Ecowitt weather station integration with Comfortclick bOS

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Prerequisites

- Comfortclick bOS with possibility to add a **Basic** device type.
- A weather station able to send measured data over **TCP** with the **Ecowitt** protocol. An example is the Steinberg Systems SBS-WS-600 weather station which was used to test this device integration with bOS.

Import into bOS

1. Download the attached **Ecowitt_bOS_device.bos** file.
2. In bOS configurator, log into your server.
3. Click the **Import configuration** button.
4. Select the downloaded **.bos** file and click **Open**. The Import window shows up:
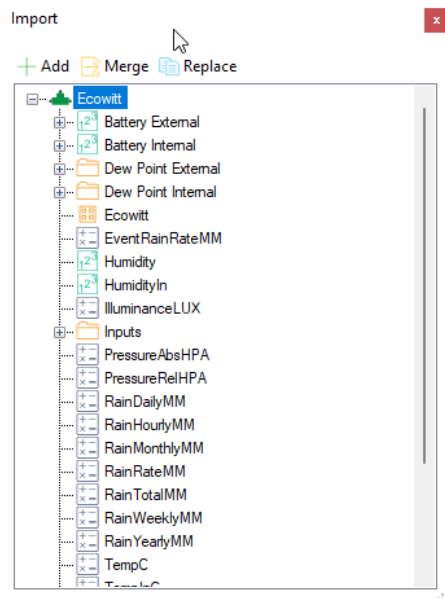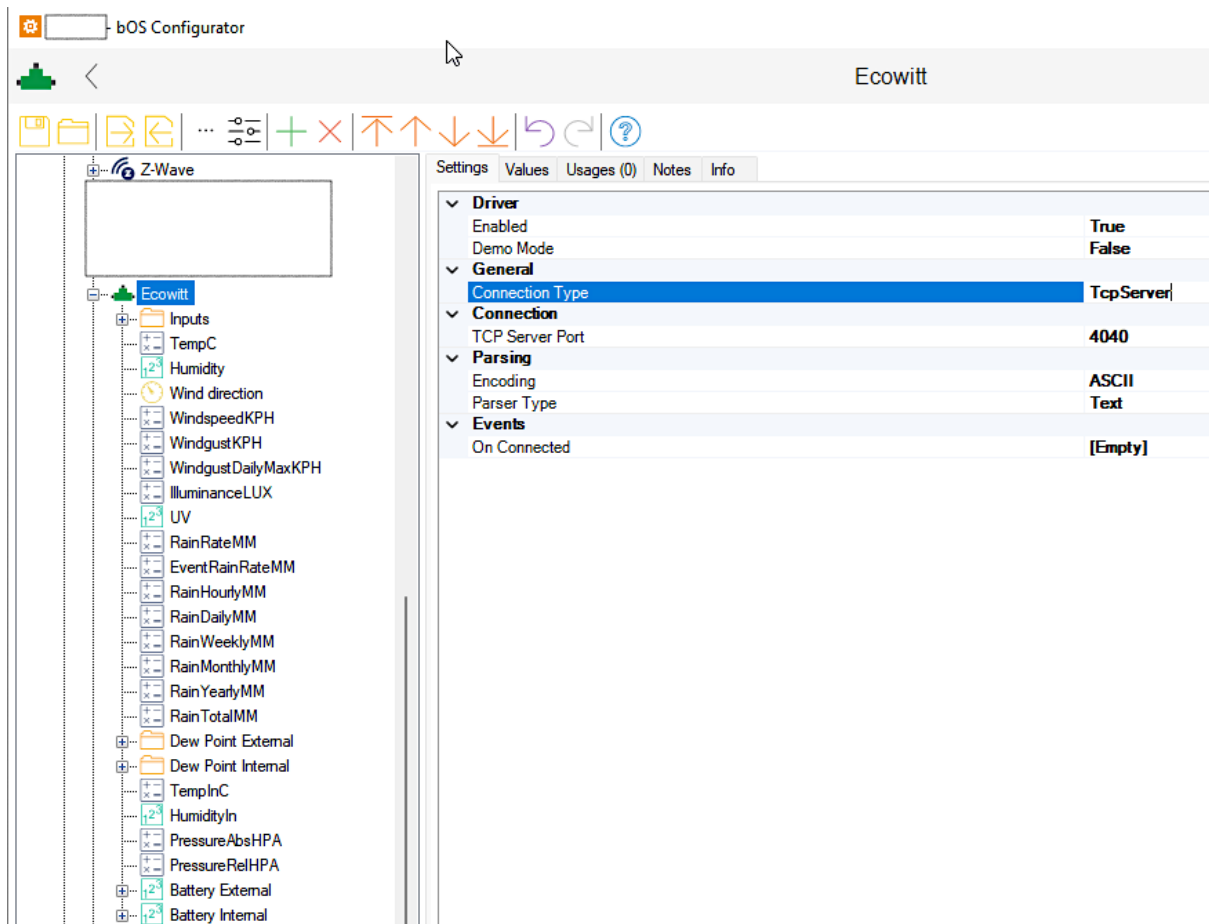

