

BACnet Gateway setup and use

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Introduction

This guide will go over how to use the BACnet Gateway with PLCnext Engineer.

Objectives

- Viewing web-based interface and navigating
- Adding tags in PLCnext Engineer
- Linking tags
- Removing links
- Additional information

Procedure

Web-Based Interface

Accessing the interface:

1. Navigate to a web browser and type in the IP address of the controller and add :2000 to the end.

Ex: <http://172.16.10.100:2000/>

2. Now the Web-Based interface will show as shown in Figure 1.1-1

Figure 1.1-1 – Web-Based Management home page

This page is writing BACnet tag values from PLCnext Engineer.

PLCnext tag to link:

PLCnext Engineer tag:

Datatype:

BACnet tag to link:

BACnet device:

BACnet Tag:

Datatype:

Priority (optional):

Link selected tags

Status

Update all devices tags

Show 10 entries

PLCnext Engineer Tag	BACnet Tag
No data available in table	

Showing 0 to 0 of 0 entries

Search:

Previous Next

Navigating the interface:

1. To change from the “writing” tab (PLCnext Engineer to BACnet) to the “reading” tab, click the button shown in Figure 1.1-2.

Figure 1.1-2 – Changing tabs

← → ↻ ⓘ Not secure | 172.16.10.100:2000/PLCnextToBACnet

Apps Welcome to the Int... PLCnext Store PLCnext Community PHOENIX CONTACT...

PLCnext Engineer to BACnet BACnet to PLCnext Engineer

This page is writing BACnet tag values from PLCnext Engineer.

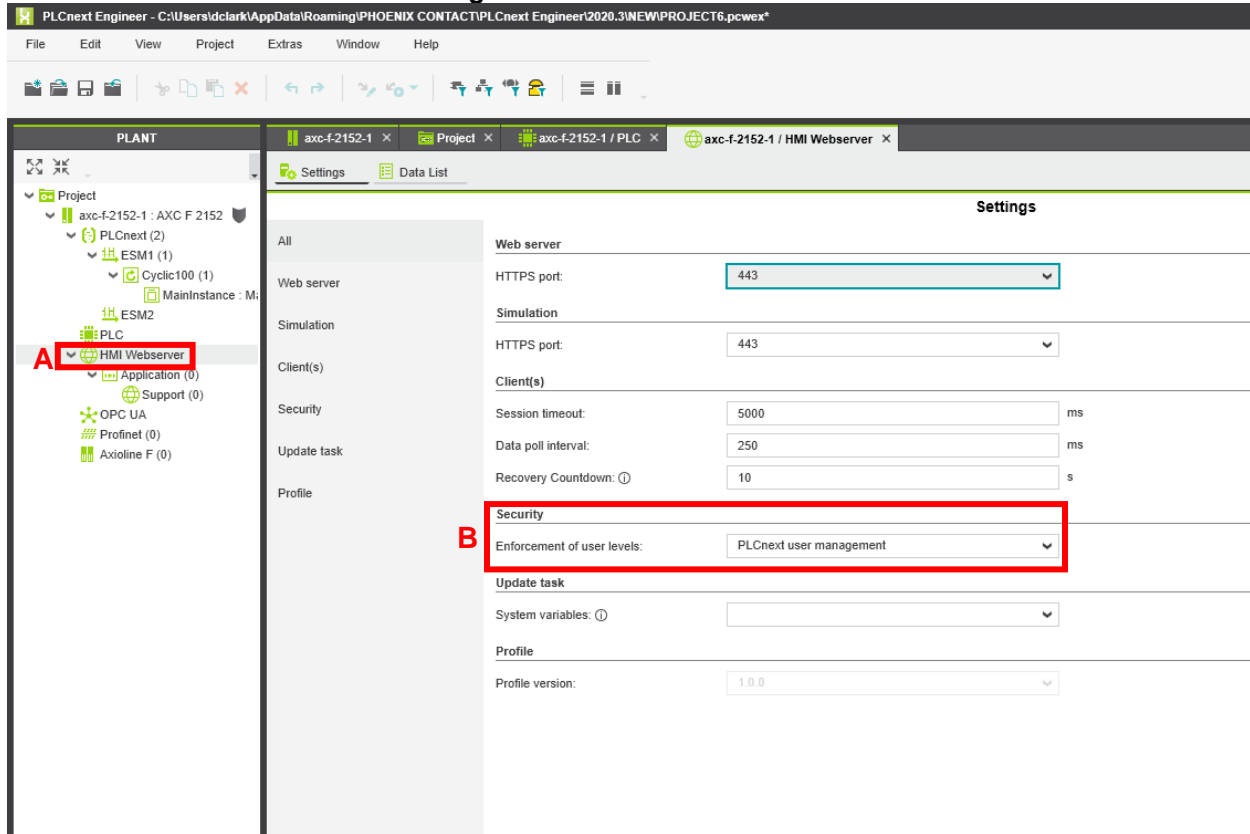
PLCnext tag to link:

