Product Catalog

Tracer® Ensemble™

Web-based Enterprise Building Management

October 2016

BAS-PRC086B-EN

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Product Information

Tracer Ensemble is a web-based building automation system (BAS) that dramatically simplifies the complex requirements of managing and operating multiple facilities. Accessible from most PCs, tablets, and smart phones, Tracer Ensemble provides immediate access to your building systems from virtually any location, allowing you to maintain comfortable, healthy conditions and satisfied occupants.

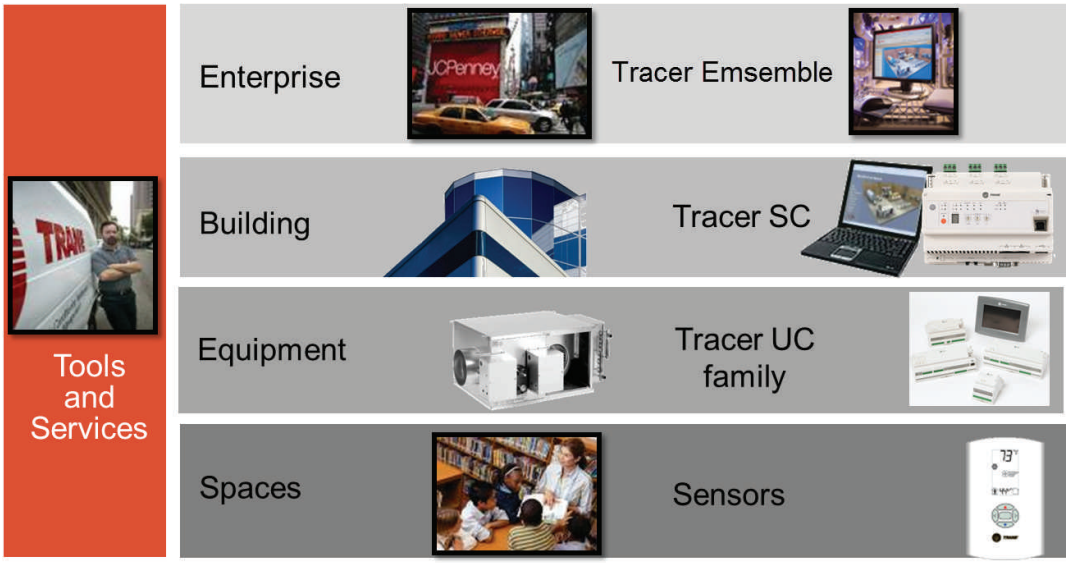
Tracer Ensemble makes it easy to:

- View and make changes to all buildings in an enterprise from a single source, including changing setpoints, modifying schedules, and managing alarms.
- Access your facilities from any device (PCs, tablets, and smart phones) equipped with a Web browser.
- Integrate disparate systems, incorporating both Trane or non-Trane devices using your existing IT infrastructure.
- Restrict user access to specific equipment and spaces, allowing tenants to manage only their own areas.
- Analyze data across all buildings and report out on key metrics to management with built-in reporting tools..

Tracer Building Automation System

From our industry-leading building automation systems to equipment controls and sensors, Trane offers a complete controls portfolio to enable you to operate buildings at peak energy and operational efficiency.

Trane controls are built on open, scalable platforms. They provide options to integrate with your existing equipment and controls, regardless of brand, and give you the latitude to easily expand into other systems within your building, multiple buildings and buildings you'll add in the future.

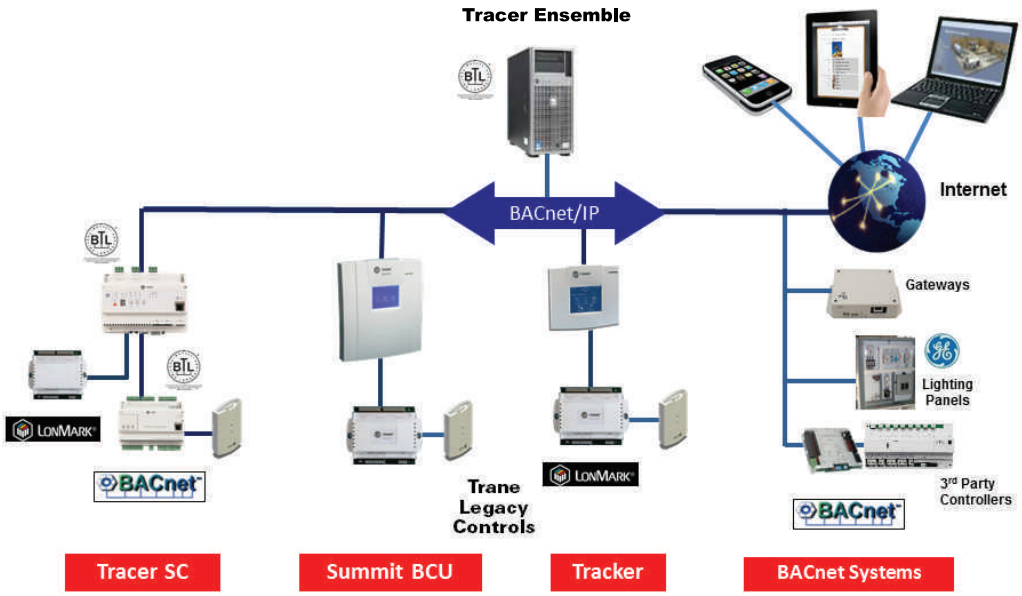


Tracer Ensemble Network Architecture

Tracer Ensemble is a comprehensive enterprise building management system that bridges the gap between your legacy systems and new technologies. Build on open-standard protocols, Tracer Ensemble communicates with buildings through your IP network to allow easy connection of multiple systems across your enterprise. Tracer Ensemble works with both Tracker and Tracer Summit systems (BMTX, BMTW, V16 or higher). It also easily integrates with new Trane controllers and any third-party BACnet system..

Its auto-discovery and self-configuration capabilities search your network, locating all qualifying BACnet systems and components. As your buildings and systems evolve over time, you can easily update Tracer Ensemble from one central point, instead of having to update each and every workstation. And because Tracer Ensemble is securely accessibly through any Web browser, it can be accessed with most PCs, tablets, and smart phones. Meaning that you can manage your facilities whenever needed from wherever you are.

Figure 1. Tracer Ensemble Architecture



The Tracer Ensemble Solution

Tracer Ensemble is part of Trane's Integrated Comfort Solutions (ICS). The ICS strategy leverages Trane's HVAC and controls expertise, building and energy management knowledge, and local service and support to bring you a truly comprehensive solution.

Software

The Tracer Ensemble software lives on a central server and is typically installed by a certified Trane controls installer. The purchase price of Tracer Ensemble is based on the number of Trane or non-Trane panels that are connected to the Tracer Ensemble server.

Hardware

Tracer Ensemble hardware can be supplied by either Trane or the customer. Minimum specifications needed for any Tracer Ensemble installation can be found in the "System Requirements and Specifications" section.

Tracer Ensemble Express

Tracer Ensemble Express is an all-in-one hardware and software package that includes Tracer Ensemble software and Microsoft SQL Express database software on either a qualified Dell Server or Microsoft Windows platform. The Tracer Ensemble Express bundle is a streamlined, cost effective web solution, targeted for smaller customers who have a new or existing Tracer Summit and Tracer SC systems that want a web-based building automation system with long-term data storage and custom reporting capabilities.