5. Make sure to select the top node called **Ecowitt** and click the **Add** button.
6. In the **Import Add** window select **Devices** in the tree and give the device any name you would like (the default is Ecowitt). Click the **Add** button.
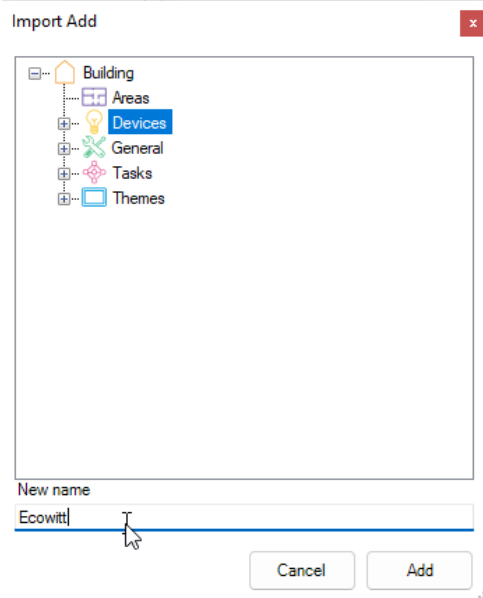
7. After a few moments, the device will be added into your bOS configuration.

Setup in bOS

The settings should be as seen on the screenshot.

⚠️ If you already have any other **Basic** device where the connection type is **TcpServer**, make sure that the Ecowitt device's **TCP Server Port number** is different from any other Basic TcpServer device in your system.

If you change the port number from the default 4040 to another, take a note of it, as you will need it later when configuring the weather station.

Setup in WS View

The device was created using the above mentioned Steinberg Systems SBS-WS-600 weather station, for which the "official" mobile application is called **WS View**. Your weather station may need to be set up with a different application.

Download the **VS View** mobile application for either iOS or Android. Here is a screenshot from the Apple store for identification:
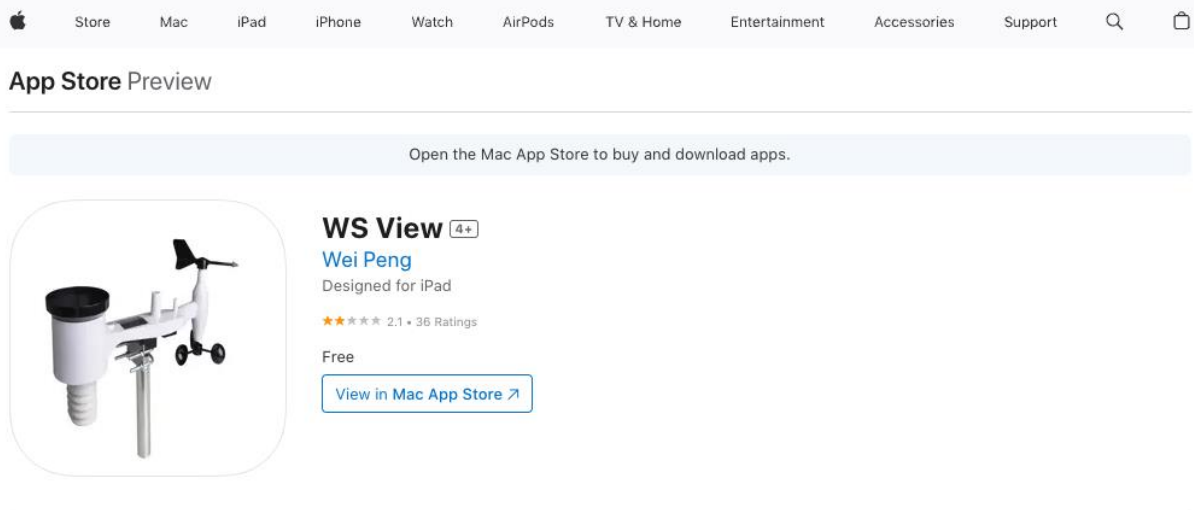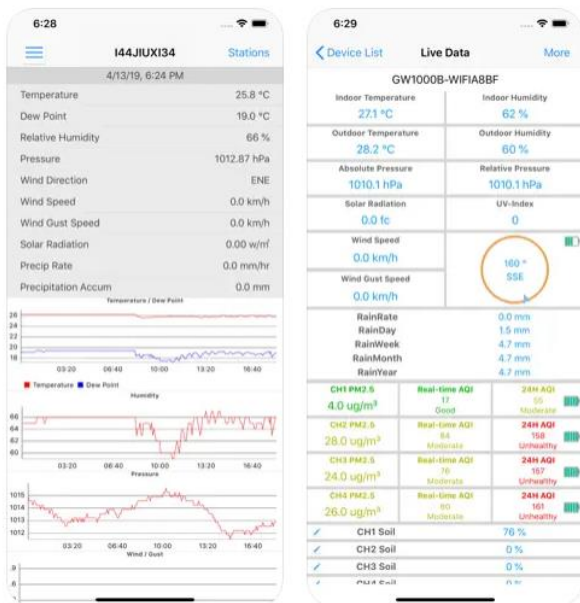
Follow the instructions in the weather station's manual to add your weather station to the VS View application.
Follow these steps in the **VS View mobile app** to set up the connection between the weather station's indoor unit and bOS.