Adding PLCnext Engineer tags

PLCnext Engineer:

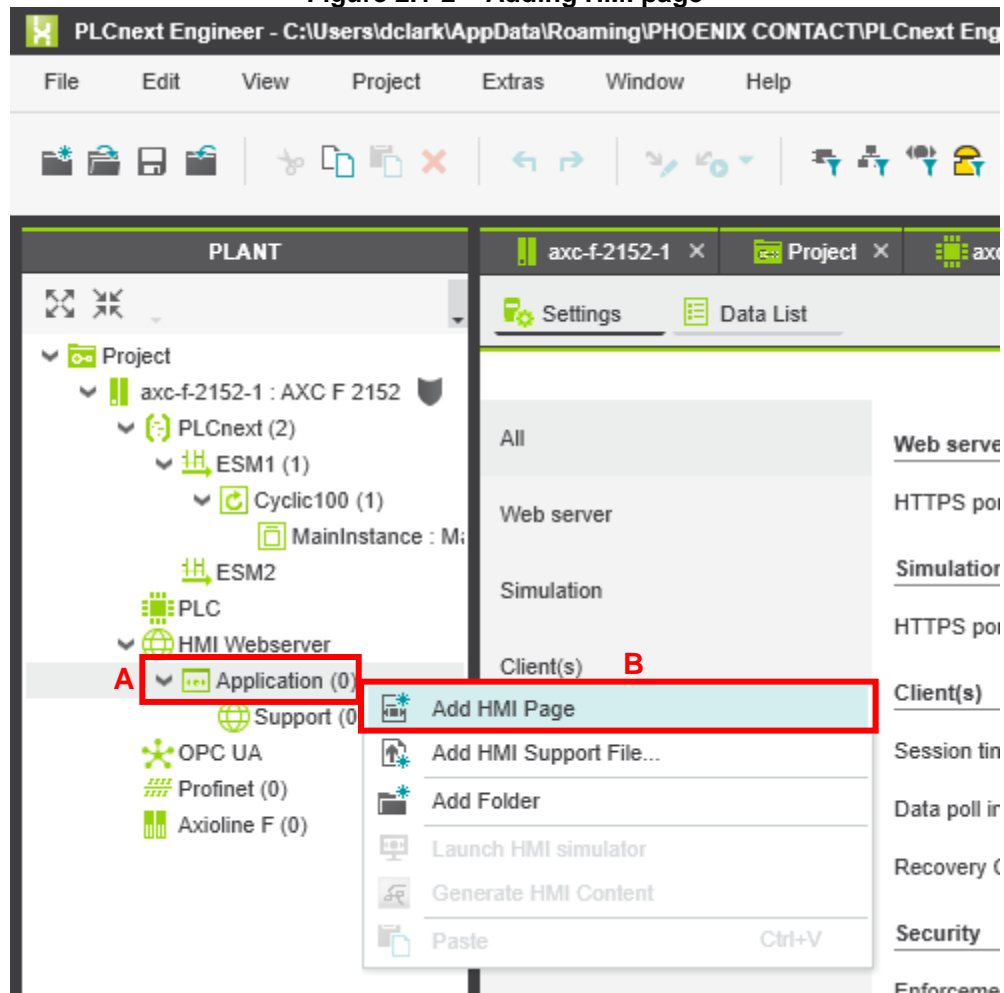
1. Navigate to the HMI webserver tab (A), and disable the user authentication under settings (B) in Figure 2.1-1.

