CLOUDLEAF

Cloudleaf Gateway
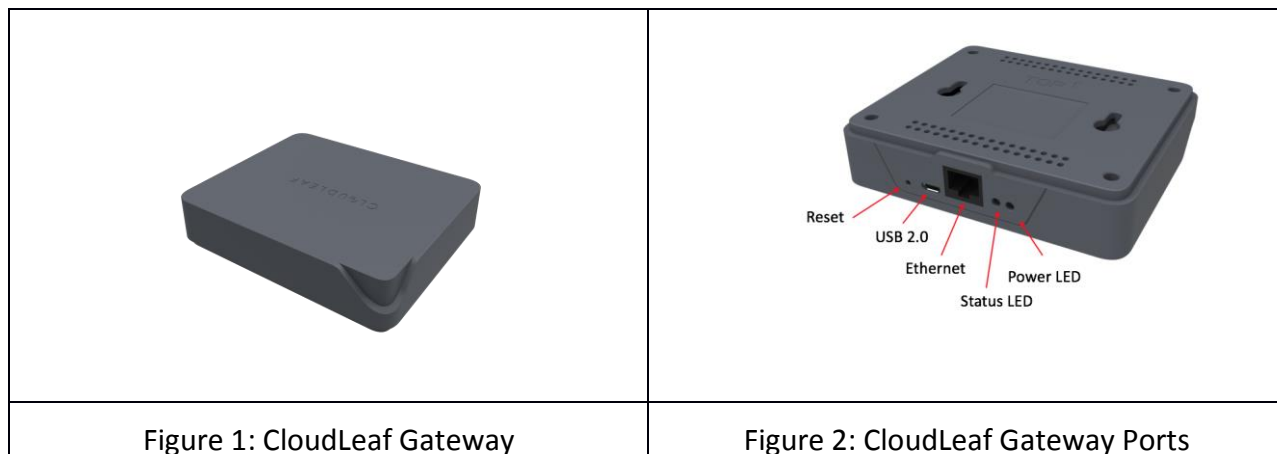Model: GW-1A2I2

User Guide

April 12th, 2018

Introduction

The CloudLeaf Gateway is the access point for all Bluetooth based sensors tags, to communicate with the Cloudleaf cloud. The Gateway co-locates with existing indoor wireless networks via WiFi, USB, or Ethernet, ensuring quick & easy deployment. This also allows existing wireless network security to be leveraged, extending end-to-end security with SSL/TLS tunneling from the access point to the Cloudleaf's Cloud.

The Gateway utilizes a proven wireless technology standard (Bluetooth 4.1) to communicate with the downstream sensors, tags. It has two independent BLE radio subsystems, which create scalability, link redundancy, and spectral diversity. It can perform scans on all three BLE specifications-defined advertisement channels (37, 38, 39), ensuring all BLE devices present in its 150 feet coverage range are visible. The access point is designed to provide visibility of thousands of end-node devices, breaking the intrinsic limitation of BLE with the CloudSense device management algorithm. For downstream device security, the access point supports native 128-bit AES encryptions for all communications to the end-nodes.

The Gateway is designed to operate in harsh industrial environments, with the ability to withstand extended operating temperature range from 0 C to 60 C. The access point can be wall- or ceiling-mounted.

Figure 1: CloudLeaf Gateway	Figure 2: CloudLeaf Gateway Ports

Ports & LEDs

The Gateway has the following ports & LEDs exposed:
- Power LED indicator
- Status LED indicator
- Ethernet
- Micro USB 2.0
- Reset pin hole

Installation

Installing the Gateway is easy and quick, and it can usually be completed within 30 minutes. This section provides the "best practice" guidelines to get the Gateway up and running. If you have any questions or require advanced setup, please contact CloudLeaf technical support at support@cloudleaf.io.

Power

The Gateway needs to be wall powered, and should be supplied with 2A at 5V on its micro USB port. The Gateway ships with a standard micro USB cable and a USB wall charger, which can provide enough power to the Gateway. If the Gateway is to be co-located with another network access point (e.g. Wi-Fi AP), it can be directly connected to the USB Host port, if it is able to provide 2A of output current. Another option to power the Gateway is through Power-over-Ethernet (PoE). If this option is chosen, please make sure a PoE to Ethernet + Power adapter is available, as PoE is currently not natively supported on the Gateway. Contact CloudLeaf for a list of approved adapters.

Network

The Gateway needs access to the Internet to connect to the CloudSense cloud. It establishes a secure connection to the cloud using SSL (port 443), so please make sure this is supported in the LAN at the installation site. The Gateway can obtain network connection via Ethernet, Wi-Fi, or USB. When connected to Ethernet, the downstream port from the switch needs to provide direct Internet connectivity. When using Wi-Fi, the Gateway can support WPA2 or WEP security. Use Cloudleaf's mobile app to provision the SSID and password of the WIFI network that you want the gateway to connect to.

Mounting Best Practices

The CloudLeaf Gateway should be installed with the following guidelines:
- Each Gateway is designed to cover up to 70,000 square feet of indoor area. For best coverage and Bluetooth Low-Energy signal strength, space each Gateway 200 to 250 ft. from one another.
- Install the Gateway at about 10 ft. above the ground to ensure good reception
- Avoid immediate metal structures next to the Gateway (e.g. metal beam on the ceiling), which can attenuate signal strength.
- The Gateway needs to be secured on a stable structure, with screws, bolts, zip ties, or strong adhesives (e.g. 3M VHB).
- Make sure the installation point does not have excess exposure to moisture or dust.
- Make sure the 3 mounting holes are protected against entry of contaminants.
- If Wi-Fi is used for backhauling, make sure the Gateway is within reasonable distance from the Wi-Fi access point (to get a stable connection to the network).

Operating Conditions

The Gateway is designed to operate in the following conditions:
- Temperature: 0 to 60 C
- Humidity: 0 to 95% RH

FCC Statement

Warning: Modifications not expressly approved by the manufacturer could void the user authority to operate the equipment under FCC Rules. "FCC RF Radiation Exposure Statement Caution: To maintain compliance with the FCC's RF exposure guidelines, place the product at least 20cm from nearby persons."

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

To ensure compliance with the class B FCC limits, a shielded USB cable must be used with this unit. The Ethernet cable must be either unshielded twisted pair (UTP) or shielded.

This device complies with Part 15 of the FCC Rules.

Operation is subject to the following two conditions:

- This device may not cause harmful interference and
- This device must accept any interference received, including interference that may cause undesired operation.

Revision History

Version	Author	Date	Changes
1.0	Sharath	8/8/2017	New Document
1.1	MJM	4/12/2018	Cable requirement correction, minor edits.