol for building infrastructure. However, we recognize that certain applications, industries and equipment types that you have in your building may need to speak another language. Therefore, we have a dedicated team of integration experts who are always developing means to “speak” with the latest protocols. Our approach is based on the belief that we should be as effective at receiving and normalizing data points from other systems as we are at sending our data points to them.

Questions to Ask	Trane	Vendor 1	Vendor 2
<b>Can your controls system leverage all of the data from the equipment I have and pass that data up into a larger enterprise-level system (AI, analytics, BMS, etc.)?</b>	Yes. We can easily access, read and write to BACnet, LonTalk and Modbus communicating controllers regardless of the equipment manufacturer or age. We can also use our system controller to access API data or a bridge for other protocols. All of this data can be shared with other systems using BACnet, Modbus or other protocols. We will work with you to understand the subsystems (lighting, fire and life safety, security, other HVAC/BAS equipment) that you want to see from a single pane of glass and then apply the right mechanism for either pulling that data into our system or sharing our data outward.		
<b>How do you determine what data and information you can leverage to run third-party applications and analytics?</b>	We ask you what matters to you. That may seem like an overly simple answer, but it is the fundamental approach we take with our customers — we believe in creating relationships where we are a consultative advisor offering our expertise. We'll start by understanding what analytics or applications you want to use (or want to be able to use in the future) and then will identify the right amount and means for sharing that data. We'll explore various ways to achieve your goals without creating unnecessary risk.		



## Ongoing Service and Support

Mechanical systems degrade over time. For HVAC equipment, that degradation may have impacts on your bottom line. Equipment that is not performing as designed is less energy efficient and may cost you more to run. Ongoing monitoring and maintenance of your building systems is important to make sure you are taking advantage of the operational and energy efficiencies your system was designed to deliver. When selecting a supplier, it is important to consider not only the initial setup and commissioning of the integrated system, but the ongoing support it will require over time.

Questions to Ask	Trane	Vendor 1	Vendor 2
Once I've purchased this system from you, are you the only ones that can service it? How can I ensure we're getting competitive pricing without multiple providers?	There are a lot of different models for ongoing support and service in the HVAC industry. Our approach is to support you throughout your entire building lifecycle. We not only manufacture the equipment and design the systems, but we also offer ongoing support and service through our nationwide network of OEM-certified technicians. When you work with Trane you are not beholden to the specific team that will program your equipment the way they see best, you are working with a team that leverages documented standard work so that anyone with a Trane logo on their uniform can serve you. While we always strive to be your service vendor, we certainly recognize that you do have other choices and may opt to work with local providers, or do some service work yourself. Our approach is to enable that as best we can through intuitive and easy-to-use dashboards, configuration wizards and system setup guides that allow you or a local service team to make changes to your system based on what you need.		
I want to know if there will be support of the system in 20 years — how long can I expect this will last and that you'll support it?	We have been in the HVAC business for over 100 years and we've built our legacy on supporting customers and standing by our products. You will have access to Trane technicians and experts who can work on your system. As we continue to develop new products and sunset legacy offerings, we do so with an eye towards backwards compatibility and offer as much warning as we can when we move towards full obsolescence. We are committed to not leaving our customers nor their systems stranded just because we move from one generation of technology to the next.		
How do you make sure that you aren't negatively impacting our equipment longevity or hurting one component of the system when you "fix" another?	Almost all HVAC systems are composed of a series of independent pieces of equipment and controls that have to work in concert with each other. Trane believes in a system-first mindset, when we design, install, commission and service your system we don't think about it as Component A + Component B + Component C. Instead, we look at the equipment and controls holistically. We consider the ways in which the equipment can work together and complement each other — through our industry-leading controls and building automation systems we can help you verify the components all maintain that balance and harmony.		



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