

Creating Dashboards using Bluemix Services

By Bryan Chen

This application is a continuation of AV04 – Alexa Voice-Controlled Smart Home Demo and extends the previously built application to include dashboard visualizations.

Requirements:

- [Avnet BCM4343W IoT Starter Kit](#)
- Adafruit 8x8 LED Matrix board (more information in appendix)
- Seeed Studio Relay Shield v3.0 (more information in appendix)
- ZentriOS SDK
- A Serial console application (such as TeraTerm or Putty)
- IBM Bluemix Account
- Amazon AWS Account

Application Description

The main function of the application is to provide a dashboard visualization for the Smart Home Demo. This allows for a friendlier interface for the user to interact with the data. To do so, each individual Avnet board must be registered with Bluemix Services using its unique device ID to enable proper device identification and dashboarding.

Once registered, an extra node is utilized within the existing Node RED infrastructure to create a new flow to output to the dashboard. Therefore, when one asks Alexa to “Start Publishing”, the published data will be routed over to Bluemix Services in addition to being stored as a Node RED variable.

On the Bluemix Services side, the dashboard or “board” is generated to contain various “cards”. Each card accesses the data published by the device in order to generate visualizations for the board. Bluemix Services allows users to generate all types of card visualizations, such as real time donut charts, gauges, graphs etc.

Instructions

0. Please complete reference design AV04 first.
1. Reconfigure your Node-RED code
 - a. In Node RED, configure the node “*Output to dashboard*” like the following image if not done so already. Zentri_XXXX is replaced by your own device ID.

Edit ibmiot out node

Cancel Done

Authentication: Bluemix Service

Output Type: Device Event

Device Type: ZentriDevice

Device Id: zentri_XXXX

Event Type: avnet_module

Format: json

Data: alexa_message

QoS: [v]

Name: Output to dashboard

2. Register your device in Bluemix Services
 - a. Go to the following link and scroll down to select the appropriate iotf service.

<https://new-console.ng.bluemix.net/#all-items>



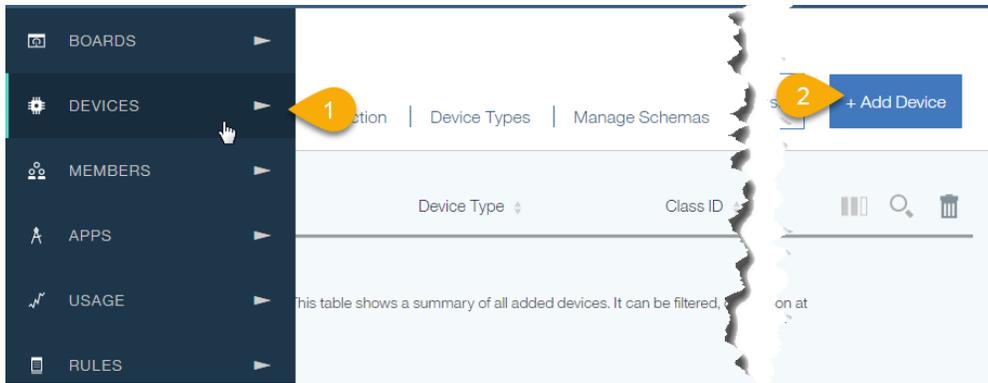
- b. Click on “*Launch*” to access your Bluemix Services dashboard:

Welcome to Watson IoT Platform

Securely connect, control, and manage devices. Quickly build IoT applications that analyze data from the physical world.



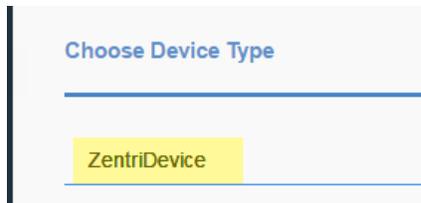
- c. Hover your mouse over the icons to the left to open up the pop-out menu, then select “*Devices*”. Click “*Add Device*” in the top right corner of the screen.



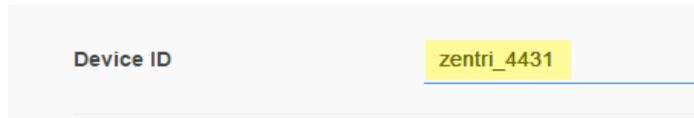
- d. Click on “*Create device type*”, then click “*Create device type*” again.



- e. Enter “*ZentriDevice*” for the Name and add an optional description and click next to skip through rest of the windows until you reach the last page - Metadata. Click “Create” and you should now see a “*ZentriDevice*” device type.



- f. Click “*Next*” and enter in your “*zentri_XXXX*” device ID from earlier. Skip through the remaining windows and click the “*X*” when finished.

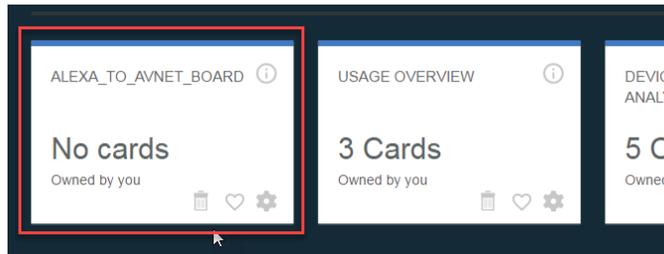


3. Create a Bluemix Dashboard

- a. Now you will need to create a new “board” (dashboard). Hover your cursor on the left side of the screen until the pop out menu appears, then select “Boards”. This will load a new page with all of your dashboards - click on “Create New Board” in the top right corner of the screen.

