# Everbridge – Harald Connector

## March 2021

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March 2021
Printed in the USA.



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# Everbridge – Harald Connector

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## History

| Version | Date | Notes |
|---|---|---|
| 1.0.0 | 01/2021 | Initial release |

## Introduction

Everbridge Safety Connection enables organizations to quickly react to COVID-19 cases by identifying people who may have been in contact with an infected person, by communicating specific, confidential instructions to contain the spread, and by taking protective measures. These steps are key to keeping all personnel safe and healthy.

Bluetooth Low Energy (BLE) Harald wearable devices are used to capture proximity events between individuals. Each time individuals carrying these devices come to within 6 feet of each other for a duration of two minutes or more, the event is recorded. The solution requires that each individual or contact always wears one of these devices within a controlled environment. Harald devices do not exchange any data with the Everbridge Mobile App. The two categories of devices, Harald and Everbridge Mobile App, are mutually exclusive for contact tracing purposes.

In the event an individual reports being infected by COVID-19, the solution provides a mechanism to store that information and triggers related notifications and workflows such as:

- The first notification directly related to the COVID-19 case to:
    - Assist, as much as possible, the infected individual.
    - Communicate the exposure information to the relevant stakeholders within the organization.
    - Take protective measures, such as preventing the infected individual from entering the organization's premises.

- The second notification is delivered to all individuals who have been in proximity of the COVID-19 infected person. These individuals are identified from the proximity events recorded by the wearable devices. Distinct notifications and workflows can be used to:
    - Alert all these individuals of the exposure event.
    - Provide guidance to these individuals (e.g., requiring a COVID-19 test, instructions for reduction in movement, or quarantine).
    - Apply protective measures and organizational processes to ensure a safe return of these individuals to work.

Reports are provided to monitor COVID-19 cases, proximity events, and all related notifications and workflows.

## Solution Components

This solution consists of IoT Harald devices, an Apple (iPad) application, an optional Harald SaaS application, and the Everbridge Safety Connection product.

## Hardware

**Contact Tracing Harald Devices** - These are the BLE wearable devices worn by each individual to record and keep track of proximity events. These devices do not contain any personally identifiable information (PII) or Protected Health Information. Only anonymous keys are exchanged between devices. The card uses onboard Advanced Encryption Standard (AES) 128-bit cryptography to generate a random Rolling Proximity Identifier (RPI) every 15 minutes to prevent any potential tracking or monitoring. Relationships between keys on devices and contacts are kept in a secured server-side database. Unloading exposure events and keys from a device requires either the use of a dedicated application running on an iPAD device or a URL link provided by an administrator, and the pushing of the button on the device.

The Harald wearable contact tracing devices support a BLE connection only to:

- Set-up a contact tracing device from the iPad application.
- Exchange anonymous keys during exposure/proximity events between devices.
- Unload proximity event data to the server via the iOS application.

The system is configured to measure and rank contacts within six feet of each other. Bluetooth signal strength or a Received Signal Strength Indicator (RSSI) is used to approximate distance. The devices have been calibrated to work correctly when worn on a lanyard around the neck. When two devices come within six feet of each other for two minutes or more, a contact event is saved on the

card. Multiple contacts are tallied up to give a total contact time. For example, if two people were together for four minutes, then apart for a while, then back together for six minutes for a total of ten minutes, the system would show a contact event number of five (i.e., ten minutes is divided by two minutes). Because of Bluetooth performance limitations and potential radio signal interference, a confidence ranking is also applied next to the proximity time. In ideal conditions, the system will give high confidence.

**Apple iPad** – An iOS-based tablet device is required for:

- Registering new users.
- Assigning/Unassigning devices to users.
- Unloading proximity event data from devices.

This application uses an encrypted server-side database. No data is kept on the iPad device itself. The server-side database contains contact data (PII data), links between contacts and devices, and exposure events.

## Software

**An iOS Harald Registration Application running on an iPad**. This application is used to:

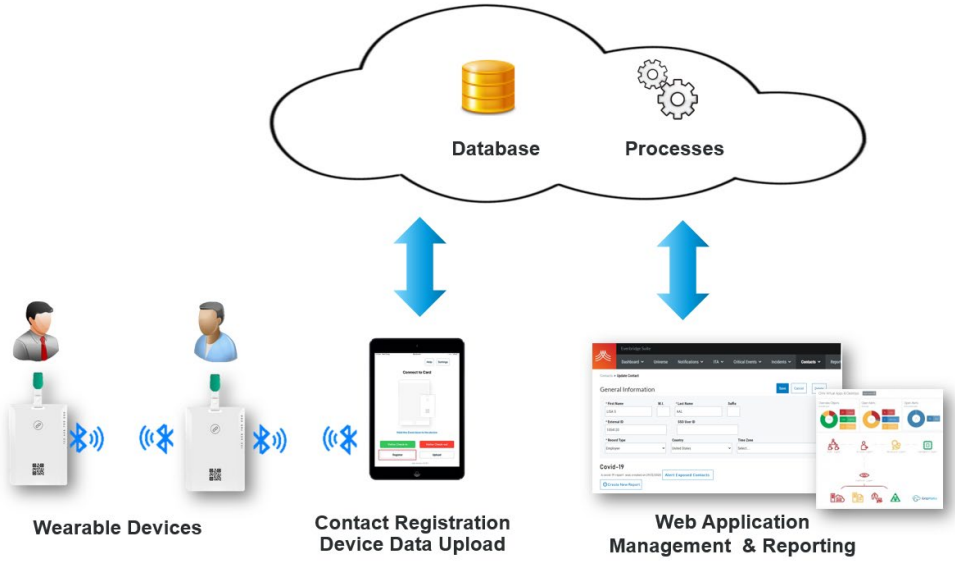
- Register new users.
- Assign/Unassign devices to users.
- Unload proximity event data from devices.

The iOS Application uses the BLE technology to communicate with wearable devices.

**Contact Harald SaaS Component**: A dedicated SaaS application used to review and monitor visitors' check-ins and check-outs, Personnel registration, proximity events, and so forth.

**Everbridge Safety Connection**: This Everbridge product hosts modular and highly configurable Software as a Service (SaaS) applications which have been configured specifically to create a contract tracing solution.

