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Appendix A Customer Support
ABOUT

This chapter is organized into the following sections:

- Using the Documentation
- Zebra Technologies Corporation (“Zebra”) End-User Software 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:

Document Conventions

The following conventions are used in this manual to draw 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.

Revision History

This guide has the following release and revision milestone history:

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<td>August, 2014</td>
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**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**

MPact Location and Analytics documentation includes the following:

- *MPact Location & Analytics Deployment Guide*
- *MPact Location & Analytics Server Reference Guide*
- *MPact Location & Analytics Android Toolbox User Guide*
- *MPact Location & Analytics iOS Toolbox User Guide*
- *MPact Location & Analytics Client Software Development Kit*
- *MPact Location & Analytics Server API Reference Guide*
- *MPact Location & Analytics Hardware Installation Guide*
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**Obtaining Software Licenses**

To obtain software licenses for *MPact Location & Analytics Server, Toolbox or Client Software Development Kit*, provide the following information:

- Identification
- Email address
- Payment
CHAPTER 1
OVERVIEW

MPact is the only indoor locationing platform to unify Wi-Fi and Bluetooth® Smart Technology to capture more analytics, accuracy and insight. Learn which aisles and products customers prefer, their shopping history, and what influences their buying decisions. MPact offers shoppers store maps, prompts associates to assist customers who linger in areas, and communicates loyalty points and promotions.

MPact provides major advantages to facilitate mobile marketing to deliver the best possible service for the customers and at the same time maximize income potential for the enterprise be it a hotel chain or a retail establishment.

- **Unequaled Value** - MPact helps locate customers inside facilities and deliver personalized service at low costs.
- **Unification of WiFi and Bluetooth® Smart Locationing** - MPact is the only platform offering a single system with end-to-end locationing visibility and analytics that unifies both WiFi and Bluetooth Smart technologies.
- **Easy Deployment** - MPact platform deployment enables administrators to deploy, access and act on locationing analytics in the same day.
- **Comprehensive Locationing Services** - MPact offers three different levels of locationing services based on presence, zone and aisle level positions.
- **Support for Public and Private Cloud** - MPact provides deployment flexibility allowing hosting of the server either on the cloud or on premises.
- **High Availability (HA)** - MPact supports High-availability clusters (also known as HA clusters or failover clusters).

Use the following to plan deployment activities:

1. **Installing MPact Server with MPact Launchpad**: Installing the Server and logging in for the first time.
2. **Upgrading MPact Server Using the Command Line (CLI)**: Upgrading the Server from previous MPact versions.
3. **High Availability Deployments**: Planning and configuring MPact HA deployments.
4. **Tree Setup**: Building the tree hierarchy, including mapped site locations and floor plans.
5. **Category Creation**: Creating product family category information, and applying significance to locationing, customer traffic and engagement time data.
7. **System Configuration**: Configuring beacons and assigning network proxy settings.
8. **MPact Toolbox System Considerations**: Installing the Toolbox on iPad or Android devices.
9. **MPact Toolbox and Beacon Installation**: Installing beacons and associating them with beacon positions on the Toolbox.

Please refer to the following guides for more information:
1.1 MPact Architecture

The MPact architecture is comprised of the following:

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

![MPact Components](image)

**Figure 1-1 MPact Components**

**NOTE:** The MPact Client SDK runs on iPhone (iOS 7 or later) and Android phones (Android 4.3 or later).

### 1.1.1 MPact Beacons

MPact Bluetooth® Smart beacons operate in Battery Save, SecureCast, iBeacon™ and MPact modes. Beacons enable the next level of customer engagement. They provide real-time location triggers and notifications, prompting shoppers to access privileges offered by the retailer.
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 on a site’s floor plan to assess the beacon’s remaining battery life.

1.1.2 MPact Server

MPact Server provides an interface to install and maintain MPact beacons throughout a deployment site. The Server software uses an analytics infrastructure and locationing API.

MPact Server receives beacon data from client devices moving about a retail environment. The beacon identifier is compared to other beacon identifiers mapped to a specific location (accomplished using the MPact management UI). When a match occurs, MPact Server can either place the mobile client within a store or place the mobile client in close proximity to specific products. The mobile client’s location, the beacon’s proximity to specific products, and the beacon’s remaining battery life are all stored on MPact Server’s local database for retrieval and analysis.

MPact Server manages the MPact infrastructure and administrative framework. The MPact Server UI configures site floor plans required for placing beacons and locationing, manages beacon association with specific products, supports installing and maintaining beacons and provides the visualization and analytics needed for both mobile clients and beacons.

1.1.2.1 MPact High Availability

MPact supports High Availability (HA). The MPact Server requires three nodes for HA: Active, Standby and Quorum. Out of the three nodes, at least two must be running. Data is replicated among the three nodes for reliability. A redirector (software redirector runs on a separate fourth node or a hardware redirector) must be configured to handle HTTP requests. The redirector is configured to prefer the Active node and fallback to the Standby node when the Active node is down.

1.1.3 MPact Toolbox

The MPact Toolbox is an iPad and Android 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. An administrator can add, modify or delete beacons and beacon positions on a site’s floor plan on the toolbox. Beacon updates are pushed to the MPact Server. For more information on the toolbox, refer to the MPact Location & Analytics Toolbox User Guides available from www.zebra.com/support.

1.1.4 MPact Client SDK

The MPact Client SDK is available in both iOS and Android versions. The client SDK integrates directly into applications and enables them to listen for Bluetooth® Smart transmissions. Upon receiving beacon transmissions, 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 MPact Server is secured with SSL.
CHAPTER 2 MPACT SERVER INSTALLATION AND SETUP

Install and configure the MPact Server from tree hierarchies down to the site’s floor plan, where beacon positions secure a beacon’s physical location. Configure beacon positions to include product information in customer notifications about special promotional offers. The MPact Server provides configuration information to the Toolbox application at the time of deployment, and later, for system reporting.

For more information, refer to the following:

- System Hardware and Software Requirements
- Installing and Upgrading MPact Server
  - High Availability Deployments
  - MPact Launchpad
    - Installing MPact Launchpad
    - Uninstalling MPact Launchpad
  - Installing MPact Server with MPact Launchpad
  - Installing MPact Server Using the Command Line (CLI)
  - Upgrading MPact Server Using the Command Line (CLI)
- Tree Setup
- Category Creation
- Understanding Region Notifications
- Position Setup and Configuration
- System Configuration
2.1 System Hardware and Software Requirements

This section lists the minimum hardware and software requirements to install and run MPact Server.

