Motorola Solutions

MPACT LOCATION & ANALYTICS DEPLOYMENT GUIDE

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ABOUT THIS GUIDE

This section is organized into the following sections:

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- *Motorola Solutions, Inc. End-User License Agreement*

Using the Documentation

The following sections provide information about the document and notational conventions used in the guides, and provides a list of related documentation.

Intended Audience

This document is written for Motorola Solutions Partners and Product Managers.

Document Conventions

The following conventions are used in this manual to draw your attention to important information:

> **NOTE:** Indicates tips or special requirements.

> **CAUTION:** Indicates conditions that can cause equipment damage or data loss.

> **WARNING! Indicates a condition or procedure that could result in personal injury or equipment damage.**

Notational Conventions

The following notational conventions are used in this document:

- Italics are used to highlight specific items in the general text, and to identify chapters and sections in this and related documents
- Bullets (•) indicate:
    - lists of alternatives
    - lists of required steps that are not necessarily sequential
    - action items
- Sequential lists (those describing step-by-step procedures) appear as numbered lists

Related Documentation

Motorola Solutions MPact Location and Analytics documentation includes the following:

- *Motorola Solutions MPact Location & Analytics Deployment Guide*
- *Motorola Solutions MPact Location & Analytics Server Reference Guide*
- *Motorola Solutions MPact Location & Analytics Toolbox Reference Guide*
- *Motorola Solutions MPact Location & Analytics Software Development Kit*

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DRAFT 2B - 12 June 2014

CHAPTER 1 MPACT OVERVIEW

The Motorola Solutions *MPact* accurately locates Bluetooth® SMART 4.0 mobile client devices using distributed *Bluetooth Low Energy* (BLE) beacons and displays their location on a site's floor plan. The beacon can be configured to be in one of three modes; Battery Saving, iBeacon or MPact. Battery Saving mode is optimized to save battery life. The iBeacon mode is configured to Apple's iBeacon specification. MPact mode is a modified iBeacon mode that includes battery information.

The Bluetooth radio is low energy, and its signal does not propagate very far. When a Bluetooth 4.0 smartphone or tablet nears an MPact beacon, the device recognizes the beacon's emission using its Bluetooth radio. Data from the beacon is forwarded to a back-end MPact Server, which displays the location of each individual MPact beacon and the movement of the store's customer as they walk about the store shopping. This data is used for analysis at a later date.

MPact is a real-time micro locationing system, designed and positioned for high-level accuracy in a wide range of deployment scenarios. As an example, using MPact, retailers know the specific aisle a customer is located and the shelf they are currently viewing. This allows administrators to track customers with standard *real time locationing services* (RTLS) and customize products and services based on a customer's movement and location. RTLS applications enable administrators to target coupons and product information where they are most likely to be leveraged based on a customer's exact store location.

This document provides a logical arrangement of processes that are essential to a successful MPact Server and Toolbox deployment.

1.1 MPact Architecture

The MPact architecture is comprised of the following:

- *MPact Beacons*
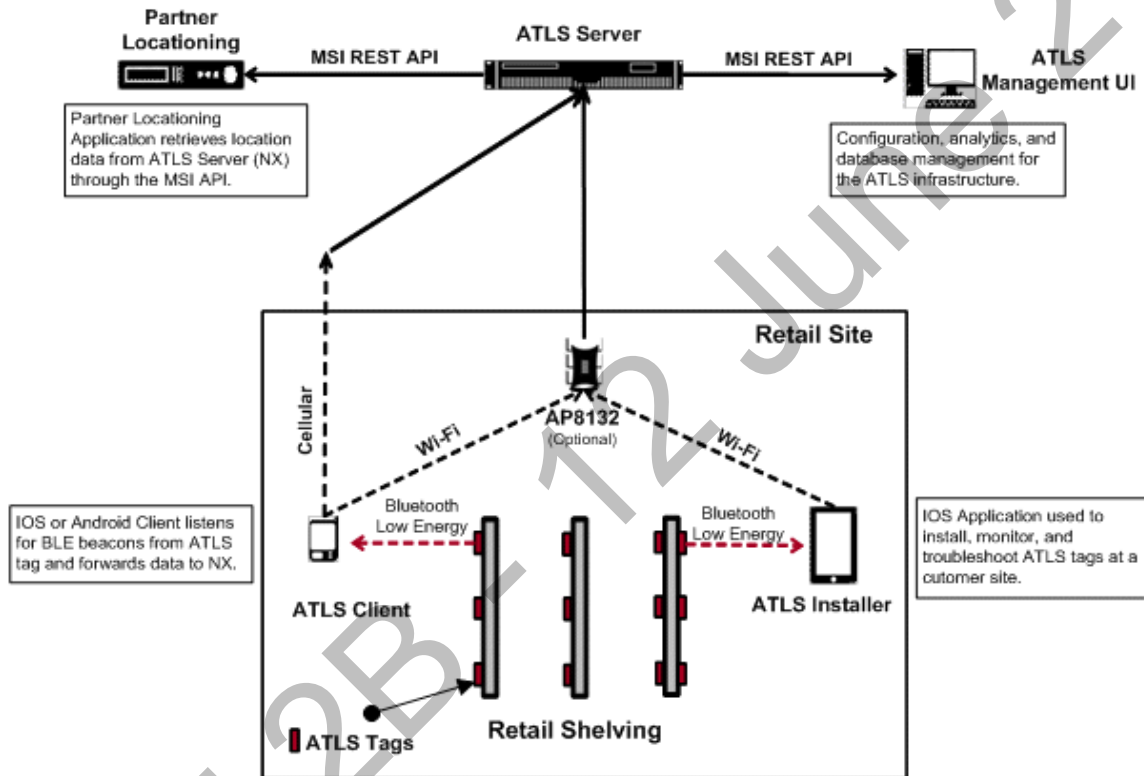- *MPact Server*
- *MPact Toolbox*
- *MPact Client SDK*

Figure 1-1 MPact Typical Topology

1.1.1 MPact Beacons

MPact beacons are small, battery powered Bluetooth Low Energy (BLE) devices. Beacons are strategically placed in retail environments where customer locationing is wanted. Beacons can be placed on existing retail shelving or mechanically secured. MPact beacons utilize a Bluetooth 4.0 radio that periodically emits a signal over the course of at least two years (the battery's maximum lifespan). Depleted beacon batteries are easily replaced. A beacon's Bluetooth beacon contains the beacon's ID and remaining battery life of the beacon to assist the administrator in managing the deployment area.

> ✓ **NOTE:** Battery information is not available if using iBeacon mode. This guide assumes the beacon is in *Battery Saving* or *MPact* mode.

Beacon placements can be adjusted within a deployment floor plan, and depending on the mode selected, their battery life can be tracked over time. Administrators can cursor over a beacon to assess the beacon's remaining battery life. For more information on Active View, refer to the *Motorola Solutions MPact Locations & Analytics Server Reference Guide*.

1.1.2 MPact Server

The MPact Server, a location and analytics system can be installed on the Linux platform (Debian 7.3). It provides an interface to install and maintain MPact beacon positions throughout a deployment site.

The MPact Server receives its beacon data from customer's devices moving about a retail environment. The beacon identifier (beacon's ID) is compared to other pre-configured beacon identifiers mapped to a specific location (the UUID is used to distinguish one store from another and is set within the MPact management UI). When a match occurs, the MPact Server can either place the mobile customer within a store or place the mobile customer in close proximity to specific products. The customer's location, the beacon's proximity to specific products and the beacon's remaining battery life are all stored on the MPact Server's local database for administrative retrieval and analysis.

The MPact Server application manages the MPact infrastructure and administrative framework. Use the MPact Server UI to configure the site floor plans required for beacon placement and locationing, manage the association of beacons with specific products, support beacon deployment and maintenance, and provide the visualization and analytics needed for both mobile customer devices and beacons.

1.1.3 MPact Toolbox

The MPact Toolbox is an iPad application designed for easy beacon deployment and management. During a typical MPact installation, an iPad is carried within a retail area to scan each beacon's barcode during deployment. The handheld can also validate existing beacon functionality at any time. Beacon deployments are administrated from the MPact Server (consisting of beacon place holders and other attributes). An administrator user can add, modify or delete beacons and beacon place holders from a site's floor plan residing and displaying on the Installer. An administrator can add beacons or flash beacons as their beacons are recognized. Beacon updates are stored on the MPact Server.

1.1.4 MPact Client SDK

The MPact Client SDK is a client library and is available in both IOS and Android versions. The client SDK integrates directly into a partner application and allows it to listen for BLE emissions. Upon receiving a beacon emission, the client library sends relevant information to the MPact Server. If the client receives data from more than one beacon within a given interval, the utilized beacon is based on a beacon selection algorithm distributed between the client and the server. Communication between the client library and the MPact Server is secured through SSL.

1.2 Browser Support

Use the following browsers with MPact Server:

- Internet Explorer, version 10 and higher
- Chrome, version 33 and higher
- Firefox, version 26 and higher

CHAPTER 2 MPACT SERVER INSTALLATION AND SETUP

For more information, refer to the following:

- *Server Installation and Login*
- *Server Configuration*
- *Tree Setup*
- *Floor Plan Setup*
- *Category Configuration*
- *Beacon Place Holder Setup and Configuration*

2.1 Server Installation and Login

The MPact Server is a Linux-based system. As a prerequisite to installing the MPact Server, ensure the server has the following capacity:

- 4 Cores
- 8GB RAM
- 200GB disk space
- Operating System (OS): Debian 7.3 64-bit GUI

If an older version of MPact is installed on the system, the older version must be uninstalled.

To uninstall the MPact Server:

1. Open a terminal on the *Debian 7.3 GUI.*

2. Get into the root account using **su root**.

3. Make sure *ls –l /bin/sh* points to **bash**, not dash.

4. If *ls –l /bin/sh* points to dash, enter the command, **ln –fs bash /bin/sh**.

5. Copy the server *tar.gz* file into **/usr**:

6. For a server upgrade, stop the server ./nxstats stop under /usr/nuxi/script/bin.

After uninstalling the older version of the MPact Server, install the latest version.

1. Change the folder to **cd/usr**.

   The server tar.gz file must be located in the /usr directory, otherwise the server cannot find the file.

2. Create a new folder, **mkdir installer**.

3. Change current folder to the installer folder, **cd installer**.

4. Download the ATLS tar.gz file to this folder or copy it from available location to the installer folder.

5. Untar **tar.gz** by *tar xzvf <file name>* under */usr, chmod –R 755 /usr/nuxi*.

6. Once untared, change *dir* to the *install* folder, **cd ./nx_installer**.

7. Use python to start install process, **python install.py**.

8. Go to **/usr/nuxi/script/bin**.

9. To start the server, enter the command, **./nxstats start**.

   Use the following paths for the MPact Server and base:
   For the MPact Server, the use the path: */usr/nuxi/**
   For the MPact Server database, the use the path: */var2/nuxi/data/**.

To check the status of the installation, use the following instructions.

1. To check for the expected results:

   - Process (create_schema) is not running. This process is used to create the database for the first server installation.
   - There should be 10 processes running.

Figure 2-1 *MPact Deployment - Expected Results*

When the server installation is complete, login to the server and configure the system parameters.

2.1.1 Server Login

To login to the MPact Server remotely:

1. Go to *<Server IP>: 80/atls* (use either Chrome or Firefox).

2. Enter the **User Name** (superuser is the default) and **Password** (motorola is the default), and select **Login**.

   • Select **Remember Me** to use the same credentials in subsequent logins.

   • Select **Reset** to clear the fields and start again.

Figure 2-2 *MPact Server - Login*

2.2 Server Configuration

Use **System Configuration** for the administration of beacon settings defined globally on the MPact Server. The beacon settings are then pushed to selected beacons as their respective configurations warrant. Beacon configuration settings must be set accurately in the MPact Server before they can be provisioned to an MPact Toolbox supported iPad.

To administrate the system configuration:

1. Select **System Configuration** under the **Configuration** main menu item.
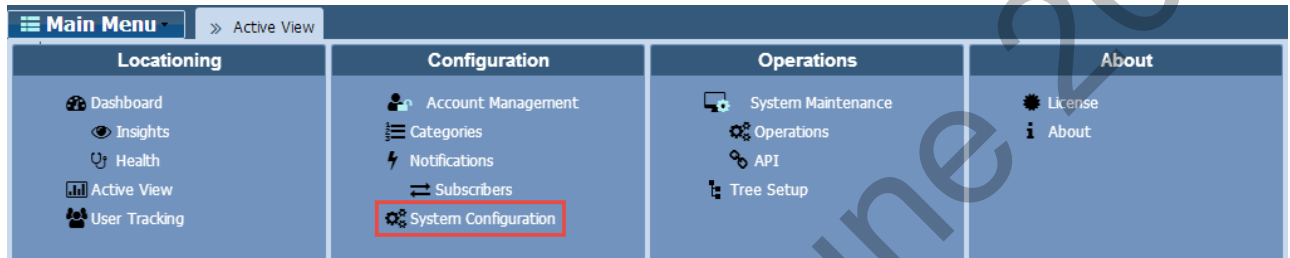

Figure 2-3 *MPact Server System Configuration - System Configuration*

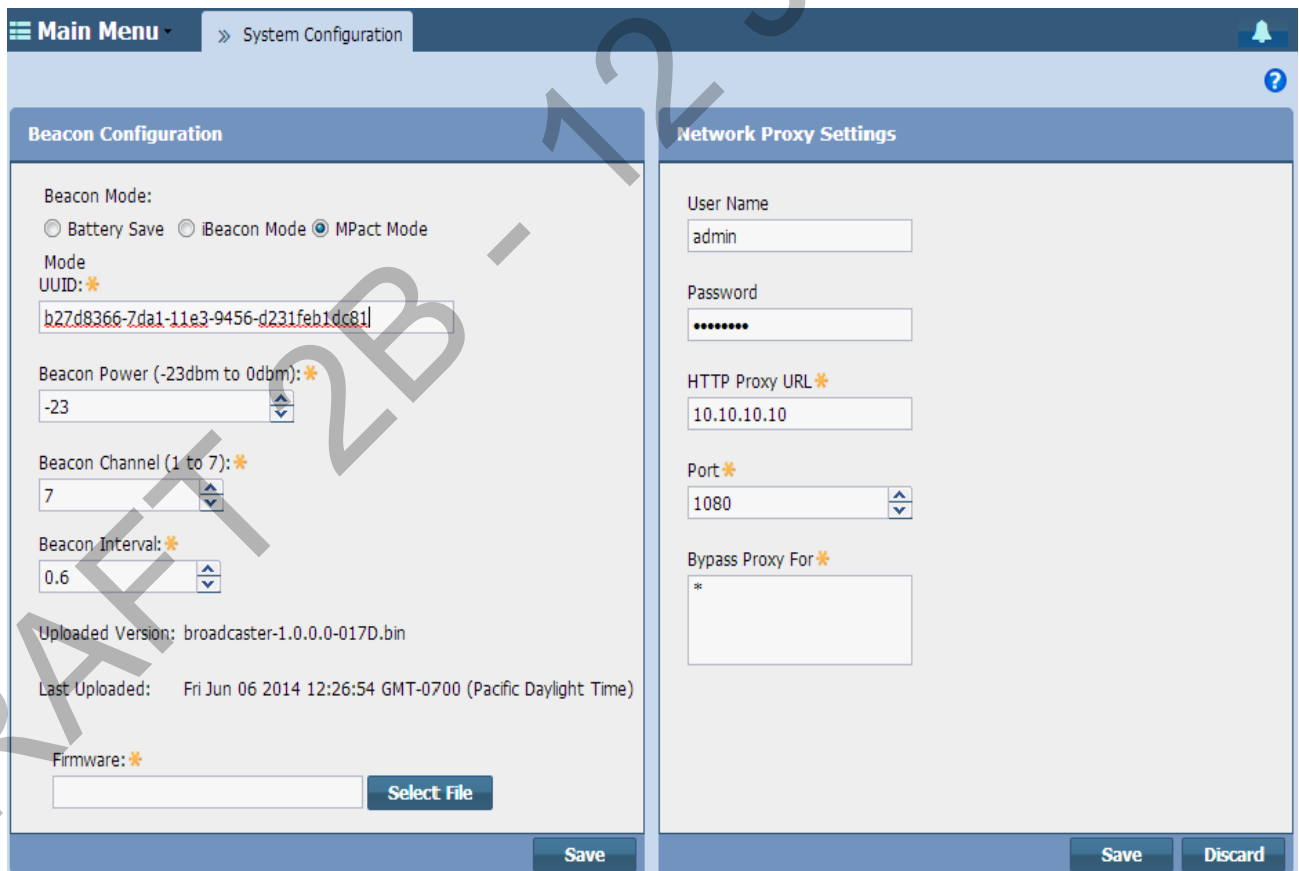2. Modify the **System Configuration** parameters as required.

Figure 2-4 *MPact Server - System Configuration*

3. Refer to the following table to modify the **Beacon Configuration** parameters:

Beacon Mode	Set the mode defining how beacons are emitted from MPact beacons. Supported modes include *Battery Saving*, *iBeacon* and *MPact*.
	The *Battery Saving* format, the default setting, is optimized for battery life by making the beacon as small as possible (the beacon contains the minimal amount of information needed to support MPact server functions). An MPact beacon contains the Motorola Solutions registered manufacturing ID, beacon ID and a single byte representing the percentage of battery life remaining (0-100%).
	The *iBeacon* format was created by Apple for use in iOS devices (beginning with iOS version 7.0). There are three data fields Apple has made available to iOS applications, a UUID for device identification, a Major component for device class and a Minor component for more refined information like product category. The *Major* field is a 2 byte field for identifying the device class. For example, the Major value could be the same for each device on the first floor or a particular department store (0-65525). The *Minor* field is a 2 byte field for more refined information, like product category (0-65535). If the major or minor values display in red, they have been pre-set from the MPact Server and do not require modification, they just need to be pushed to the device.
	The *MPact* beacon format uses the iBeacon format, however, the Major and Minor fields have been defined so MPact data can be conveyed as being compatible with the MPact server. No input is required.
UUID (16 bytes)	16 byte hex character string that defines the purpose of the device. The UUID classification is meant to be broad. For example, a UUID could identify a beacon was owned by Starbucks.
Beacon Power (-23 dBm to 0 dBm)	Beaconing output power is set from -23 to 0 dBm.
Beacon Channel (1 to 7)	Channel mask is set from 1-7 to apply an operation channel restriction to beacon transmissions.
Beacon Interval (100 ms to 1000 ms)	From 100ms to 1000ms in 100 ms increments for a beacon's emission. The default is 600ms. The shorter the interval, the shorter the beacon's battery life. However, shorter intervals result in increased accuracy.
Uploaded Version	Either blank or lists the firmware version last utilized for beacon uploads by the MPact server (for example, broadcaster-1.0.0.0-00xD.bin.
Last Uploaded	Either blank or lists the date and time the most recent firmware version (the version listed in the Uploaded Version field) is pushed to the beacons.
Firmware	Place the cursor inside the field to browse to the latest beacon firmware file. Choose *Select File* to launch a screen for navigating the system for a target firmware file for subsequent beacon uploads. Once selected, the complete relative path for the file displays. **Note**: Some beacon models do not allow for any changes in firmware.

4. Select **Save** to commit these beacon configuration settings for subsequent download to beacons.

5. Set the **Network Proxy Settings** to define how MPact server event subscribers receive their defined notifications over the MPact server.

HTTP Proxy Settings	Set the Web domain location for the destination of uniquely defined subscriber event notifications (for example, www.hostname-example.com).
Port	Use the spinner control to set the virtual port integer for the connection between the MPact server and the defined proxy or IP address.
Bypass Proxy	Optionally, bypass a proxy Web domain by providing a numerical IP address for the recipient server receiving event notifications on behalf of the subscribers.

6. Select **Save** to commit these subscriber notification connection settings to the MPact server.

NOTE: If the uploaded version does not change after saving the configuration, try logging out and re-login to MPact UI or repeating the configuration steps.

2.3 Tree Setup

Use **Tree Setup** to build the tree hierarchy for each store site location on a global map. A tree hierarchy is built from a global site location down to each floor in a building, including floor plans for each floor in a building. After the tree is saved, configurations are added to the system for beacon deployment on the floors of each site.

To administrate the MPact tree setup:

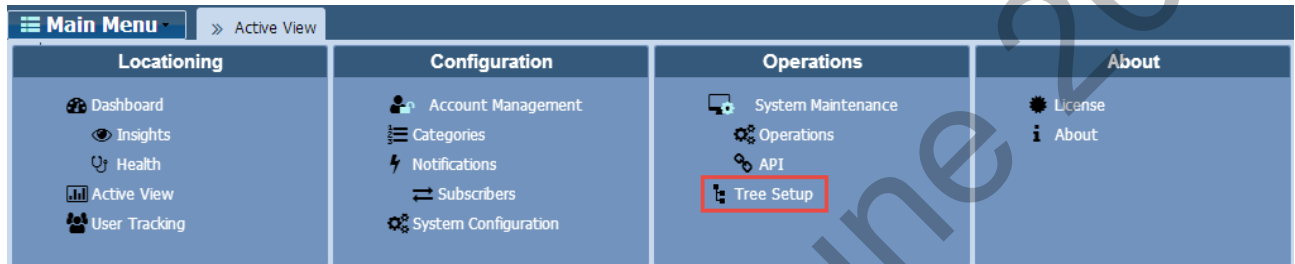1. Select **Tree Setup** under the Operations main menu item.

Figure 2-5 *MPact Server UI Tree Setup*

2. From the **System** drop-down menu, select **Add Child** and drag the cursor over to the node to add the required node. Build the hierarchy for *Country, Country Region, City, Campus, Site, Area* and *Floor*, as needed.

    Keep the following in mind when creating the tree:

    • You do not have to create a *Country* before creating a *Site*.

    • At the end of every tree setup there must be a *Floor*.

Figure 2-6 *MPact Server UI Tree Setup - Adding Tree Nodes*

NOTE: When building the tree hierarchy, the following characters are invalid: -q- $ * < > # ~. All other characters, including space, are valid.

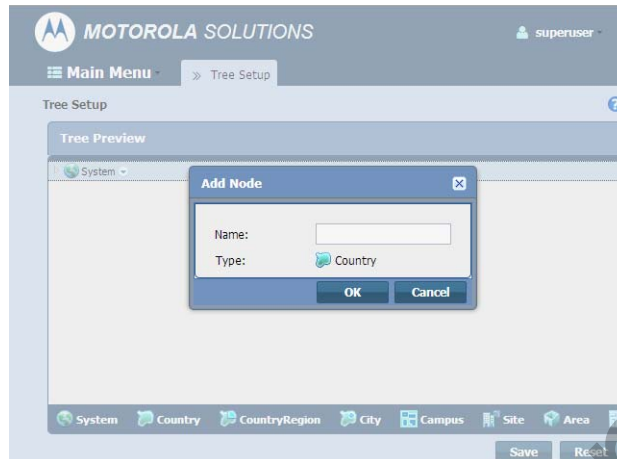3. From the **Add Node** dialog box, enter a node **Name** and select **OK**.

Figure 2-7 *MPact Server UI Tree Setup - Add Node Dialog Box*

4. Continue adding nodes as required to the **Floor** level.

5. When finished, select **Save**.

    The newly created tree displays in the **Tree Preview** area. The node is automatically placed in its respective location the hierarchy in relation to the existing tree setups. The next step is to add a floor plan to the floor.

2.4 Floor Plan Setup

After the tree setup is built down to the site floor level, load a *Floor Plan* image to the site's *Floor*. A site can have multiple floors along with their floor plans. Optimally, a floor plan should be an accurate representation of the retail floor layout, which includes broad category labeling for items in the area. For example, a grocery store would have labels such as dairy, meats, vegetables etc.

Floor plan images have the following constraints:

- *Format*: JPEG/JPG/PNG
- *Maximum resolution*: 10,000 x 10,000 pixel ~ 20MB

To administrate a floor plan:

1. Select **Tree Setup** under the Operations main menu item.

2. From the **Tree Preview** area, open the tree hierarchy down to the floor level.

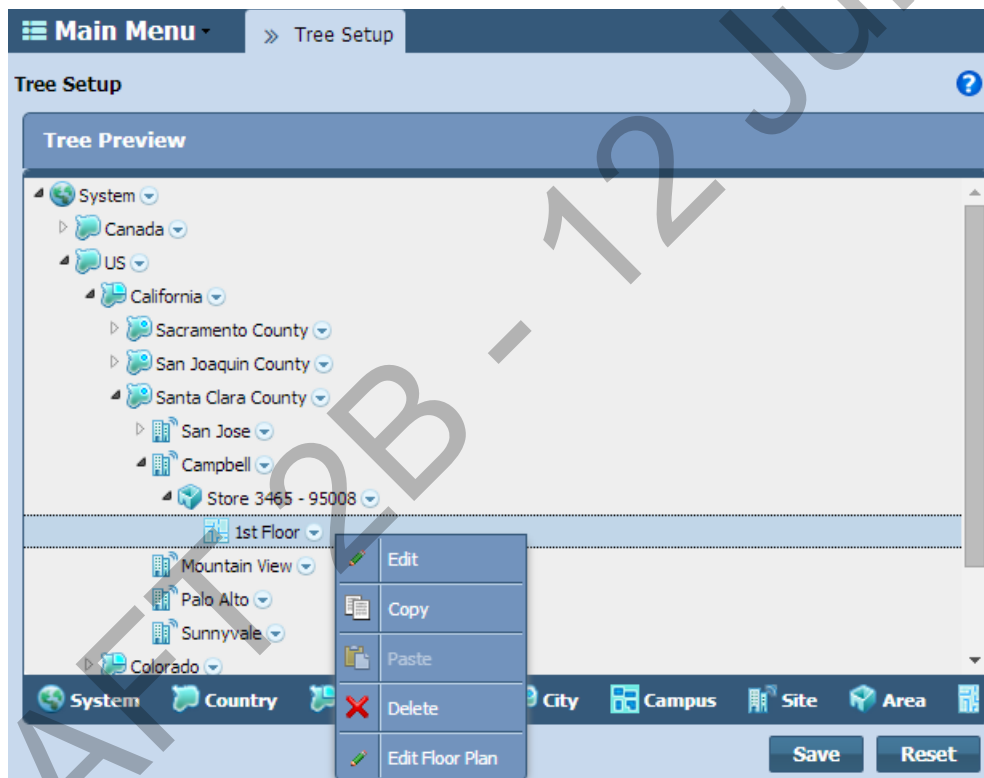3. From the **Floor** drop-down menu, select **Edit Floor Plan**.

Figure 2-8 *MPact Server UI Tree Setup - Edit Floor Plan*

4. Select the **Load Map** button to browse to and select a floor plan image of the site's floor.

Figure 2-9 *MPact Server UI Tree Setup - Load Floor Plan*

5. Set the physical size of the area the floor plan represents:

    • *Unit*: Select either Meter or Feet.

    • *Width*: Enter the width of the floor, the default is set to 400.

    • *Width*: Enter the height of the floor, the default is set to 200.

6. Select **Save**.

Figure 2-10 *MPact Server UI Tree Setup - Load Floor Plan*

2.5 Category Configuration

Use the **Categories** functions to group product family items logically and better apply significance to the locationing, customer traffic and dwell time data reported by the system. MPact events are tied to categories and category fields. When beacons are skillfully deployed, they are associated with the physical location of a specific product category within a floor plan. As client users move about the floor, their beacon visits and dwell times can be associated with the product categories associated with the beacon's location.

To administrate categories:

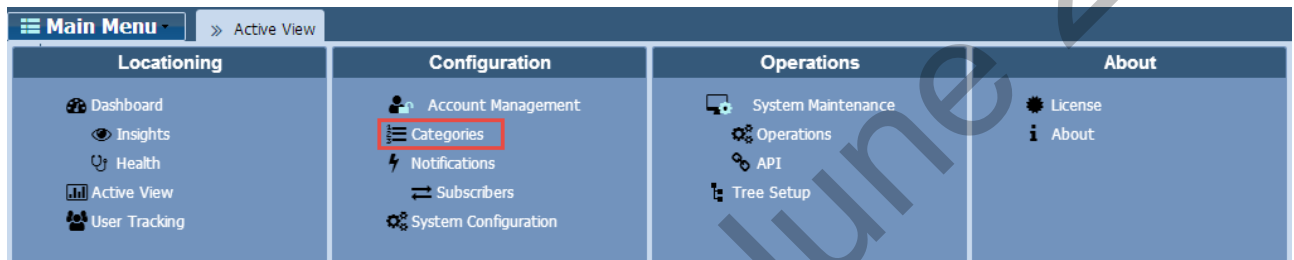1. Select **Categories** under the Configuration main menu item.