## High Level Operational View




## Harald Wearable Devices Set-up

The following section describes how to assign and unassign a device to a contact. Additional details can be found in the Harald documentation.

### Personnel Registration

Each individual receiving a contact tracing device is required to register the device in their name and create a contact profile. Registration can be done by the individual or by an adminsitrator on their behalf. The registration process involves collecting basic PII information from the individual and generating an anonymous key for the individual to establish a relationship between the device and the individual. The Personnel Registration:

- Creates a user record in the cloud database
- Generates a unique key that is associated with the user record in the database
- Stores that key on the wearable device.

The key generated will be exchanged with other contact tracing devices during exposure events. Devices can be temporarily assigned to contacts such as facility visitors or employees working in shifts. The only difference between the two is the use of the Register button on the Harald

registration application for a permanent assignment and the use of the Visitor Check-In button for a temporary assignment. This use of Visitor Check-In button flags users as visitors and enables reclaiming wearable devices if these have been inadvertently kept after leaving the organization premises.

**Requirements**

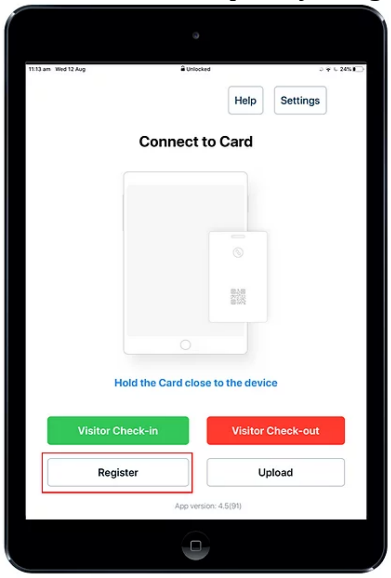
- An iPad equipped with the Harald registration application.
- An internet connection between the iPad and the backend repository.
- An activated wearable device (*)
- PII Personnel details.
- The use of the iPad camera.

(*) Activating a wearable device is a one-time operation per device consisting of turning on the device using the "On" switch. Once turned on, the device cannot be turned off.

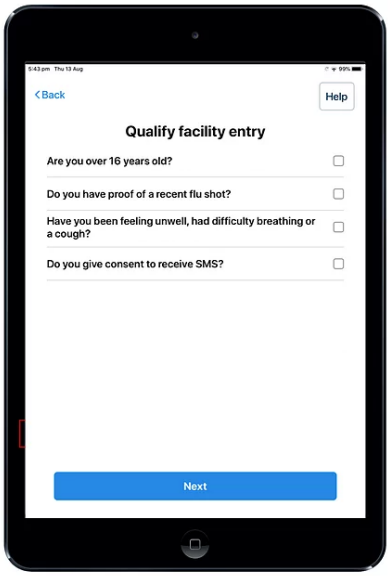
**Personnel Registration Process**

The registration process is as follows:

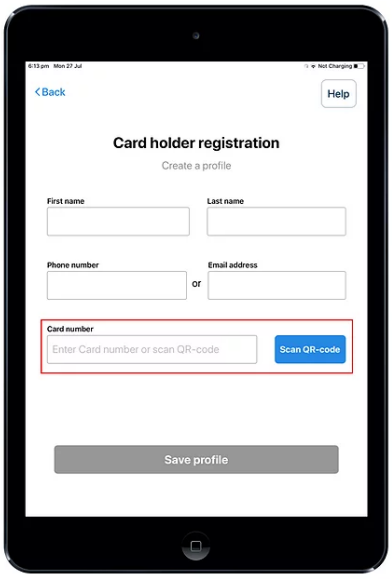
1. Launch the Harald Registration Application on the iPad.
2. The Register button is tapped on the iPad application for permanent assignment; Visitor Check-in for a temporary assignment.




3. An optional questionnaire/permissions form is available. Questions can be customized based on organization guidelines and requirements. If required, the individual will answer the screening questions and proceed to the next step.




4. The wearable device holder details are entered:
    - First Name
    - Last Name
    - Phone Number
    - Email Address




5. The wearable device QR code is scanned using the iPad camera. (It can be manually entered if the camera does not work.)


6. The Save Profile option is tapped.
7. The button on the front of the cart at the top is pressed. The blue LED on the back of the card will flash. The iPad will display a message “Updating the card”. At the end of the process that can take a few seconds, a confirmation message “Profile created” is displayed.
8. A SMS or email confirmation is sent to the phone number/email address entered in step 4 once the process is complete.

Notes:

- The phone number is optional in that process. No SMS will be sent if no phone number is entered.
- The email is the unique identifier used in the backend repository.
- Personnels can keep the wearable devices up to 6 months when the lifetime of the battery expires. About two weeks before the wearable device runs out of battery, the blue LED at the back of the device will start flashing. At that time, the individual will need to get a new wearable device and perform the registration process once again.

## Visitor/Temporary Device Check-out

Visitors leaving the premises need to surrender their wearable device. At that time, the check-out process must be performed. The checkout process extracts the keys that have been received on the wearable device during the proximity events, then stores and associates them to the user in the backend database.

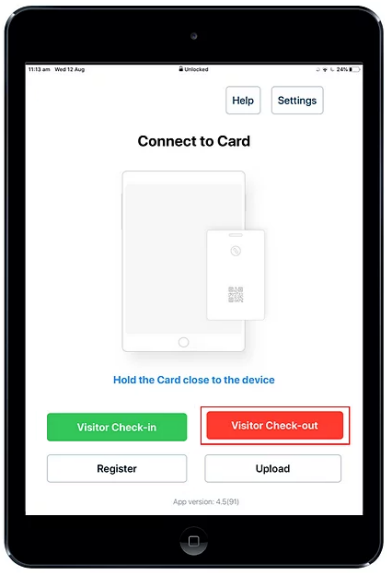
**Requirements**

- An iPad equipped with the Harald registration application.
- An internet connection between the iPad and the backend repository.

- The badge returned by the visitor.