Figure 2.1-1 – HMI Webserver



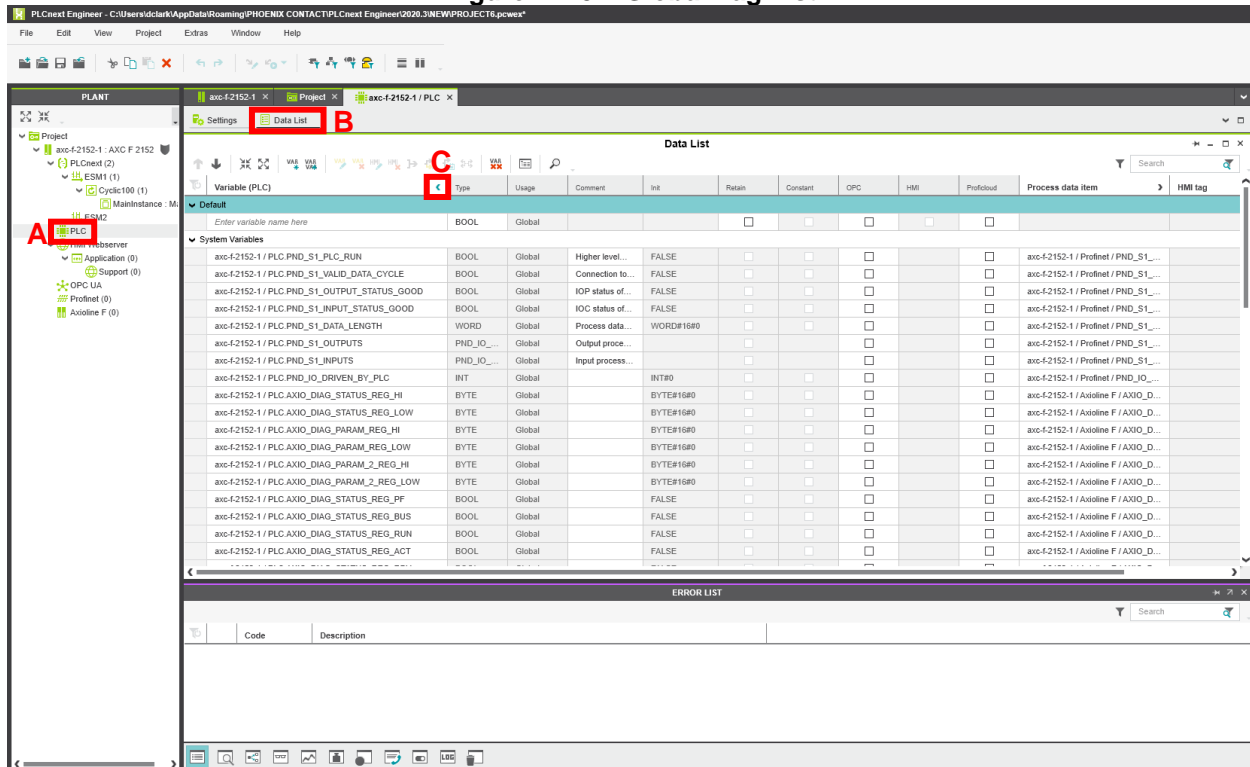
2. Now right click on Application (A), and add a page (B) as shown in Figure 2.1-2.