Tracer Ensemble Cloud

Tracer Ensemble is also available as a cloud (SaaS) solution. The cloud solution is perfect for customers without dedicated IT staff or support to maintain a server at their location. Benefits of the cloud-based solution include:

- No server expense
- No maintenance on the server
- Free software upgrades
- Automatic backups

Implementation

With every Tracer Ensemble project, Trane will create a Design and Implementation Plan that will include all the components necessary to successfully implement a Tracer Ensemble system. While each plan is unique, they all share common elements. These are:

- IT/networking
- Systems engineering
- Operational requirements

IT/Networking

Tracer Ensemble is a standard IT product. Both the Tracer Ensemble server and the connected Trane and non- Trane BACnet panels must live on a common IP network. Tracer Ensemble generally resides on the intranet behind the corporate firewall. Multiple-site connectivity is supported through the existing LAN or WAN.

Trane will work with your organization's IT personnel to understand the current IT/networking configuration and systems. With their expertise and guidance, Trane will provide recommendations on how to add a Tracer Ensemble system effectively using your standard operations procedures. These recommendations, will be documented in Trane's Design and Implementation Plan so that your organization can be assured of a safe and secure system that can be easily maintained over time.

Systems Engineering

Tracer Ensemble can connect to both Trane and non-Trane devices, making it an excellent systems integration platform. Tracer Ensemble provides one window into your entire facility or enterprise no matter how many systems you are using.

The Tracer Ensemble Design and Implementation Plan will include systems engineering documentation to identify and integrate any non-Trane BACnet system that will be connected to the Tracer Ensemble server.

Operational Requirements

Tracer Ensemble can be customized to meet the exact needs of your organization and users. Trane will interview the key administrative users to understand how many people will be using the system and what their roles and responsibilities are. This ensures that Tracer Ensemble will be ready for them as soon as it is installed and commissioned. Also, the operational requirements for scheduling, troubleshooting, and data analysis will also be obtained and documented in the Design and Implementation Plan. Trane will use this information to assure that the systems are working together as one common enterprise.

On-going Maintenance and Support

Trane excels at providing world-class maintenance and support to our customers. We will work with you to select a Tracer Ensemble Software Maintenance plan that meets your organization's needs for ongoing product maintenance and support.

Local Trane offices provide 24-hour service and support. Trane employees have lived and worked in your community for more than 80 years. With Trane, our customers receive personalized attention from locally-rooted offices, and confidence in knowing that a large corporation is standing behind each project. This level of commitment and expertise will ensure that your Tracer Ensemble system is running at its best.

Training

Trane provides both Web-based training as well as classroom training to support your new investment. Training assures that you and your staff are using your Tracer Ensemble to its fullest potential to meet the needs of your business.

Features and Benefits

Tracer Ensemble simplifies the management of building systems within multiple facilities for owners, managers, and daily operators. Tracer Ensemble provides centralized management of scheduling and alarms, supports long-term data storage to document and monitor performance, enables remote troubleshooting, and brings disparate systems together for upgrade flexibility. And because Tracer Ensemble offers full browser support, you can access your facility from wherever you are from your PC, tablet, or smart phone.

Ease of Operation

The daily operator is the most critical user of the system. To optimize the daily user's experience, Tracer Ensemble employs user-centered design principles, resulting in a simple and intuitive design. Ongoing user testing and user interface improvements ensure that Tracer Ensemble is easy to use, and all the information is right where you need it.

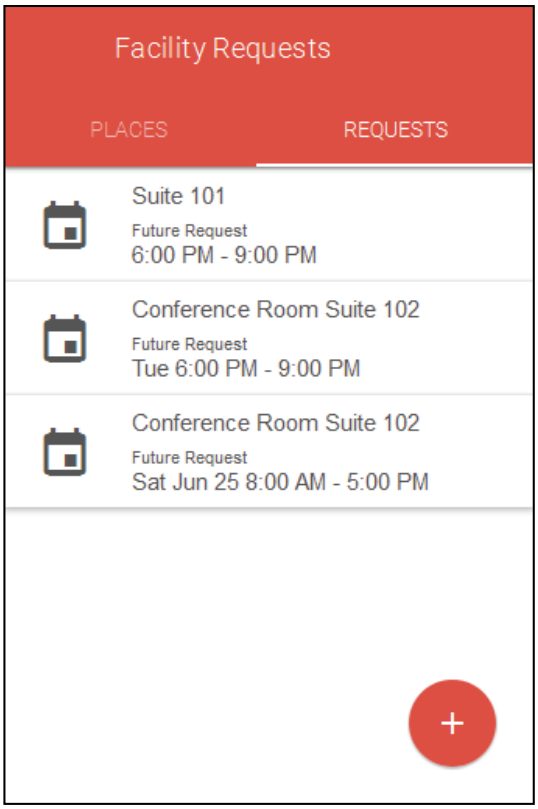
Site management

Tracer Ensemble site management features can help facility management personnel take a more proactive approach to site management. Standard pages and customizable tree navigation ensure the information you need is just one click away, significantly reducing response time to address occupant or equipment issues across even the largest enterprise.

Mobility

The interface is easy to navigate and can be used effectively with very little training. The Tracer Ensemble user interface lets you operate a multiple-building, facility management system from any device equipped with a Web browser from a PC to smart phone. If you can surf the web, you can master Tracer Ensemble.

Figure 2. Tracer Ensemble Tenant Interface



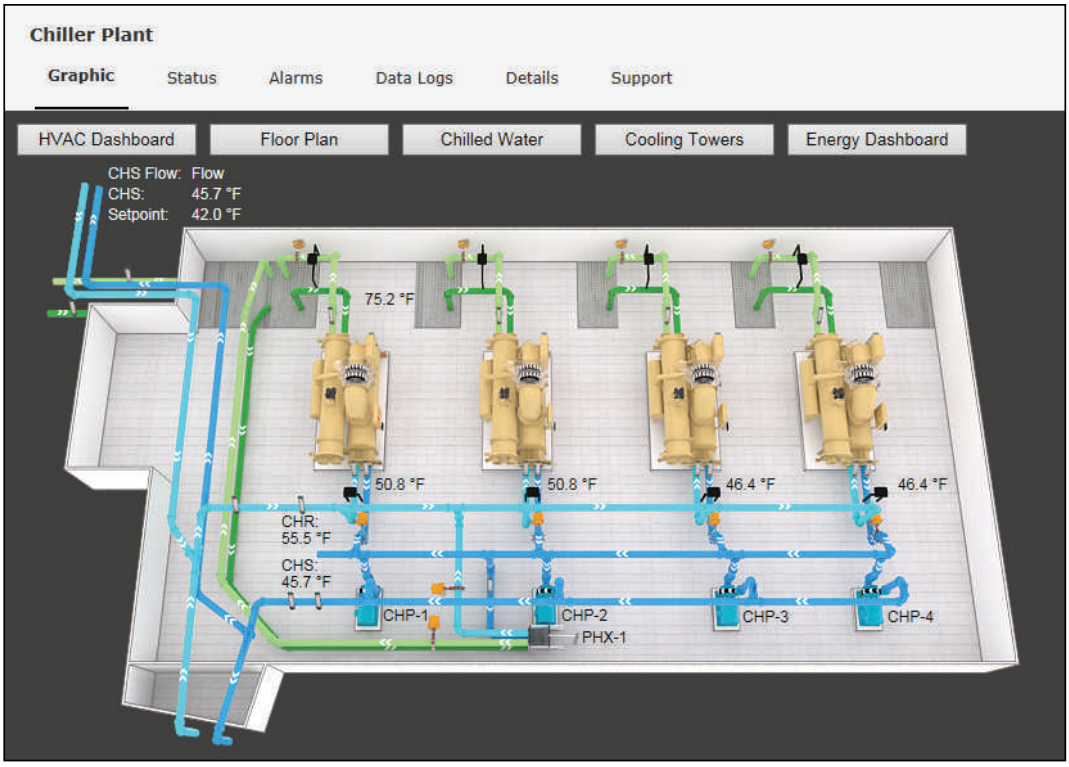
Auto-discovery and self-configuration

The auto-discovery and self-configuration feature greatly simplifies the time-consuming task of the installer having to build the equipment list and status pages during site setup. During the installation process, Tracer Ensemble discovers all of the equipment for the site, and then automatically builds the equipment list and status Web pages. This feature can also be used to quickly and easily bring new equipment online.