**Visitor Check Out Process**

1. The Visitor Check-out button is tapped on the iPad application.




2. The iPad Registration Application waits for the wearable device to be connected by BLE.
3. Press the button on the wearable device on the front of the card at the top. The blue LED on the back of the card will start flashing.
4. Once connected, the data collected through proximity events are loaded to the backend repository. The iPad Registration Application will display the message Transferring data.
5. A message is displayed indicating the data upload is complete.
6. This data is then wiped out from the device.
7. The device is ready to be re-assigned to a new visitor or Personnel. It is recommended to disinfect the badge itself before re-assigning it to another visitor or Personnel.

## Reassigning a Device to a Previously Registered User

Previously registered users or returning visitors who have already checked out may need to check-in again. User information should already be available in the registration database. The user should select their name and “check in”. It is possible but not recommended to create duplicate users. If in

that event, de-duplication using the email address provided at check-in will occur automatically before notifications are sent or processes triggered.

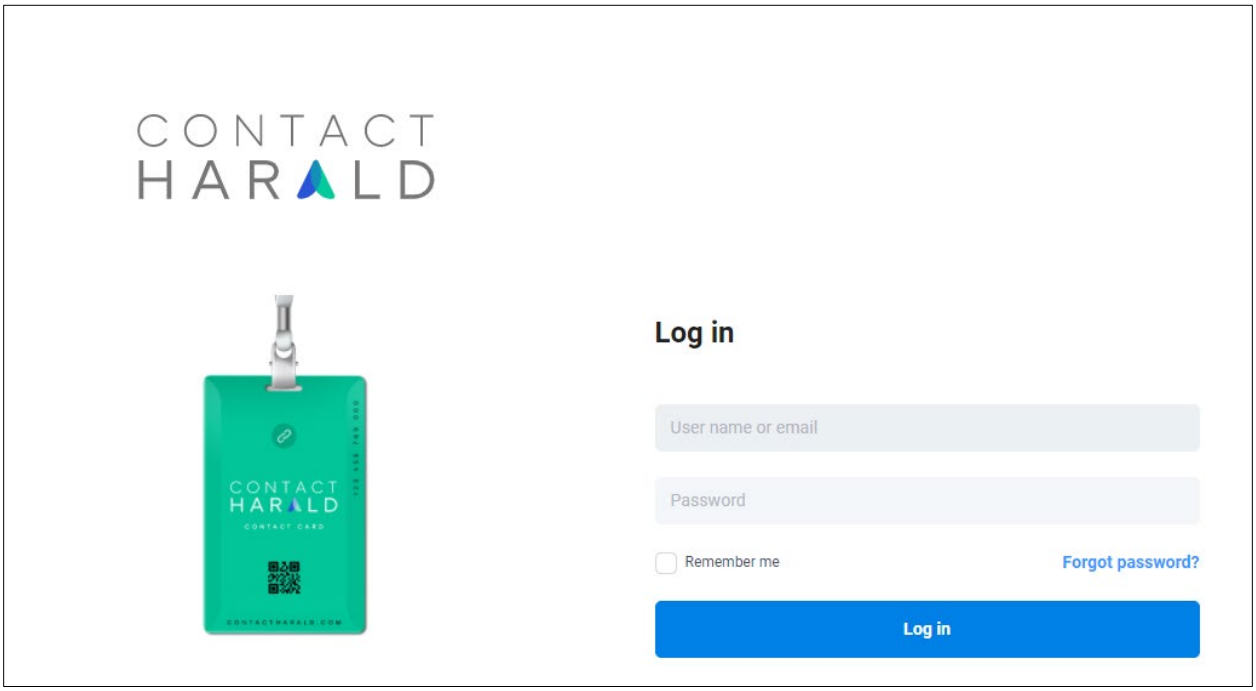
> **NOTE:** By default, the proximity events along with the visitor details will be automatically deleted from the server 20 days after the visitor has checked out. If this data is needed in a COVID-19 case either if the visitor is the person infected or if the visitor has been in proximity of the person infected, this data will be used in notification and workflow processes where it will persist.

## Using Harald SaaS Application

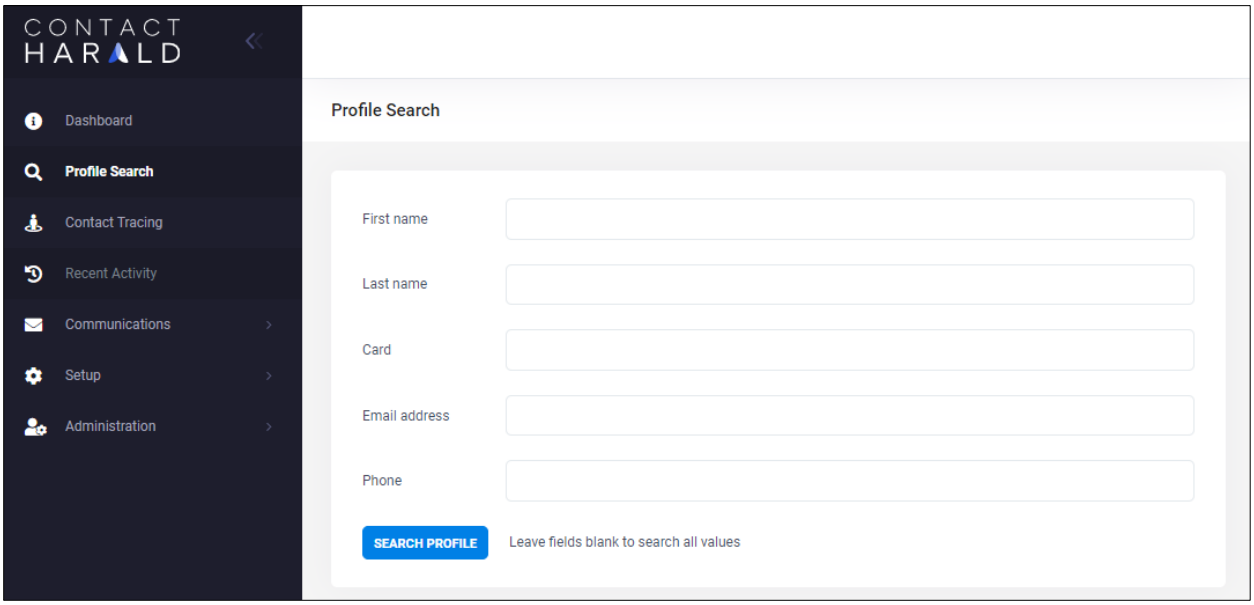
The use of the Harald SaaS application is optional. It can be accessed to consult registration and proximity data. This section only describes a limited set of features. Consult the Harald documentation for additional details and instructions.