Figure 2.1-2 – Adding HMI page



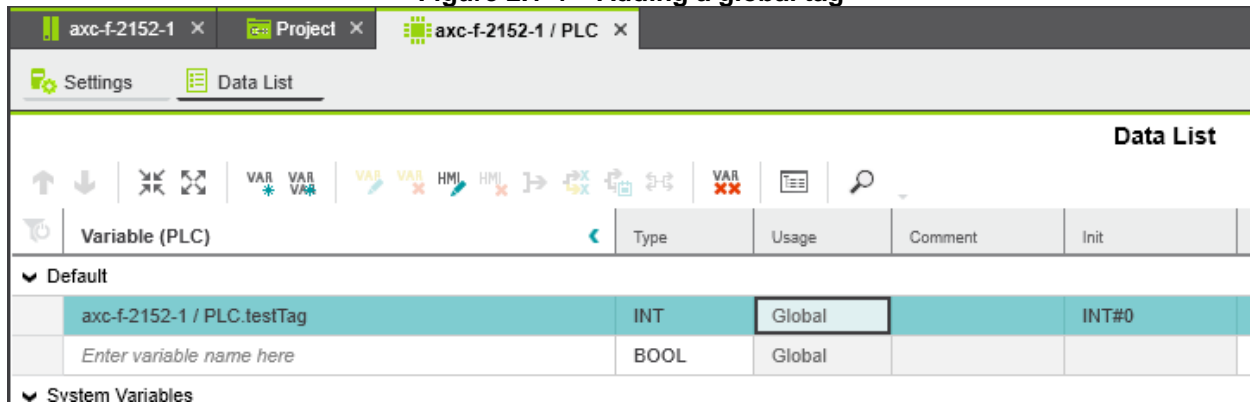
3. Navigate to the global tag list (A), select Data List (B), and expand the variables to see the datatype (C) as shown in Figure 2.1-3.

Figure 2.1-3 – Global Tag List



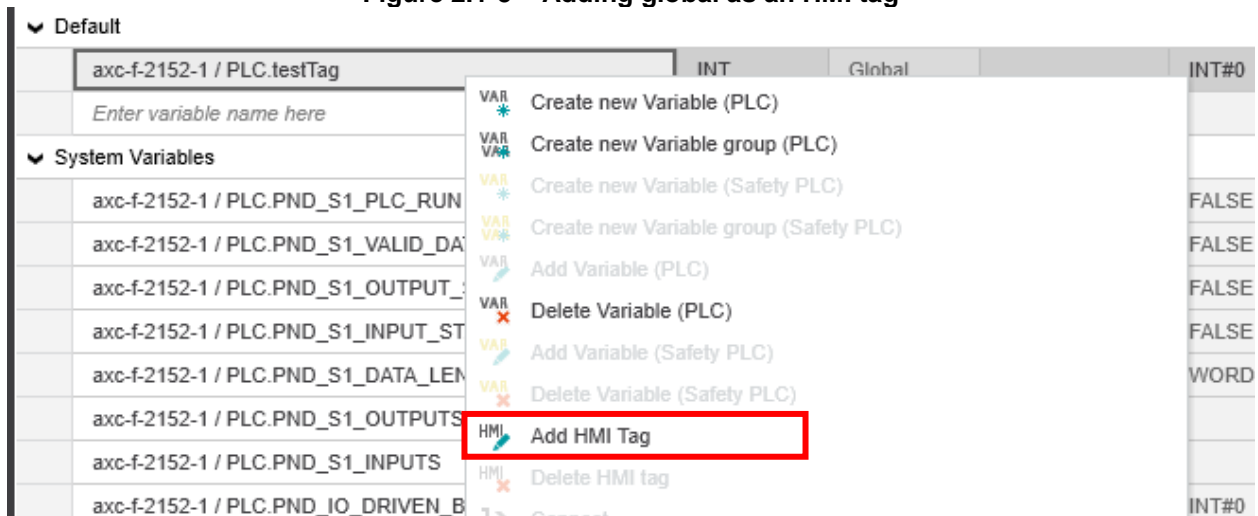
- Under Default, type the name of a tag that you would like to be displayed and make sure the datatype is correct. Figure 2.1-4 shows an example tag.

