



BACnet

Fast Browsing BACnet Devices



APPLICATION NOTE

October 2015

Description: This application note guides you how to setup, browse and use BACnet data.

Introduction

BACnet is "a data communication protocol for **B**uilding **A**utomation and **C**ontrol **net**works." A data communication protocol is a set of rules governing the exchange of data over a computer network. The rules take the form of a written specification that spells out what is required to conform to the protocol. What makes BACnet special is that the rules relate specifically to the needs of building automation and control equipment, i.e. they cover things like how to ask for the value of a temperature, define a fan operating schedule, or send a pump status alarm.

BACnet Client-Server architecture

BACnet is based on a "client-server" model ; BACnet messages are called "service requests." A client machine sends a service request to a server machine that then performs the service and reports the result to the client. BACnet currently defines 35 message types that are divided into five groups or classes. For example, one class contains messages for accessing and manipulating the properties of the objects described below. A common one is the "ReadProperty" service request. This message causes the server machine to locate the requested property of the requested object and send its value back to the client. Other classes of services deal with alarms and events; file uploading and downloading; managing the operation of remote devices; and virtual terminal functions.

BACnet specification (135-2004) supports the following objects:

- Binary Input
- Binary Output
- Binary Value
- Analog Input
- Analog Output
- Analog Value
- Averaging
- Life Safety Zone
- Multi-state Input
- Multi-state Output
- Multi-state value
- Loop
- Calendar
- Notification Class
- Command
- LifeSafetyPoint
- File
- Program
- Schedule
- Trend Log
- Group
- Event Enrollment
- Device

Browsing BACnet Devices

Before you continue, follow the instructions described in the application note "**BACnet - Network and Device Discovery**", as this describes how to add devices to your configuration and to the your servers BACnet cache.

This application note describes how to browse for the data on the network and how to read the data with the ICONICS GraphWorX64 client.

Follow these steps to read the data from BACnet device:

Standard way for BACnet data browsing

1. Start GraphWorX64 from Start menu.
2. Create new Process Point on your GraphWorX64 display by selecting Dynamics from the menu bar and select Process Point (or use Data Entry component). Left click it anywhere on the display to insert a process point.
3. Browse for Data Source in Process point's properties:

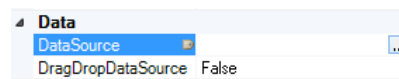


Figure 1 – Data Source

4. When Unified Data Browser is opened you need to click on BACnet folder. Go to My Computer/Data Sources/BACnet. Select an appropriate input as shown in Figure 2.

In Figure 2 you can see Device called "ICONICS BACnet Simulator 6601" was browsed, its object "AI 1" and object's property called "presentValue" was selected. This presentValue's value will be placed to the process point input.

NOTE: Usually, there is a "presentValue" which provides the current value from that device.



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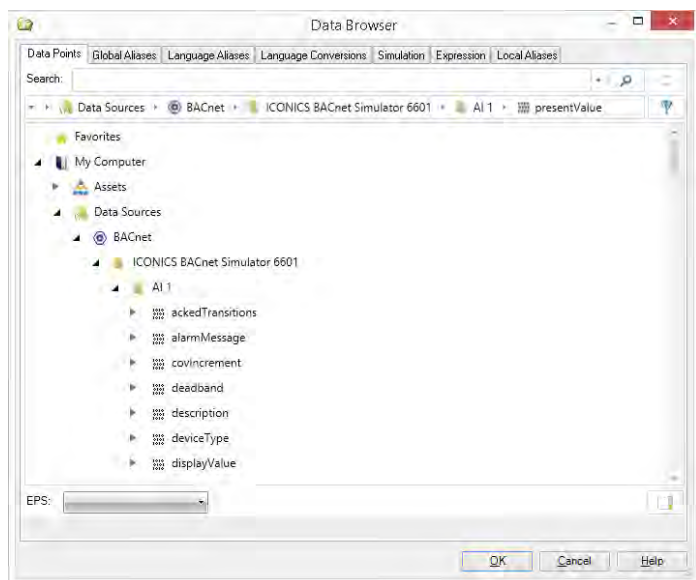


Figure 2 - Browsing BACnet Device and Properties

5. Click on OK to confirm the selection.
6. Take note of the process point data source syntax for BACnet and click OK.
7. Switch to Runtime and you should see the data tag value.

Drag and Drop way for BACnet data browsing

1. Start GraphWorX64 from Start menu.
2. In left panel select "Data Browser" from the bottom.
3. Expand BACnet node and select property you would like to place to display (in Figure 3, it is "description").
4. **Drag** the property in the browser move it to display and **Drop** it there.
5. There is created new process point with correct data source.

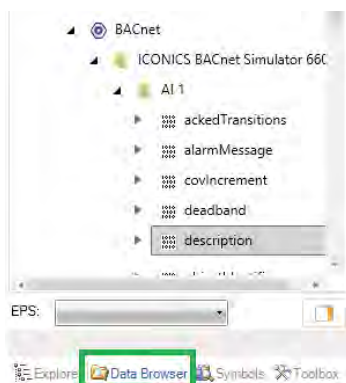


Figure 3 - Data Browser in GraphWorX

Understanding BACnet Application Pool

BACnet application pool contains the object below and it is very important to understand how it is designed. Here is an example:

bacnet:ICONICS BACnet Simulator 6601\AI 1\presentValue

In the above tag syntax:

- **bacnet:** – indicates the BACnet point manager which contains the bacnet driver. Through this point manager you can access BACnet devices to access BACnet Objects, including Inputs/Outputs, Internal Values, BACnet Trends, Alarms and Schedules generated by these devices
- **ICONICS BACnet Simulator 6601** – is the Device name with the unique ID 6601
- **AI 1** – is the <ObjectType> <Instance ID>, as Analog Input 1
- **presentValue** – is the <Property name> (by default ID=85).

NOTE: Legacy syntax for BACnet point was different:

@bacnet64:ICONICS BACnet Simulator 6601\AI 1\presentValue.Value