2.1.1 Browser Support

MPact Server requires the following browser support:
- Internet Explorer version 11 or above
- Google Chrome version 30 or above
- Mozilla Firefox version 26 or above

2.1.2 MPact Launchpad Software Requirements

MPact Launchpad requires the following software and browser support:
- Microsoft Windows 7, 32bit/64bit or above
- Internet Explorer version 11 or above
- Google Chrome version 30 or above
- Mozilla Firefox version 26 or above

2.1.3 Server Hardware Minimum Requirements

MPact Server is a Linux-based system. As a prerequisite to installing MPact Server, ensure the server has the following capacity:
- 4 Cores
- 8 GB RAM
- 200 GB Disk space
- Operating Systems (OS): Debian 7.6 (Use Console Mode in Debian, not GUI mode), Red Hat 6.6
  - Python 2.7.3 required for Red Hat and Debian
  - Computer display resolution minimum is 1024 x 768 pixels

2.1.4 Server Hardware Requirements for Medium Deployments

- 8 Cores
- 16 GB RAM
- 250 GB Disk space
- Operating Systems (OS): Debian 7.6 (Use Console Mode in Debian, not GUI mode), Red Hat 6.6
  - Python 2.7.3 required for Red Hat and Debian
  - Computer display resolution minimum is 1024 x 768 pixels

2.1.5 Server Hardware Requirements for Larger Deployments

- 12 Cores
- 36 GB RAM
- 1 TB Disk space
• Operating Systems (OS): Debian 7.6 (Use Console Mode in Debian, not GUI mode), Red Hat 6.6
• Python 2.7.3 required for Red Hat and Debian
• Computer display resolution minimum is 1024 x 768 pixels

2.1.6 Software License File

An MPact Server license file is required before the Server is fully functional. Before the IT Customer Care team distributes the MPact Server software license file, the user’s administrator must provide the Server Unique ID for the application after it has been uploaded to the MPact Server. For more information, see Software License File Upload.

2.2 Installing and Upgrading MPact Server

MPact provides the following options for installing and upgrading the MPact Server:

• High Availability Deployments
• Installing MPact Server with MPact Launchpad
• Installing MPact Server Using the Command Line (CLI)
• Upgrading MPact Server Using the Command Line (CLI)
• HA Deployment Steps Using CLI

2.2.1 High Availability Deployments

MPact supports High Availability (HA or failover clusters). The MPact Server requires three nodes for HA to function: Active, Standby and Quorum. Of the three nodes, at least two must be running for the cluster to function. Data is replicated among the three nodes for reliability. A redirector (software redirector runs on a separate fourth node or a hardware redirector) must be configured to support http requests. The redirector is configured to prefer the Active node and fallback to the Standby node when the Active node is down.
2.2.2 High Availability Prerequisites

- MPact Server on a single node system with an accessible UI (Active node) and
  Two additional nodes configured the same as the Active node (Standby, Quorum). All three servers should be the same capacity.
- One redirector node (For more information see: [http://nginx.org](http://nginx.org))
- Debian 7.6 (or higher) or Red Hat 6.6 (or higher) installed on VMs or Local server (Required for MPact Server installation)
- Python 2.7.x (ex. 2.7.3)
- Static IP configured on all nodes
- Each node must have a unique hostname
- All nodes must have an entry that includes IP and Hostname of ever other node in the HA cluster in their etc/hosts file
- All nodes must be synchronized (an external NTP Server is recommended)
- Include each HA port and NTP port 123 in security firewall rules (if applicable)
• Configured HA node property files (sample files are located in `usr/nuxi/scripts/bin/samples`)

**NOTE:** Configured HA node property files must only be manually setup if installing a HA deployment using the CLI.

### 2.3 MPact Launchpad

MPact Launchpad is for deploying and managing MPact Server nodes. Use Launchpad to install single or multiple MPact Server nodes using the same server image. Upload, install, and delete MPact images, as well as add, delete, start and stop MPact server nodes, and monitor the status of an MPact Server node while receiving important system notifications.

**NOTE:** Download the MPact Launchpad setup file from: [www.zebra.com/support](http://www.zebra.com/support). MPact Launchpad requires administrator privilege to install and run. Zebra recommends maintaining at least 20 GB free on the server to store logs and snapshots. Zebra recommends uninstalling the previous version of Launchpad before installing the newest version. Use MPact Launchpad to install the MPact Server for the first time. To upgrade from a previous version of the MPact Server see Edit or Upgrade Single or Distributed Node.

#### 2.3.1 Installing MPact Launchpad

To install MPact Launchpad:

1. Double-click the MPact Launchpad `setup.exe` file.
   
   A security warning may display depending on the security settings. If a security warning displays, select **Run** to continue the installation. The MPact Launchpad Setup Wizard automatically starts.

2. Select **Next**.

![Setup- MPact Launchpad 2.0 Screen](image)
The MPact Launchpad Setup Wizard displays.

3. Select Next. The Select Destination screen displays. Choose the default destination directory or another directory.

4. Select Next.
   The Select Start Menu Folder screen displays.
5. Select Next.
The MPact Launchpad Setup Wizard screen displays.


Figure 2-5  Setup - MPact Launchpad - Select Start Menu

Figure 2-6  Setup - MPact Launchpad - Setup Wizard
2.3.2 Uninstalling MPact Launchpad

To uninstall MPact Launchpad:

1. Select Start > All Programs > MPact Launchpad > MPact Launchpad Uninstaller. If a security warning displays, click Run to continue the installation. The MPact Launchpad Uninstall Wizard automatically starts.
2. Select Next.

![MPact Launchpad Uninstall Wizard](image)

*Figure 2-7 Setup- MPact Launchpad - Uninstall Wizard*

*Figure 2-8*  Setup- MPact Launchpad - Finished Uninstalling
2.4 Installing MPact Server with MPact Launchpad

Installing the MPact Server on Amazon Web Services (AWS) as an Amazon instance or on local servers is the same. Ensure the following before installing MPact Server:

- MPact Launchpad is installed on a system used to deploy and manage MPact Servers
- An instance of Debian 7.6 or Red Hat 6.6 is created on AWS or a local server
- Python 2.7.3 must be installed on the VM or local server running Debian or Red Hat

Refer to System Hardware and Software Requirements for hardware requirements for deploying the OVA:

An Open Virtual Appliance (OVA) is recommended as an option to simplify installing the Debian server. Download the OVA from: www.zebra.com/support.

The hardware requirements for deploying the OVA include:

<table>
<thead>
<tr>
<th>Type</th>
<th>Small</th>
<th>Medium (recommended)</th>
<th>Large</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>RAM (configurable)</td>
<td>8G</td>
<td>16GB</td>
<td>35GB</td>
<td>Reduce to 8G if you do not have a VMware license.</td>
</tr>
<tr>
<td>Cores</td>
<td>4</td>
<td>8</td>
<td>12 (matches NX9510)</td>
<td></td>
</tr>
<tr>
<td>HD</td>
<td>200GB</td>
<td>250GB</td>
<td>1 TB</td>
<td>(Modifying the size of the HD is not recommended)</td>
</tr>
</tbody>
</table>

Run the OVA on ESXi 5.1 platform or above.

NOTE: The OVA only provides the Linux Debian 7.6 Server version. The OVA includes the latest Debian security patch. Administrator privileges are required to setup network and NTP on the OVA. Although MPact supports Red Hat 6.6, the OVA does not provide the Red Hat distribution. The OVA does not provide the MPact Server software image.
2.4.1 Installing MPact Server

To install the MPact Server:

1. Download the MPact Server image (MPact.tar.gz) from: www.zebra.com/support.
2. Start MPact Launchpad:
   
   Select Start > All Programs > MPact Launchpad > MPact Client Portal.
   