> **NOTE:** A URL is sent to users authorized to access this application in a welcome email along with a temporary password. If this information has not been provided, contact Everbridge.

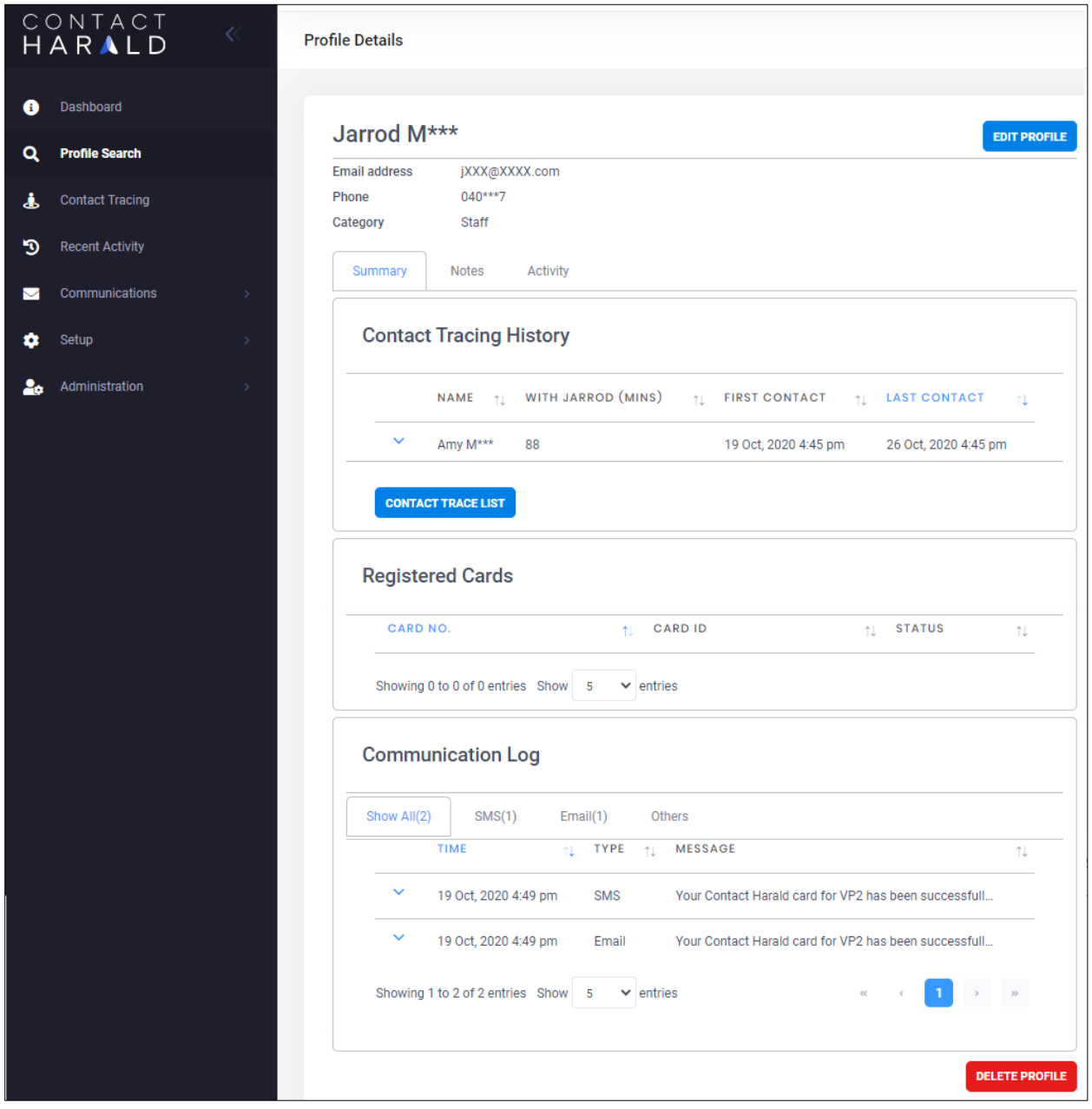
Using a browser, connect to the SaaS Application and enter login/password credentials:




Select Profile Search on the left. Optional criteria can be set to lookup profiles. Click Search Profile to initiate the profile lookup.




The list of users matching the criteria is displayed. Each one can be individually viewed by expanding the profile line item in the list and selecting the View Profile option.



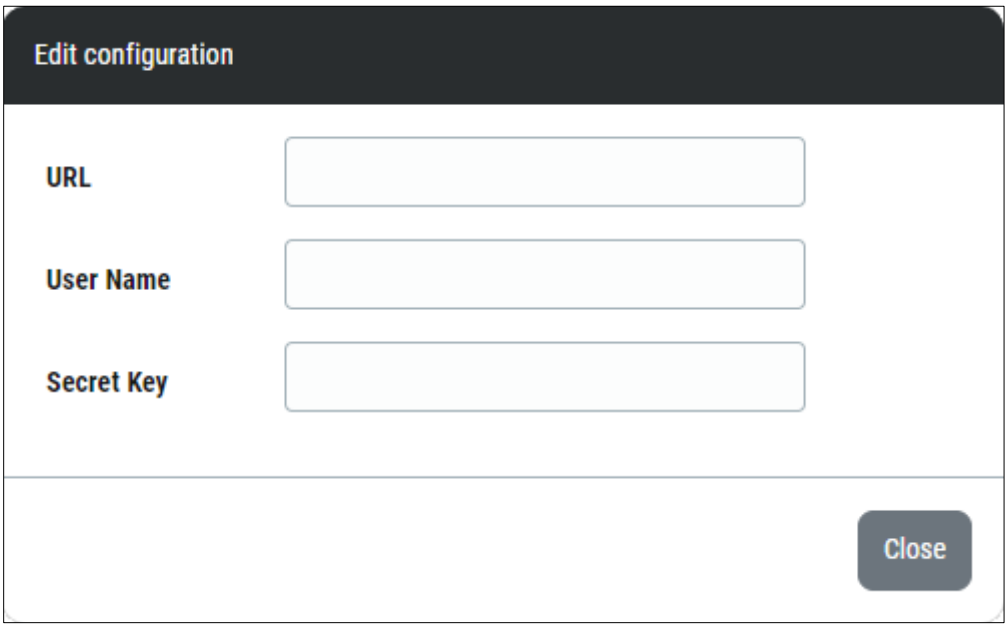

The contact details can be edited. The page displays:

- The Contact Tracing History: This displays the proximity events triggered from the card(s) associated to the contact.

