Polling Data from a BACNET/IP device

How to use the BACNET IO Server to poll data from a BACNET/IP device
# Table of Contents

1. Objective .......................................................................................................................... 3

2. Hardware requirements ........................................................................................................ 4

3. Software requirements ......................................................................................................... 5
   eWON configuration software: .......................................................................................... 5
   eWON Firmware Version ................................................................................................. 5

4. Protocol compatibility .......................................................................................................... 6

5. IO Server configuration ........................................................................................................ 6
   Main Settings ................................................................................................................... 7
   Topic Settings .................................................................................................................. 7

6. Tag Creation ......................................................................................................................... 8
   Object Type ...................................................................................................................... 8
   Instance Number .............................................................................................................. 9
   Property of the object ....................................................................................................... 9

7. Example of configuration .................................................................................................... 11

Revision .................................................................................................................................. 13

Revision History ................................................................................................................... 13
1. Objective

The objective of this document is to explain how the eWON Flexy can poll data variables out of one or more BACNET/IP devices.

Polling BACNET/IP data variables can be resumed in four steps:

- Linking the Flexy with the BACNET/IP Device
- Configuring the Flexy BACNET IO Server
- Creating tags in the Flexy
- Monitoring tags

- Note -

**Advanced explanations are indicated by this icon**
2. Hardware requirements

In order to follow this guide you’ll need:

- PC suitable to connect to the eWON
- A Device acting as a BACNET/IP Server

1. From a computer running a web-browser, you will configure the BACNET IO Server in the eWON Flexy to poll different types of object properties.

2. Access to the eWON Flexy web server is done either by using (one of) its local LAN port(s) or by another type of access like through Talk2M, etc.

3. Connection to the BACNET/IP device is done using an Ethernet cable.

4. The connected BACNET/IP device will have its object property values read by the tags associated to the BACNET IO Server of the eWON Flexy.
3. Software requirements

**eWON configuration software:**

The eWON Flexy is configured through its web server. All you need is a standard Web Browser software like Internet Explorer, Firefox or Chrome.

Additionally we suggest you to download the eBuddy utility on our website: [http://support.ewon.biz/](http://support.ewon.biz/)

This utility allows to list all the eWONs on your network and change the default IP address of an eWON to match your LAN IP address range. With eBuddy, you can also easily upgrade the firmware of your eWON (if required) and make a backup of your configuration.

**eWON Firmware Version**

The screen-shots of this guide reflect the firmware version 12.0s0 (Jan 2017), but you can expect the basic principles to remain the same in later versions.

If your eWON is not up-to-date, use eBuddy to upgrade your firmwares easily.
Chapter 4  
Protocol compatibility

4. Protocol compatibility

The BACNET IO Server is only supported by the eWON Flexy (as of firmware 12.0). This IO Server uses the BACNET/IP protocol (based on UDP/IP) to collect the data from field devices acting as BACNET/IP Servers.

5. IO Server configuration

Go to "Configuration→ IO Server Config" and select "BACNET".

Here you can configure the BACNET IO Server general settings.
## Main Settings

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>eWON BACNET Device ID</td>
<td>Type the BACNET device ID of the Flexy. This number must be unique in your BACNET network. Leave it blank to let the Flexy choose a device ID.</td>
</tr>
<tr>
<td>eWON BACNET Port</td>
<td>Select the UDP port used for the BACNET IP communication.</td>
</tr>
</tbody>
</table>

The BACNET IO Server provides also three Topics used to define different polling rates.

Check “Enabled” to enable the topic. At least one topic must be enabled.

The topic settings (except the pollrate) are optional and can be defined in the Tag address as well. This allows you to poll more than 3 BACNET devices. Leave them blank if you define them in the Tag address.

## Topic Settings

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Device ID</td>
<td>Type the device ID of the device to poll. There is no IP address to define for the device as the BACNET IP protocol can detect the Bacnet devices on the network using an UDP Broadcast packet. Note that the IP address of the Bacnet device must still be in the same range as the eWON IP address</td>
</tr>
<tr>
<td>Poll rate</td>
<td>Type the poll rate for this topic (in milliseconds). Default : 2000 ms</td>
</tr>
<tr>
<td>Write Priority</td>
<td>Type a write priority value. (0 or blank : no priority defined, 1 : highest priority, 16 : lowest priority)</td>
</tr>
</tbody>
</table>
6. Tag Creation

When the General settings of the IO Server are defined, you can now create your BACNET tags.

Go to “Configuration → Tag Setup” and click “Create New Tag”

First select the Topic you want to associate the Tag to (A, B or C)
Second, define the address of the Tag.

The address of the Tag is composed of four parameters:
1. Object Type (mandatory)
2. Instance Number (mandatory)
3. Property of the object (optional. If not defined, the property “Present Value” is used)
4. Device ID (optional if defined in the topic settings)

Object Type

Here is the list of the supported object types:

- ANALOG_INPUT (0),
- ANALOG_OUTPUT (1),
- ANALOG_VALUE (2),
- BINARY_INPUT (3),
- BINARY_OUTPUT (4),
Chapter 6
Tag Creation

- BINARY_VALUE (5),
- INTEGER_VALUE (45),
- POSITIVE_INTEGER_VALUE (48)
- ACCUMULATOR

Instance Number

The instance number defines the ID of the object you want to access to.

Property of the object

An object is composed of different properties. These properties can be accessed through different Tags. You have therefore to define which property you want to access for your Tag. If no property is defined, the property “PRESENT_VALUE” is used.

Here is the list of the property you have access to:

- PRESENT_VALUE (85),
- OUT_OF_SERVICE (81),
- COV_INCREMENT (22),
• DEADBAND (25),
• HIGH_LIMIT (45),
• LOW_LIMIT (5)
• Any numerical ID

- Note -

The other Tag settings are explained in the eWON General Reference Guide.
7. Example of configuration

For this example, I used the BACNET IP Device simulator from “SCADA Engine” ([http://www.scadaengine.com/downloads.html](http://www.scadaengine.com/downloads.html))

Here is my device configuration:

![Device Configuration Image]
Chapter 7
Example of configuration

Here is the corresponding Flexy configuration:

- **IO Server Settings**
  
  ![IO Server Configuration Diagram]

- **Tag Setup**
  
  ![Tag Setup Diagram]

- **Tag ViewIO**
  
  ![Tag ViewIO Table]
Chapter 7
Example of configuration
Revision

Revision History

<table>
<thead>
<tr>
<th>Revision Level</th>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>26/01/17</td>
<td>Initial Version</td>
</tr>
</tbody>
</table>

Document build number: 104

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