   The MPact Launchpad Web UI displays.

**NOTE:** The MPact Launchpad Web UI displays a series of pop-up screens presenting a tour of the UI when first installed. Select Next, Skip or Back as navigation preferences. Select the light bulb icon to view the tour after intial installation.

![Figure 2-9 Setup- MPact Launchpad Welcome Screen](image-url)
2.4.2 ADD Server (Node)

To add an MPact Server node:

1. Select ADD.

![Figure 2-10 Setup- MPact Launchpad ADD Server (Node)](image)

The ADD Server screen displays.

2. Enter the following information in the fields:

   - External IP/Host Name
   - Host IP Address
   - Cluster Name (Auto Generated)
   - Auth Type:
     - Password:
       - Username
       - Password
     - Private Key:
       - Username
       - Private Key
       - Pass Phrase

**NOTE:** Choose either Password or Private Key file (.ppk or .pem) as the Auth type depending on the network's specific security requirements.
3. Select **Save Node**.

A new server node entry is created in the **Host Name** row.
2.4.3 Delete Server (Node)

To delete a MPact Server node:

1. Select the target MPact node in the **External IP/Host Name** row.
2. Select **Delete**.
   
   A dialog displays prompting whether to delete the server.
3. Select **Yes**.

**Figure 2-13** MPact Centralized Manager - Delete Server

**NOTE:** The Delete Server functionality only deletes an MPact Server instance from Launchpad. It does not actually delete it from the VM where it is deployed. Add it back on Launchpad as the need arises.
2.5 Upload MPact Image

To upload an MPact Server image:

1. Select the **UPLOAD** button. The **Available Images** pane displays: “Click here to upload an Image.”
   A dialog box prompts to select an MPact Server image.

2. Select **Open**.
   A dialog displays to upload the selected image file.

3. Select **Yes**.
   MPact Launchpad displays the uploading MPact Server image in the right column.
NOTE: Once the MPact image is uploaded, the progress arrow will disappear.
2.6 Cluster Setup

Use Launchpad to create single node (cluster of one) and distributed node (High Availability) clusters.

2.6.1 Single Node Cluster Setup

To create a single node cluster:

1. Select **Cluster Setup**. A dialog displays prompting to select a node option.
2. Check Single Node option.
3. Select the drop-down menu under Single Node, and choose an IP address.
4. Select the drop-down menu under MPact Image, and choose the appropriate MPact image.
5. Select **Setup & Upgrade**. This starts the installation and configuration of a Single Node on the selected VM.

![MPact Launchpad - Single Node Cluster Setup](image-url)

**NOTE:** If you have not uploaded an MPact Server image already, you can upload an image from **Cluster Setup** dialog box. To view the progress of the installation, select the **Cluster** drop-down menu and choose the appropriate cluster.

**NOTE:** MPact Server image cannot be installed on new Debian or Redhat servers as **Single Node** as non-root user.
2.6.2 **Distributed Node Setup (HA)**

To create a Distributed node:

1. Select **Cluster Setup**.
   A dialog displays prompting to select a node option.
2. Check the Distributed node option.
3. Select the drop-down menu next to **Active**, and choose an IP address.
4. Select the drop-down menu next to **Standby**, and choose an IP address.
5. Select the drop-down menu next to **Quorum**, and choose an IP address.
6. Select the drop-down menu under MPact Image, and choose the appropriate MPact image or select the upload button to upload an MPact image.
7. Select **Save**.

This starts the installation and configuration of a Distributed Node on the selected VMs.

**NOTE:** To setup a Distributed node, add three (servers) un-configured clusters.

**NOTE:** To see the progress of the installation, select the **Cluster** drop-down menu and choose the appropriate cluster.

*Figure 2-17 MPact Launchpad - Distributed Node Setup*
8. Select the **Cluster** drop-down menu and choose a specific Distributed Node to review progress.

**NOTE:** Once the Distributed node (Cluster) is up and running (after verifying by logging-in to the MPact UI) Zebra recommends that Autostart is set to Enabled.

### 2.6.3 Edit or Upgrade Single or Distributed Node

To edit or upgrade a Single or Distributed node:

**NOTE:** To setup a Distributed node, add three (servers) unconfigured clusters.

1. Select the **Pencil** icon.
   
   A dialog displays prompting you to edit or upgrade a cluster. See “MPact Launchpad - Distributed Node Setup” on page 2-18.

2. Check the Single or Distributed node check box (optional).

3. Select the drop-down menu next to **Active** and choose an IP address (optional).

4. Select the drop-down menu next to **Standby** and choose an IP address (optional).

5. Select the drop-down menu next to **Quorum** and choose an IP address (optional).

6. Select the drop-down menu under **MPact Image** and choose the appropriate MPact image or select the upload button to upload an MPact image (optional).

7. Select **Save**.
   
   This starts the installation, upgrade and configuration process of a Single Node, or Distribute Node, on the selected VMs.

**NOTE:** To review the progress of the installation, select the **Cluster** drop-down menu and choose the appropriate cluster. MPact Server passwords cannot be edited within Launchpad. Administrators must remove the Server and add it with new password.
2.7 MPact Server Status

Use MPact Launchpad to assess important MPact Server status.

To check the status of an MPact Server:

1. Select the Status icon of the External IP/Host Name you want to check.

   MPact Launchpad displays a status pop-up showing the Server status.

   The following processes should display “running” next to them:

   - Namenode
   - Datanode
   - Zookeeper
   - RegionServer
   - Tomcat

   **NOTE:** It can take 5-10 minutes when the MPact Server is first started for server status to display. MPact Launchpad depends on the MPact Web service (Tomcat) to report status, and Tomcat service is started last.
2.7.1 Starting Single or Distributed Node

To start a Single or Distributed Node:

1. Select the Single Node or Distributed Node in the External IP/Host Name row that you want to start.
2. Select Start.

MPact Launchpad displays a status bar indicating the progress.

**NOTE:** It can take 5-10 minutes when the MPact Server is first started, for server status to display. MPact Launchpad depends on the MPact Web service (Tomcat) to report status, and Tomcat service is started last. After starting the MPact server, select the link next to Start to load the MPact Server Web UI.

![MPact Launchpad - Start Server (node) or Cluster](image)

**Figure 2-19** MPact Launchpad - Start Server (node) or Cluster

**NOTE:** Starting a Single Node or Distributed Node is the same process. A Distributed Node has three servers. Each server is started at the same time by choosing the cluster name in the Cluster drop-down menu.

