

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

OS Requirement: Windows 2003 Server/XP/Vista/Windows 7.

General Requirement: ICONICS Genesis32 v9.20 (or later)

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 of the world; 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 5 groups or classes. For example, one class contains messages for accessing and manipulating the properties of the objects described above. 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.

Please notice that GENESIS32 v9.3 is compliant with ANSI ASHRAE Standard 135-2004.

NOTE: Types which are part of the specification above are supported by ICONICS as well as other BACnet standards. Please notice that ICONICS supports read/write property for all BACnet objects, but only the objects defined in ANSI ASHRAE Standard 135-2004 would be correctly shown in ICONICS clients (e.g. GraphWorX32). Basically we can display only Data Sharing operations in GENESIS32 clients (reading/writing values from/to properties).

BACnet Address Space Configuration via Workbench

Manual BACnet configuration of BACnet Address space is not necessary normally (as by default the BACnet Address Space – list of available devices, object instances and properties is constructed automatically based on network/device scan).

You can use this manual BACnet Configuration in cases where you need to:

- Override naming of given device, object instance or property to provide human-readable strings in address space
- Connect to device which is not discoverable by standard way – use 'Static binding'

1. Now, you need to Add **New Device**, follow these steps to make it correctly:
 - a) Right click on Devices and choose  Device or click the  button from the toolbar and select Device. The Device tab will display.
 - b) Type a name in the Name text box.
 - c) Type a description in the Description text box, this is optional.
 - d) Type a device ID in the Device ID box.
 - e) Optionally override a Polling Rate.
 - f) Optionally override a Default priority.
 - g) Optionally override a Service Type.
 - h) Enable Static Binding (optional).
 - i) In case of static binding type a Network number.
 - j) In case of static binding type a MAC Hex address – it means combination of IP Address and BACnet port in hex, for example BACnet device running on IP 172.16.0.32 and port 47808 will result in BACnet MAC address AC100020BAC0
 - k) Click the Apply button.

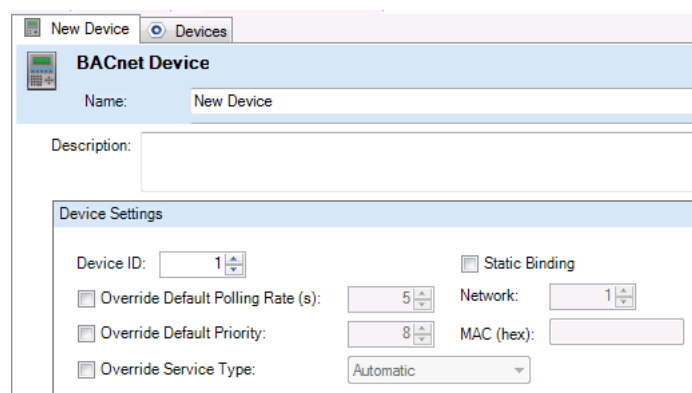


Figure 1 - BACnet Device

2. Now, you are going to Create **New Object** under your device:
 - a) Right click on your Device and choose  Object or click the  button from the toolbar and select Object. The Object tab will display.
 - b) Type a name in the Name text box.
 - c) Type a description in the Description text box, this is optional.
 - d) Fill in Object Type and its instance.

- e) Optionally override a Polling Rate.
- f) Optionally override a Default priority.
- g) Click the Apply button.

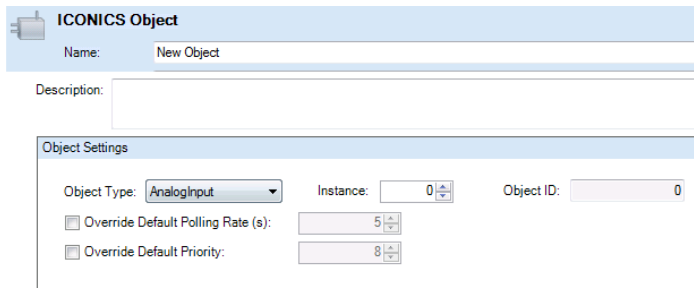


Figure 2 - BACnet Object

3. Now, you are going to Create **New Property** under your object:
 - a) Right click on your Object and choose  Property or click the  button from the toolbar and select Property. The Property tab will display.
 - b) Type a name in the Name text box.
 - c) Type a description in the Description text box, this is optional.
 - d) Type property ID in the Property text box, optionally fill in array index and Variant Type
 - e) Optionally override a Polling Rate.
 - f) Optionally override a Default priority.
 - g) Click the Apply button.