Navigate with graphics

With Tracer Ensemble, users can graphically navigate through all levels of a facility by clicking on an image of a building, room, or piece of equipment. Graphical navigation enables operators to view status or change setpoints easily and efficiently.

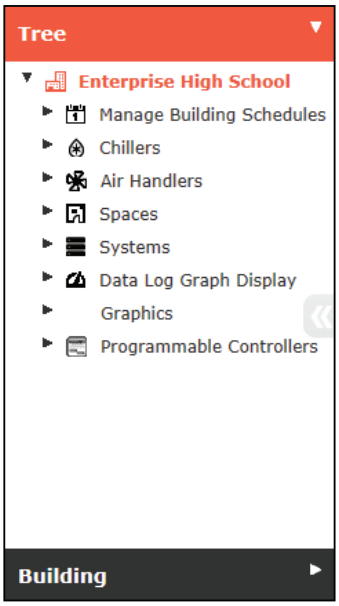
Figure 3. Graphical Navigation



Customizable Navigation Tree

The Navigation Tree, which displays on the left navigation sidebar of the Tracer Ensemble interface, provides a faster, customizable way to navigate through Tracer Ensemble. Add frequently used buildings, spaces, and points to the Navigation Tree for quick access to the information that is used most often. By default, the Tree is always available in the left sidebar, but it can be hidden with the click of a button.

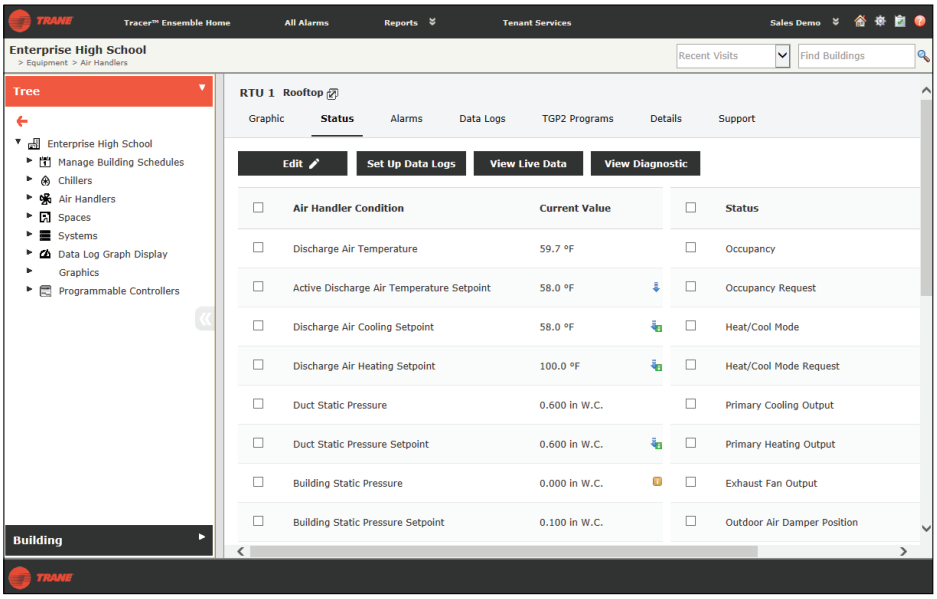
Figure 4. Navigation Tree



Flexible search tool

The Finding a Building feature is a powerful search tool that helps the user quickly find a building or a group of buildings in the system. Users can search on any attribute that is specified during administrator setup. To find a specific building, enter the building name or other building attribute in the Find Building field and click "Go." The user is taken to the Summary page for a particular building or group of buildings, where other building information can be readily viewed.

Figure 5. Tracer Ensemble Status Page



Daily Building Operation

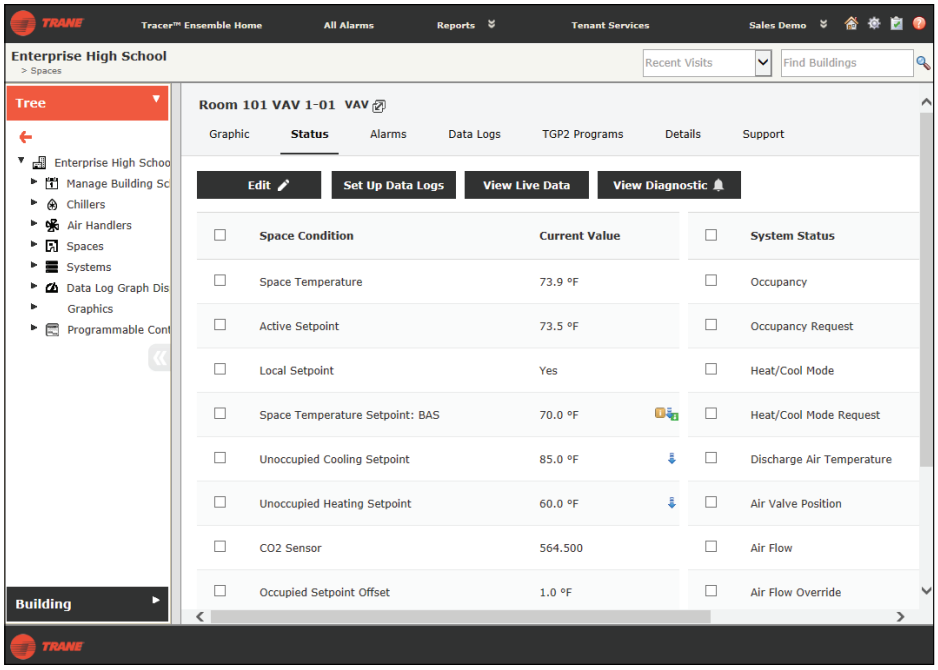
Tracer Ensemble automatically and dynamically constructs Web pages that incorporate building summaries, systems, and equipment, accessed by a left-hand navigation pane. This makes both the installation process and daily operation of Tracer Ensemble efficient and effective.

Easy to Navigate Pages

Areas, spaces, equipment, and systems pages feature a tabbed layout. These pages provide an overview of the status, alarms, data logs, and details for the selected area, space, equipment, or system. The tabular layout allows for easy navigation.