2.7.2 Stopping Single or Distributed Node

To stop a Single or Distributed Node:

1. Select the Single Node or Distributed Node in the External IP/Host Name row.
2. Select Stop.

MPact Launchpad displays a status bar indicating the progress.
Figure 2-20  MPact Launchpad - Start Server (node) or Cluster

**NOTE:** Stopping a Single Node or Cluster is the same process. A Distributed Node has three servers and each server is stopped at the same time by choosing the cluster name in the **Cluster** drop-down menu.
2.8 Launchpad System Information Toolbar

Launchpad includes the following tools for managing single and distributed nodes (HA):

- **Notifications** - provides critical system and even notifications
- **Tour** - provides a brief tour of Launchpad tasks and capabilities
- **Help** - provides help about the current UI page

2.8.1 Notifications

To view LaunchPad Notifications:

1. Select the bell icon in the upper right corner of the Launchpad UI.

   MPact Launchpad displays notifications about current Launchpad activities.

![Figure 2-21 MPact Launchpad - Notifications Launchpad System Information Toolbar](image)

2.8.2 Tour

To view a LaunchPad Tour:

1. Select the light bulb icon in the upper right corner of the Launchpad UI.

   MPact Launchpad displays a tour of the Launchpad UI.

   **NOTE:** The **MPact Launchpad Web UI** displays a series of pop-up screens presenting a tour of the UI when first installed. Select the **Next** button on each pop-up to view the tour, select **Skip** to skip the tour or **Back** to view previous pop-up. Select the light bulb icon to view the tour after installation.
2.8.3 Help

To view LaunchPad Help:

1. Select the question mark icon in the upper right corner of the Launchpad UI.

MPact Launchpad displays HTML help information about the currently displayed UI.
2.9 Logs

Launchpad collects system log files you can download your local system. These logs contains events logged by the VM where MPact resides. The log files contain information about device changes, device drivers, system changes, and events.

To start and download logs:

1. Select a node or HA Cluster from the Cluster drop-down menu.
2. Select Start Logs.
3. Select Start to start compiling log information.
4. Select the down arrow icon near the right column of the Launchpad UI.

NOTE: By default the logs are downloaded to the “Downloads” folder.
2.10 Snapshots

Take a snapshot to back up user created static or planning data. If data is lost for any reason, it can be restored to its original state.

To take and download a snapshot:
1. Select a node or HA Cluster from the **Cluster** drop-down menu.
2. Select **Start Snapshot**. Launchpad begins the Snapshot process.
3. Select **Download Snapshot** as displayed in **Figure 2-24**.

**NOTE:** By default, the snapshots are downloaded to the “Downloads” folder. Use the following command from the CLI to restore a snapshot of static or planning data:
```
./nxstats restore -fromFile=/tmp/Dsqs_<HOSTIP>_<Date>.tar.gz
```

**Figure 2-24** MPact Launchpad - Snapshot
2.11 Installing MPact Server Using the Command Line (CLI)

Installing MPact Server on Amazon Web Services (AWS) or a local server is the same process.

Complete the following to install an MPact Server using the CLI:

NOTE: To upgrade from a legacy version of MPact Server, see Upgrading MPact Server Using the Command Line (CLI).

Validate the following prerequisites before installing MPact Server:
- MPact Launchpad is installed on a system used to deploy and manage MPact Servers
- An instance of Debian 7.6 or Red Hat 6.6 is created on AWS or a local server
- Python 2.7.3 must be installed on the VM or local server running Debian or Red Hat

Refer to System Hardware and Software Requirements for hardware requirements for deploying the OVA:

To install the latest version of MPact Server:
1. Download the MPact Server image (MPact tar.gz) from the following Web site: [www.zebra.com/support](http://www.zebra.com/support) to a VM or local server running Debian 7.6. or Red Hat 6.6.
2. Open a terminal session to an instance of Debian 7.6 or Red Hat 6.6 on a VM or local server.
3. Log in as root.
4. Change the directory to: cd /usr.
5. Copy the MPact tar.gz file to the /usr directory on the VM or local server.
6. Untar the MPact tar file, tar -xvf <file name> in the /usr directory:
   tar -xvf <downloaded file name> (make sure there is a space after tar).
7. Change to the installation directory: cd nx_installer.
8. Install the MPact Server: python install.py.
9. After installing the MPact Server, start the MPact services:
   cd ~/usr/nuxi/scripts/bin and execute ./nxstats start
10. Wait for the MPact installation to complete (5-10 minutes) before logging in and configuring system parameters.
11. To automatically start the MPact Server upon boot/re-boot: ./nxstats auto_restart true

NOTE: Take care to untar the Server tar.gz file to a location different from the previously installed location, or risk license errors and problematic performance.

NOTE: The MPact Server does not automatically start upon boot unless you issue the ./nxstats auto_restart true command.
In addition to the `python install.py` command, refer to the following installation CLI options:

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
<th>Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>-mpactbase</code></td>
<td>Use this option to pass the mpactbase value.</td>
<td><code>python install.py -mpactbase /home/joe/usr/ mpactbase</code></td>
</tr>
<tr>
<td><code>-mpactuser</code></td>
<td>Use this option to pass the mpactuser value.</td>
<td><code>python install.py -mpactuser mpact</code></td>
</tr>
<tr>
<td><code>-mpactdata</code></td>
<td>Use this option to pass the mpactdata value.</td>
<td><code>python install.py -mpactdata /home/joe/usr/ mpactdata</code></td>
</tr>
<tr>
<td><code>-mpactlogs</code></td>
<td>Use this option to pass the mpactlogs value.</td>
<td><code>python install.py -mpactlogs /home/joe/usr/ mpactlogs</code></td>
</tr>
<tr>
<td><code>-mpactpids</code></td>
<td>Use this option to pass the mpactpids value.</td>
<td><code>python install.py -mpactpids /home/joe/usr/ mpactpids</code></td>
</tr>
<tr>
<td><code>-mpacttpsport</code></td>
<td>Use this option to pass the mpacthttpport value.</td>
<td><code>python install.py -mpacthttpport 8080</code></td>
</tr>
<tr>
<td><code>-mpacthelp</code></td>
<td>Displays help and command line arguments used with:</td>
<td><code>install(python install.py -h or install.py --help)</code></td>
</tr>
<tr>
<td><code>-silent</code></td>
<td>Silently installs the MPact Server. Information to create default SSL certificate is obtained from the properties file, <code>python install.py -silent</code>.</td>
<td></td>
</tr>
</tbody>
</table>
### 2.12 Upgrading MPact Server Using the Command Line (CLI)

Upgrading the MPact Server on *Amazon Web Services* (AWS) or a local server is the same process.

Use the following steps to upgrade an MPact Server from MPact 1.0.2 or earlier release using the CLI:

1. Download the MPact Server image (*MPact tar.gz*) from: [www.zebra.com/support](http://www.zebra.com/support).
2. Open a terminal session to an instance of Debian 7.6 on a VM or local server.
3. Log in as root.
4. Change the directory to: `cd /usr`.
5. Remove any previous MPact installation folders such as `/usr/nx_installer` or `/usr/nx_installer_<number>`.
6. Copy the *MPact tar.gz* file to the `/usr` directory on the VM or local server.
7. Untar the MPact tar file, `tar -xvf <file name>` in the `/usr` directory: `tar -xvf <downloaded file name>` (make sure there is a space after tar).
10. After upgrading the MPact Server, start the MPact services: `cd /usr/nuxi/scripts/bin and execute ./nxstats start`.
11. Wait for the MPact upgrade to complete (5-10 minutes) before logging in and configuring the system parameters.
12. To automatically start the MPact Server upon boot/re-boot: `./nxstats auto_restart true`.