1. Select **Device List** from the menu.

2. Click on your weather station in the list.
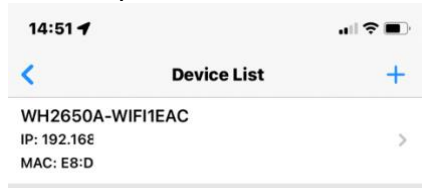
3. Click on **More** and then **Weather Services**.
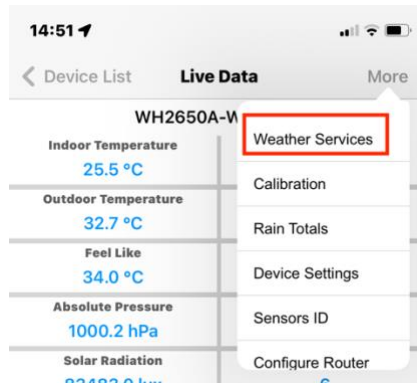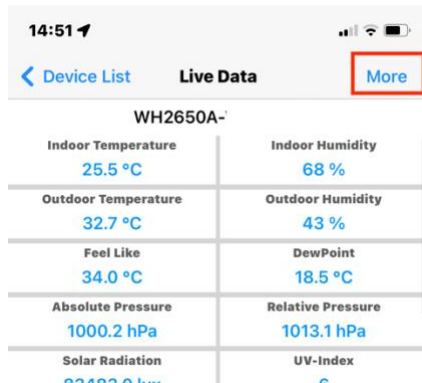
4. Click **Next** until you reach the **Customized** page.
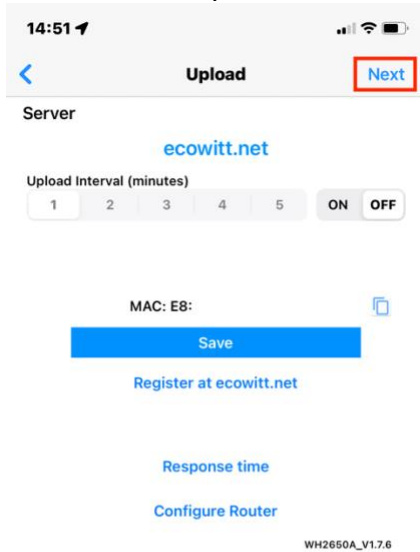
5. Modify the settings:
   5.1. Click **Enabled**.
   5.2. Set protocol type to **Ecowitt**.
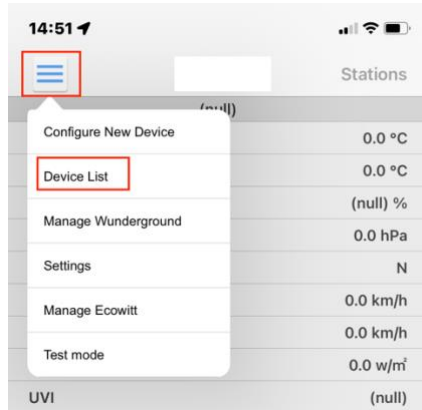   5.3. Enter your bOS server's **IP address**.
   5.4. Leave **Path** empty.
   5.5. Enter the same **port number** that you have set as **TCP Server Port number** in the bOS Basic device configuration. The default is **4040** but you may have to use a different one.
   5.6. Set the upload interval to **16** seconds. This is how often the weather station will update its values.