Figure 2-11 *MPact Server - Categories*

Existing categories display along the left-hand side of the screen.

2. From the **Category List**, select a category to display its **Category Values** (product names) administratively aligned with that category's beacon location on a site's floor plan.
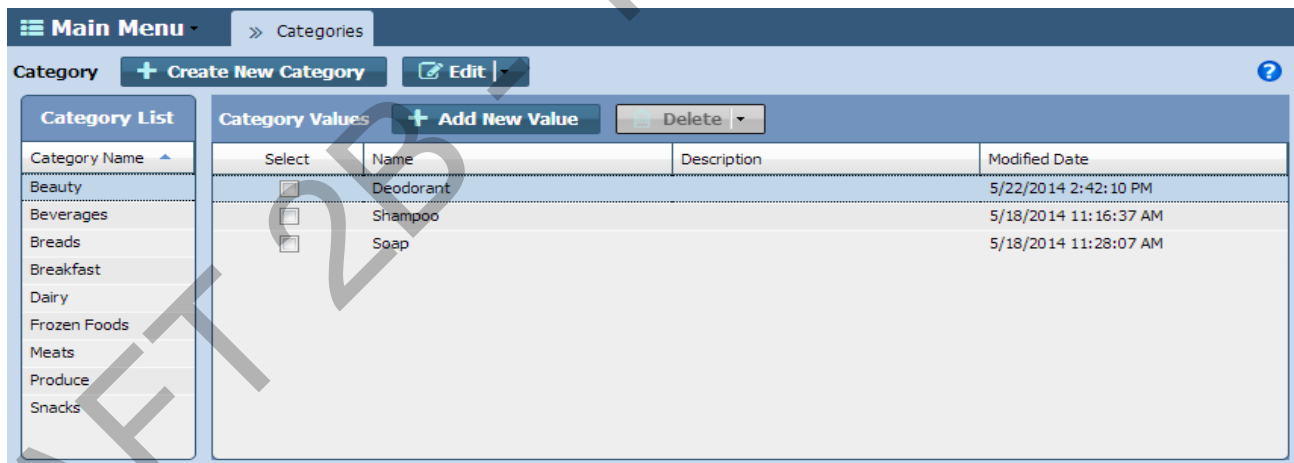

Figure 2-12 *MPact Server - Categories*

In the example above, the **Category**, **Beauty**, located on the left-hand side of the screen, is aligned with the **Category Values** listed on the right-hand side of the screen: **Deodorant**, **Shampoo** and **Soap**. In this example, **Category Values** represent the products grouped for tracking under the parent category, **Beauty**.

2.5.0.1 Category Creation and Modification

Use the **+Create New Category** button to add new categories to the **Category List** and the **Edit** drop-down menu to modify existing categories.
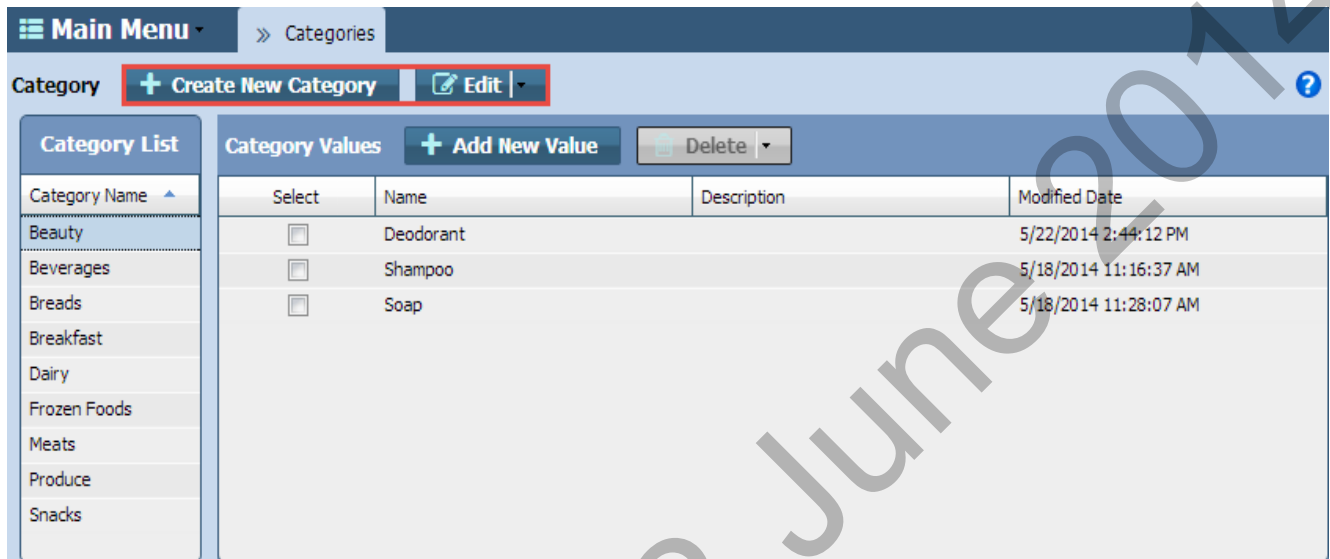

Figure 2-13 *MPact Server - Category Creation and Modification*

To create a new category:

1. Select the **+Create New Category** button.

2. Enter a **Category Name** and **Category Description** and click **Ok** to implement the updates.

Figure 2-14 *MPact Server - Add Category*

3. To modify an existing category, select a category from the **Category List**.

4. From the **Edit** drop-down menu, select one of the following actions and select **Ok** to implement the changes.

Edit	Allows changes to the category's name and description.
Copy	Places a duplicate copy of the category and its category values immediately below the existing category name.
Delete	Deletes the category and associated category values. Motorola Solutions recommends an administrator export and archive a category's defined values in Comma Separated Value (CSV) file format before deleting a category.

2.5.0.2 Category Value Creation and Modification

Use the **+Add New Value** button to add new values to existing **Category Values** and the **Delete** drop-down menu to modify existing category values. Ensure any values added make up a logical group of products, well suited for the client traffic and dwell time reported under its parent category's beacon deployment location.
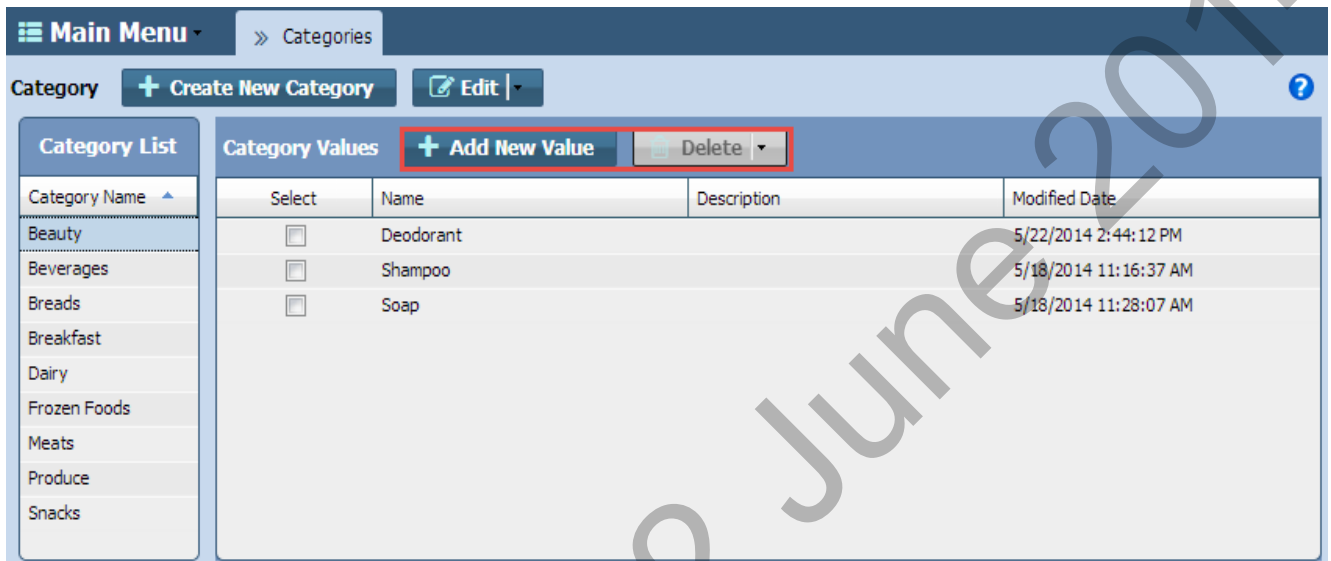

Figure 2-15 *MPact Server - Category Value Creation and Modification*

To create new category values:

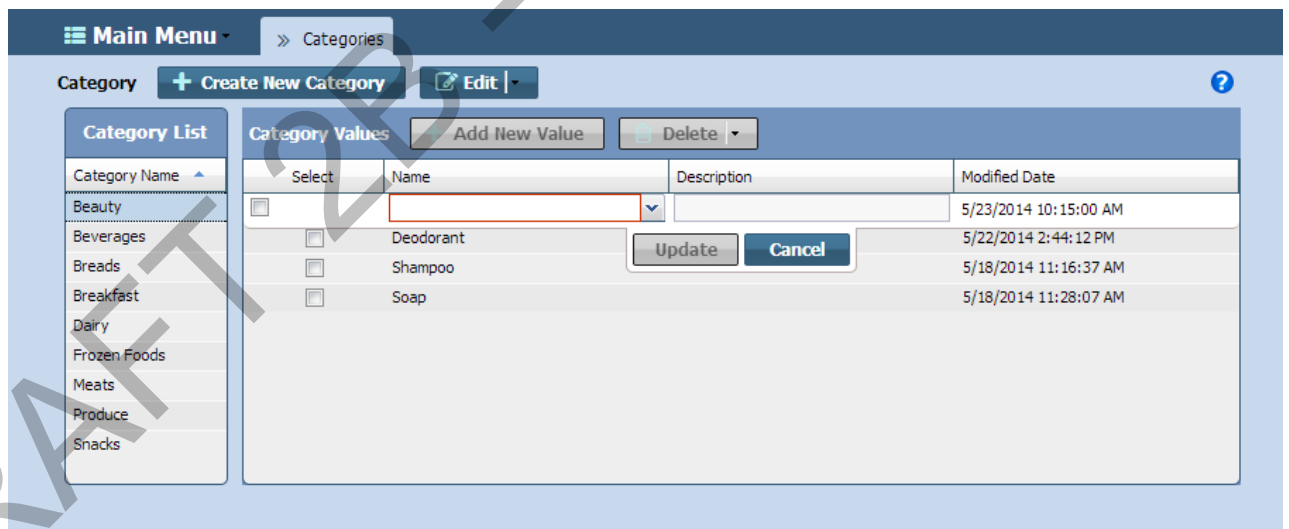1. Select the **+Add New Value** button.

Figure 2-16 *MPact Server - Add New Value*

2. Enter a **Name** and **Description** and click **Update** to implement the value.

3. To modify existing category values, select the check box for an existing category value.

Select the **Delete** drop-down menu to select one of the following modification actions:

Edit	Allows changes to the category value name and description.

Copy	Places a duplicate copy of the category value immediately below the existing category value.
Delete	Deletes the category value.

4. Select **Ok** to implement the changes to the category value list.

2.6 Beacon Place Holder Setup and Configuration

Use *Place Holders* to secure a beacon's physical position on a site floor plan. The beacon place holder contains the beacon's X-Axis and Y-Axis coordinates and the beacon's direction and antenna pattern.

The optimal floor plan coverage has beacon place holders setup two meters apart and staggered on opposite sides of an aisle, seen in the image below. Placing them any closer can cause the beacon's signal to bounce between beacon locations.
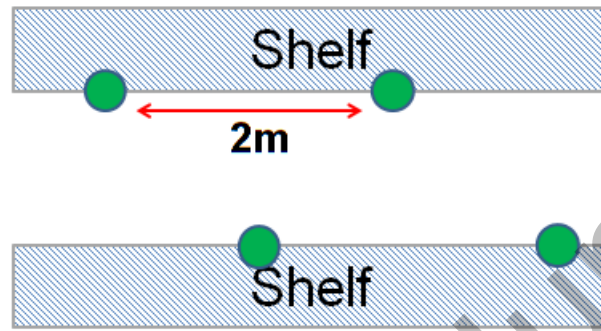

Figure 2-17 *MPact Server - Beacon Place Holder Coverage*

When placing beacon place holders on the floor plan, ensure the place holder is located with respect to the selected product category. Place holders can be strategically placed on end caps, aisle entrances, and at seasonal promotional displays.

Product *Categories* and *Category Values* are assigned to the beacon place holder, which allows *Subscribers* to receive *Notifications* for special promotional offers. Notifications are configured to notify a subscriber when a client action is performed, for example, client entry, client exit or dwell time.

There are two methods for setting up beacon place holder positions on a floor plan:

• Manual setup: Used for smaller deployment projects.

• CSV file import setup: Used for large deployment projects.

2.6.1 Place Holder Manual Setup

Manual place holder setup can be used for smaller deployments.

To manually set up a beacon's place holder position:

1. Select **Active View** under the Locationing main menu.

2. From the *Tree Hierarchy* area on the left-hand side, select the **System** node to display the *Unplaced Sites* that have not yet been placed on the global map.