**NOTE:** The following procedures is for upgrading the MPact Server from a previous version. To install the MPact Server from the CLI for the first time see *Installing MPact Server Using the Command Line (CLI)*.

**NOTE:** Take care to untar the Server tar.gz file to a location different from the previously installed version location, or risk license errors and problematic performance.
2.12.1 Process Status Check

To check the status of the process:

1. Go to /usr/nuxi/scripts/bin.

2. Check the MPact Server status using the command: ./nxstats status.

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

   Process (create_schema) is not running. This process creates the database for the first Server installation. Process Create Schema can take five or more minutes. A user should not login to the Server for at least five to ten minutes, or until the process Create Schema is complete.

   To check the status of the process, use the command: ./nxstats status.

Figure 2-25  MPact Deployment - Expected Results
The following are MPact Server Administrator CLI options:

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
<th>Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>auto_restart true/false</code></td>
<td>By default ./nxstats auto_restart true/false is set to false. If you do not issue the command ./nxstats auto_restart true the MPact services must be started manually with the ./nxstats start command any time your VM is rebooted. Setting auto_restart to true causes the MPact system to automatically restart any time the MPact Server is booted.</td>
<td>./nxstats auto_restart true/false</td>
</tr>
<tr>
<td>backup</td>
<td>Use this option to backup the system’s planning data.</td>
<td>backup [-fromPath=&lt;fromPath&gt;] [toPath=&lt;toPath&gt;]</td>
</tr>
<tr>
<td>restore</td>
<td>Use this option to restore the backed up data from a file.</td>
<td>restore -fromFile=&lt;fromFile&gt;</td>
</tr>
<tr>
<td>resetSu</td>
<td>Use this option to change the default Web/API superuser’s password.</td>
<td>./nxstats resetSu &lt;newPWD&gt;, ./nxstats resetSu resets to MPact123 as the password.</td>
</tr>
<tr>
<td>start</td>
<td>Uses this option to start the MPact Server.</td>
<td>./nxstats start</td>
</tr>
<tr>
<td>start_techdump</td>
<td>Use this option to start the techdump process. It creates a MPact dump file:</td>
<td>~/mpactTechDumps.tar.gz</td>
</tr>
<tr>
<td></td>
<td>start_techdump process. It creates a MPact dump file: ~/mpactTechDumps.tar.gz</td>
<td>./nxstats start_techdump</td>
</tr>
<tr>
<td>stop_techdump</td>
<td>Use this option to stop the techdump process.</td>
<td>./nxstats stop_techdump</td>
</tr>
<tr>
<td>status</td>
<td>Uses this option to check MPact status.</td>
<td>./nxstats status</td>
</tr>
<tr>
<td>stop</td>
<td>Use this option to stop the MPact Server.</td>
<td>./nxstats stop</td>
</tr>
</tbody>
</table>
2.13 HA Deployment Steps Using CLI

The following describes configuring High Availability MPact deployments using the CLI:

1. Install MPact Server on a single node system (Active node), see Installing MPact Server Using the Command Line (CLI) or Upgrading MPact Server Using the Command Line (CLI).

2. Setup a redirector node (For more information on how setup nginx see: http://nginx.org) or use an existing hard redirector node already present in the Network Operations Center (NOC). Download the Nginx from the Nginx website. A sample config file for MPact (nginx.conf) is available at: www.zebra.com/support.

3. Stop MPact Server on the Active node: ./nxstats stop

4. Install two additional nodes using the same installation steps as the Active node (Standby, Quarum). However, do not start or check their status. See Installing MPact Server Using the Command Line (CLI) or Upgrading MPact Server Using the Command Line (CLI).

5. Copy the sample configuration files from usr/nuxi/scripts/bin/samples to the home directories of the Active, Standby and Quarum nodes:
   a. Use the following command for Active node:
      ```bash
cp ~/usr/nuxi/scripts/bin/samples/activeNodeis.properties ~/n
      ```
   b. Use the following command for Standby node:
      ```bash
cp ~/usr/nuxi/scripts/bin/samples/standbyNodeis.properties ~
      ```
   c. Use the following command for Quarum node:
      ```bash
cp ~/usr/nuxi/scripts/bin/samples/quarumNodeis.properties ~
      ```
   d. Edit the IP addresses in each node’s Nodeis.properties file (The values and orders should be the same in all three files):
      ```properties
nnip=<activeIp>,<standbyIp>
zookeeperip=<activeIp>,<standbyIp>,<quorumIp>
quorumjournalip=<activeIp>,<standbyIp>,<quorumIp>
```
   e. Edit the value thisip=<this node’s ip addresses> in each node’s Nodeis.properties file to be their respective IP address:
      ```properties
thisIp=<activeip>
thisIp=<standbyIp>
thisIp=<quorumIp>
```

6. Configure the nodes:
   ```bash
./nxstats confignode ~<path to modified sample file in home directory> on all Active, Standby and Quarum nodes.
```

7. Run the HA commands in the following order:
   a. Change to the Quorum node CLI, and run the command: ./nxstats start
   b. Change to the Standby node CLI, and run the command: ./nxstats initStandby
   c. Change to the Active node CLI, and run the command: ./nxstats initActive
   d. Change to the Standby node CLI, and run the command: ./nxstats finalizeHA
Once the HA setup is complete, nodes can be started, stopped and their status checked. Set nodes to auto restart when power cycling with the following command: `./nxstats auto_restart true`.

**NOTE:** Wait ten minutes between each command before running the next command. Use the following commands: `./nxstats start`, `./nxstats stop` and `./nxstats status` to start, stop and check the status of a cluster configured for HA.

**NOTE:** For node replacement steps or other issues with HA, contact: [www.zebra.com/support](http://www.zebra.com/support).
2.14 MPact Server Login

To login to the MPact Server remotely:

1. Go to one of the following sites:
   - http://<server IP>
   - https://<server IP>

Enter the User Name (superuser is the default) and Password (mpact123 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 2-26 MPact Server - Login Screen
## 2.15 Software License File Upload

An MPact Server license file is required before the Server can be fully functional.

To upload the MPact Server license file:

1. Select **License** under the **About** main menu item.

![Figure 2-27 MPact Server - License](image1.png)

2. Choose the **Select File** button to upload the license file provided by the Customer Service IT team. For more information, see [Customer Support Web Site](#) and the section on **License Management** in the *MPact Location & Analytics Server Reference Guide*.

![Figure 2-28 MPact Server - License File Upload](image2.png)

3. Select **Open** to upload the file.

4. Select **Refresh**.
It takes less than 3 minutes for the file to upload and display license details.

Figure 2-29 License Management - Upload License File Complete
2.16 Tree Setup

Use Tree Setup to build the tree hierarchy for each site location. A tree hierarchy is built from a global site location, down to each floor, including floor plans for each floor.

