

Description: This application note guides you how to setup, browse and use BACnet data over the Workbench64.

OS Requirement: Windows Server 2003 x64/Vista x64/ Server 2008 x64/Windows 7 x64/ Server 2008 R2 x64

General Requirement: ICONICS GENESIS64 v10.6.

Introduction

BACnet is "a data communication protocol for **B**uilding **A**utomation and **C**ontrol **n**etworks." 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 ICONICS 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. 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. GraphWorX64).

BACnet Configuration via Workbench

1. Launch Workbench64 from Start → Programs → ICONICS GENESIS64 → Workbench.
2. Click the BACnet icon  in the Workbench project explorer.
3. Once your BACnet configuration opens, you can select Devices by double-clicking on the item and go to the

'Communication' tab, then you will see the setting for your devices.

4. Enter the settings for: APDU Timeout, APDU Segment Timeout, and APDU Retries in the 'Communication' tab and Default Polling Rate and Default Priority in the 'General tab'

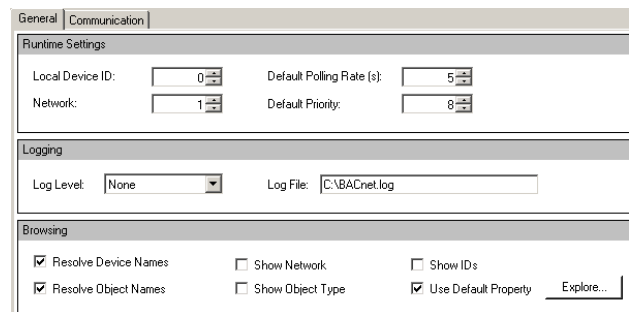


Figure 1 - BACnet Settings for Devices

5. If you made changes click the Apply button.
6. Now, you need to Add a **New Device**. Right-click on Devices and choose  Device or click the  button from the toolbar and select Device. The Device tab will display.
7. Type a name in the Name textbox.
8. Type a description in the Description textbox, this is optional.
9. Type a device ID in the Device ID box.
10. You can leave the default polling rate as it is unless you want to override it, then select the 'Override Default Polling Rate(s)' checkbox and enter the value in second. Same goes for the Default Priority.
11. Enable Static Binding (optional).
12. Type a Network number.
13. Type a MAC ID.
14. Click on the Apply button when you are satisfied with the configuration.

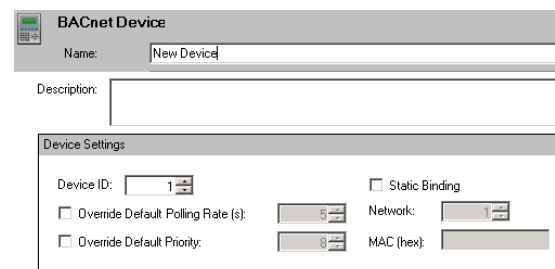


Figure 2 - BACnet Device

15. Now, you are going to Create a **New Object** under your device.
16. Right-click on your Device and choose  Object or click the  button from the toolbar and select Object. The Object tab will display.

17. Type a name in the Name textbox and give an option Description.
18. Specify the object Type in the Object Type dropdown menu (AnalogInput by default) and specify the right Instance # (usually 1). Object ID should be generated automatically.
19. You can leave the default polling rate as it is unless you want to override it, then select the 'Override Default Polling Rate(s)' checkbox and enter the value in second.
20. Same goes for the Default Priority.
21. Click the Apply button.

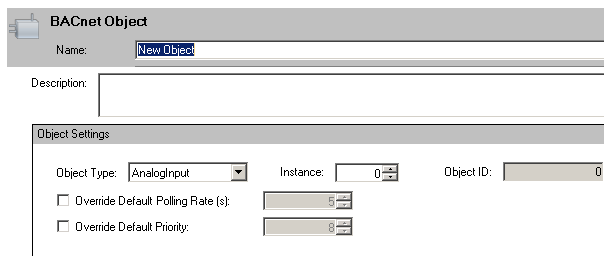


Figure 3 - BACnet Object

22. Now, you are going to Create a **New Property** under your object. Right-click on your Object and choose  Property or click the  button from the toolbar and select Property. The Property tab will display.
23. Type a name in the Name textbox and an optional description in the Description textbox.
24. Type a property number in the Property box.
25. You can leave the default polling rate as it is unless you want to override it, then select the 'Override Default Polling Rate(s)' checkbox and enter the value in second.
26. Same goes for the Default Priority and click the Apply button.

