BLE to WiFi Gateway

**Highlights**

- Connect Bluetooth Smart devices to the cloud
- Low power and small form factor
- MQTT Protocol Support
- HTTP Configuration
- Over the air upgrade
Integrating the BLE node to cloud with WiFi
CASCADEMIC gateway reads BLE advertising data from beacons (like iBeacon or Eddystone), customized format and sends the information to MQTT server over Wi-Fi®. User can configure the server credentials, WiFi settings, data period through a simple web UI.

Gateway devices make it easy and cost efficient to cover an area with BLE and get it connected with cloud to take advantage of real time remote monitoring or asset tracking with a lesser effort and manpower.

Easy installation
With CASCADEMIC BLE to WiFi gateway, users can access and control their multiple sensor node from anywhere at any time with easy installation setups. For instance, even a battery-operated small home appliance can be remotely accessed and controlled from outside.

Firmware Upgrade Over the air
FOTA support for both BLE and WiFi Firmware. FOTA is an essential feature which allows easy upgrading or adding of features to a remote installed device without the need for cables or man power.

Applications
- iBeacon/ Eddystone receiver
- BLE sensor reader for sensor network
- Health monitoring
- Location tracking
- Access management
- Industrial automation

Remote Monitor and Control
Gateway is not limited to beacon method which is one way communication. it can be used as connectable and secure bidirectional data communication device. End BLE node can be controlled and monitored over the cloud via MQTT.
<table>
<thead>
<tr>
<th>Hardware</th>
<th>Memory</th>
<th>Storage</th>
<th>Power Supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processor</td>
<td>• ARM Cortex M4, ARM Cortex M3 Core based CPU</td>
<td>Memory</td>
<td>• 256 KB RAM</td>
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<tr>
<td></td>
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<tr>
<td>Storage</td>
<td>• SPI FLASH – 1MB default (Expandable up to 8MB)</td>
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<tr>
<td>Power Supply</td>
<td>• 5V DC</td>
<td></td>
<td>• 5V DC</td>
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<tr>
<td></td>
<td>• 3.7V, 1100mAh Rechargeable Battery Back Up</td>
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</tbody>
</table>

**Connectivity – WiFi**

- WiFi
  - 802.11 b/g/n
  - 2.4 GHZ frequency band
  - Station (WPS 2.0), AP and Wi-Fi Direct mode (optional)
  - TX Power
    - 18.0 dBm @ 1 DSSS
    - 14.5 dBm @ 54 OFDM
  - RX Sensitivity
    - –95.7 dBm @ 1 DSSS
    - –74.0 dBm @ 54 OFDM

**Wireless Protocol Support**

- TCP
- HTTP
- MQTT
- Firmware over the Air (FOTA)

**Security**

- Secure Wi-Fi & Internet Connections with 256-Bit AES Encryption for TLS and SSL Connections
- WPA2 Personal and Enterprise Security

**Antenna Support**

- On board Chip antenna
- SMA/ UFL

**Connectivity - BLE**

- BLE
  - BT Version 5.0
  - 2.4-GHz
  - Receiver Sensitivity –97 dBm

- BLE data format (Non connectable)
  - Ibeacon, Eddystone
  - Customized format

**Other**

- * Connection method (optional)

**Antenna Support**

- On board Chip antenna
- SMA/ UFL
### User Interface

| LED | • Power Status  
|     | • WiFi connectivity Status  
|     | • BLE status  

| Wireless Configuration | • WiFi AP, STA setting  
|                        | • MQTT configuration  
|                        | • Device Parameters  

### Other Interface

| Serial | • 1 * UART(TTL)  
|        | • 1 * RS485  

| Modules* | • GSM (3G/4G)  
|          | • LoRa  

### Operating Conditions

| Operating Temperature | • 0deg.C to +50deg.C  
|                       |  
| Storage Temperature   | • -40deg.C to +85deg.C  
| Relative Humidity     | • 5% to 95% Non Condensing  

### Mechanical Parameters

| Enclosure over all Dimension | • 87X47X42mm  
| Weight                       | • 200 gram  
| Material                     | • Aluminum  
| Mounting                     | • Wall mount, Table top  

* Custom configuration
**Applications**

The applications of CASCADEMIC's Asset Tracking System range from Asset tracking and control, workforce monitoring to visually impaired assistance systems, proximity ads and push notifications.

The above picture demonstrates how the system can be used for tracking energy consumption of welding machines and also to monitor manpower efficiency of welder activity.

CASCADEMIC's system will be able to monitor the welding machine and the presence of welders within the vicinity of the Welding machine. The compact nodes can be attached to welding torch, welding machine and also wearable by employees. Hall-sensor based measurement for the welding machine and accelerometer based measurement of movement in the case of welding personnel and welding torch is used.

Another typical need for such a tracker is in health-care industry for tracking critical personnel like nurses and patient files. The Asset tracking System from CASCADEMIC is the best option not only in the above case, but it can literally be used in any situation where location positioning, communication and analytics are needed.