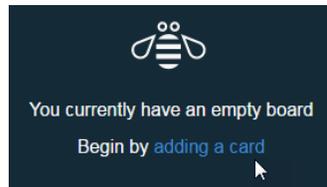


- b. Enter a name for your board and an optional description.
- c. Click on “Next” when complete and then click on create. Your newly created board should now appear accordingly.

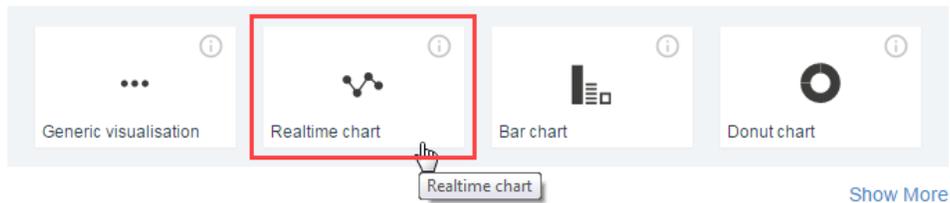


4. Create Cards for your Dashboard

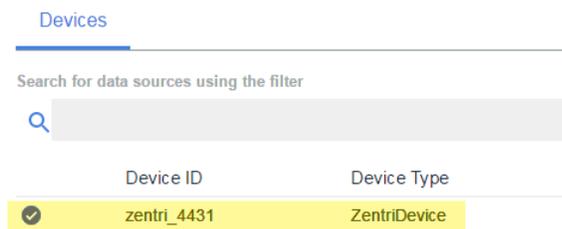
- a. To view the data coming from your board, you will need to create “cards”. Double click on your board and add a new card.



- b. Select “Realtime chart” under “Devices”.



- c. You should see the registered device under the devices tab - select it and click “Next”.



- d. Click “*Connect new data set*”.

Create Realtime chart Card

Connect data set



- e. Enter the following parameters for “Light Level” to monitor the light sensor then click *next*:

Property

d.light_level

Name

Light Level

Type

Float

Unit

lx

Precision

Min

0

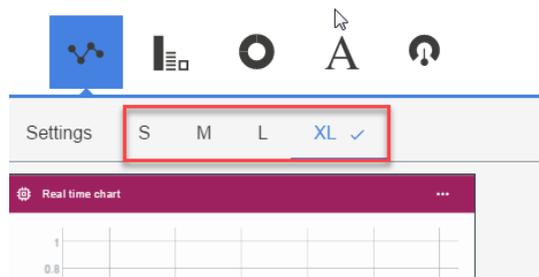
Max

500

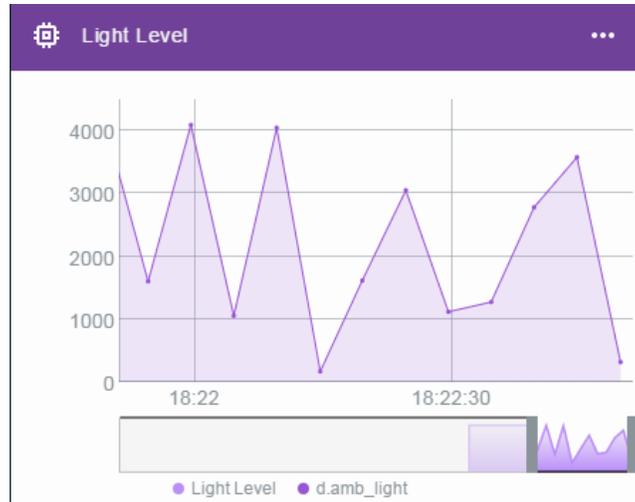
- f. Choose a size for your *Realtime chart* then continue. The XL size is recommended for better viewing. Press “*Submit*” when complete.

Edit Realtime chart Card

Select the card size and specify additional information



5. Verify! – Bluemix Dashboarding!
 - a. Ask Alexa to “*Start Publishing*” and then shine a light on the light sensor of your board to see how the cards react! Once comfortable with the dashboarding environment, try creating other types of cards with additional parameters such as *WiFi RSSI*, *channel* etc.



LINKS:

Avnet BCM4343W IoT Starter Kit:

<http://cloudconnectkits.org>

Adafruit 8x8 LED Matrix Board:

<https://www.adafruit.com/products/870>

Seeed Studio Relay Shield:

<http://www.seeedstudio.com/depot/Relay-Shield-v30-p-2440.html>

ZentriOS SDK:

<https://docs.zentri.com/wifi/sdk/latest/user-guide/getting-started>

IBM Bluemix Console Page

<https://new-console.ng.bluemix.net/>

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With a passion for robotics and home automation, Bryan is a part-time EE/CS intern within Avnet's engineering team, while busy with full-time final year UCLA Electrical Engineering studies, focused on signals and systems.

He is a key contributor of reference designs, having published multiple applications using Avnet's versatile BCM4343W Wi-Fi & BT/BLE SoC module, taking-on challenging connectivity designs with BLE, cloud platforms and Alexa voice interfacing.

Revision History

Date	Version	Revision
20 June 17	01	Initial Release