IoTWorX
JSON Custom Encoders and Publish Groups

APPLICATION NOTE

September 2017

Description: This document describes how to create custom JSON encoders, which would send messages to an IoT Hub, and how to create Publish Groups and use them in Publish lists.
IoT Gateway OS Requirement: Windows 10 IoT or Windows 10 Enterprise.
General Requirement: Basic JSON format knowledge, Microsoft Azure Portal account and Basic SQL Azure/IoT knowledge. ICONICS version 10.95.1 or later.

Introduction

This Application Note demonstrates how to create and use ICONICS' new Custom Encoder (special JSON format of messages) with an IoT Hub, as well as how to create and customize Publish Groups, which allows custom Publish Rates for specific tags within a Publish List.

An example of JSON format can be found in Figure 2.

JSON Custom Encoders

1. Open Workbench and under your project and Internet of Things you can find the **Custom Encoders** folder or under your IoT Project
2. Right-click on Custom Encoders and Add Encoder to your project.
3. Name your Encoder.
4. Select **Plugin**.

NOTE: Plugins are templates that you can use to communicate with an IoT Hub. Currently, there is only a CustomJSON plugin, but in the future ICONICS may support custom plugins from customers and/or third parties

5. Currently, there are 3 types of plugins:
   - **Multiple values in the "Values" array of the message** – In the message you can put properties and an array of values, which were specified in Value Format.
   - **One value for each message** – Sends the message every time a tag is updated or depending on the publish rate (for each value)
   - **Multiple values for each message** – Sends the message with multiple values in an Array.
6. Your messages are customizable, using standard JSON syntax.
7. Write down the name of your parameter, as in this example: `"myNewValue":`

Add Keyword

8. Now, click on the **Add keyword** link.
9. This will open a popup with list of available keywords for your custom JSON format.
10. Select any keyword.

If there are any problems with your syntax, your value format and message format would turn red, showing that there is some issue with it. Once you move your cursor into the top right corner, you will get a tooltip describing what/where your issue is (as shown in Figure 1).

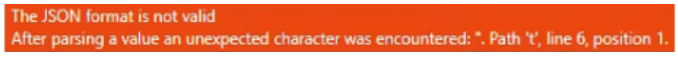

Figure 1 – Error in Value format syntax

11. Our final step is to go to **Publisher Connections** and create or edit an existing connection.
12. Under **IoT Hub Settings**, you can find the Encoder option, where you can find the Customized Encoder that you just created.

Auto Indent

If your Value Format is not indented, you can click on Auto indent link. See the example in Figure 2.

Figure 2 – Auto indent usage

NOTE: On the bottom of **General Settings**, you can find checkbox "Enable compatibility with ICONICS clients". This checkbox ensures that, with your message, it would also send all properties and values that are requested by FrameWorX server to decode this message and use it inside of the system.

Set Default Format

This is used to simply reset your format back to default settings.

Message Format Examples

Multiple values in the "Values" array of the message

Message Format:
(Add keyword)
(Set default format)
(Auto indent)

```
{
  "timestamp": "%NOWUTC.UNIX%",
 "myProperty": "%ENCODER%",
  "values": "%VALUE_ARRAY%"
}
```

NOTE: This message format is user-configurable.

One value for each message

Message Format:
(Add keyword)
(Set default format)
(Auto indent)

```
{
  "id": "%PUBLISHNAME%",
  "v": "%VALUE%",
  "q": "%STATUS.GOOD%",
  "t": "%NOWUTC.UNIX%",
  "myNewValue": "%NOWLOCAL.UNIX%"
}
```

Multiple values for each message

Message Format:
(Add keyword)
(Set default format)
(Auto indent)

```
[{
  "id": "%PUBLISHNAME%",
  "v": "%VALUE%",
  "q": "%STATUS.GOOD%",
  "t": "%NOWUTC.UNIX%",
  "myNewValue": "%NOWLOCAL.UNIX%"
}]
```

NOTE: Please notice the **[ ]** signs in the message body, which indicate that more of these can be included as an array.

Publish Groups

1. Open Workbench and under your project and Internet of Things, or under your IoT Project, you can find **Publish Groups**.
2. Create new Publish Group and set its name.
3. You can now create an example Publish and Sampling rate. Set the Publish Rate to 1 second and the Sampling Rate to 500 milliseconds.
4. Right-click on **Publish Lists** and create new Realtime Publish list.
5. Go to your Realtime Publish List and, by default, it would publish your data every 30 seconds, but for the tag that you specify in Published Points, you can now choose some specific predefined Published Group.

   What this means is that the rest of your data will publish using the default settings. Only your crucial tag that you selected would have a different publish rate.