VTAP

Application Note - Using BLE beacons

VTAP Core Firmware from v2.3.0.2
VTAP Connectivity Firmware from v1.0.4.3

VTAP100-PRO-BW

Revised July 2025 v1.02

DOT ORIGIN

If you need help to set up or use your VTAP reader, beyond what is contained in this Application Note, then please contact our support team.

Email: **vtap-support@dotorigin.com**

Download the latest documentation and firmware from **https://vtapnfc.com**

Telephone UK and Europe: +44 (0) 1428 685861

Telephone North America and Latin America: +1 (562) 262-9642

If you have any feedback on setting up or using your VTAP reader or this documentation, then please contact our support team. The product is constantly being reviewed and improved and we value feedback about your experience.

Dot Origin Ltd
Unit 7, Coopers Place Business Park, Combe Lane, Wormley
Godalming GU8 5SZ United Kingdom
+44 (0) 1428 685861

Contents

1 Using BLE beacons

Bluetooth Low Energy (BLE) beacons are low power wireless transmitters, which broadcast notifications to nearby devices such as iPhones, Android phones (with an app) or a tablet. BLE beacons can be used to provide location notifications, for positioning that works in a similar way to GPS, but which can work in GPS signal-blocked areas, such as for indoor locations. VTAP100-PRO-BW readers support wireless comms including a BLE beacon function, and can be used with all devices that support BLE beacon technology.

Note: Bluetooth is only available on VTAP100-PRO-BW readers.

1.1 Using BLE beacons with iPhones

The most common application of BLE beacons with iPhones is to trigger location notifications associated with Apple Wallet passes. When a user with the correct Apple Wallet pass approaches the beacon, iOS detects the beacon and presents a notification tied to that pass. If the user acknowledges the notification, the NFC Wallet pass is pre-authorised to be read by the VTAP100-PRO-BW reader, providing a seamless user experience.

This is an example screenshot of a beacon notification on an iPhone with a Dot Origin demo pass, as the phone is within the range of a VTAP100-PRO-BW reader with BLE beacon set up. The beacon parameters are also set up on pass provider platform.

Figure 1-1 Message triggered by a BLE beacon on a user's phone

There can be up to 10 unique beacon UUIDs associated with one pass. The UUIDs are for you to define, and could each trigger a different message. Multiple beacons can be associated with the same UUID as well, but still be uniquely identified. Using different major and minor identifiers allow you to further expand the unique identification of beacons.

1.2 Using BLE beacons with Android devices

There would need to be a custom app on the user's Android phone, in order to interact with the BLE beacon functionality running on a nearby VTAP100-PRO-BW reader.

2 BLE beacon scenarios

2.1 Beacon parameters for retail environments

In a large retail environment, beacon parameters can be structured to provide scalable and location-specific interaction through an NFC Wallet pass.

The **UUID** is a high-level grouping mechanism. In most cases, a retailer will assign one UUID to each store, or use the same UUID across all stores for consistent logic chain-wide.

The **major** value is typically used to differentiate individual store branches, if a shared UUID is in use. Each store gets a unique major value to distinguish it from others in the same network.

The **minor** value is used to identify smaller zones within a store, such as departments, entry points, service desks, or promotional areas.

This structure allows mobile passes to react contextually to the customer's precise location within a retail environment, while staying within platform constraints such as the ten-entry `relevantLocations` limit.

Example: Configuration of BLE beacon in the clothing department of a store in a large retail chain

- **UUID**: `E2C56DB5-DFFB-48D2-B060-D0F5A71096E0`
- **Major**: `1102` (store identifier)
- **Minor**: `02` (clothing department identifier)

When a customer approaches this beacon, they will receive a message on their iPhone which is unique to the clothing department of this specific store.

2.2 Beacon parameters for gym environments

In a gym chain, beacons are primarily used to identify individual gym locations rather than multiple zones within a facility. This keeps beacon parameters simple:

The **UUID** can be shared across the entire gym chain.

The **major** value uniquely identifies each gym branch.

The **minor** value is not often used, or may be set to a default, as there is often only on beacon location, at the entrance.

Example: Configuration of BLE beacon at the entrance to a branch of a large gym chain

- **UUID**: `A1B2C3D4-E5F6-7890-1234-56789ABCDEF0`
- **Major**: `3005` (gym branch identifier)
- **Minor**: `0` (default or unused)

When a member arrives, a welcome message from this branch could display on their phone.

3 Configure BLE beacons

3.1 Configuration for BLE beacon in NFC passes

When issuing an Apple Wallet pass for Apple iPhone/iPad applications, a pass provider can set a location value, which could comprise GPS coordinates or a BLE beacon UUID, with optional major and minor values. Refer to the **Apple developer documentation on beacons** for information on setting the beacons for a specific pass. If more involved with designing your own passes there is **Apple developer information about adding "relevance information" using iBeacons** to display passes on a lock screen.

3.2 Configuration for BLE beacons on the VTAP reader

When a VTAP100-PRO-BW reader is in Cloud mode, the necessary beacon settings will be defined through VTAP Cloud.

For a VTAP100-PRO-BW reader in Local mode, the UUID, major and minor are all defined in the VTAP `config.txt` file by the `BLEBeacon` setting, along with optional beacon name (for logging). Multiple beacons can be defined in `config.txt` but only one can be active at any one time. Alternatively, remote management command for beacons (`@BLEBeacon`) can be used to dynamically change the advertised beacon.

Example: Demonstrate BLE beacon using OriginPass

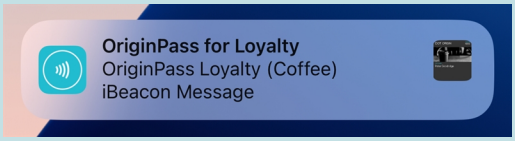
The OriginPass demo mobile NFC pass already has a UUID assigned: `4CE2EF69-4414-469D-9D55-3EC7FCC31234`.

If you don't already have one, obtain an OriginPass from Dot Origin by visiting **https://originpass.com/VTAP/** and add it to your NFC Wallet. (You will require a username and password - contact **vtap-support@dotorigin.com** to get these.)

Then add this line to your `config.txt` file:

```
BLEBeacon=i,loyaltybeacon,4CE2EF69-4414-469D-9D55-3EC7FCC31234,1,1
```

When an Apple iPhone, with this demo pass in its NFC Wallet, comes within range of your VTAP reader, the BLEBeacon will trigger an alert about the pass, which looks like this:



4 About Application Notes

Application Notes address topics of interest to small groups of customers, or topics around the use of a VTAP reader with third-party systems.

An Installation or Integration Guide for your VTAP reader model together with the VTAP Configuration Guide are the key documents to support the use of your VTAP reader. You will find the latest versions of these, and other useful information at **https://vtapnfc.com**.

If you need further help do contact us by email to **vtap-support@dotorigin.com**, or by phone +44 (0) 1428 685861 from Europe and Asia, or +1 (562) 262-9642 from Northern and Latin America.