Figure 2.1-4 – Adding a global tag



- Add the global tag as an HMI tag by right clicking on the tag and selecting Add HMI Tag as shown in Figure 2.1-5.

Figure 2.1-5 – Adding global as an HMI tag

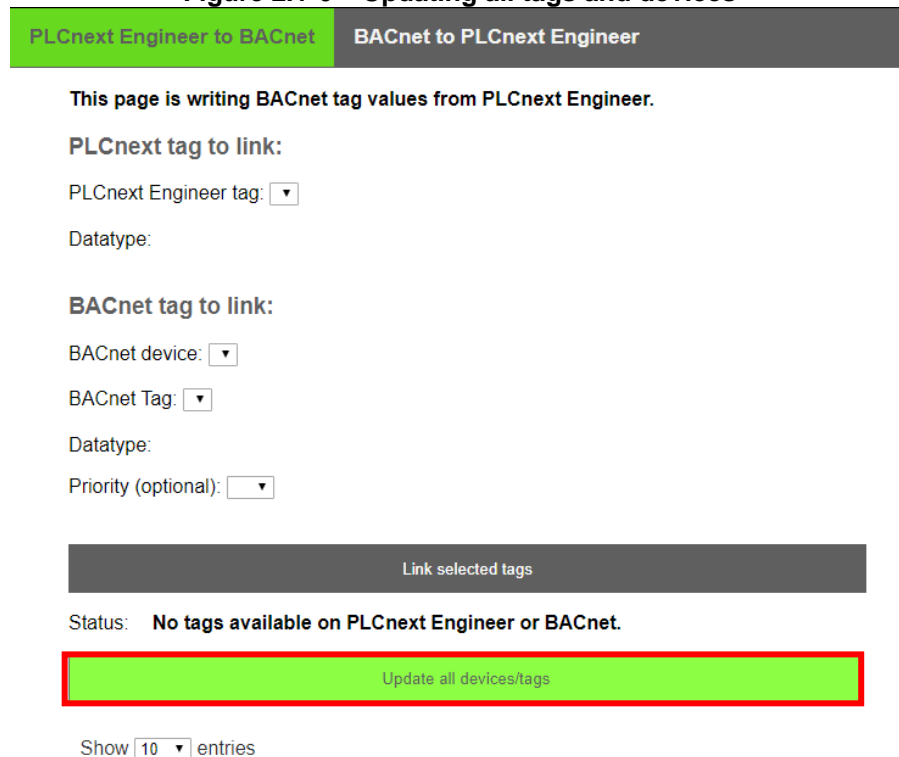


6. Write and start the project on the controller.

BACnet Web-Based Management:

1. Navigate to the web-based management.
2. Click the Update all devices/tags button as shown in Figure 2.1-6.

Figure 2.1-6 – Updating all tags and devices



3. There will now be PLCnext Engineer tags available in the dropdown.

Linking Tags

To link tags, navigate to the web-based management.

1. Ensure the status, as shown in Figure 3.1-1 does not state that there are no tags available (as this picture does show).

Figure 3.1-1 – Status message

The screenshot shows a web-based management interface for linking tags. At the top, there are two tabs: 'PLCnext Engineer to BACnet' (highlighted in green) and 'BACnet to PLCnext Engineer' (dark grey). Below the tabs, a message states: 'This page is writing BACnet tag values from PLCnext Engineer.' Under the heading 'PLCnext tag to link:', there is a dropdown menu for 'PLCnext Engineer tag:' and a label 'Datatype:'. Under the heading 'BACnet tag to link:', there are dropdown menus for 'BACnet device:', 'BACnet Tag:', and 'Priority (optional):', along with a label 'Datatype:'. A dark grey button labeled 'Link selected tags' is positioned above a red-bordered box containing the status message: 'Status: No tags available on PLCnext Engineer or BACnet.' Below this, there is a green button labeled 'Update all devices/tags'. At the bottom, there is a label 'Show 10 entries' with a dropdown menu set to '10'.