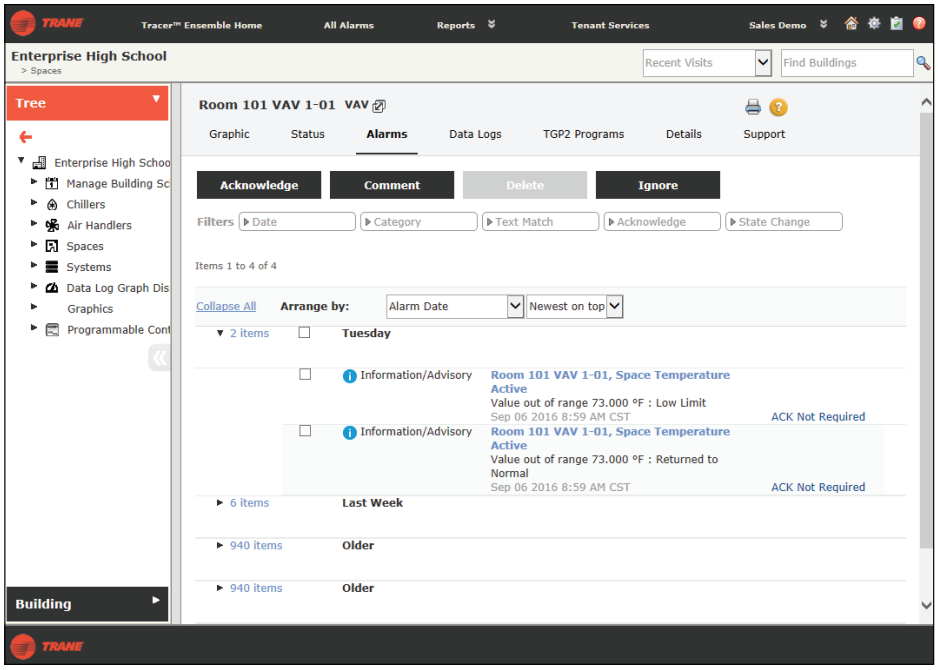
- The **Status** tab details the current conditions and the status values.

Figure 6. Status Tab



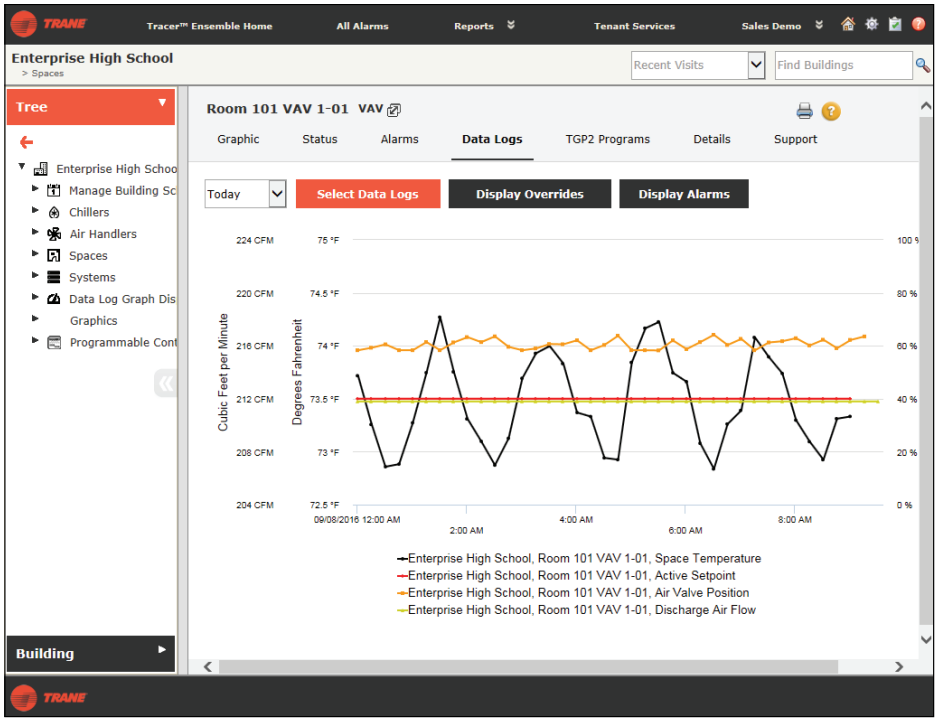
- The **Alarms** tab allows you to acknowledge, comment, remove, or ignore alarms.

Figure 7. Alarm Tab



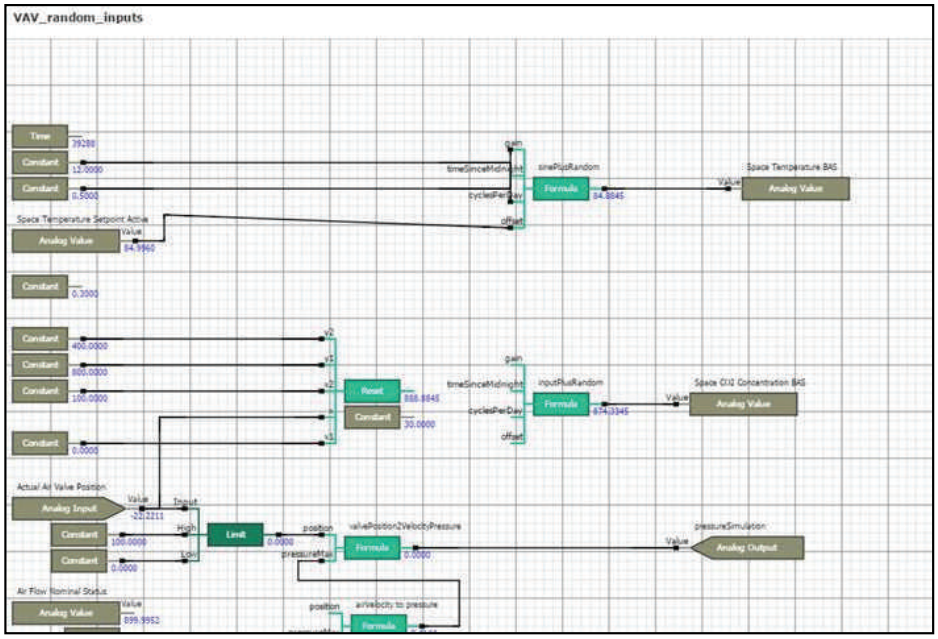
- The **Data Logs** tab allows you to select the data points, display period, and display range of the data logs to view.

Figure 8. Data Logs Tab



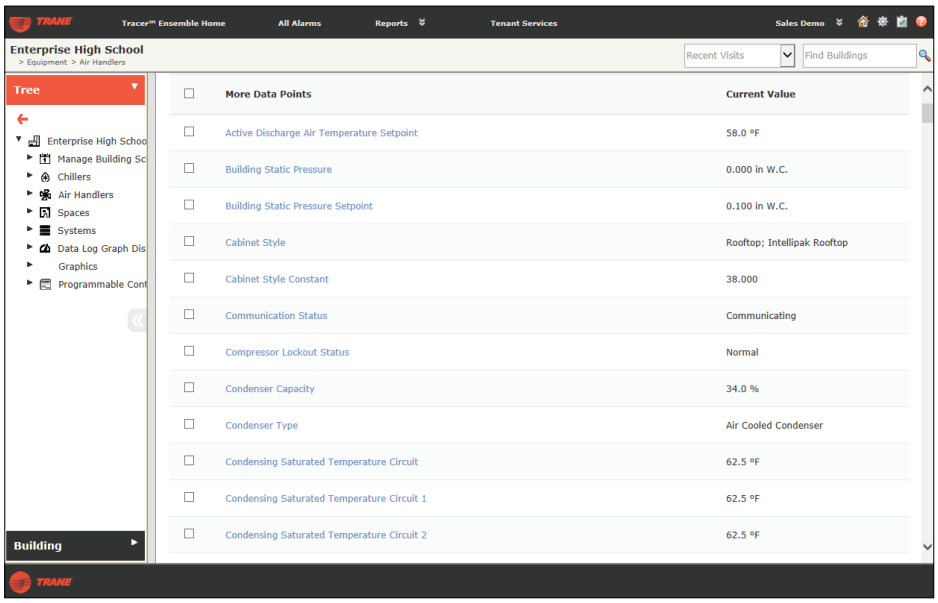
- The **TGP2 Programs** tab shows associated TGP2 programs.