To administrate the MPact tree hierarchy:

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

![Figure 2-30 MPact Server - Tree Setup](image)

2. From the System drop-down menu, select Add Child and drag the cursor over to select add a Country, Country Region, City, Campus or Site. As each node is built, more choices become available, for example, Floor.

![Figure 2-31 MPact Server UI Tree Setup - Adding Tree Nodes](image)

**NOTE:** Most characters, including spaces, are valid in the Tree Hierarchy, except the following: `~` `^` `*` `<` `>` `#` `=` `\` `/`. 
3. From the **Add Node** dialog box, enter a node **Name** and select **OK**.

![Figure 2-32 MPact Server UI Tree Setup - Add Node](image)

4. Continue adding nodes as required until reaching the **Floor** level.

Tree setup is saved automatically. When Tree setup is complete, upload a floor plan. Refer to “Floor Plan Upload” on page 2-39.
2.17 Floor Plan Upload

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 and 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 dimensions:
- *Minimum floor plan dimension* = 45,000 square feet
- *Maximum floor plan dimension* = 200,000 square feet

Floor plan images have the following constraints:
- *Format*: JPEG/JPG/PNG
- *Maximum resolution*: 10,000 x 10,000 pixels ~ 20MB

**NOTE:** An MPact floor plan origin is top-left on the screen, whereas an ADSP origin is bottom-left. If ADSP has only DWG (Auto Cad) files, then the corresponding floor plan does not show up in MPact; ADSP does not provide a corresponding a bit map image.

To upload a floor plan:
1. Select **Active View** under the Locationing main menu item.
2. From the **Tree Preview** area, open the tree hierarchy down to the floor level.
3. Select **Edit Mode**.

![Figure 2-33 MPact Server UI Edit Floor Plan](image)
4. Select the **Edit Floor Plan** button to browse and select a floor plan. In some cases, users may not want to upload a floor plan and can choose to use the default floor plan shown in **Figure 2-34**.

5. Select **Replace Floor Plan**.

![Figure 2-34 MPact Server UI Active View - Default Floor Plan](image)

6. Select the upload button to browse and select a floor plan.

7. Select **Open** to upload the file.

![Figure 2-35 MPact Server UI Active View - Uploaded Floor Plan](image)

8. Crop the image to the required coverage area or Select **Skip this step**.

9. Set the scale for your building. Click on the floor plan to start a measuring line, then click again to set the line.

10. Set the physical size of the area the floor plan represents:
    - **Unit**: Select either Meters or Feet.
    - **Auto Fit Positions**.
11. Select **Finish** to commit the updates or **Reset Scale** to revert to the last saved configuration.

### 2.17.1 Site Placement

Site placements are an optional means of displaying site locations on a global map.

To place a site on the global map:

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

![Figure 2-36 MPact Server - Active View](image)

2. Select the **System** node under the Tree Hierarchy. **Unplaced Sites** display on the global location map.

![Figure 2-37 MPact Server - Active View Site Placement](image)

3. Use the zoom feature, in the upper left-hand corner of the global map, to zoom to potential site placement locations.

4. Highlight the site under **Unplaced Sites**. Drag and drop the site to the appropriate location on the global map.
2.18 Category Creation

Categories group product family items logically and better apply significance to the locationing, customer traffic and engagement 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 mobile clients move about the floor, their beacon visits and engagement times can be associated with the product categories and beacon location.

To create a new category:

1. Select Categories under the Configuration main menu item.

The Categories screen displays.

2. Select the + Create New Category button.

3. Enter a Category Name and Category Description (up to thirty characters) and select Ok to implement the updates.
4. Select a category from the **Category List**.

5. Select one of the following actions from the **Edit** drop-down menu:

<table>
<thead>
<tr>
<th><strong>Edit</strong></th>
<th>Allows changes to the category's name and description.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Copy</strong></td>
<td>Places a duplicate copy of the category and its values below the existing category name.</td>
</tr>
<tr>
<td><strong>Delete</strong></td>
<td>Deletes the category and associated category values. It is recommended that an administrator export and archive a category's defined values in <strong>Comma Separated Value (CSV)</strong> file format before deleting a category.</td>
</tr>
</tbody>
</table>

6. Select **Ok** to save the changes.

### 2.18.1 Category Value Creation

Add **Category Values** to refine existing **Categories**. Ensure any values added make up a logical group of products, well suited for the client traffic and engagement time reported under its parent category's beacon deployment location.

In **Figure 2-41**, the **Accessories** category, located on the left-hand side of the screen, is aligned with the category values listed on the right-hand side of the screen: **Adapters**, **Cables**, and **Ear Pieces**. In this example, **Category Values** represent the products grouped for tracking under the parent category, **Accessories**.

![Figure 2-41 MPact Server - Category Value Creation and Modification](image)

To create a new category value:

1. Select a category from the **Category List** on the left-hand side of the page.

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

![Figure 2-42 MPact Server - Add New Category Value](image)

3. Enter a **Name** and **Description**.

4. Select **Update** to implement the value.
To modify existing category values:

1. Select an existing category value.
2. Select the **Delete** drop-down menu to perform one of the following:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Edit</strong></td>
<td>Allows changes to the category value name and description.</td>
</tr>
<tr>
<td><strong>Copy</strong></td>
<td>Places a duplicate copy of the category value immediately below the existing one.</td>
</tr>
<tr>
<td><strong>Delete</strong></td>
<td>Deletes the category value.</td>
</tr>
</tbody>
</table>

3. Select **Ok** to implement the changes.

The next step is to plan beacon placements on the floor plan.
2.19 Understanding Region Notifications

Region notifications allow a sleeping or background application to awaken for an interval of time during which the application is allowed to execute in the background. Notifications can be used to display an alert, a coupon, or other content, using the device’s native notification system (not the MPact Server). Custom applications used for displaying notifications on a mobile device can be created using the MPact client SDK. Refer to the MPact Location & Analytics Client Software Development Kit available at www.zebra.com/support.

Notifications are sent based on UUID, and Major and Minor fields in iBeacon, MPact SecureCast, and BatterySave modes. This creates notifications based on the various zones within a site for an improved user experience. The maximum number of region notifications supported is 20, including the UUID, otherwise the maximum is 19 for both Android and iOS.

NOTE: The MPact Client SDK runs on iPhone (iOS 7 or later) and Android phones (Android 4.3 or later).

When beacons are running in either iBeacon or MPact mode, the limit of 20 region notifications is a global limit, meaning all stores, all sites. The MPact solution enhances this notification limitation through programming the list of regions dynamically, using the concept of site ID beacons to allow each site to have a unique list of 20 regions. Therefore, a site ID beacon must be heard by a client before sending updates to the MPact Server. A well planned MPact deployment should have several beacons set as site IDs. The site IDs should be strategically placed throughout a site, especially in entrances and exits to ensure they can be heard by all the mobile clients propagating the site. If there is no site ID defined, the MPact Server is unable to receive client updates.