3. Use the zoom feature in the upper left-hand corner of the right pane to zoom in to the appropriate site location.

4. Drag and drop one or more of the **Unplaced Sites** to the appropriate site location on the global map.
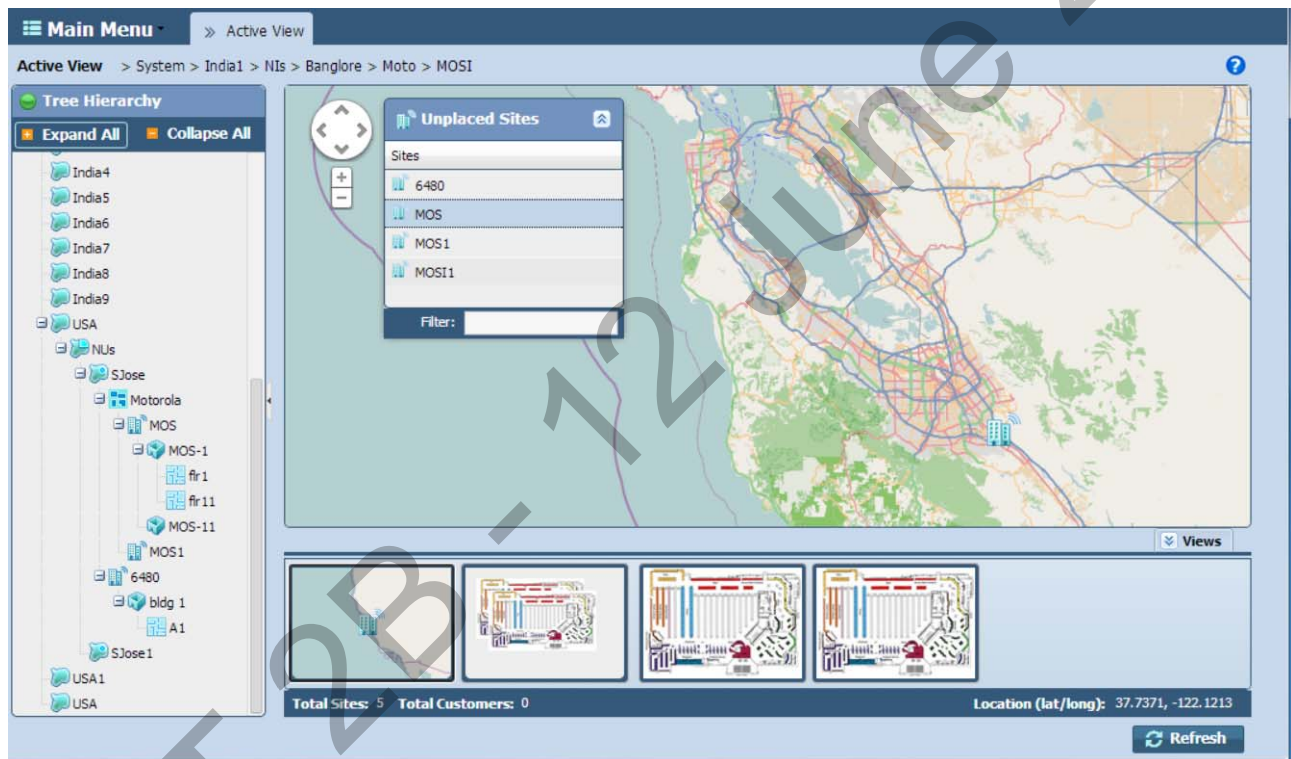

Figure 2-18 *MPact Server - Site Map Placement*

5. Expand the **Tree Hierarchy** on the left-hand pane and select the corresponding site floor for the deployment.

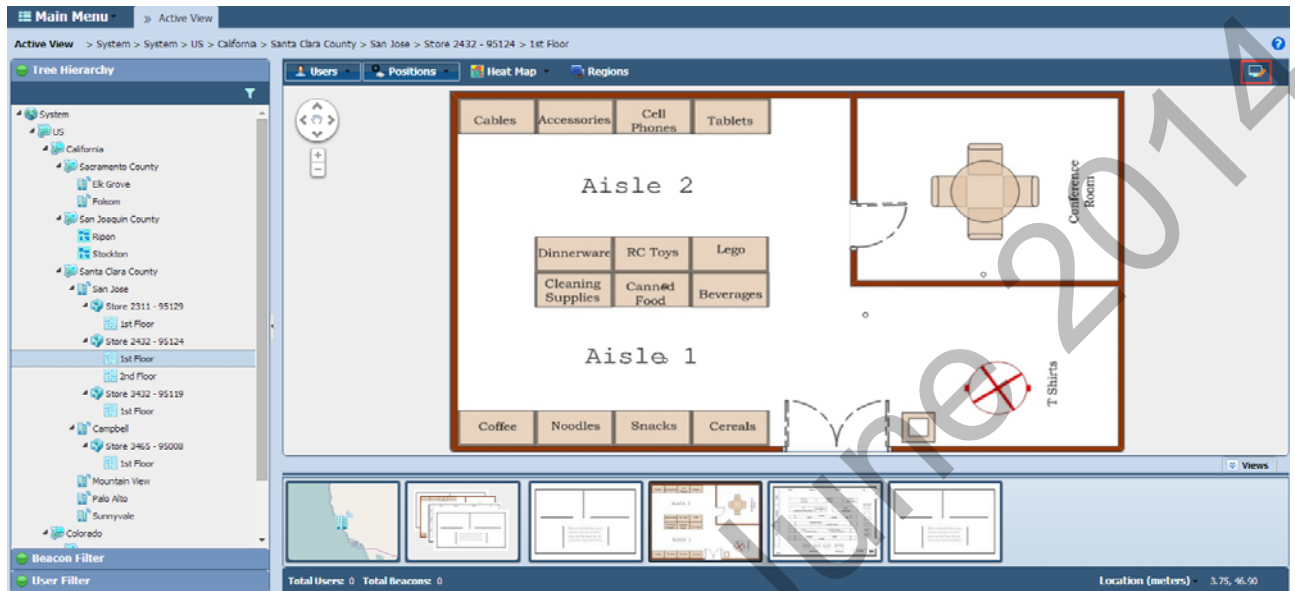6.   Select the **Edit Mode** button to the far-right on the tool bar.

Figure 2-19 *MPact Server - Floor Plan Edit Mode*

7.   From the **Positions** drop-down menu, select **Add Position**.
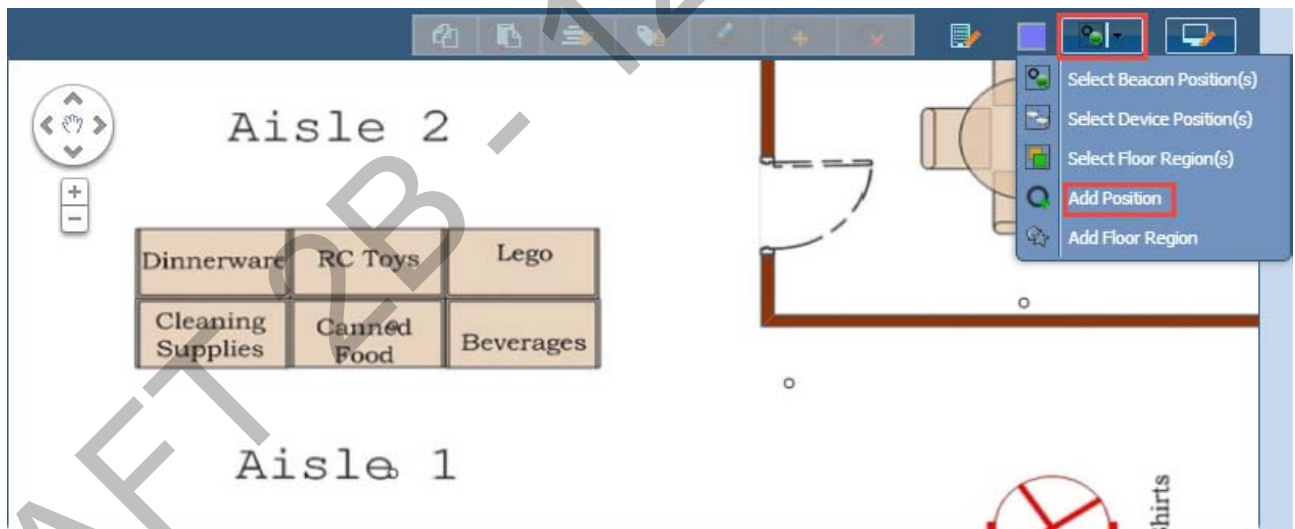

Figure 2-20 *MPact Server Active View - Add Position*

8.   Select the intended location of the place holder by double-clicking on the location on the floor plan.

The **Add Position** dialog box displays with the **Position Location** auto-populated with the place holder's **X-Axis** and **Y-Axis** positions on the floor plan.

Figure 2-21 *MPact Server Active View - Add Place Holder Position to the Site Floor*

9. Configure the Place Holder options:

Position Name	Enter a XX character maximum Position Name for the beacon place holder location.
Position Description	Optionally, provide a XX character maximum description.
Position Location (meters)	The auto-populated X and Y axis values are relative (zero) to the upper left-hand corner of the floor plan and increase to the right (X) and down (Y) from the left-hand corner of the floor plan. (The Position Location was auto-populated earlier by double-clicking on the floor plan location.)
Beacon Configuration	Major: Set from 0 - 9. A Major component for device class and a Minor component for more refined information like product category. The Major field is a 2 byte field for identifying the device class. For example, the Major value could be the same for each device on the first floor or a particular department store.
	Minor: Set from 0 - 9. In iBeacon mode, the Minor field is a 2 byte field for more refined information, like product category. It consists of the last byte of the MAC address.
Position Categories	Select *Add Category* to assign a Category to the beacon's position. Category selections are defined and configured in Categories, under the Configuration main menu item of the Server. For more information on defining and configuring Categories, see *Motorola Solutions MPact Location & Analytics Server Reference Guide*.

Advanced Beacon Settings	*Antenna Pattern*: Use the drop-down menu to set whether the antenna pattern is a Circle (360 degree omnidirectional) pattern or a Semi-Ellipse (180 degree direction) pattern.
	Beacon ID: The ID of the beacon receiving advanced settings.
	Degrees: Set from 0 to 360 degrees.
	Beacon Offset: Set from 1 to 4 meters.

10. Select **Save** to commit the updates, **Reset** to revert to the last saved configuration or **Cancel** to close and exit the screen.

11. Repeat this process to manually add more place holders. Once place holders have been added to the floor plan, beacons can be installed (scanned) and configured.

2.6.2 Beacon Place Holder CSV File Import Setup

For large deployments, a CSV file is used to setup beacon place holders on a site floor plan on the MPact Server (instead of manual setup).

To import the CSV file to the site floor plan in the server:

1. Select **API** under the Operations main menu.

Figure 2-22 *MPact Server System Maintenance- CSV File Import*

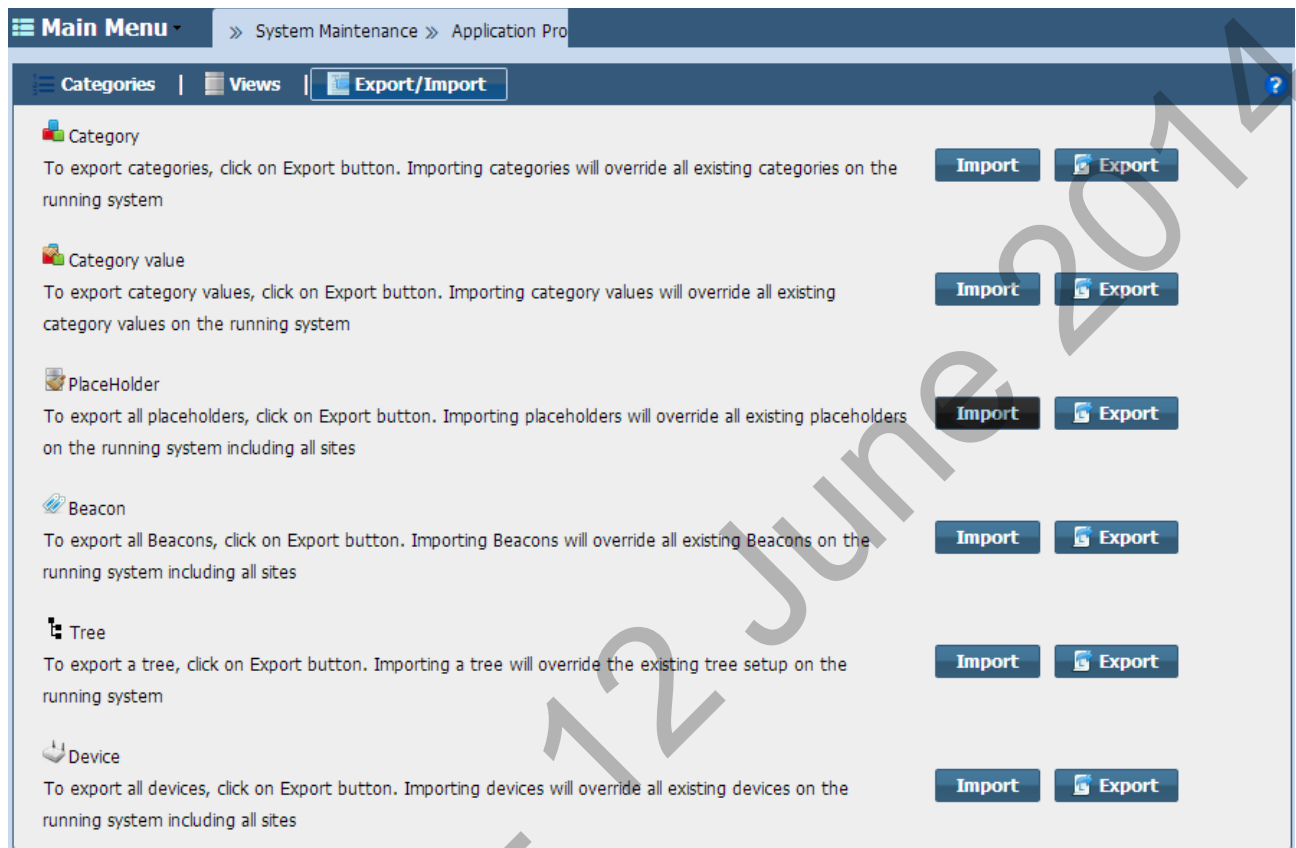2. Select the **Export/Import** button.

