

BACnet Scheduling Interface

User Guide for v6.5 systems

Catalog No. 11-808-587-01

Rev. 10/11/2017



Important changes are listed in Document revision history at the end of this document.

UTC © 2017. All rights reserved throughout the world. All trademarks are the property of their respective owners.

The content of this guide is furnished for informational use only and is subject to change without notice. United Technologies assumes no responsibility or liability for any errors or inaccuracies that may appear in the informational content contained in this guide.

Contents

| | |
|--|----------|
| What is the BACnet Scheduling Interface add-on? | 1 |
| Requirements | 1 |
| IT considerations | 1 |
| Configuring the BACnet Scheduling Interface add-on..... | 2 |
| To publish a BACnet Schedule | 2 |
| To remove a BACnet Schedule | 2 |
| Interfacing to published BACnet Schedules | 3 |
| Exporting published BACnet Schedules list | 3 |
| Reading Properties..... | 3 |
| Writing Properties | 3 |
| Write then Read-back Discrepancies..... | 4 |
| Exception-Schedule Unoccupied Periods | 4 |
| Document revision history..... | 5 |

What is the BACnet Scheduling Interface add-on?

The BACnet Scheduling Interface add-on enables third-party devices to read and write schedules in your building automation system via the BACnet protocol.

NOTE The add-on does not provide the ability to read and write effective schedules consisting of schedules from other associated groups or locations. In order to access an effective schedule, a third party must access each contributing schedule individually, and compute the effective schedule according to the system hierarchy.



CAUTION:

**If you are upgrading from a previous version of BACnet Scheduling Interface:
To avoid losing any data, you must uninstall the previous version while keeping the data.**

See [Installing an Add-on User Guide](#) for more information.

Requirements

- You are running a v6.5 system with the latest cumulative patch applied.
- You have downloaded bacnetscheduling.addon
- You have purchased and downloaded the BACnet Scheduling Interface license
- Your system is backed up regularly to ensure the add-on's data is also backed up
- The system is configured with **at least** one active BACnet IP connection
- You have adequate disk space available to store the add-on's data
- If you are integrating with the SchoolDude® application, you must be running FSDirect™, FSAutomation™, and the latest DAA™ appliance software

See "Installing an Add-on User Guide" for the following:

- Installing an add-on
- Applying a license
- Running an add-on
- Upgrading an add-on

IT considerations

The following information may be useful to network administrators.

| Client | Server | Default Port | Traffic |
|---------------------------|---|---------------|-----------------|
| Third-party BACnet device | building automation system - BACnet Scheduling Interface add-on | UDP/IP 47808* | BACnet protocol |

* The BACnet port is configurable in the building automation system system.

This add-on uses the BACnet protocol to expose schedules to third-party BACnet devices. These schedules are used to control when mechanical equipment runs. The BACnet protocol does not require authentication, so any entity on the network with the ability to communicate on the BACnet port can write to these schedules and affect the operation of the associated equipment.

Configuring the BACnet Scheduling Interface add-on

To enable BACnet scheduling operations at an Area, Equipment, or Schedule Group, a BACnet Schedule must be published at that location.

Best Practices: Only one scheduling method should be used at any Area, Equipment, or Schedule Group, whether it be from your system application or from this or any other scheduling add-on. Be aware that using more than one scheduling method at a location may yield unexpected results.

To publish a BACnet Schedule

- 1 On the left side of the **Configuration** page, select a location to publish by navigating the tree. The tree displays Areas, Equipment, and Groups that can be scheduled.
NOTE Add multiple locations at the same time by using:
 - SHIFT+click to select multiple adjacent items at the same level.
 - CTRL+click to select multiple non-adjacent items.
- 2 Click **Add** to publish a schedule.

NOTES:

- A new BACnet Schedule Object is created and assigned a unique name and instance number and is associated with a specific location. This object appears in the **Published BACnet Schedules** table on the right side of the **Configuration** page.
- The published BACnet Schedule is associated with the specified location only. Effective schedules are still calculated using the building automation system hierarchical scheduling concepts.