Finalize setup in bOS

1. Go back to bOS and check the Values tab of the Ecowitt device. You should see both **Raw Data** and **Encoded data** appear (non-empty).

Name	Type	Template	Image	Unit	Value
Connected	Boolean	Label ⌄	ⓘ	[OFF,ON]	True
Raw Data	String				50-4F-53-54-20-20-48-54-54...
Encoded Data	String				POST HTTP/1.1HOST: 19...

(Tabs above table: Settings | Values | Usages (0) | Notes | Info)

2. If that is not the case, go back to the **Settings** tab, double click the **Enabled** row to disable the driver, and then double click again to enable it again. Check the data on the Values tab again.

3. Copy the UI panel also called Ecowitt with a weather station icon to your UI.
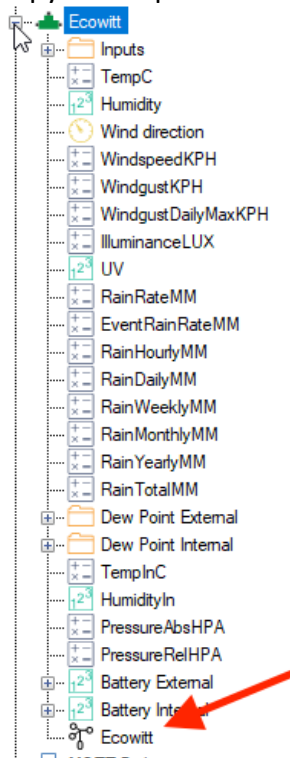
4. Open the panel in **bOS Client** and compare the data with the ones in **VS View**.
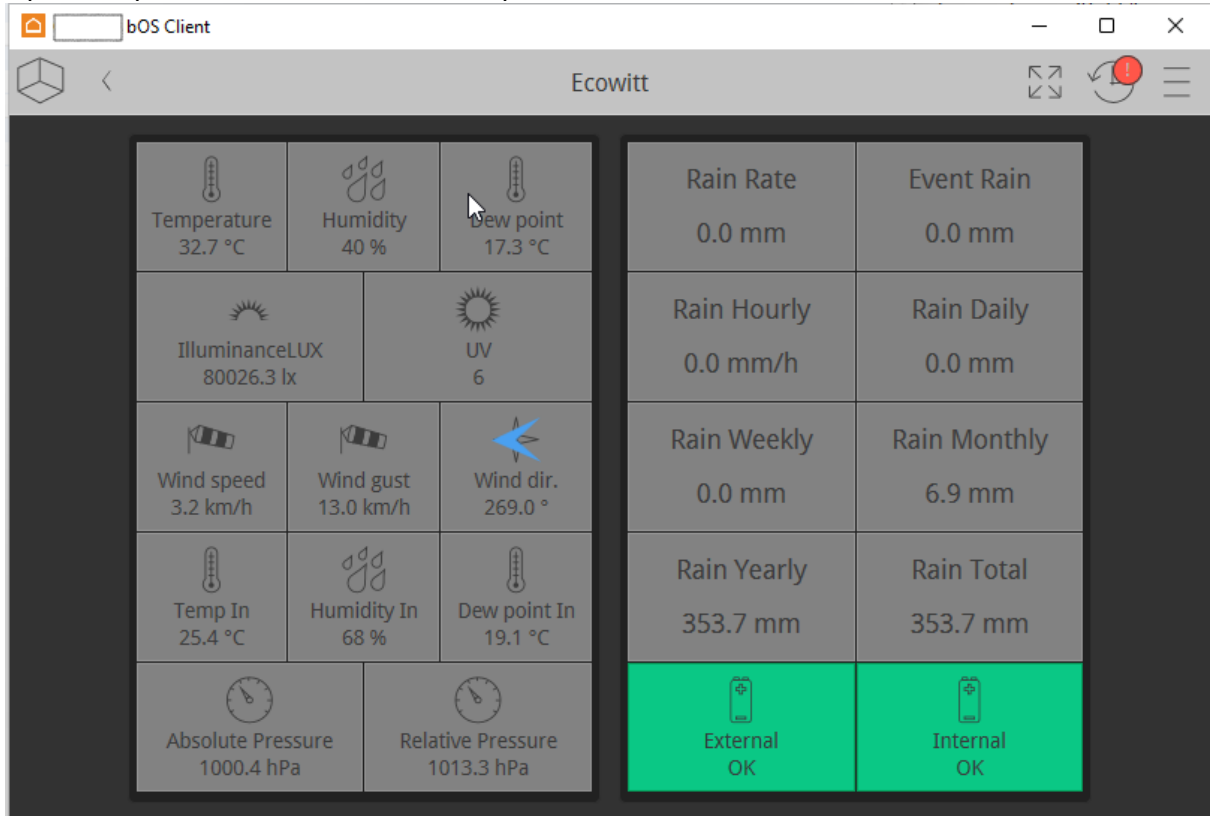
If your weather station doesn't provide any of the data, make sure to remove them from the UI and the nodes under Ecowitt.