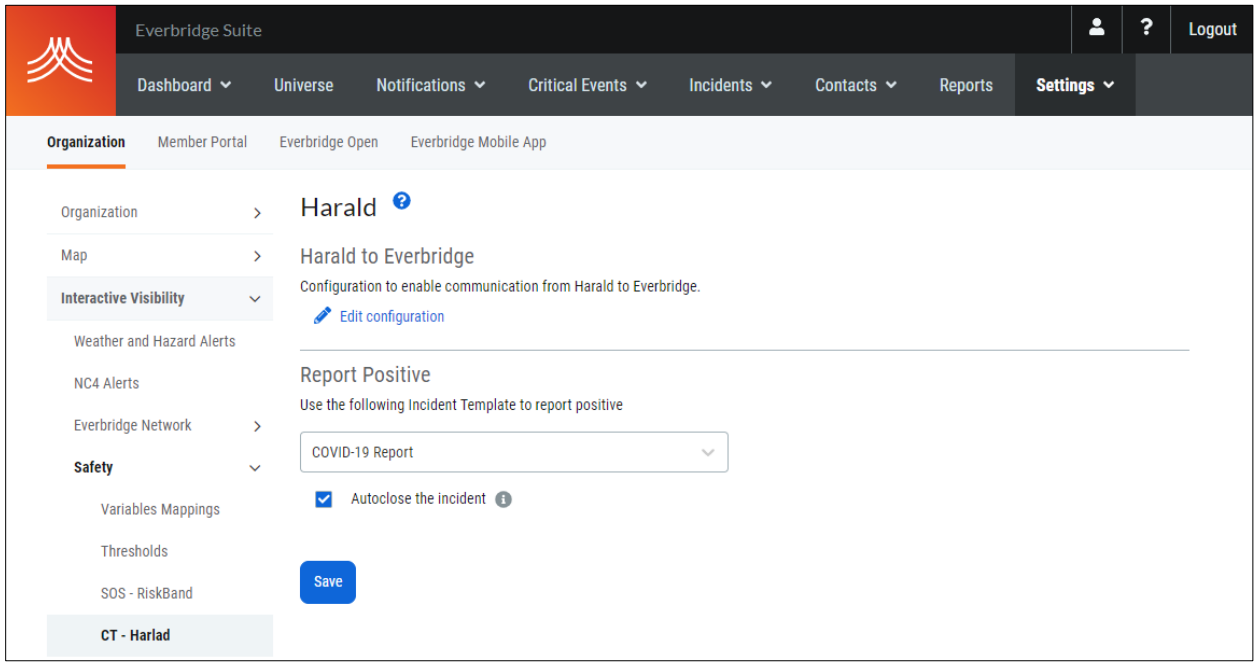
- The card(s) associated with the contact. The status property will display Allocated or Unallocated depending on whether or not the Harald wearable device is currently assigned to that contact.
- A log of all communications between the Harald system and the contact.

## Everbridge Suite Configuration

1. Navigate to Settings > Organization > Interactive Visibility > Safety > CT - Harald.
2. Click Edit Configuration.
3. The Edit Configuration dialog is displayed.




4. Enter the values as provided by Everbridge.
5. Click Close.




6. Select the incident template that will be used to generate an incident each time a contact is reported as COVID-19 positive.
7. Optionally, to close the incident after the message is sent, select the check box: Autoclose the incident check box.
8. Click Save.

## COVID-19 Reporting Process

There are a couple of ways to report a contact positive for COVID-19:

- The contact can use the Everbridge Mobile App to self-report positive.
- A system administrator can report a contact positive for COVID-19 using the Manager Portal.

Only the second case scenario is documented here. For more information on self-reporting, see the Everbridge *Safety Connection User Guide*.

### Reporting a Contact as positive for COVID-19

Before reporting a contact as positive for COVID-19, that contact must have uploaded the proximity events from his/her device using the Harald iPad application or a URL provided by the administrator.

