Application Note - AN-124

Azures' IOT Central - GPS Location and Tracking

NOTICE

This application note is provided for use as a general example and a guide. Divelbiss assumes no responsibility, liability or warranty regarding this application, its use, functionality or reliability to meet application needs. User assumes all responsibility to ensure all safety precautions are taken when using this application note. This application must not be used alone in applications which would be hazardous to personnel in the event of a failure. Precautions must be taken by the user to provide mechanical and/or electrical safeguards external to this application and controllers shown.

Application Description

VersaCloud M2M+*IoT*, AN-124 demonstrates connecting the Versatile base VB-2000 to an Iot Central Application on Microsoft's Azure. After connection, GPS location data will be Published to an asset tracking map. The GPS logic portion is written primarily is Structured Text. Modification will need to be made through the ST. editor. A Link is provided with a pre configured Dashboard and Device temple to get started right out of the Box.

Equipment Used

VB-2000 Controller		
Controller Part #:		VB-2000
Programming Software:		EZ LADDER Toolkit, V1.2.4.11 or later
Other		Azure Account and IoT application Template
Application Filename:		AN124.dld
Programming Cable:		SI-PGM

Other controllers including the HEC-P2000 , P5000, and P6000 Series, P-Series Bear Bones, and other P-Series PLC on a Chip/Modules may also be used with this Application note.

To download the Template, copy this link into your Windows Browser : https://apps.azureiotcentral.com/build/new/22007f60-b8f2-4104-ba05-07df5b75d126

Variable List:

mqttConnected: Variable tied to the output of the Connection block. It is true when the connection to the server is successful. Used as a condition to publish data.

txMqttData: Attached to the Q output of a One shot timer function. Used to publish data on timed interval. This Boolean Flag is true for only one scan.

connErr: Variable used to store the error code from the MQTT connect function. It is a valid code for only one scan.

numRetries: The Current number of retries the block has attempted. The number resets when the EN toggles state.

Status: Holds the Status code of the MQTT Funtion block.

MqttTxTmr: The time base for One –Shot timer to publish data.

mqttTxElap: Holds the elapsed time of the One-shot timer.

GPS_err: Holds the return codes for the Structured text Function Block.

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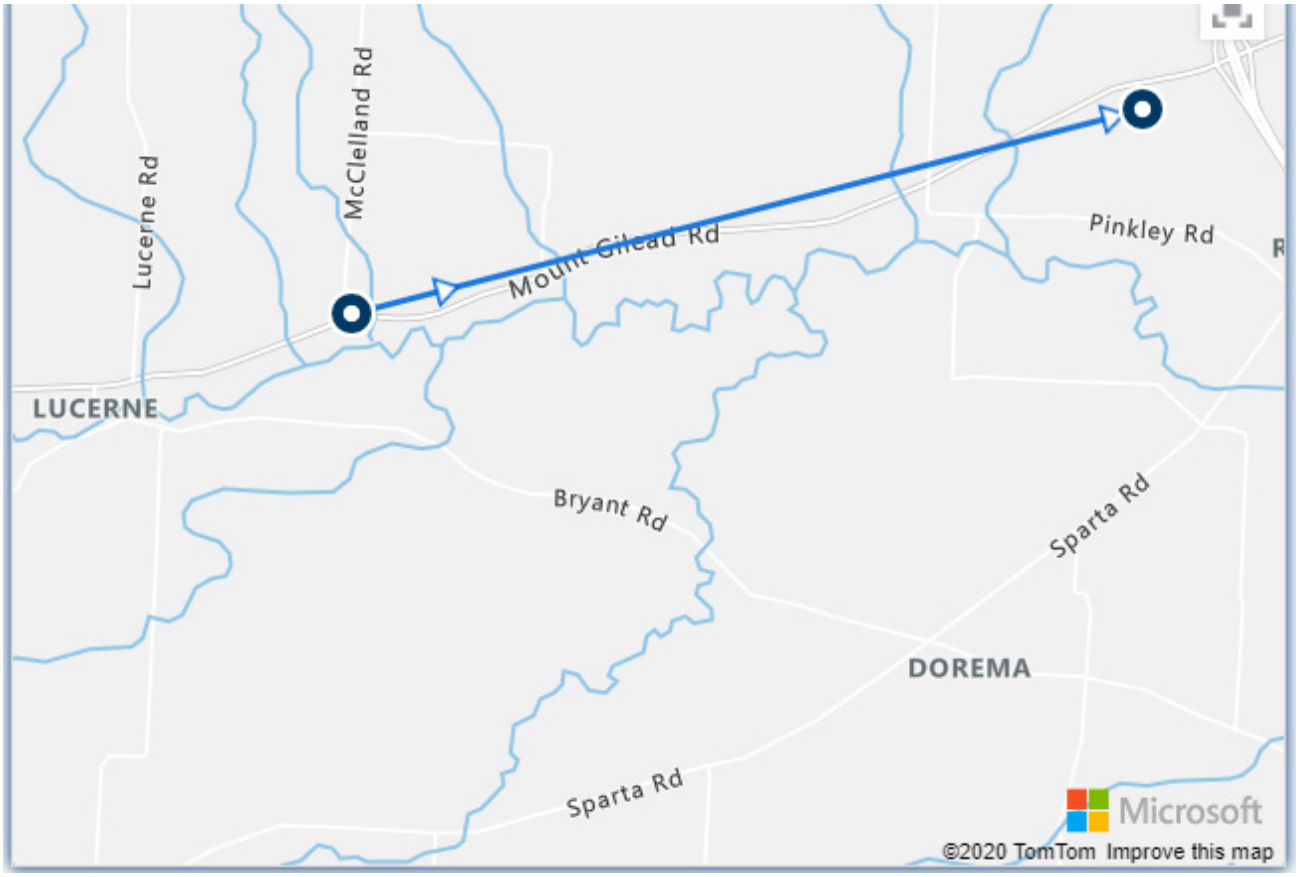

Rungs 1-3:
The MQTT Connection block is enabled by the normally closed enMqttConn contact. Variable Outputs of the block are valid for one scan. The Q output becomes true when the Connection is successful. If enabled, the Block will attempt to retry a lost connection. The Notes listed in the ladder diagram are the expected values for the status and the error codes.

Rung 8-10:
If the Connection is successful, the Q output variable, txMqttData, will become true. This will enable the one shot Timer to repeat a transmit flag once every minute in order to update the GPS location.

Rungs 14-15:
On the rising edge if the EN input this Structured Text Function block will capture the current Latitude, Longitude, Altitude, and the number of satellites in range. It then publishes the longitude and Latitude to Iot central. The Function Block can be customized using the ST MENU option from the EZ ladder tool bar.

Getting Started:

After downloading the accompanying EZ ladder program, AN124.dld, Copy this URL into your window browser: https://apps.azureiotcentral.com/build/new/22007f60-b8f2-4104-ba05-07df5b75d126 . You will be prompted to sigh up for a FREE account.

This short video will walk you through setting up your devices with the unique device ID assigned to your device.
https://www.youtube.com/watch?v=3aIcHGnHtV4&feature=youtu.be