Figure 2-23 *MPact Server System Maintenance- CSV Place Holder Import*

3. Select the **Import** button for **Place Holder**.

4. When the **Upload CSV** popup box displays, browse to and select the CSV file, and select the **Upload** button.
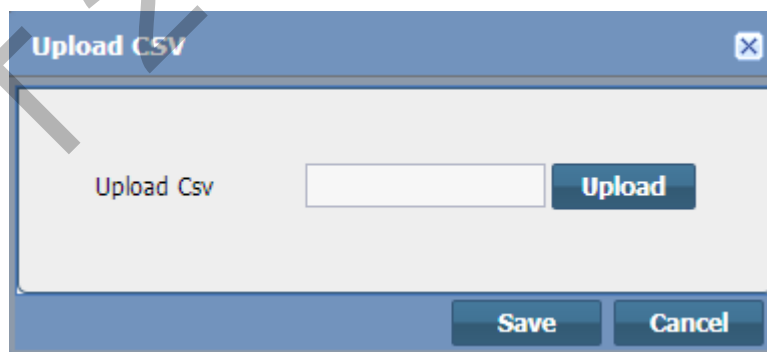

Figure 2-24 *MPact Server System Maintenance - Upload CSV*

5. Click **Save** to save CSV file data to the server.

CHAPTER 3 MPACT TOOLBOX INSTALLATION AND SETUP

The MPact Toolbox is an iPad application designed for beacon installation and maintenance at the area beacons are deployed. The iPad is carried within the deployment area to scan a beacon's barcode when the beacon is first installed to add its position attributes and validate existing beacons are working as expected. A toolbox equipped iPad reads beacon installations from the MPact Server, which consists of beacon positions, IDs and other attributes. Users can optionally add, modify or delete beacons and beacon positions from a store map displayed on the installer (essentially adding beacons by scanning a barcode and flashing beacons as their beacons are recognized).

All beacon updates are stored on the MPact Server. The MPact Toolbox mediates between an MPact Server and an MPact beacon. The toolbox can pull configuration and firmware information from the MPact Server and update a beacon as deployment objectives require. The toolbox records beacon placements and updates the server. The toolbox supports three beaconing beacon modes: Battery Save, iBeacon and MPact.

To install the MPact Toolbox application, register the iPad with the TestFlight Web site. Once installed, download the latest MPact Server configurations to the MPact Toolbox application on the iPad.

For more information, refer to the following:

- *Toolbox System Requirements*
- *Toolbox Installation*
- *Toolbox Login and Setup*

3.1 Toolbox System Requirements

The MPact Toolbox can be run with the following platforms:

- iOS versions 6.1 - Only supports the Battery Save beaconing mode
- iOS versions 7.0 and higher - Supports all three MPact beacon modes (Battery Save, iBeacon and MPact)

3.1.1 iPad Hardware Limitations

The iPad has the following limitations:

iPad Version	Model	CPU	RAM	Limitation
iPad Min (First Generation)	A1432	32 Bit	512 MB	Floor plan image should not exceed 3MB in file size
iPad 3	A1416	32 Bit	1GB	Floor plan image should not exceed 200 MB in file size
iPad 4	A1458	32 Bit	1GB	Floor plan image should not exceed 200 MB in file size

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3.2 Toolbox Installation

The MPact Toolbox software application is installed on an iPad and is used to locate beacons in the system, download firmware to the beacons, and configure the beacons. The MPact Toolbox is used to maintain beacon positions and reconfigure beacons when changes are made to the retail site floor.

The MPact Toolbox software application is installed on an iPad using the TestFlight web site (only for beta).

The MPact Toolbox application supports the iPad iOS 6.0 and 7.0 operating systems.

3.2.1 TestFlight Mobile Platform Account Sign Up (Use for Beta Only)

The TestFlight mobile platform is used to install and maintain the Toolbox application. Prior to using the TestFlight web site, provide a business email to the Motorola MPact team and request an invitation to sign up for the TestFlight mobile platform. Invitations are provided only to qualified developers and IT personnel.

To sign-up for the TestFlight account:

1. From the invitation email received from the Motorola MPact team, **Accept** the invite using a new or existing *TestFlight* account.

2. Follow the instructional wizard to complete the registration.

Use this account to install and maintain the MPact Toolbox application during the beta period.

3.2.2 MPact Toolbox Installation (Use for Beta Only)

Use the install wizard provided to install the MPact Toolbox.

To install the Toolbox software application:

1. Using an iPad, logon to *https://www.testflightapp.com* using the newly created TestFlight account.

2. Select the **Install** button to install the TestFlight configuration profile on the iPad.
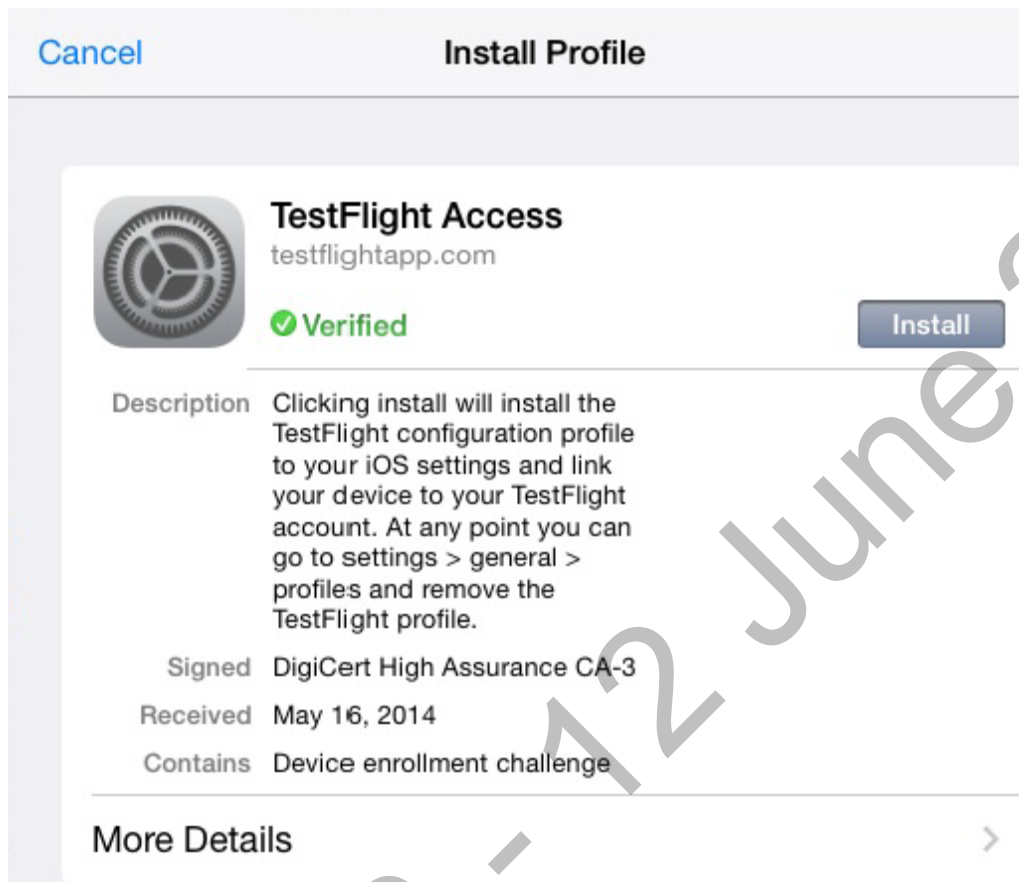

Figure 3-1 MPact Toolbox Installation - Install Profile

3. Select the **Install Now** button to change the iPad settings.
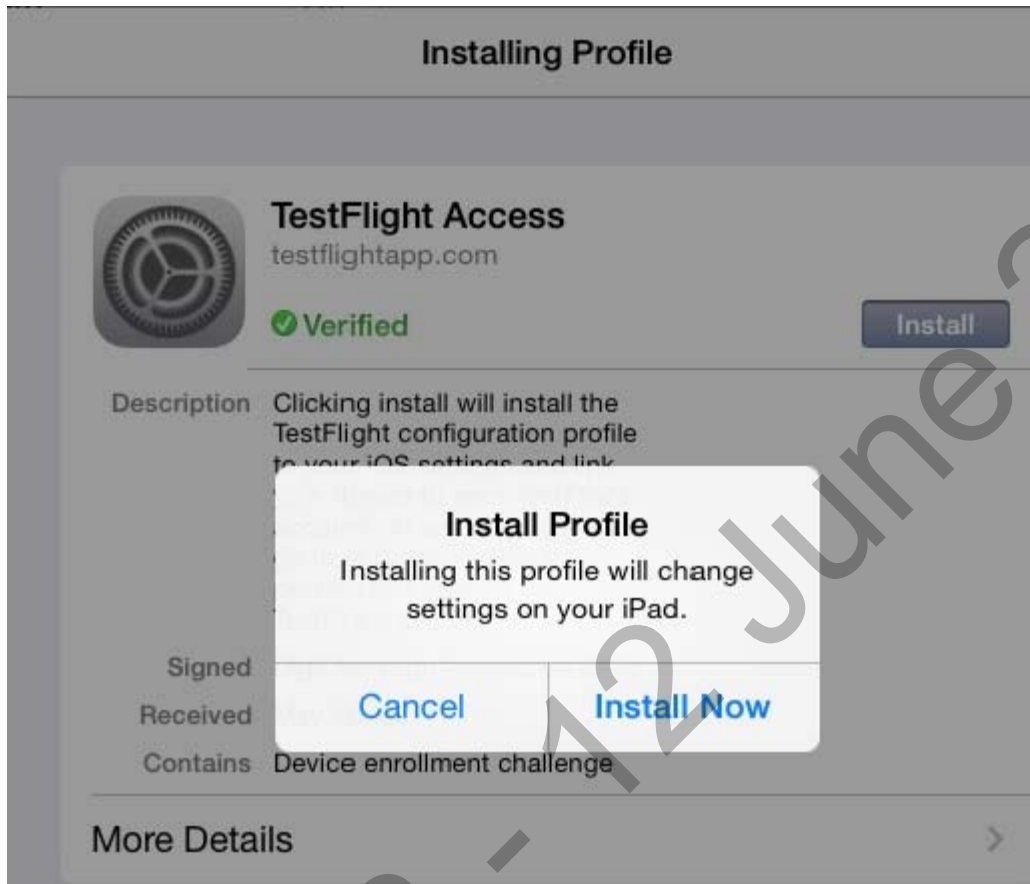

Figure 3-2 *MPact Toolbox Installation - Confirm Install Profile*

4. Select the **Install Now** button to install the profile settings on your iPad.
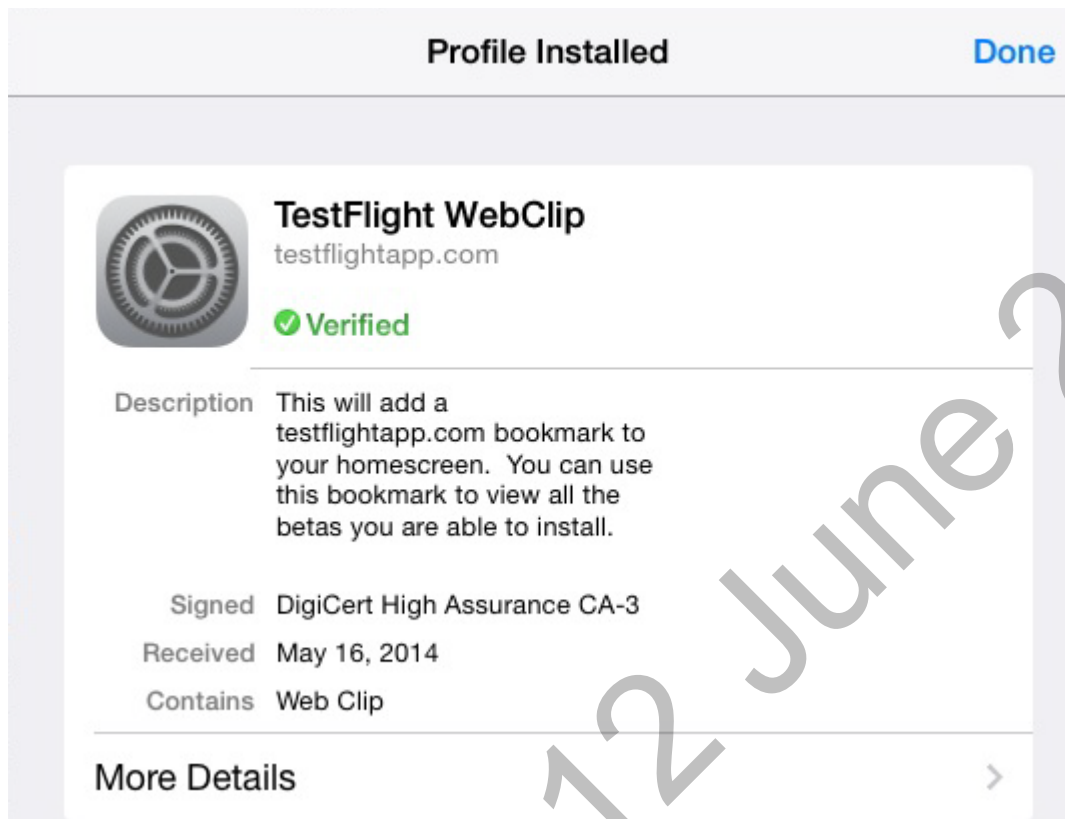
Figure 3-3 *MPact Toolbox Installation - Profile Installation Confirmation*