All beacons ship configured as site ID beacons, so no action is necessary. To configure region notification, set the Major and Minor beacon configuration to the desired (non-zero) values (in Active View). A region notification is tied to the Major and Minor values set in Active View and does not apply to site ID beacons. To change a beacon back to a site ID beacon, set the Major and Minor beacon configuration to 0 (in Active View) for the client to use its MAC address in its advertisement message to the MPact Server. Those values have been reserved for instructing the firmware to broadcast using the beacon’s default MAC address. No notification support is available for a beacon set as a site ID.

NOTE: If there is no site ID set, the MPact Server does not receive client updates.

NOTE: If modifying a major or minor value in Active View, the beacon must also be re-configured using the MPact Toolbox application (using the Beacon Configuration screen). For more information refer to the MPact Location and Analytics iOS Toolbox User Guide or the MPact Location and Analytics Android Toolbox User Guide.
### 2.19.1 Beacon Mode Pros and Cons

Refer to the following Beacon mode pros and cons:

<table>
<thead>
<tr>
<th></th>
<th><strong>Pros</strong></th>
<th><strong>Cons</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Battery Save</strong></td>
<td>Long battery life</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MPact Server displays health information for batteries</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Supports region notifications based on major/ minor</td>
<td></td>
</tr>
<tr>
<td><strong>SecureCast</strong></td>
<td>Beacon signal broadcasts are encrypted with an AES key</td>
<td>30% shorter battery life than Battery Save mode</td>
</tr>
<tr>
<td></td>
<td>Signal broadcasts are encrypted to ensure privacy for users and control over information for organizations that deploy beacons.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MPact Server displays health information for batteries Long battery life</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Supports region notifications based on major/ minor</td>
<td></td>
</tr>
<tr>
<td><strong>iBeacon</strong></td>
<td>Supports region notifications based on major and minor values.</td>
<td>30% shorter battery life than Battery Save mode</td>
</tr>
<tr>
<td></td>
<td>Supports region notifications in background, foreground and sleep modes</td>
<td>The MPact Server does not display health information for batteries.</td>
</tr>
<tr>
<td><strong>MPact</strong></td>
<td>MPact Server displays health information for batteries</td>
<td>30% shorter battery life than Battery Save mode</td>
</tr>
<tr>
<td></td>
<td>Supports region notifications based on major values</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Supports region notifications in background, foreground and sleep modes</td>
<td></td>
</tr>
</tbody>
</table>

**NOTE:** Refer to *Position Setup and Configuration* for more information.
2.20 Position Setup and Configuration

Use Positions to secure a beacon’s physical location on a site floor plan. Positions contains the beacon’s X-axis and Y-axis coordinates, the beacon’s direction and antenna pattern and product categories and category values assignment. Product Categories and Category Values are assigned to a beacon’s position, which allows Subscribers to receive Notifications for special promotional offers. Notifications inform a subscriber when a client action is performed, for example, client entry or engagement time.

When placing beacon positions on the floor plan, ensure the beacon’s position is located with respect to the selected product category. Beacon positions can be strategically placed on end caps, aisle entrances and seasonal promotional displays.

To place and configure a position on a floor plan:

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

2. Select a deployment floor plan from the Tree Hierarchy.

3. Select the Edit Mode button on the far-right of the toolbar to expand toolbar options.
4. Choose Select or Add from the Positions drop-down menu.

5. Double-click on the beacon's intended position on the floor plan. The Add Position screen displays with the Position Location auto-populated with the X-axis and Y-axis coordinates on the floor plan. The screen below shows Position Categories selected for the Accessories and Batteries category values, used to assign promotional notifications to customers.
6. Refer to the following configuration options for adding a position:

<table>
<thead>
<tr>
<th>Position Name</th>
<th>Generates a time stamp when a name is unassigned. The position name displays for battery life, missing beacons and misinstalled beacons within Dashboard Health.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Position Description</td>
<td>Provide a 30 character maximum description for the beacon’s physical deployment location.</td>
</tr>
<tr>
<td>Position Location (meters)</td>
<td>Auto-populated X and Y axis coordinates 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 location within the floor plan. Additionally, feet or meters display depending on what was selected when the floor plan was uploaded.</td>
</tr>
<tr>
<td>Use Hex for Major/Minor</td>
<td>Use Hexadecimal values for Major/Minor values.</td>
</tr>
<tr>
<td>Use Decimal for Major/Minor</td>
<td>Use Decimal values for Major/Minor values.</td>
</tr>
<tr>
<td>Enable Notification</td>
<td>Enable this feature to support regional notifications (targeted coupons and pop-up displays) for clients (not the MPact Server). Notifications can now be sent based on UUID, as well as the Major and Minor fields of the beacon frame (in both iBeacon and MPact modes). This helps create notifications based on the various zones within a site for an improved user experience. The maximum number of region notifications supported is 20, including the UUID, otherwise the maximum is 19 for both Android and iOS. With iBeacon mode, both Major and Minor are supported for regional notifications. With MPact mode, only Major is supported for regional notifications. In Battery Save and SecureCast modes, no regional notifications are supported.</td>
</tr>
<tr>
<td>Beacon Configuration</td>
<td>A site ID must be heard by a client to send updates to the MPact Server. For iBeacon and MPact mode installations, set the Major and Minor beacon configuration to 0 for the client to use its MAC address in its advertisement message to the MPact Server. The values of major 0 and minor 0 are not valid region notifications. Those values have been reserved for instructing the firmware to broadcast using a default MAC address. A region notification is tied to the major and minor values set in the database and does not apply to site ID beacons. Major: Set from 0 - 65535. A Major component for device class and a Minor component for more refined information like product category. The Major field is for identifying the device class. For example, the Major value could be the same for each device on the first floor or a particular site. The default value for the Major field is the second to the last and third to the last byte of the MAC address. Minor: Set from 0 - 65535. In both the iBeacon and MPact modes, the Minor field is for more refined information, like product category. The Minor field consists of two bytes and the last byte of the MAC address is its default value. The second byte for MPact mode is for battery life and for iBeacon mode it is ff. In MPact mode however, region notifications are not supported for the minor value.</td>
</tr>
</tbody>
</table>
Position Categories

Select Add Category to assign a Category to the position (left drop-down menu displays) and select Category Values (right drop-down menu displays) appropriate for the beacon's position on the site floor. These selections send notifications, coupons or product information to the shopper's mobile client when the customer is browsing in the site.

Advanced Beacon Settings

Advanced beacon settings are not functional in nature, they change nothing on the beacon itself. They serve only as a visual aid within Active View.

Antenna Pattern: Use this drop-down option to determine how the Heat Map displays for a beacon. The Heat Map displays in either 180 or 360 degree orientations for a semi-ellipse or circle shape.

Planned Beacon: Use this option for deployment scenarios where users want to install specific Beacon IDs at specific locations. In such scenarios, this Planned Beacon ID is compared to the actual Installed Beacon ID. If there is a mis-match, it is highlighted under the Analytics section.

Degrees: Controls how Heat Maps are displayed for a beacon. The option is applicable only for the semi-circle antenna pattern. The default, 0 degrees, displays the Heat Map toward the east, 90 degrees toward the south, etc. Based on the value set, the orientation of the Heat Map changes accordingly.