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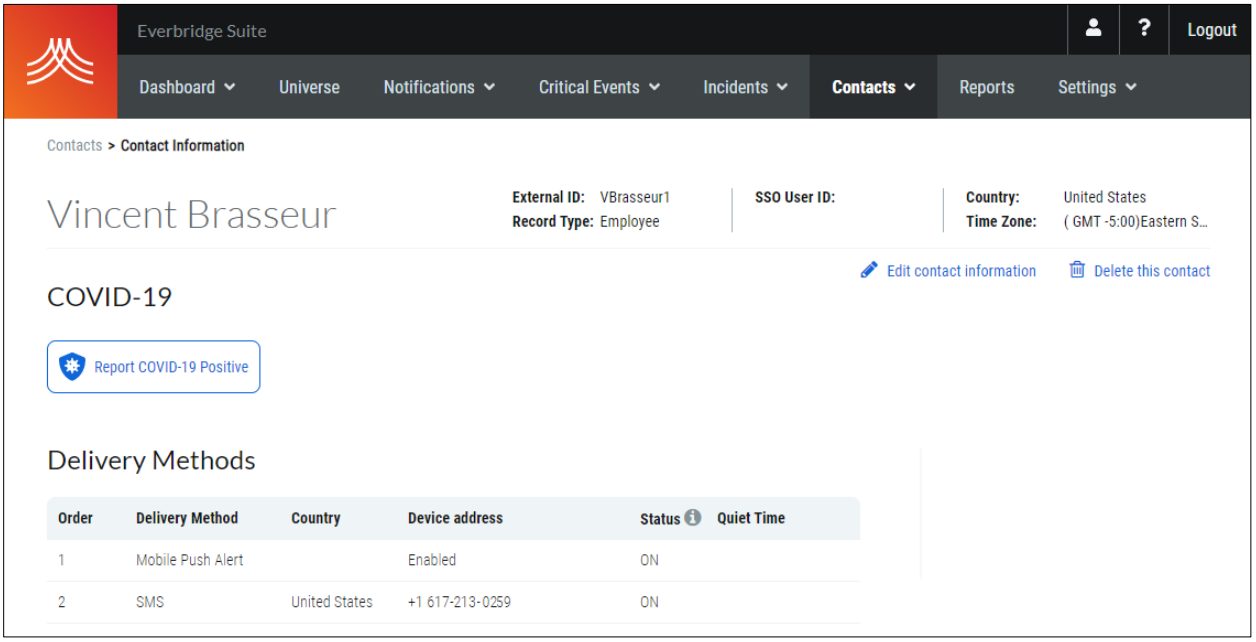
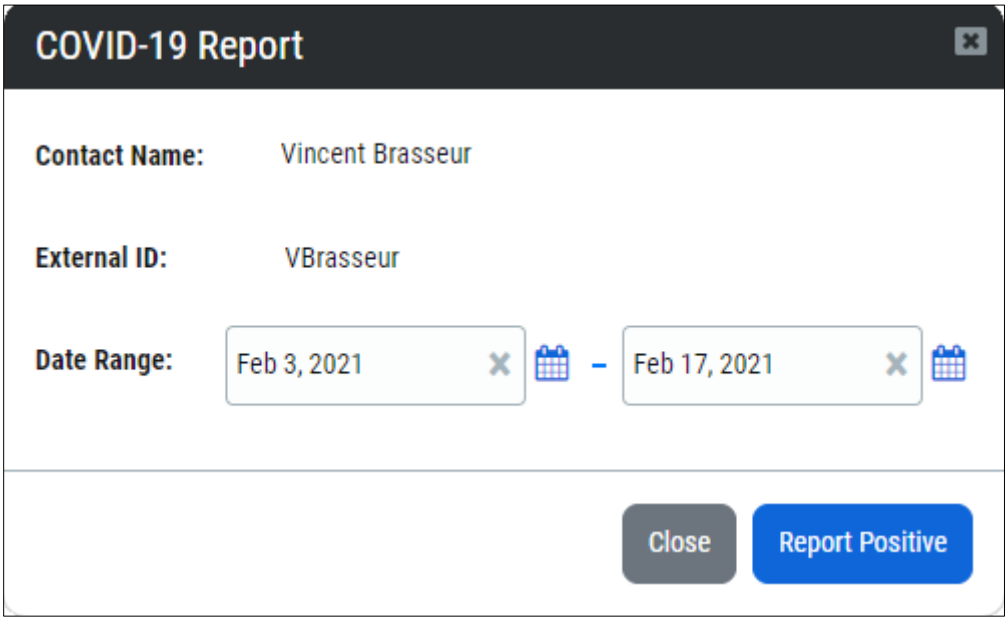
1. Navigate to Contact > Contact list and double-click the desired contact's First Name (which displays read-only Contact Information).