Figure 9. Tracer Ensemble TGP2 Viewer



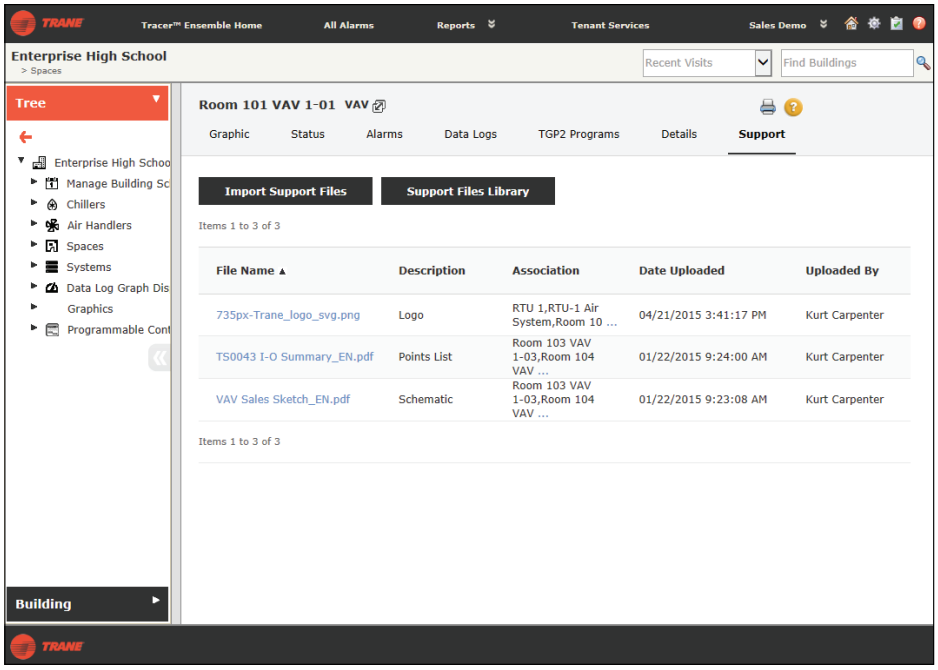
- The **Details** tab allows you to edit or set up data logs for additional data points.

Figure 10. Details Tab



- The **Support** tab provides access to all related documents stored in the Support Files Library.

Figure 11. Support Tab



Data Management

The Data Collection application lets users collect historical data from the building control system. This data provides invaluable information for optimal system operation and can be used for a variety of purposes, from monthly energy usage reporting to equipment troubleshooting.

The Data Log pages display the results of the collection of data points from a piece of equipment or from a building panel. This page displays all of the data points currently being logged with check boxes allowing the user to select and place them on a graph or summary chart for viewing.

Enterprise Management

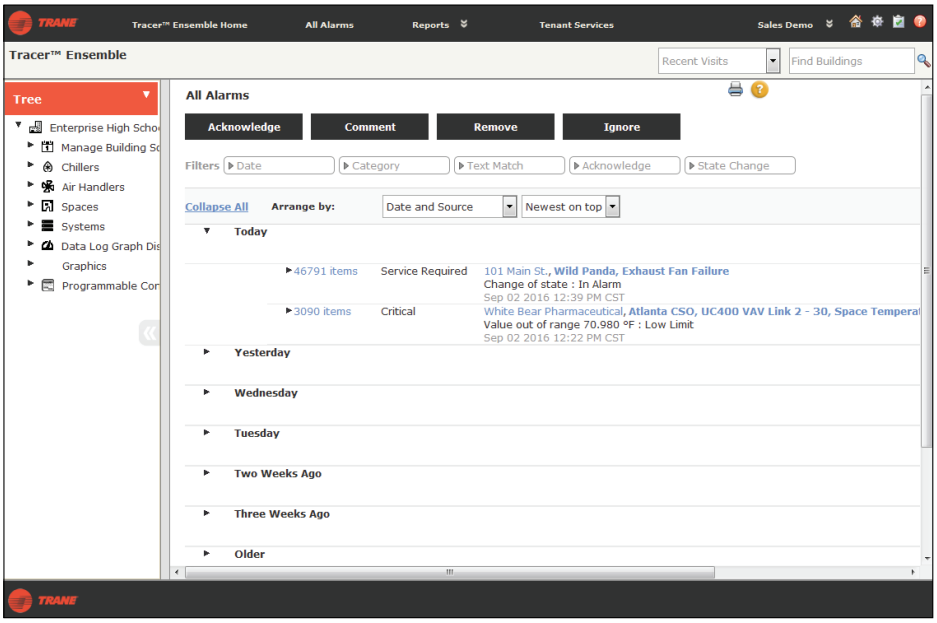
Tracer Ensemble provides enterprise management functionality to help you run your facilities better. Responding to alarms and modifying schedules from a single-access point is an efficient way to ensure the safety and comfort of your buildings' occupants.

Enterprise Alarm Management

Sort by priority and alarm type: Tracer Ensemble displays alarms for any connected qualified system on the IT network. Users can manage these alarms by viewing, filtering, and sorting the alarm information. For easy troubleshooting and acknowledgment, hot-links for each alarm quickly take the user to the exact building, space, system, or equipment that is in alarm.

E-mail forwarding: Alarm information can be sent to an e-mail address based on the severity of the alarm or the attributes of the building from which it was issued. This helps to ensure that building operational staff and servicing contractors are well informed about maintenance problems.

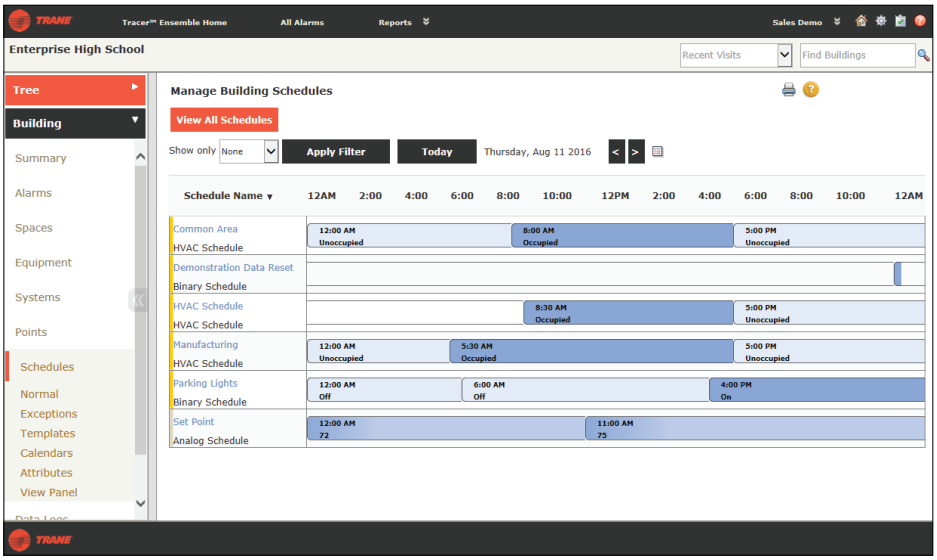
Figure 12. All Alarms



Enterprise Scheduling

Tracer Ensemble simplifies the task of making changes to schedules for more than one building in an enterprise. Enterprise scheduling lets building operators make scheduling changes across multiple buildings with just a few clicks. This significantly reduces the time required for scheduling tasks. For example, a building operator responsible for a group of school buildings in a district needs to make an exception to the schedule for snow days. The operator creates the exception once, and then applies it to the buildings that are affected by that schedule.