5. Select the **View All Apps** button.
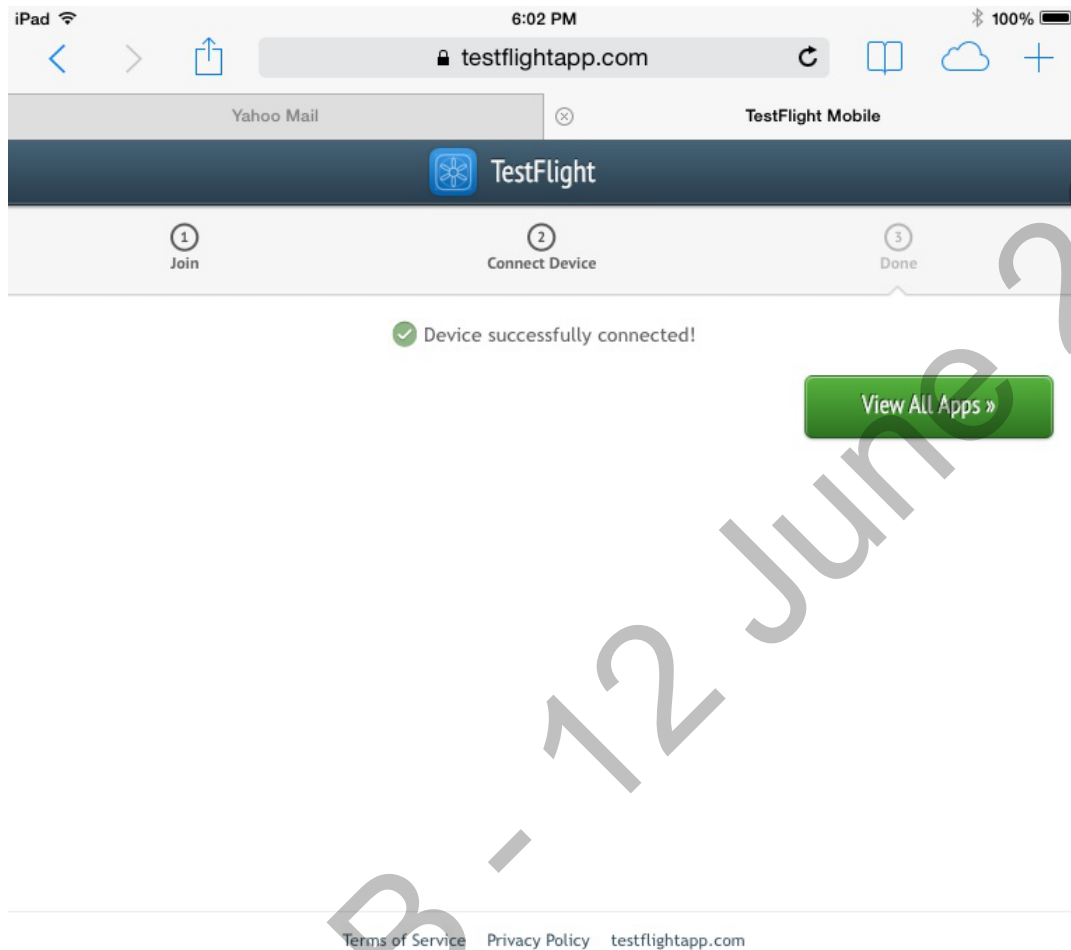
Figure 3-4 *MPact Toolbox Installation - TestFlight Device Connected*

6. Select the **Continue** button to agree to the **Terms of Use & Privacy Policy Update**.

Figure 3-5 *MPact Toolbox Installation - Terms of Use and Privacy Policy Update*

7. Select the **Install** button to install the **Toolbox** application.
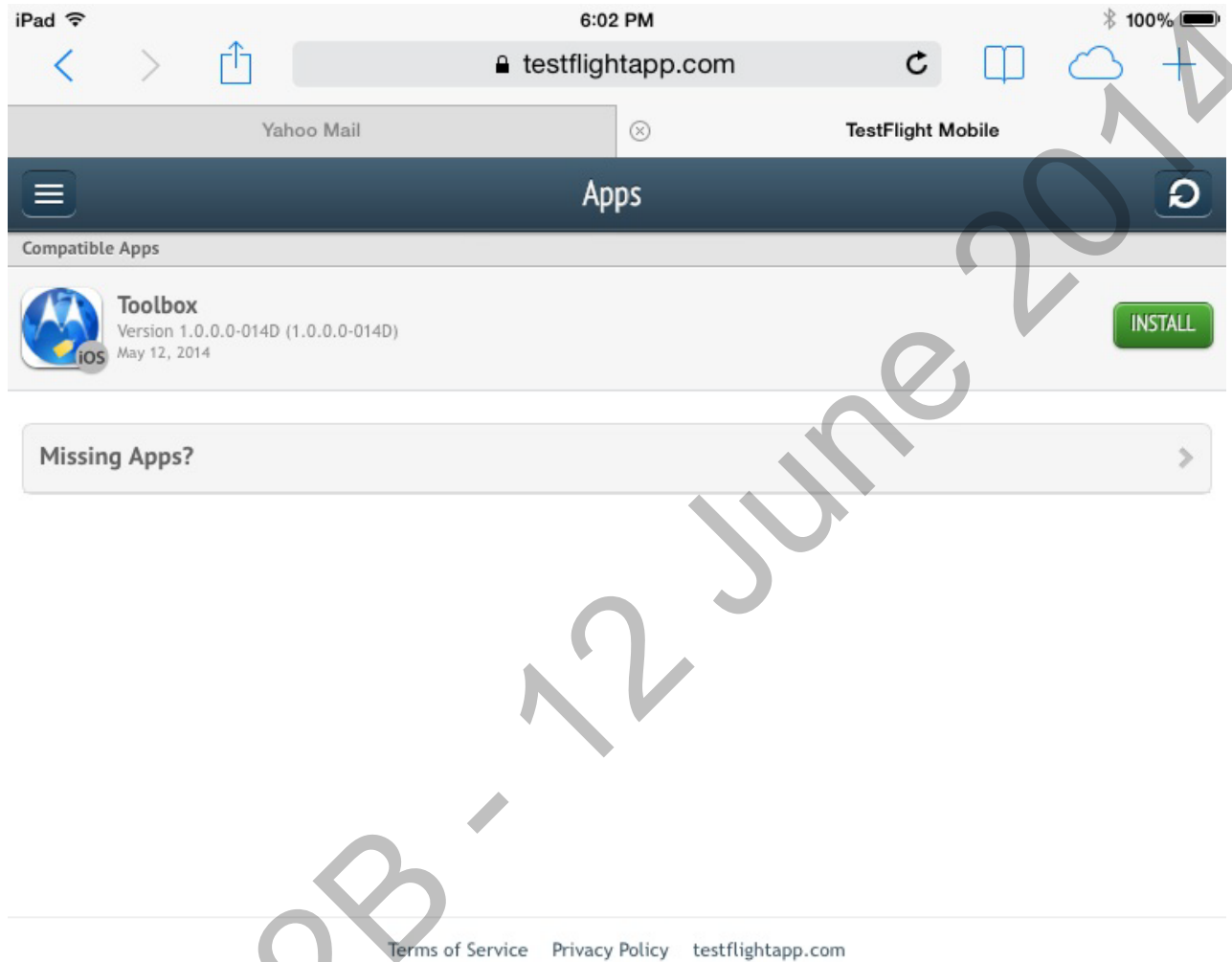
Figure 3-6 *MPact Toolbox Installation - Install the Toolbox Application*

8. Select the **Install** button to continue with the installation.

Figure 3-7 *MPact Toolbox Installation*

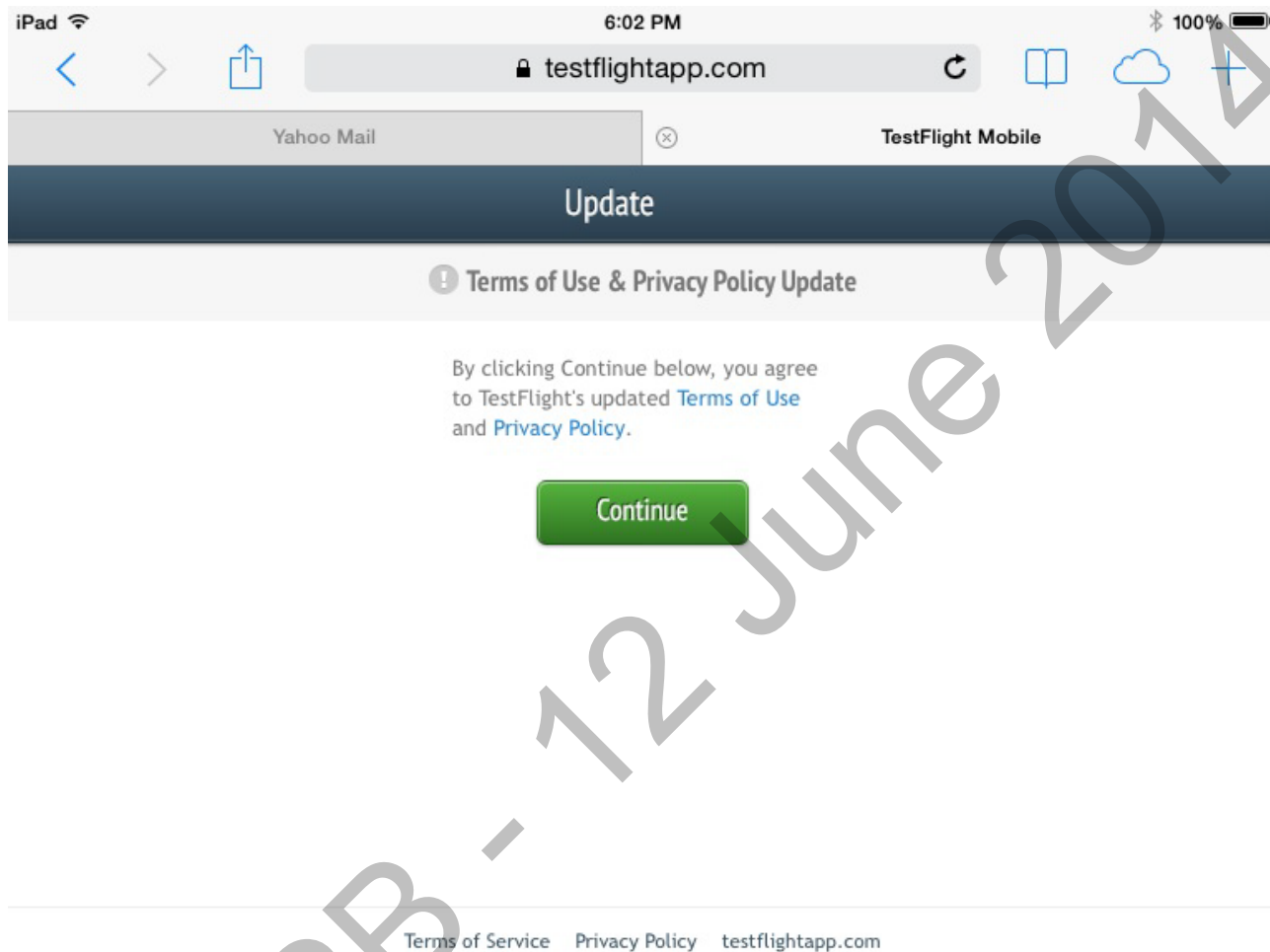9. Select the **Continue** button complete the installation process and open the application.

> Are You Sure You Want to Open the
> Application "Toolbox" from the
> Developer "iPhone Distribution:
> Motorola Solutions, Inc."?
>
> | Continue | Quit |

Figure 3-8 *MPact Toolbox Installation Complete*

The application is installed on the iPad and ready for login.

3.3 Toolbox Login and Setup

Login to the MPact Toolbox application to automatically allow the server to download deployment information to the Toolbox. All data displayed in the ToolBox is fetched from the server, which includes settings for site maps, floor plans, and beacon related configurations.
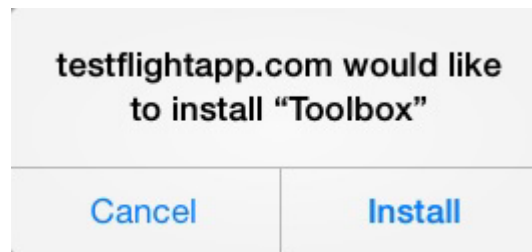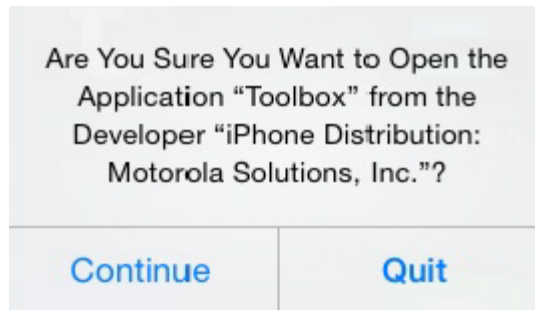
To login to the MPact Toolbox application:

1. From your iPad, select the Toolbox icon.

Figure 3-9 MPact Toolbox Icon

The first time logging on, the login screen displays prompting for a username, password and the server port for data transfers between MPact beacons and the administrative MPact Server.

Figure 3-10 MPact Client Toolbox - Login

2. Enter *superuser* as the default **Username** and *motorola* as the default **Password**.

If changing the default password, enter a 32 character maximum alphanumeric password consisting of ASCII characters with no spaces.

3. Provide the numeric server IP address and port designated for traffic for MPact beacons. This is a non IPv6 address.

The first time logging into the MPact Toolbox, the following are acceptable IP addresses for logging on to the server:

- http://IP/atls/atls/atls.html
- http://IP:80/atls/atls/atls.html
- https://IP/atls/atls/atls.html
- https://IP:443/atls/atls/atls.html

> **NOTE:** To enable the https connection, a certificate is required in the following directory: */var2/muxi/cert/nuxi.jks.* The *nuxi.jks* certificate file is provided for https connections. To use a company generated certificate, rename the certificate to *nuxi.jks* and put it in the directory.