To remove a BACnet Schedule

- 1 Using either the tree or the table on the **Configuration** page, select a schedule to remove.
NOTE Remove multiple published schedules at the same time by using:
 - SHIFT+click to select multiple adjacent items at the same level.
 - CTRL+click to select multiple non-adjacent items.
- 2 Click **Remove** to stop publishing the schedule.

The BACnet Schedule Object is removed from the **Published BACnet Schedules** table.

Interfacing to published BACnet Schedules

A third-party device can access the published BACnet Schedules via the BACnet protocol. The following information is needed to configure the third-party device for this integration:

- Identity of the building automation system server:
 - BACnet network address consisting of network number, IP address, and port number (for static binding), or
 - BACnet device name and/or id (for dynamic binding)
- Identity of the BACnet Schedules to integrate (as listed on the add-on's **Configuration** page, see below)

Exporting published BACnet Schedules list

The BACnet Schedules list can be easily exported by clicking one of the buttons at the top of the table:

| | |
|--------------|---|
| Copy | Copies the contents of the table to the clipboard to be pasted into another application. |
| CSV | Converts the contents of the table to a comma-separated-value file for import into spreadsheet documents. |
| Excel | Converts the contents of the table to a Microsoft Excel file. |

Reading Properties

Properties of the schedule object can be read using BACnet Read-Property requests.

Writing Properties

Most properties are read-only, but the **Weekly-Schedule** and **Exception-Schedule** properties may be written to make changes to the corresponding building automation system schedules.

A write to the **Weekly-Schedule** property results in 7 Normal priority building automation system schedules, one for each day.

A write to the **Exception-Schedule** property results in Override priority schedules in your building automation system. To avoid scheduling limitations, the **Exception-Schedules** are combined into individual building automation system schedules for each of the next 7 days.

The **Out-of-Service** property may be written. When **Out-of-Service** is true, the **Present-Value** property may also be written, but changing this value does not affect the corresponding building automation system schedules in any way.

Write then Read-back Discrepancies

Since BACnet scheduling concepts are different than scheduling concepts in your building automation system, this add-on acts more like a translator than a direct schedule interface. Because of this translation, a BACnet Write-Property request followed by a Read-Property request for verification may result in some discrepancies.

Possible reasons for any discrepancies:

- The BACnetTimeValue pairs, in both Weekly-Schedule and Exception-Schedule properties, are converted into your building automation system scheduling periods. If the pairs are specified so that an implied scheduling period ends at the end-of-day (that is, the end-of-day BACnetTimeValue pair is not explicit), then read-back of the property will include that transition.
- If other non-BACnet processes are modifying schedules at the same time as the BACnet Read/Write-Property requests. This occurs when schedules are changed by users or other add-ons and when the system is performing schedule cleanup activities.

Exception-Schedule Unoccupied Periods

A third-party BACnet device may schedule events with occupied periods that end with either Null or Unoccupied values.

When a Null value is written by the third-party BACnet device, the schedule object reverts to a value from a lower priority event; this allows for logical merging of events of different priorities.

When an Unoccupied value is written, the schedule object does not revert to a value from a lower priority event because the value is explicitly specified, resulting in an Unoccupied period scheduled in the building automation system interface. If you want to prevent Unoccupied periods from being scheduled in the building automation system interface, either:

- reconfigure the third-party BACnet device to schedule with Null values, or
- disable writing of Unoccupied periods by setting **Allow Exception-Schedules to write Unoccupied periods** to OFF on the **Options** page.

Note: You cannot schedule Unoccupied periods, such as holidays, through the BACnet Scheduling Interface add-on if **Allow Exception-Schedules to write Unoccupied periods** is set to OFF.

Document revision history

Important changes to this document are listed below. Minor changes such as typographical or formatting errors are not listed.

| Date | Topic | Change description | Code* |
|----------|-------|---------------------|-----------|
| 10-11-17 | Book | Add-on name changed | X-AE-LO-E |

* For internal use only