Figure 13. Managing Building Schedules



Global Setpoints

Tracer Ensemble global change capability allows users to quickly initiate the same edits to any number of area or space setpoints across an entire building network. Changes take effect as quickly as they can be communicated to the individual building panels.

Access Control

Tracer Ensemble offers customized user roles, which define what permissions for equipment and application/administrative within the system. Use one of the four pre-configured roles or define custom user roles to fit the organization's needs. Tracer Ensemble also interfaces with Microsoft Active Directory, to allow seamless user access with existing corporate log ins and security policies.

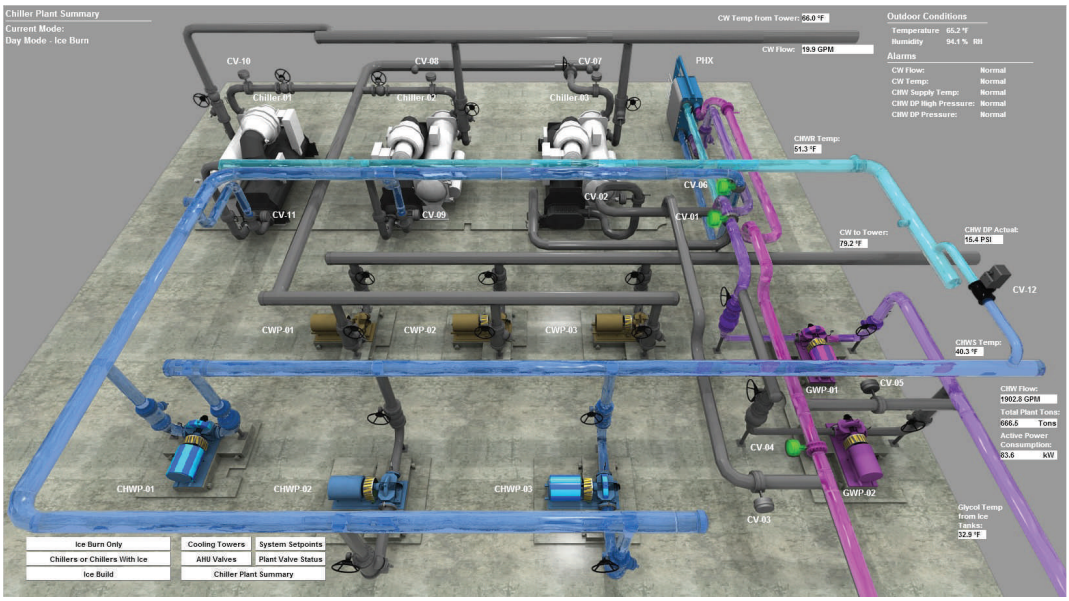
Customizable User Interface

The Tracer Ensemble user-interface supports a range of customization possibilities, from custom Web pages to user preferences. Tracer Ensemble users can choose to navigate their systems using Tracer Ensemble standard Web pages that are automatically generated, or create custom Web pages that present an enhanced visual representation.

Standard Web Pages: Standard Web pages are the result of the auto-discovery and auto-configuration process. They are a convenient way to view data points that come from each piece of equipment, system, or entire plant.

Custom Web Pages: Custom Web pages contain building graphics (floor plans, maps, and equipment) for greater depth of usability of the site.

Figure 14. Tracer Ensemble Custom Web Page



Data Collection, Analysis, and Reporting

Tracer Ensemble provides data collection, analysis, and reporting of all enterprise data. Users can collect historical data from any Trane or non-Trane BACnet building control system. This data provides invaluable information for optimal system operation. It can be used for a variety of purposes, from reporting monthly energy usage to troubleshooting equipment problems.

Data Logs

Tracer Ensemble can collect and store data from both existing panel trends or directly from the system itself. Data logs can be set up directly from the building, system or equipment status pages. A data log setup wizard takes the user through the easy-to-understand process can provides flexibility for the length of storage by either time or number of samples.

Figure 15. Data Log Example

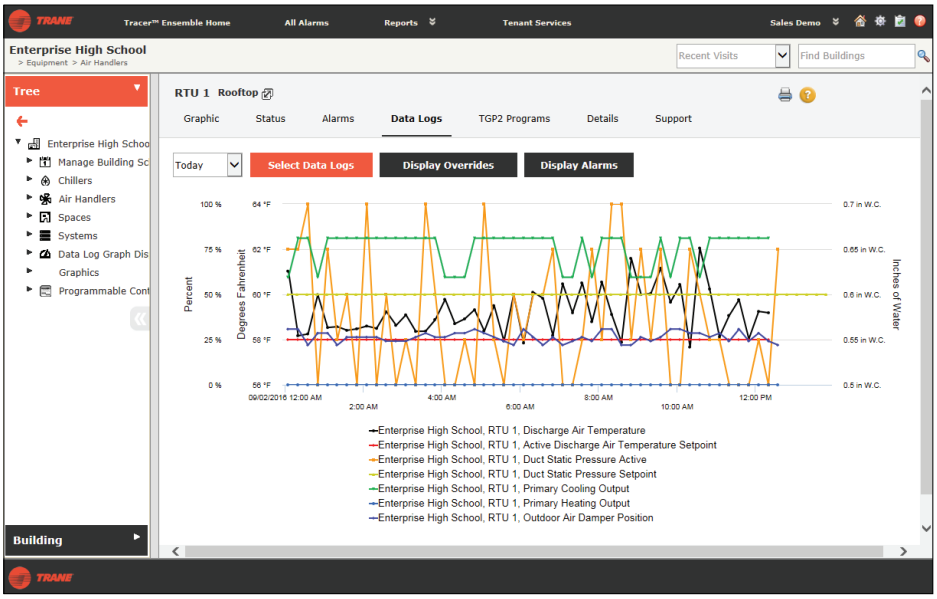
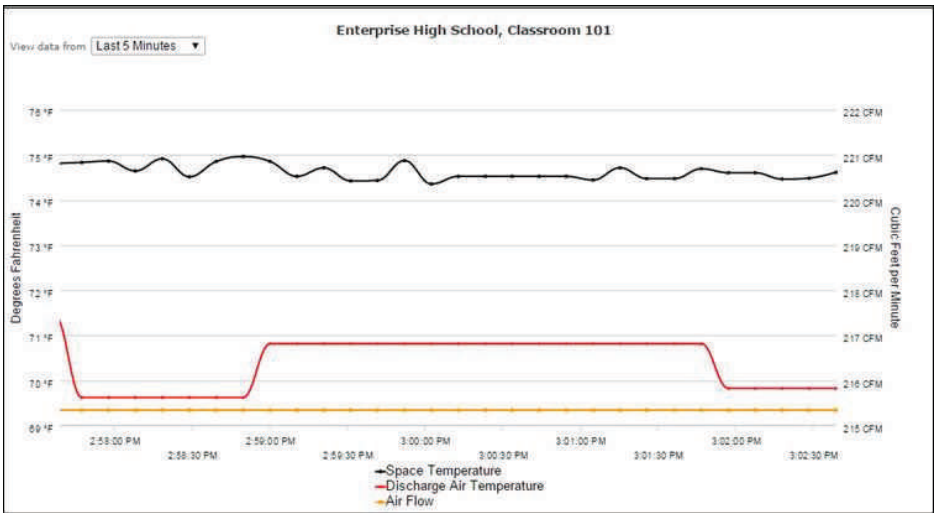