4. Select the **Login** button. Select **Remember Me** to use the same credentials in subsequent logins.

Upon successful login, the toolbox home page displays. The first time you log onto the MPact Toolbox application, wait for the server to download toolbox data to the iPad, which takes about a minute. The indicator in the upper left corner of the screen displays the progress of the download.
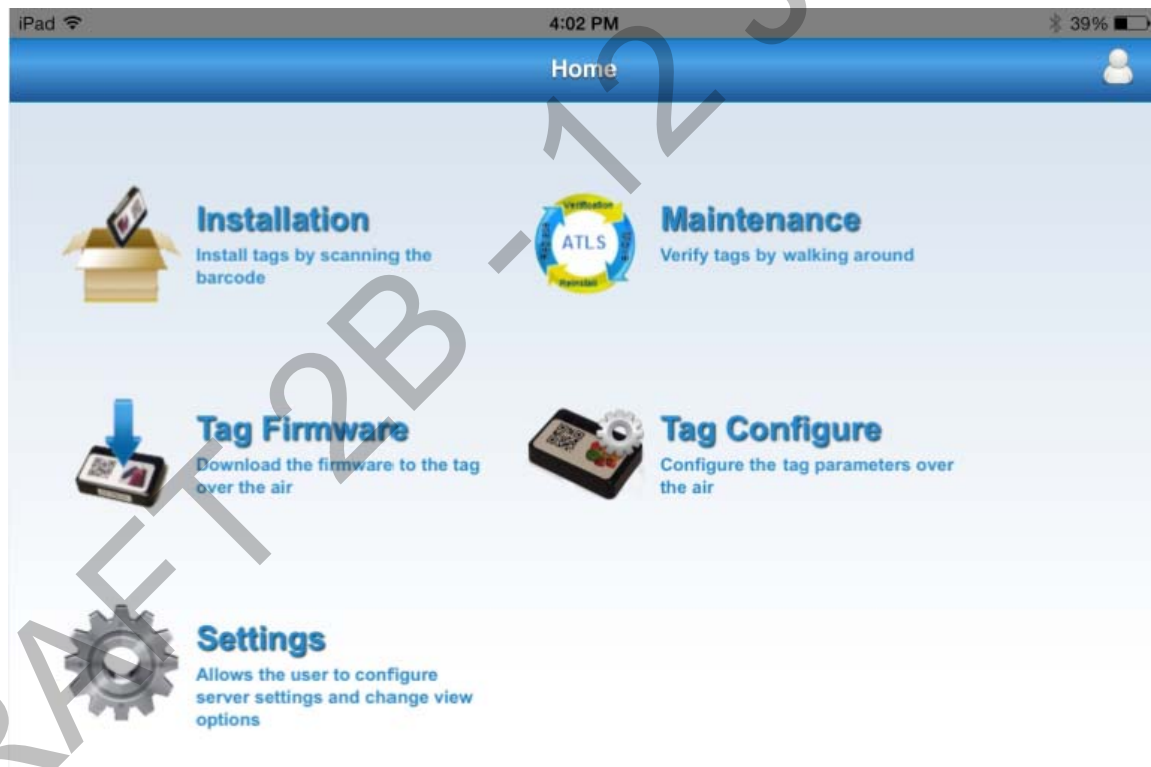
Figure 3-11 *MPact Toolbox Home Page - Beacon Installation*

The **Home** page displays beacon setup and maintenance activities:

Installation	Select the *Installation* icon to display a site map containing building and floor plan images. Individual floors can be administrated for specific beacon deployment activities.
Maintenance	Select the *Maintenance* option to validate the operation and functionality of existing beacon deployments.
Beacon Firmware	Select *Beacon Firmware* to launch a utility for upgrading beacon firmware.

Beacon Configure	Select *Beacon Configure* to wirelessly set the deployment settings for beacons.
Settings	Refer to the *Settings* option to administrate the connection settings between the handheld device and the MPact Server.

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CHAPTER 4 BEACON INSTALLATION AND ACTIVATION

The MPact Toolbox allows beacons to be installed and activated from the deployment site and allows the MPact Server to receive client device site data in real time.

For more information, refer to the following:

- *Beacon Installation*
- *Beacon Activation*

4.1 Beacon Installation

Use the iPad to scan the beacon's bar code and connect the beacon to the floor plan location in the MPact Toolbox.

To connect the beacon hardware to the MPact Toolbox application:

1. From the toolbox home page, select **Installation**.

   A global map displays the existing site locations.
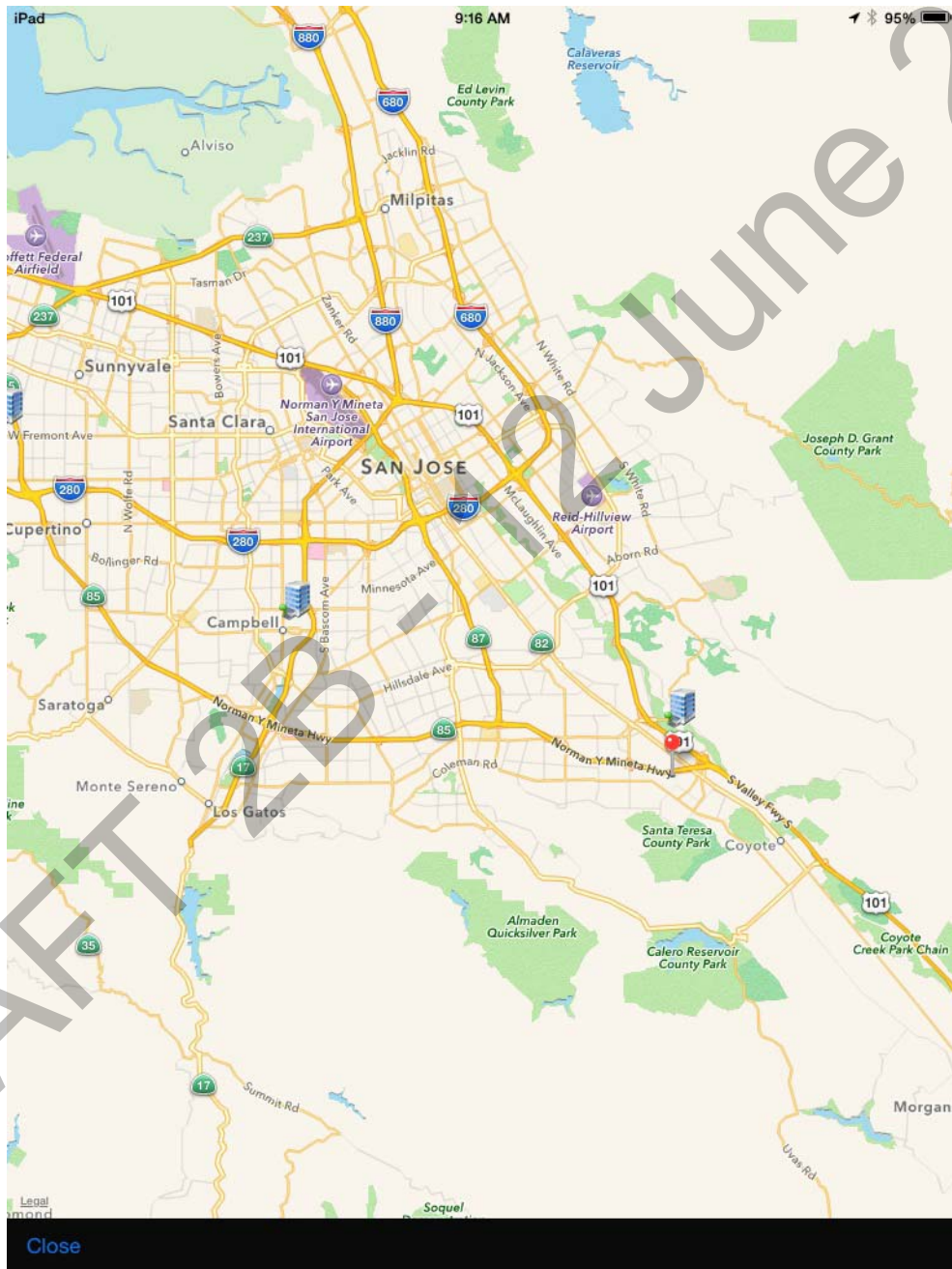
Figure 4-1 *MPact Toolbox - Deployment Site Map*

2. Use the **Close** button located in the lower left-had corner of the screen to close the map and display the **Site Hierarchy** screen.

The **Site Hierarchy** screen displays deployment sites downloaded from the MPact Server.

Figure 4-2 MPact Toolbox - Site Hierarchy

3. Select a site and drill down to the deployment floor plan where the beacons are being deployed.

4. Select the intended Place Holder for the beacon that is being deployed.

   The image below shows an empty circle on the floor plan with a red square, an intended Place Holder for a beacon.
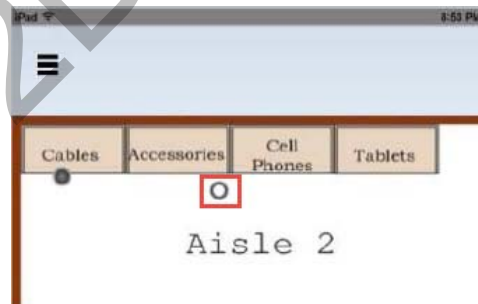
Figure 4-3 MPact Toolbox Home Page - Beacon Place Holder

5. With the MPact Toolbox set to scan mode, scan the bar code on the beacon housing by aiming the iPad camera within 3-4 inches of the beacon's bar code until a green square appears.

Figure 4-4 *MPact Toolbox Home Page - Beacon Place Holder*

A green square appears in the capture area and the decoded barcode displays as a numeric ID at the bottom of the page.

Figure 4-5 *Beacon Barcode Scanning*

6. When the installation popup displays, select **Scan Barcode**.
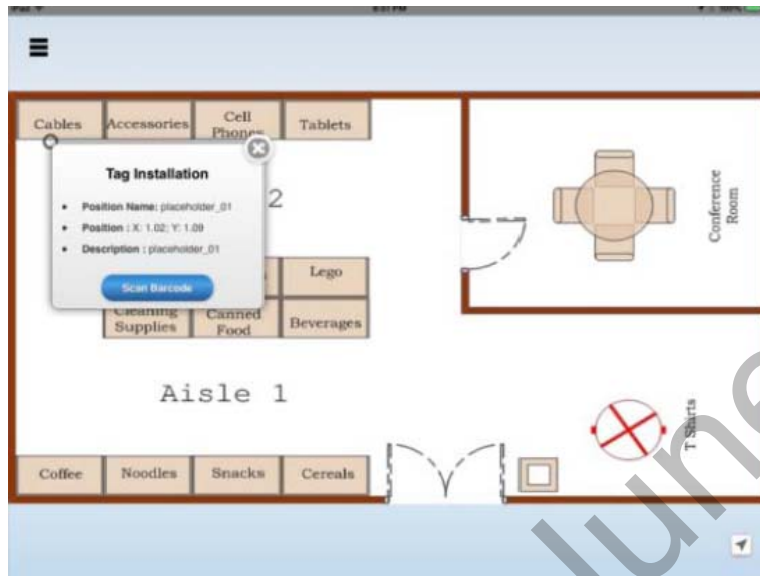
Figure 4-6 *MPact Toolbox - Scan Barcode*

| ✓ | **NOTE:** If the beacons have been pre-configured on the server with a specific ID, be sure to select the proper beacon with the correct ID that matches what is shown on the beacon installation popup display. |

7. Select **Done**, then select **Save**.

Within twenty seconds, the beacon connects to the toolbox. A successful installation results in the beacon being located in the intended place holder position and in an inactive state; the interior of the beacon is grey.

Figure 4-7 *MPact Toolbox - Successful Beacon Installation*

4.2 Beacon Activation

After the beacon is connected to the MPact Toolbox, the beacon must be activated. The beacon is activated by opening and closing the beacon's housing (hardware), where the battery is located. These actions allow the beacon to switch from transmitting mode to receiving m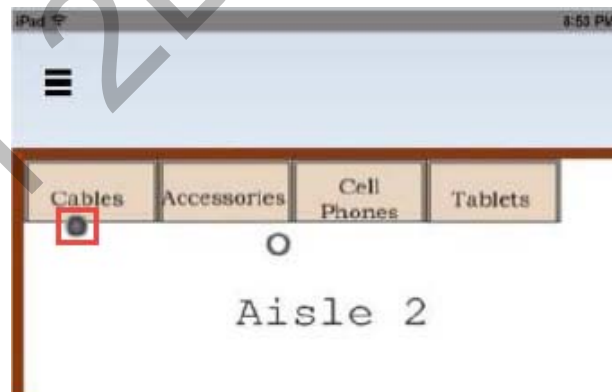ode, enabling the location and tracking of the client's device, and allowing offers to be received by the client's device.

To activate the beacon, pull the mylar strip off of the beacon housing, shown below, to the left of the housing.

Figure 4-8 *Beacon Activation*

When the beacon is in an active state, the beacon turns green with a blue dot, shown below. The blue dot indicates the direction of the beacon's signal, which should face toward the middle of the aisle.

Figure 4-9 *MPact Toolbox Home Page - Active Beacon*

8. Attach the beacon to the shelf or other similar hardware and move on to deploy the next beacon.

For more information on mounting beacon hardware to shelves and other surfaces, see *Appendix A, Beacon Hardware Installation*.

APPENDIX BEACON HARDWARE INSTALLATION

As a prerequisite to installing beacon hardware, the following setup processes must be complete:

- MPact Server installation and setup is complete
  For more information see, *MPact Server Installation and Setup on page 2-1*
- MPact Toolbox installation and setup is complete
  For more information see, *MPact Toolbox Installation and Setup on page 3-1*

For information on beacon power usage and scalability, see *Beacon Battery Life*

For instructions on installing beacon and bracket hardware models on deployment site floors, see the following:

- *Beacon Part Number: MPACT-T1B20-000-WR (Model # ATLS-T1B)*
- *Beacon Part Number: MPACT-T1B10-000-WR (Model # ATLS-T1B)*
- *Beacon Hardware Regulatory Information*

Lozier Shelves

The brackets can be used on the following styles of Lozier shelves:

- Lozier TL Shelf
- DL Shelf
- HL Shelf
- Standard Base Deck

A.1 Beacon Battery Life

For beacon battery life information, refer to the following table.

Advertising Interval	Broadcasting	Power	
	-30 dBm [low]	-4dBm	+4 dBm [high]
200 ms	160 days	140 days	104 days
500 ms [short]	40 days	35 days	26 days
600 ms	1.9 years	1 year	300 days
1000 ms	1.2 years	1.7 years	1.3 years
2000 ms [long]	3.3 years	3 years	2.3 years

A.2 Beacon Part Number: MPACT-T1B20-000-WR (Model # ATLS-T1B)

As a prerequisite, the following hardware items are required to mount the tie-wrap style beacon housing to a pole or similar structure:

- Beacon (tie-wrap style housing), part number - MPACT-T1B20-000-WR
- Plastic tie wraps for attaching each beacon housing to the shelf

Installing the Tie-Wrap Style Beacon

Tie-wrap beacon housings are designed to attach to vertical or horizontal poles or similar mounting surfaces.In the image below, there are openings located on the back of the beacon housing allowing a tie wrap to be inserted through the openings and wrapped around a pole or similar structure.