2. To remove this status, ensure there is a BACnet device, and PLCnext tags have been created and then select the Update all devices/tags button to refresh all PLCnext and BACnet tags.
3. Now select a PLCnext Engineer tag, and a BACnet tag by selecting the device first, then the tag.

NOTE: Ensure the Datatype matches! If not the tags will not link and the status will reflect.

Figure 3.1-2 – Tags selected to link

PLCnext Engineer to BACnet

BACnet to PLCnext Engineer

This page is writing BACnet tag values from PLCnext Engineer.

PLCnext tag to link:

PLCnext Engineer tag:

Datatype: **BOOL**

BACnet tag to link:

BACnet device:

BACnet Tag:

Datatype: **BOOL**

Priority (optional):

Link selected tags

- Once both tags are chosen, click the Link selected tags, and the tag will now be populated into the table as shown in Figure 3.1-3.

Figure 3.1-3 – Table with tags linked

PLCnext Engineer to BACnet

BACnet to PLCnext Engineer

This page is writing BACnet tag values from PLCnext Engineer.

PLCnext tag to link:

PLCnext Engineer tag:

Datatype:

BACnet tag to link:

BACnet device:

BACnet Tag:

Datatype:

Priority (optional):

Link selected tags

Status: **Success**

Update all devices/tags

Show entries

Search:

PLCnext Engineer Tag	BACnet Tag	
DI1	points.boolVar	Remove Link

Showing 1 to 1 of 1 entries

Previous 1 Next

- The tag is now linked!

Removing Links

1. Click the Remove Link button on the same row as the link you would like to remove.

Figure 4.1-1 – Remove Link button

Show <input type="text" value="10"/> entries		Search: <input type="text"/>
PLCnext Engineer Tag ▲	BACnet Tag ▲	
DI1	points.boolVar	Remove Link
Showing 1 to 1 of 1 entries		Previous <input type="text" value="1"/> Next

2. Allow the page to refresh and the tag be removed from the table
3. The link is now removed!

Additional Information

If you experience any other issues than what is listed below with this project, please post an issue on GitHub.

1. If you are experiencing installation issues:
 - a. In your SSH session, open the NTP server file with the below commands:

```
cd /etc/
nano ntp.conf
```

- b. In the file just opened, change the file with the changes in red.

```
# This is the most basic ntp configuration file
# The driftfile must remain in a place specific to this
# machine - it records the machine specific clock error
driftfile /var/lib/ntp/drift
# This should be a server that is close (in IP terms)
# to the machine. Add other servers as required.
# Unless you un-comment the line below ntpd will sync
# only against the local system clock.
#
# server time.server.example.com time.google.com
#
# Using local hardware clock as fallback
# Disable this when using ntpd -q -g -x as ntpdate or it will sync to itself
#server 127.127.1.0
#fudge 127.127.1.0 stratum 14
# Defining a default security setting
restrict default
```

2. If you just added a new tag or device:
 - a. Select the Update all devices/tags
3. If you see an error in the status that says refer to log file, **and the gateway is not functioning:**
 - a. SSH into the controller and type the below command:

```
balena-engine logs bacnetgw
```
 - b. Copy the log file and add it to an issue in GitHub.
4. If you see an error in the status that says refer to log file, **and the gateway is functioning:**
 - a. Note the error that was listed and go to the log file to view what happened.
 - b. There are errors that can happen, but it will not affect the performance.
 - c. If the error happens constantly, get the log file and report an issue in GitHub.