Figure 16. Live Trend Viewer



Custom Reports

The Tracer Ensemble built in reporting capability allows you to use pre-configured standard reports or create customized reports that intuitively display system data. Custom reports allow you to measure and compare building performance across assets and time periods, and track and verify energy usage and savings. And the reporting tool can perform complex data calculations without the need for custom programming. Custom reports can be scheduled to run at regular intervals and e-mailed to key stakeholders, increasing productivity and providing insight into building operations.

Figure 17. Custom Report Example

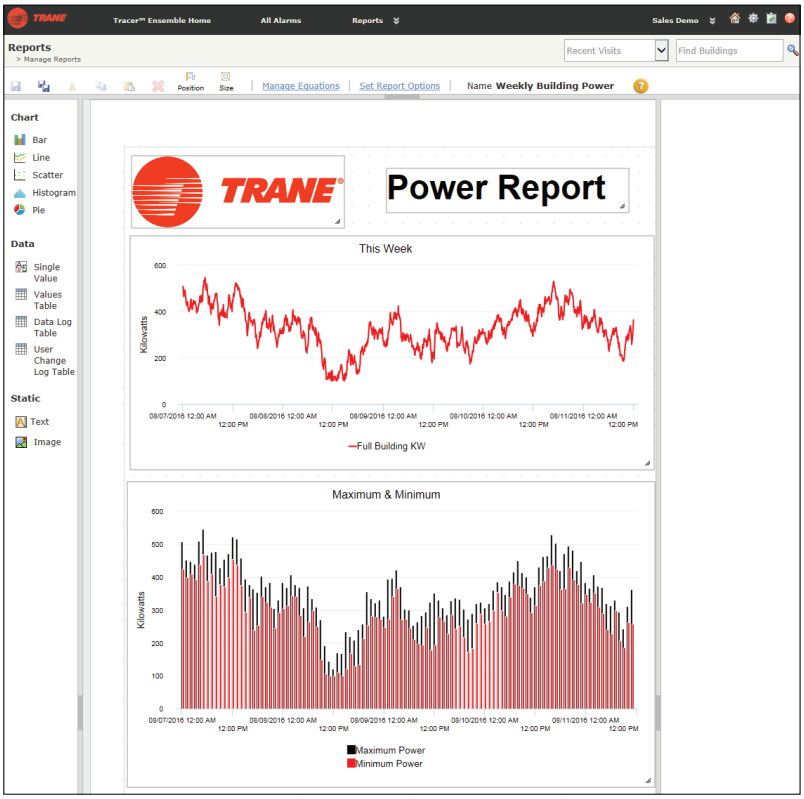


Figure 18. Example PDF Report

Trane St. Paul

Spaces - Comfort Analysis Report

TRANE

Spaces where the variance is greater than (0 °F)

Name	Occupancy	Space Temperature	Active Setpoint	Variance	Heat/Cool Mode
CUH North Enterance	Occupied	84.24 °F	70.50 °F	10.7	Heat
CUH-ECM-Asia	Occupied	81.34 °F	70.48 °F	7.9	Heat
RTU-5 Computer Room	Occupy	65.0 °F	65.0 °F	7.0	Cooling
FP-VAV-02-06 ES Team Windows	Occupied	77.35 °F	74.00 °F	3.3	Cool
AHU-04	Occupied	71.0 °F	71.0 °F	2.8	Cooling
CUH North East Enterance	Occupied	75.42 °F	70.50 °F	1.9	Heat
FP-VAV-02-05 SC Team Windows	Occupied	75.43 °F	74.00 °F	1.4	Cool
FP VAV 1-02 Kevin Bollom's Office	Occupied	75.30 °F	74.00 °F	1.3	Cool
FP-VAV-02-03 Vikings	Occupied	75.14 °F	74.00 °F	1.1	Cool
FP VAV 1-01 NE Corner Cubicals	Occupied	75.10 °F	74.00 °F	1.1	Cool
RTU_2	Occupied	73.70 °F	72.60 °F	1.1	Cool
VAV 4-08 Lunch Room	Occupied	74.99 °F	73.99 °F	1.0	Cool
VAV_2_3 (Tracy Thompson)	Occupied	75.47 °F	74.50 °F	1.0	Cool
FP VAV 3-01 Phil Lilja	Unoccupied	76.55 °F	73.99 °F	0.8	Cool
FP VAV 3-03 Asia	Occupied	74.61 °F	73.99 °F	0.6	Cool
VAV 3-10 Applications Lab	Occupied	74.59 °F	73.99 °F	0.6	Cool
Tech Support RTU	Occupied	73.60 °F	73.10 °F	0.5	Cool
Tracy's Office (VAV4)	Occupied	74.40 °F	73.99 °F	0.4	Cool
FP VAV 3-02 MISG (Reath)	Unoccupied	76.69 °F	73.99 °F	0.3	Cool

Optional Licensed Features

Audit Trail

Tracer Ensemble's Audit Trail feature is an optional, licensed feature that provides management and restricted access to critical points. Points can be defined in Tracer Ensemble as critical, allowing only users with the proper credentials the ability to override those points. In addition to secured access to point overrides, Audit Trail works in conjunction with the User Change Log to record and display any edits to points defined as critical.

Users with critical point access are required to re-enter their password and provide comments regarding the change, creating an electronic signature. This functionality, along with user role-based access, the user change log, and secure .PDF reports, provides the tools to help customers meet certification requirements like FDA CFR 21 part 11.

Tenant Services

Tracer Ensemble Tenant Services is an optional, licensed feature that enables, records, and invoices individual tenants for use of defined spaces in a building. Tenant Services is designed for:

- Commercial office buildings with multiple tenants
- Buildings where operators need to charge internal departments for utilization
- Buildings that rent out areas for special events

Tenant Services provides a simple, mobile-friendly interface that allows tenant users to quickly request after-hours use. Tracer Ensemble tracks all changes and provides the ability to create invoices for any selected time period. Because this functionality is not a third-party add on, it works seamlessly with all Trane and non-Trane BACnet controllers and can be set up in a just a few hours.