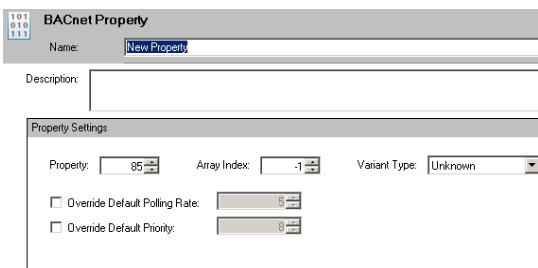


Figure 4 - BACnet Property

27. The last thing you need to do is create a port for your device. Right-click on your Ports (left tree) and choose  Port or click the  button from the toolbar and select Port. The BACnet Port will come up.
28. Type a name in the Name textbox and give an option Description if you wish.

29. You can then enter the Channel type, network number, adapter, and the IP settings. Click Apply to confirm.

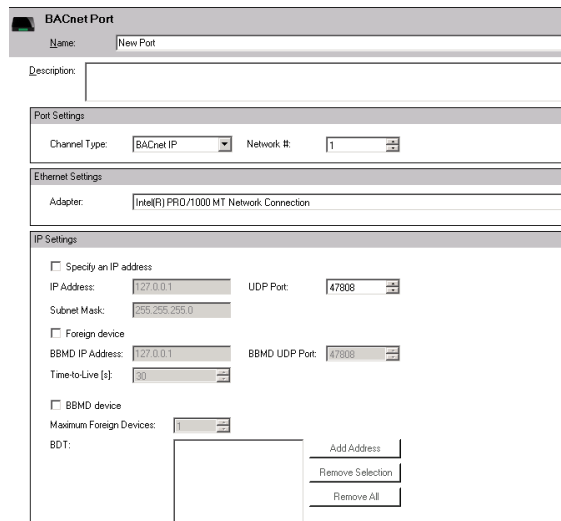


Figure 5 - BACnet Port

NOTE: Please notice that default BACnet communication is based on IP protocol, where default port (47808) can be changed (under the Ports) if you really need it, but in most of the cases you can run with the default settings. Also notice that Ports in Workbench64 are ICONICS proprietary interfaces created specifically for BACnet communication where IP port is not equal to Workbench64 port.

BACnet in GraphWorX64

In most cases, you would browse directly for the BACnet devices via Data Browser and add BACnet data on your GraphWorX64 display as process points (please refer to the related application note *BACnet - Fast Browsing BACnet Devices*), but in this case, you are going to add BACnet device that you preconfigured in Workbench64. Follow the steps below:

1. Start GraphWorX64 from Workbench by clicking on Start → Programs → ICONICS GENESIS64 → Workbench64
2. Once Workbench launches create a new display by clicking on the GraphWorX64 button in the Home tab of the ribbon.
3. Add a new process point on your GraphWorX64 display and browse for the BACnet data tags under BACnet folder .
4. When Data Browser shows the objects, browse for your BACnet object property (e.g. presentValue). Select an appropriate input as shown in Figure 6 and then click on "OK."

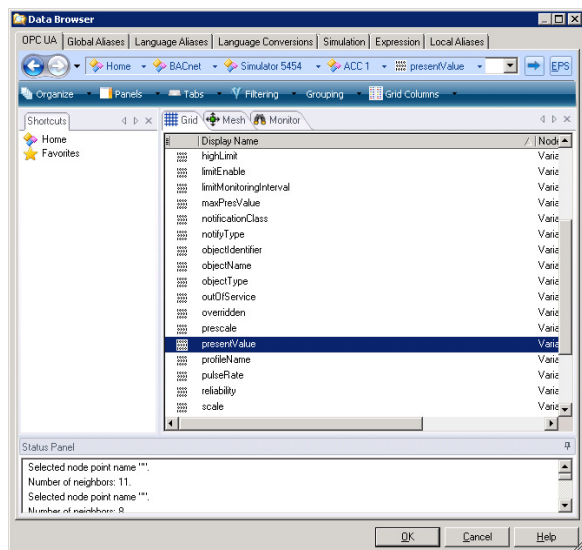


Figure 6 - Browsing BACnet Data via Data Browser

- When you have PPT added on your GraphWorX64 display switch to runtime mode and you would see BACnet value resolved.