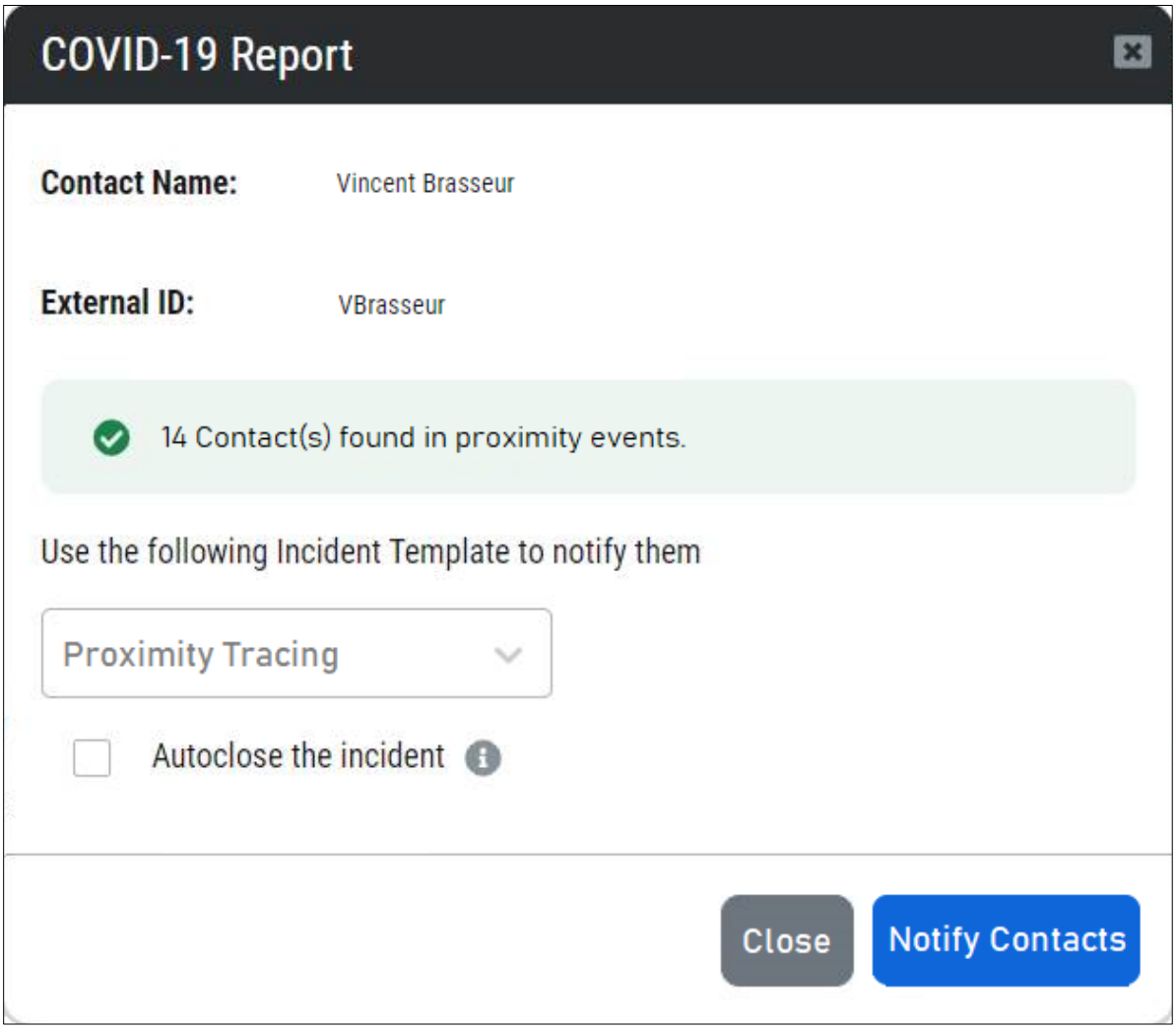

2. Click the Report Covid-19 Positive button




3. Enter the date range to consider for exposure events.

**NOTE:** Once the Report Positive button is pressed, an incident will be triggered using the incident template selected in the Harald – CT configuration screen.

4. Click Report Positive.
5. Once the Report Positive button has been pressed, the system will query the Harald proximity events repository and find any contact that has been in proximity for more than 14 minutes in the date range specified. The number of contacts found is then displayed.

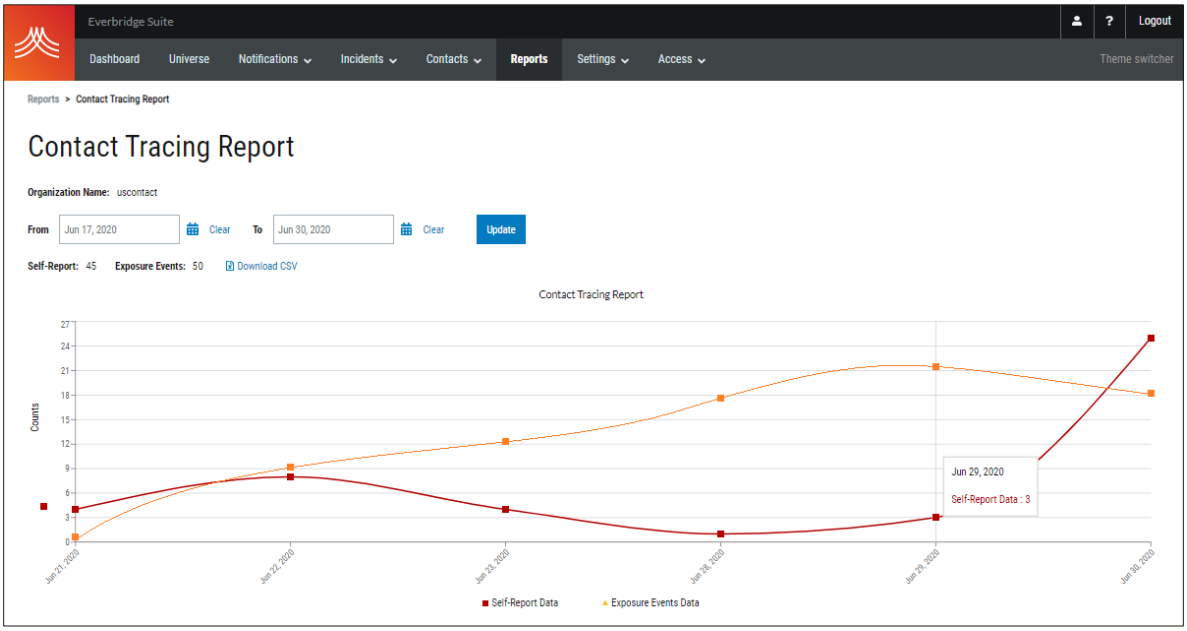



6. Select an incident template to notify these contact(s) and optionally select the check box: Autoclose the incident.
7. Click Notify Contacts.
8. Each contact will receive a notification based on the incident template.

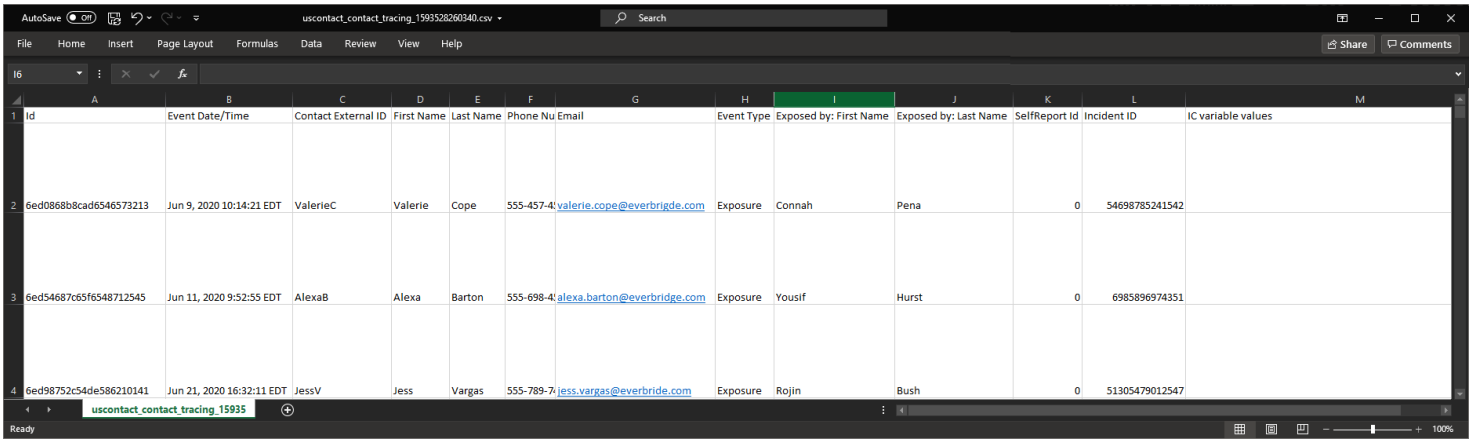
# Reporting

## Reporting on COVID-19 cases and proximity events

1. In the Everbridge Manager Portal, navigate to Reports.
2. From the Quick Reports drop-down list, select the Contact Tracing Report.
3. Click View Report to display a chart, by default the period selected is 14 days ending on the current date; it can be manually adjusted. The chart displays the number of COVID-19 or Self-Report on a day-by-day basis. It also reports on the number of exposure events each day.