Figure 19. Tenant Services

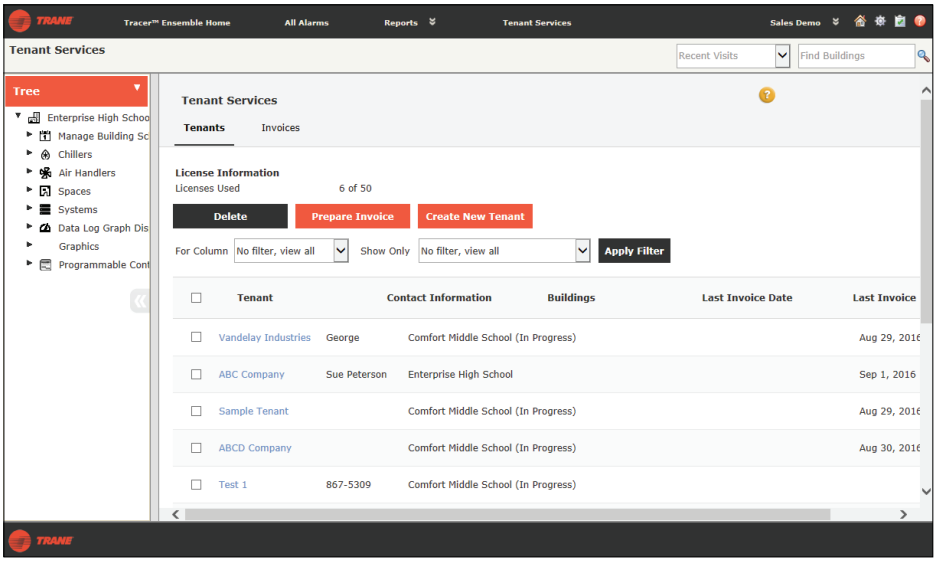
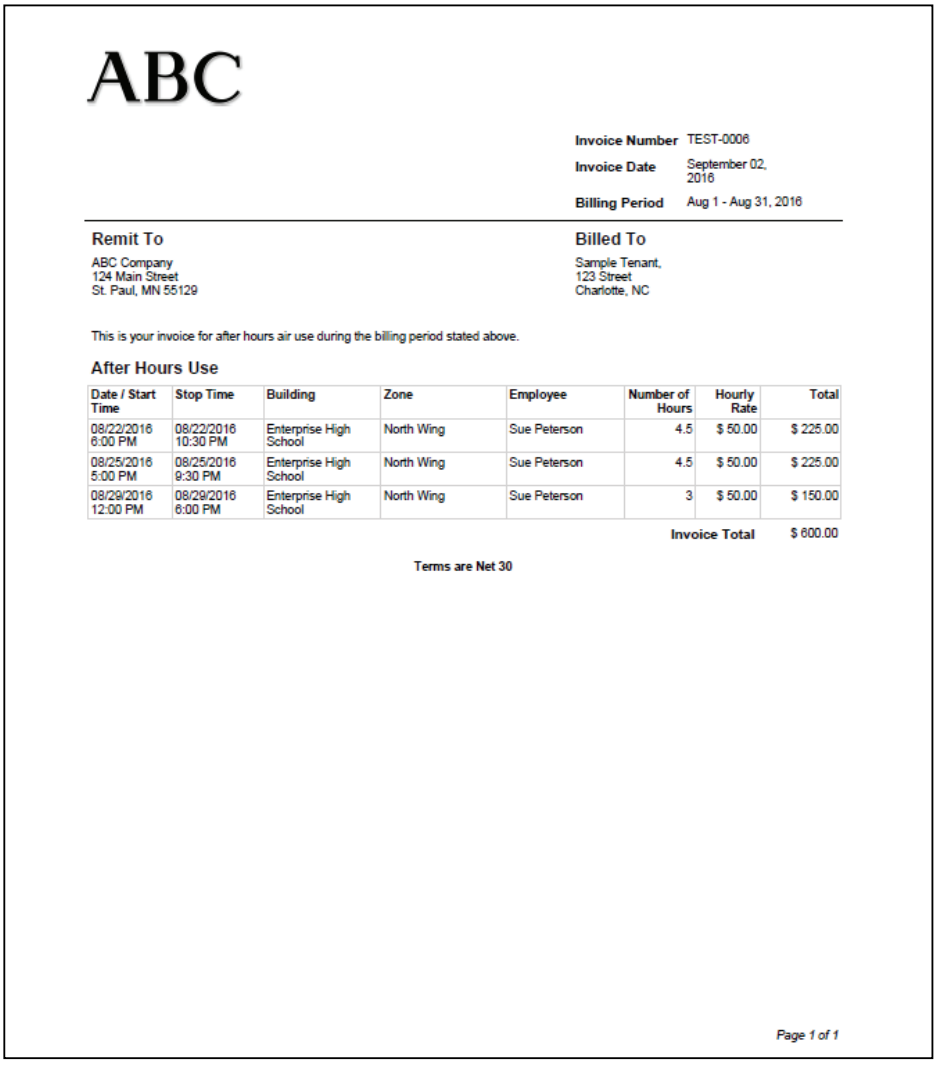


Figure 20. Example Tenant Invoice



ABC

Invoice Number TEST-0006
Invoice Date September 02, 2016
Billing Period Aug 1 - Aug 31, 2016

Remit To
ABC Company
124 Main Street
St. Paul, MN 55129

Billed To
Sample Tenant,
123 Street
Charlotte, NC

This is your invoice for after hours air use during the billing period stated above.

After Hours Use

Date / Start Time	Stop Time	Building	Zone	Employee	Number of Hours	Hourly Rate	Total
08/22/2016 6:00 PM	08/22/2016 10:30 PM	Enterprise High School	North Wing	Sue Peterson	4.5	$ 50.00	$ 225.00
08/25/2016 5:00 PM	08/25/2016 9:30 PM	Enterprise High School	North Wing	Sue Peterson	4.5	$ 50.00	$ 225.00
08/29/2016 12:00 PM	08/29/2016 6:00 PM	Enterprise High School	North Wing	Sue Peterson	3	$ 50.00	$ 150.00
						Invoice Total	$ 600.00

Terms are Net 30

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System Requirements and Specifications

The following tables shows the minimum Tracer Ensemble specifications and the requirements of the Tracer Ensemble server.

Table 1. Server Prerequisites

Configuration	Application Server	Application Server	Application Server and Database Server
Server Type	Virtual[a]	Tower or rack-mount	Tower or rack-mount
Processor	2 vCPU[a]	3.0GHz - Dual Core	3.0 GHz - Quad Core
Memory	4 GB	4 GB	8 GB
Hard Drive	NAS/SAN	73 GB minimum	
RAID	N/A	RAID-5 recommended for Tracer Ensemble full, RAID-1 or SSD hard drive recommended for Tracer Ensemble Express.	
Operating System	Microsoft Windows Server 2008/2012 .Net V3.5 and V4.0		
Database	Microsoft SQL Server 2008/2012/2014		
Network Interface	TCP/IP Interface		

[a] Virtual Server needs to be configured to allow the Processor Serial Number (Processor ID) to be persisted. This is used by Tracer Ensemble for licensing purposes.

Table 2. BACnet Network Requirements

Architecture	TCP/IP
Utilization	Low (see IT Fact Sheet BAS-SLB014-EN)
Protocols	BACnet (ASHRAE Std 135-2004) http (port 80)

Table 3. User Interface Network Requirements

Tracer Ensemble Web UI	http (port 80) https (port 443)[a]
Server	Remote Desktop Connection[b] (RDP) port 3389 VPN Recommended
Utilization	Load dependent on number of users and web page customizations

[a] Https requires additional configuration and installation of certificate.
[b] Remote desktop Connection is recommended for support; additional configuration is needed for RDP and VPN.

Notes

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