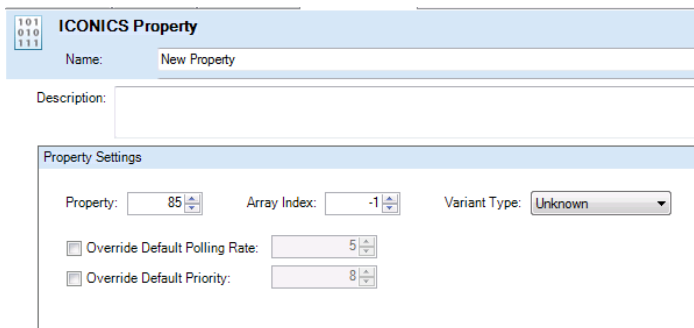


Figure 3 - BACnet Property

BACnet Communication settings configuration via workbench

It is possible to adjust several parameters for BACnet communication, to do so, please follow these steps:

4. Launch Workbench32 from Start → Programs → ICONICS Workbench32 → Workbench32.
5. Click the BACnet icon  in the Workbench project explorer.

6. Expand localhost, active database and double click Devices in the tree. The BACnet settings similar to one below will be displayed.
7. Adjust desired settings.

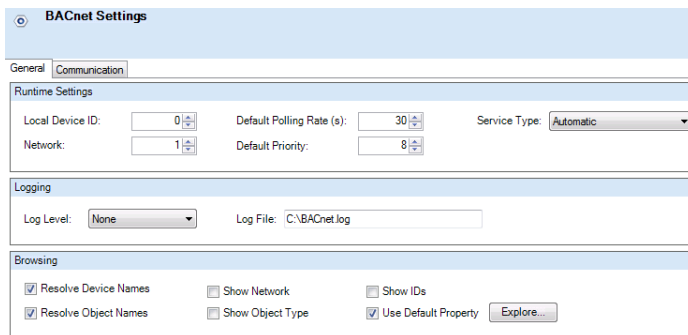


Figure 4 - BACnet Settings

8. For taking these settings into account click Apply button.

BACnet in GraphWorX32

In most of the cases you would browse directly for the BACnet devices via Unified Data Browser and add BACnet data on your GraphWorX32 display as PPTs (see the related application note *BACnet - Fast Browsing BACnet Devices.pdf*), but in this case you are going to add BACnet device that you preconfigured in Workbench32. Follow the steps below to make it correctly:

1. Start GraphWorX32 from Start → Programs → ICONICS GENESIS32 → GraphWorX32 → GraphWorX32.
2. Create a new process point on your GraphWorX32 display and click on “Process Point” button  and then click somewhere on display canvas to place it and to browse for the BACnet data.
3. When Unified Data Browser will be opened browse for your object property (e.g. presentValue). You just need to click on BACnet tab (GenBroker Plug-in), select an appropriate input as shown on figure below and click OK.

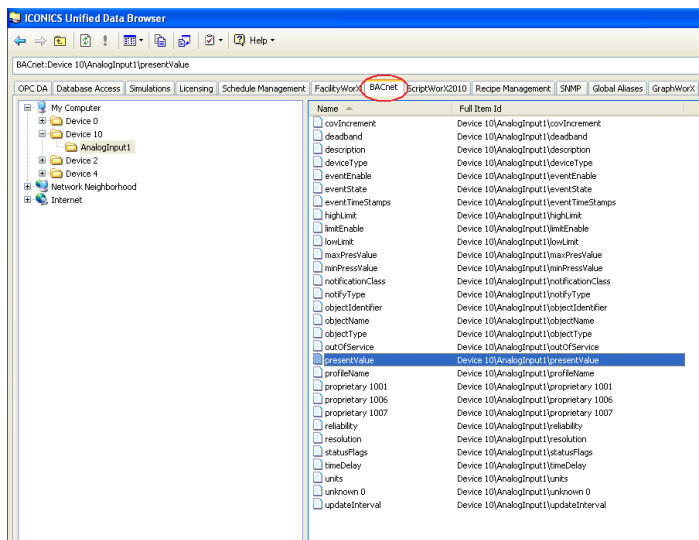


Figure 5 – Browsing BACnet data via Unified Data Browser

4. When you have PPT added on your GraphWorX32 display, switch to runtime mode and you would see similar output as shown on figure below.

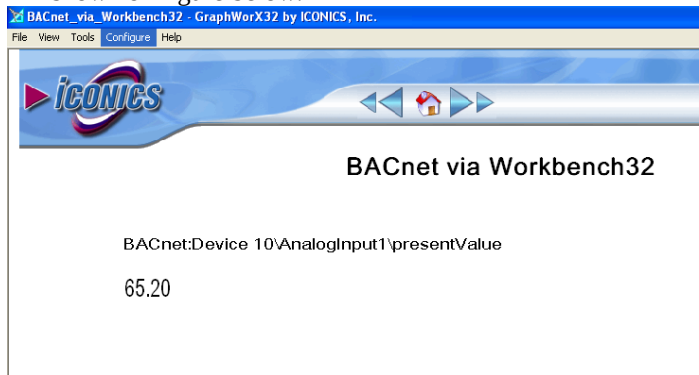


Figure 6 – BACnet device via Workbench in GraphWorX32