4. The Download CSV option can be used to generate a CSV file. In that file, each row corresponds to either a Self-Report/Covid-19 Report or an Exposure Event.

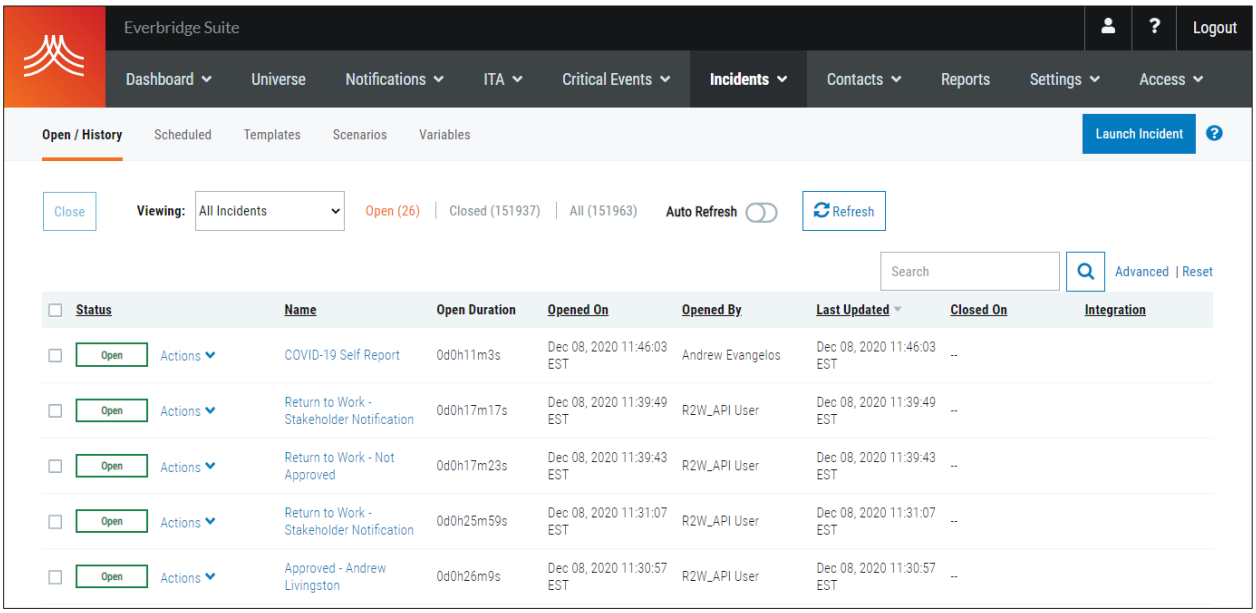


| Id | Event Date/Time | Contact External ID | First Name | Last Name | Phone Nu | Email | Event Type | Exposed by: First Name | Exposed by: Last Name | SelfReport Id | Incident ID | IC variable values |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6ed0868b8cad6546573213 | Jun 9, 2020 10:14:21 EDT | ValerieC | Valerie | Cope | 555-457-4 | valerie.cope@everbrigde.com | Exposure | Connah | Pena | 0 | 54698785241542 | |
| 6ed54687c65f6548712545 | Jun 11, 2020 9:52:55 EDT | AlexaB | Alexa | Barton | 555-698-4 | alexa.barton@everbridge.com | Exposure | Yousif | Hurst | 0 | 6985896974351 | |
| 6ed98752c54de586210141 | Jun 21, 2020 16:32:11 EDT | JessV | Jess | Vargas | 555-789-7 | jess.vargas@everbride.com | Exposure | Rojin | Bush | 0 | 51305479012547 | |

## Viewing incidents triggered

All Incidents that have been triggered from COVID-19 or exposure events can be reviewed in the Manager Portal.

1. Navigate to Incidents > Open/History. The list of all incidents created is displayed
2. Drill through the name of the incident in the list to get access to its details.




## Harald Device Specifications

The specifications below may change over time. Check the latest specifications with Harald.

### Bluetooth Specification

The Device is a Bluetooth 5.0 Low Energy device, as defined by the Bluetooth specification. Bluetooth operates at 2.4Ghz.

### Device Dimensions and weight

- Size: 3.38” x 2.13” x 0.16” (86 mm x 54 mm x 4 mm)
- Weight: 0.635 oz (18.0 g)

### Device rating – water, dust resistance and testing

- The device internal electronics are protected using an ultrasonic welded plastic housing. The battery and electronics are completely sealed inside the unit.
- The device is rated at IP66. The enclosure is dust tight and is water resistant against water projected from a nozzle.
- The device has a drop test rating of IK 05.

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**Battery Specification and Performance**

- The battery is 3.7V. 800mAh lithium polymer non-rechargeable.
- The battery is designed to function continuously for approximately six months, depending on usage.

**Normal Operating Temperatures**

- The device is designed to operate optimally in normal indoor environments and temperatures. The device is designed to operate between 5°F to 131°F temperature bands.
- Storage temperature –4°F to 140°F.
- At –4°F the battery performance is about half.

**Device and Lanyard Usage**

For proper performance, the device must be used as specified:

- The device must be worn in front, around the neck.
- Do not place the device directly on skin.
- Do not put the device in side or back pockets. The device should be worn in front.
- The device attaches using a lanyard with a plastic clip at the end.
- Do not use a lanyard with a metal clip.

**Proximity Contact Records**

- To understand who was in close proximity with whom, the device records when two or more devices are nearby, using Bluetooth radio signals as an approximate measure of distance. If the radio signal is strong, the two devices and two people are close together, calibrated to within six feet of each other.
- Two or more devices exchange anonymous ID numbers. No personal information is shared between the devices.

**Security**

- Devices do not contain any PII or PHI data, only randomly generated IDs.
- The relationships between IDs and contacts are securely saved on the server.
- The card uses onboard AES 128 cryptography to generate random Rolling Proximity Identifier (RPI) every 15 minutes.