Notice there is an up arrow located on the middle of the beacon housing. This up arrow shows the orientation for the beacon to rest in order for the beacon to function properly. In addition to the beacon's up arrow orientation, the smooth front of the beacon should face out, so that the beacon's directional pattern faces out toward the aisle where the retail customer is located, not facing over the shelves.
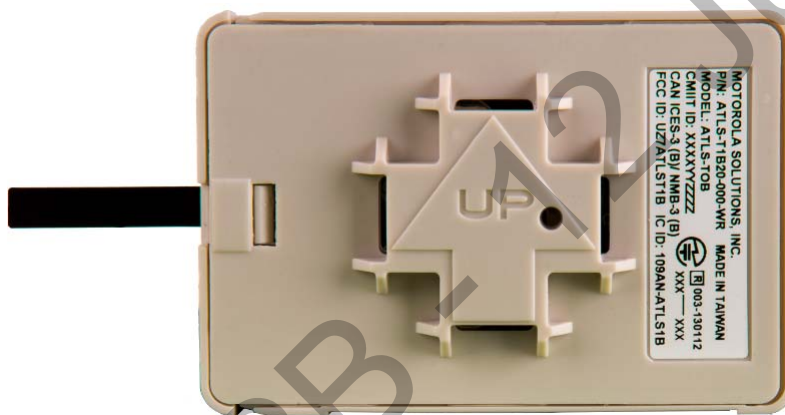

Figure A-1 *Tie Wrap Style Beacon - Part Number - MPACT-T1B20-000-WR*

To mount the tie wrap style beacon to a pole or similar structure:

1. Using a site floor plan, determine the exact Place Holder location on the site floor plan for the beacon.

   Physically mounting the beacon should be done in conjunction with the software process of associating the beacon with the place holder in the MPact Toolbox application. After the technician associates the beacon with the place holder, the beacon is physically affixed to a poll or similar structure on the site floor.

2. Mount the beacon to a pole or similar structure using the plastic tie wrap.

   When mounting the beacon, make sure the bar code label is face up toward the ceiling and the front of the beacon is facing outward toward the aisle where the retail customer is expected to dwell.

A.3 Beacon Part Number: MPACT-T1B10-000-WR (Model # ATLS-T1B)

As a prerequisite, the following hardware items are required to a Lozier style shelving unit:

- Lozier style shelving units are in place
- Beacon: Part number - MPACT-T1B10-000-WR
- Bracket mount, one of the following:
  - MPACT Metal Lozier Bracket: Part number MPACT-A1O10-004-WR
  - MPACT Plastic Lozier Bracket: Part number MPACT-A1O10-001-WR
- Phillips head screw driver for mounting the bracket (metal brackets only) to the Lozier shelf

Installing the Universal Style Beacon

The image below shows a *universal* style beacon housing. While there is no up arrow on this beacon's housing, the beacon is oriented similar to the tie wrap style of beacon housing (see).

Figure A-2 *Tie Wrap Style Beacon - MPACT-T1B10-000-WR*

The beacon and bracket are mounted on the shelf so the beacon is up and facing out toward the aisle so the signal emitted by the beacon can be picked up by the retail customer's phone application. The bracket mounts directly onto the retail shelf. There are two styles of bracket mounts from which to choose, one is metal and one is plastic.
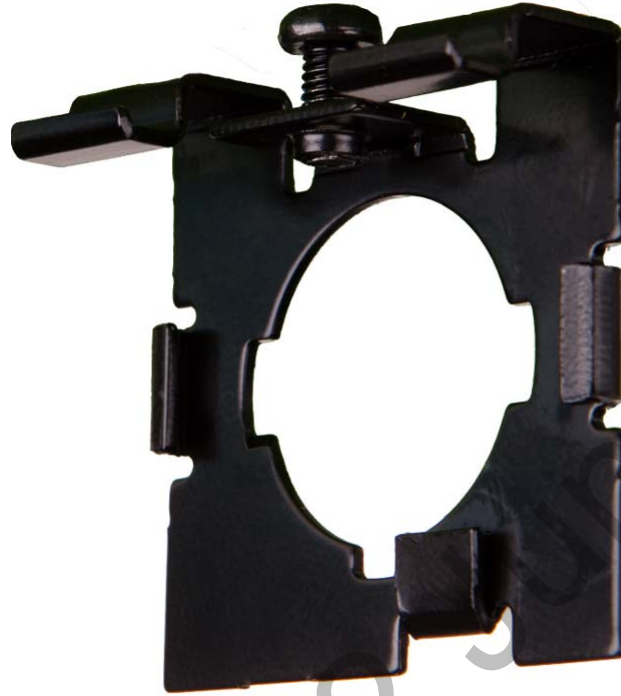
Figure A-3 *Universal Style Metal Bracket - Part Number MPACT-A1010-004-WR*
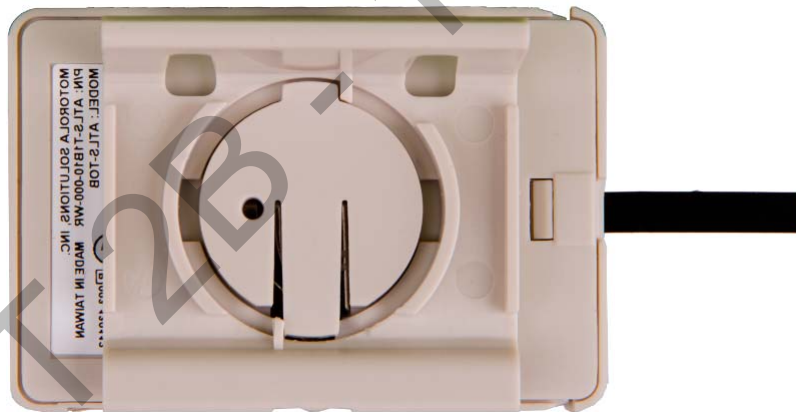

Figure A-4 *Universal Style Plastic Bracket with Beacon- Bracket Part Number MPACT-A1010-001-WR*

To mount the universal style beacon to a Lozier shelf:

1. From the MPact Toolbox, select a site floor plan and beacon *Place Holder* location for the beacon installation.

2. Mount the universal beacon shelf-bracket on the shelf:

    • Metal brackets: Fit in place and tighten onto the shelving unit using a phillips-head screw driver.

    • Plastic brackets: Fit in place and snap onto the shelving unit.

3. Fit the beacon's universal style housing into the bracket and turn the beacon housing clockwise 90 degrees.

The bar code label should face up toward the ceiling and the smooth front of the beacon should face out toward the aisle where the retail customer is expected to dwell.

A.4 Beacon Hardware Regulatory Information

This device is approved under Motorola Solutions, Inc. This regulatory information applies to the following Model Numbers: ATLS-T1B.

All Motorola devices are designed to be compliant with rules and regulations in locations they are sold and will be labeled as required.

Local language translations are available at the following web site:

http://portal.motorolasolutions.com/Support/US-EN

Any changes or modifications to Motorola equipment, not expressly approved by Motorola, could void the user's authority to operate the equipment.

Wireless Device Country Approvals

Regulatory markings, subject to certification, are applied to the device signifying the radio(s) is/are approved for use in the following countries: United States, Canada, Japan, China, Australia, and Europe.

Please refer to the Declaration of Conformity (DoC) for details of other country markings. This is available at http://www.motorolasolutions.com/doc.

Note: Europe includes Austria, Belgium, Bulgaria, Czech Republic, Cyprus, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovak Republic, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

Figure A-5 *Operation of the device without regulatory approval is illegal.*

Bluetooth Wireless® Technology

This is an approved Bluetooth® product. For more information or to view *End Product Listing*, please visit *https://www.bluetooth.org/tpg/listings.cfm*.

Please observe all warning notices with regard to the usage of wireless devices.

Figure A-6 *Warnings for use of Wireless Devices*

Potentially Hazardous Atmospheres: Vehicles Use

You are reminded of the need to observe restrictions on the use of radio devices in fuel depots, chemical plants etc. and areas where the air contains chemicals or particles (such as grain, dust, or metal powders) and any other area where you would normally be advised to **turn off your vehicle engine**.

Potentially Hazardous Atmospheres: Fixed Installations

You are reminded of the need to observe restrictions on the use of radio devices in fuel depots, chemical plants etc. and areas where the air contains chemicals or particles (such as grain, dust, or metal powders).

Safety in Aircraft

Switch off your wireless device whenever you are instructed to do so by airport or airline staff. If your device offers a *flight mode* or similar feature, consult airline staff as to its use in flight.

Safety Information

Figure A-7 *RF Exposure Guidelines*

Reducing RF Exposure - Use Properly

Only operate the device in accordance with the instructions supplied.

International

The device complies with internationally recognized standards covering human exposure to electromagnetic fields from radio devices. For information on "International" human exposure to electromagnet fields refer to the Motorola Declaration of Conformity (DoC) at *http://www.motorolasolutions.com/doc*.

For further information on the safety of RF energy from wireless devices, see *http://responsibility.motorolasolutions.com/index.php/downloads/*

This is located under *Wireless Communications and Health*.

Radio Frequency Interference Requirements (FCC)

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 into an outlet on a circuit different from that to which the receiver is connected

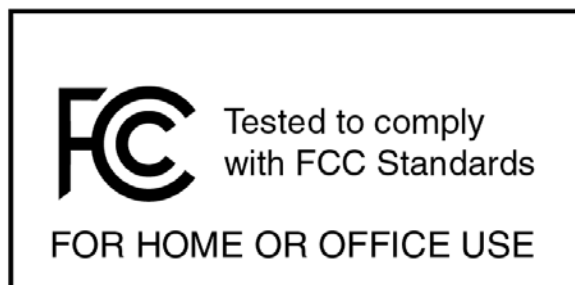• Consult the dealer or an experienced radio/TV technician for help

Figure A-8 *Label for FCC Standards*

Radio Transmitters (Part 15)

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Radio Frequency Interference Requirements: Canada

This device is in compliance with the NRC for Industry Canada applicable to license-exempt radios. Use is allowed with the following two conditions: (1) the device must not produce interference, and (2) the device must accept any interference to the radio, even if the interference is likely to compromise operation.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Ⅽⅇ Marketing and European Economic Area (EEA)

Bluetooth® Wireless Technology for use through the EEA has the following restriction of a maximum radiated transmit power of 100mW EIRP in the frequency range 2.400 -2.4835 GHz.

European Union Statement of Compliance

Motorola hereby declares that this device is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC and 2011/65/EU. A Declaration of Conformity may be obtained from http://www.motorolasolutions.com/doc.

Japan: Voluntary Control Council for Interference (VCCI)

この装置は、クラスB情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。
取扱説明書に従って正しい取り扱いをして下さい。　　VCCI－B

Figure A-9 *Japan VCCI*

China

合 格 证

Figure A-10 *China*

China RoHS						
Product Name	**Toxic and Hazardous Substances or Elements**					
Component with toxic and hazardous substances	**Pb (Lead)**	**Hg (Mercury)**	**Cd (Cadmium)**	**Cr(VI) (Hexavalent Chrome)**	**PBB (Polybrominated biphenyl)**	**PBDE (Polybrominated diphenyl ether)**
MPACT-T1B10-000-WR	X	O	O	O	O	O
MPACT-T1B20-000-WR	X	O	O	O	O	O
MPACT-A1O10-001-WR	O	O	O	O	O	O
MPACT-A1O10-004-WR	O	O	O	O	O	O
O: Indicates that the content of the toxic and hazardous substance in all the homogenous materials of the part is below the limit requirement for RoHS compliance.						
X: Indicates that the content of the toxic and hazardous substance in at least one homogeneous material of the part exceeds the concentration limit requirement for RoHS compliance.						

Figure A-11 *China RoHS*

Customer Support Web Site

If you have a problem with your equipment, contact Enterprise Mobility support for your region. Support and issue resolution is provided for products under warranty or that are covered by an Enterprise Mobility Services agreement. For information and online assistance including developer tools, software downloads, product manuals, support contact information and online repair requests. Contact information and web self-service is available by visiting *http://portal.motorolasolutions.com/Support/US-EN*.

When contacting Customer Support, please provide the following information:

- MAC ID of the product shown on the side of the product next to the barcode
- Model number or product name shown on the label on the back of the product

Beacon Mounts and Installation

For mounting and installation information see the guide, Motorola Solutions MPact Location and Analytics Deployment Guide on the web site: *http://portal.motorolasolutions.com/Support/US-EN*.

Batteries

Important: Replace batteries with cell type CR2450. Only trained service personnel should replace battery cells.

Dispose of batteries in accordance with local governmental regulations. For information on how to remove and reinsert a battery, see the guide, Motorola Solutions MPact Location and Analytics Deployment Guide on the web site, *http://portal.motorolasolutions.com/Support/US-EN*.

Other Licenses

The following indicates that this product is licensed to operate according to Apple's iBeacon specifications.

Figure A-12 *iBeacon Logo*

APPENDIX CUSTOMER SUPPORT

Motorola's Enterprise Mobility Support Center

If you have a problem with your equipment, contact Enterprise Mobility support for your region. Support and issue resolution is provided for products under warranty or that are covered by an Enterprise Mobility Services agreement. Contact information and Web self-service is available by visiting *http://portal.motorolasolutions.com/Support/US-EN*.

When contacting Enterprise Mobility support, please provide the following information:

- *MAC ID of the unit*
- *Model number or product name*
- *Software type and version number*

Motorola Solutions responds to calls by email or telephone within the time limits set forth in support agreements. If you purchased your Enterprise Mobility business product from a Motorola business partner, contact that business partner for support.

Customer Support Web Site

Motorola's Support Central Web site, located at *http://portal.motorolasolutions.com/Support/US-EN* provides information and online assistance including developer tools, software downloads, product manuals, support contact information and online repair requests.

Manuals

To see manuals, go to: *http://portal.motorolasolutions.com/Support/US-EN*

MOTOROLA

BETA

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