Reference

Data from Ecowitt

Here is an example message sent by the weather station to the bOS via TCP:

```
POST  HTTP/1.1
HOST: 192.168.0.73
Connection: Close
Content-Type: application/x-www-form-urlencoded
Content-Length:487

PASSKEY=YOURPASSKEY&stationtype=WH2650A_V1.7.6&runtime=1800365&dateu
tc=2023-07-
11+15:26:40&tempinf=76.10&humidityin=70&baromrelin=29.899&baromabsin
=29.518&tempf=89.42&humidity=40&winddir=138&windspeedmph=1.34&windgu
stmph=2.24&maxdailygust=9.17&solarradiation=366.52&uv=3&rainratein=0
.000&eventrainin=0.000&hourlyrainin=0.000&dailyrainin=0.000&weeklyra
inin=0.000&monthlyrainin=0.272&yearlyrainin=13.925&totalrainin=13.92
5&wh65batt=0&wh25batt=0&freq=868M&model=WH2650A
```

Here we have removed the header and changed the **&** characters to new line

```
PASSKEY=YOURPASSKEY
stationtype=WH2650A_V1.7.6
runtime=1787751
dateutc=2023-07-11+11:56:26
tempinf=75.92
humidityin=70
baromrelin=29.932
baromabsin=29.551
tempf=89.24
humidity=44
winddir=123
windspeedmph=0.22
windgustmph=2.24
maxdailygust=8.05
solarradiation=682.39
uv=6
rainratein=0.000
eventrainin=0.000
hourlyrainin=0.000
dailyrainin=0.000
weeklyrainin=0.000
monthlyrainin=0.272
yearlyrainin=13.925
totalrainin=13.925
wh65batt=0
wh25batt=0
freq=868M
model=WH2650A
```

The **data_name=value** pairs are more visible now. In case the value has a unit (like temperature or speed) the unit is in the **data_name**. For example, **tempf** is the external temperature in **Fahrenheit**.

Your weather station may provide more or less data. When setting up in bOS, copy the whole text from the Ecowitt Encoded Data, and examine the data available in your weather station. Based on this Basic device, you will be able to parse other data types as well.

Nodes in bOS

The **Input** folder contains parsers for the data which has a unit:

- Temperature
- Speed
- Illumination
- Height
- Pressure

Data which doesn't have a unit have parsers directly under the root device (besides the Inputs folder):

- Humidity
- Wind direction
- UV
- Battery Low

You will see Integer and Double icons next to the names.

Other nodes under the root node are calculation nodes, which convert the imperial unit values to metric values. These are indicated at the end of their names (similar to the Ecowitt data), for example **TempC** is the external temperature in **Celsius**.

Parsing data

Except for four values (stationtype, dateutc, freq and model), all values are either Integer or Double types, so we use such parsers.

Integers

This is how to parse the humidity value:

(?<=humidity=)(\d*)(?=&)

If your weather station provides additional integer values not available in this driver, you can look for the data name in the Encoded Data value, add a new Integer parser, and modify the Regex by replacing the part highlighted in red above to the data_name your weather station sends.

Doubles

For double types, it is the same as for integers, but you have to use a Double parser, and make sure that in the Parser's settings, **Decimal Mark** is set to **DecimalPoint**.

Dew point calculator

As the weather station used to create this integration (Steinberg Systems SBS-WS-600) doesn't report dew point temperatures, a dew point calculator has been added. In the respectively named Dew Point folders, there are two values (Temperature and Humidity), and a calculator (Dew point).
The values are references of other values from Ecowitt.
You can copy the whole Dew Point folder if you need it in other places inside bOS, and just replace the references for the Temperature and Humidity values to the room sensors where you would like to calculate the dew point.