Beacon Offset: Determines how far from a beacon the user icon displays.

7. Select Save to commit the updates, Reset to revert to the last saved configuration or Cancel to close and exit the screen. Figure 2-47 shows the newly created Position, an empty circle on the floor plan, indicating no beacon is assigned to the position.

8. Cursor over the Position to display an informational popup.

The status of the position shows no beacon installed and the Accessories category is assigned to the position, which is located next to Accessories.
9. Repeat this process to add more beacon positions or copy one or more positions to distribute on the floor plan. Modify position information, as required, to reflect the final position location and configuration.

NOTE: Ensure position Categories are appropriately assigned for the location.
2.20.1 Position Modification

For larger deployments, positions can be copied and pasted repeatedly until there are enough positions to cover the deployment floor. When a position is copied and pasted, the pasted position has the minimum configuration and must be modified to reflect the correct configuration for its new location and category.

Select the Edit Mode button on the far-right of the toolbar to expand toolbar options. and selecting a beacon (by click-dragging a box around the position) on the map adds to the choices available on the toolbar.

**Figure 2-49** MPact Server Active View - Position Edit Mode

Use the following tools to modify beacon positions:

- **Copy Positions**: Copies one or more highlighted positions.
- **Paste Positions**: Pastes one or more highlighted positions.
- **Beacon Align Tool**: Adjusts the direction the beacon displays in Heat Maps, from 0-360 degrees.
- **Edit Beacon Positions**: Edits the configuration of one or more positions.
- **Move Beacon Positions**: Moves one or more positions.
- **Delete Beacon**: Deletes a single installed beacon (not applicable for multiple installed beacons).
- **Delete Beacon Positions**: Deletes one or more positions (This option not only deletes one or more positions, it also deletes the installed beacon(s) on one or more positions).

### 2.20.1.1 Copy and Paste Beacon Positions

To copy a position:

1. Select **Active View** under the Locationing main menu item.
2. Select a deployment floor plan from the **Tree Hierarchy**.
3. Select a floor plan with one or more positions to copy, or create a new position.
4. Select the **Edit Mode** button on the far-right of the toolbar to expand toolbar options.

**Figure 2-50** MPact Server Active View - Edit Position

5. Choose **Select** or **Add** from the **Positions** drop-down menu to select one or more positions.
6. Click-drag a box around one or more positions to highlight.

7. From the expanded toolbar, select the Copy icon, then, select the Paste icon.

8. Continue copying and pasting multiple icons until there are enough to cover the floor. As positions are copied, move to new locations as needed.

### 2.20.1.2 Move Beacon Positions

To move beacon positions:

1. Select the Edit Mode button from the toolbar to expand toolbar options.
2. Choose Select or Add from the Positions drop-down menu.
3. Click-drag a box around one or more positions to highlight.
4. From the expanded toolbar, select the Move Beacon Positions icon.

5. Use the cursor to drag the highlighted position to its new intended location.

Edit the beacon positions to reflect the latest product information about their location.
2.20.1.3 Edit Beacon Positions

NOTE: Anytime major and minor values are edited beacons must be reconfigured with the MPact Toolbox application.

Edit beacon positions as floor configurations or products change.

To edit a beacon position:

1. Select the Edit Mode button from the toolbar to expand toolbar options.
2. Choose Select or Add from the Positions drop-down menu.
3. Click-drag a box around one or more positions to highlight.
4. From the expanded toolbar, select the Edit Beacon Positions icon.

**Figure 2-56** MPact Server Active View - Edit Beacon Positions

5. Edit the position parameters as required.

**Figure 2-57** MPact Server Active View - Edit Position

6. Select Save to commit the updates, Reset to revert to the last saved configuration or Cancel to close and exit the screen.
2.20.1.4 **Delete Beacon Positions**

To delete beacon positions and the installed beacon on the beacon position:

1. Select the *Edit Mode* button from the toolbar to expand toolbar options.
2. Choose *Select* or *Add* from the *Positions* drop-down menu.
3. Drag the cursor over one or more positions to highlight.
4. From the expanded toolbar, select the *Delete Beacon Positions* icon.

![Figure 2-58 MPact Server Active View - Delete Beacon Positions](image)

The *Delete Beacon Position Group* dialog box displays.

5. Perform either of the following as needed:
   - *Delete selected beacons*
   - *Delete selected beacons and beacon positions*
6. Select *Yes* to complete the deletion.

2.20.1.5 **Align Beacon Position Heat Map Display**

Use the *Beacon Align Tool* to visually align how beacons display on a heat map. The alignment does not affect beacon transmissions, and is only a visual representation of a heat map’s display. Settings display, based on the positive X-axis representing 0 degrees and moving clockwise can be set at any number degree (0-360).

![Figure 2-60 MPact Server Active View - Beacon Alignment at 180 Degrees](image)

**NOTE:** Changing the beacon alignment in Active View alters the Toolbox display of the blue dot (the installer) once the beacon is installed using the Toolbox.

To align a beacon’s heat map display:

1. Determine the direction of the heat display.

   The following *Heat Map* image displays beacons at 180 degrees, and needs to be changed in the direction where customers engage (dwell), at 90 degrees.

![Aisle 2 figure](image)

2. Select the *Edit Mode* button from the toolbar to expand toolbar options.
3. Choose Select or Add from the Positions drop-down menu.

4. Drag the cursor position to highlight.

5. Select the Beacon Align Tool icon from the expanded toolbar.

6. When the alignment tool displays, drag the adjustment from 180 to 90 degrees in the direction where customers engage (dwell), toward the center of the aisle.

   **NOTE:** Changing the beacon alignment in Active View alters the Toolbox display of the blue dot (the installer) once the beacon is installed using the Toolbox.

7. Select the Edit Mode button, then, Heat Map, to display the intended engagement area.

   The following Heat Map image displays the beacon in front of the Cell Phone area at 90 degrees, toward the area where customers engage.

8. Make changes to the rest of the beacons as needed.

   The next step is to install the MPact Toolbox application.

   **NOTE:** For information about installing and using the MPact Toolbox application, refer to the MPact Location and Analytics iOS Toolbox User Guide or MPact Location and Analytics Android Toolbox User Guide.
2.21 System Configuration

Use System Configuration to set global beacon settings in MPact Server. A beacon’s firmware transmits using Bluetooth® Smart technology. A beacon’s transmit power and mode configuration can be set using the MPact Server interface. The configuration is then pushed to the Toolbox.

Beacon configuration settings must be set accurately by MPact Server before they can be provisioned to an MPact Toolbox supported iPad. Once downloaded to the Toolbox, the beacon configurations can be downloaded to the actual beacons.

To administrate MPact Server beacon configurations:
1. Select System Configuration under the Configuration main menu item.

![Figure 2-64 MPact Server System Configuration - System Configuration](image)

2. Modify the System Configuration parameters as required.

![Figure 2-65 MPact Server - System Configuration Settings](image)
3. Refer to the to set the **Beacon Configuration**:

<table>
<thead>
<tr>
<th>Beacon Mode</th>
<th>Sets the mode defining how signals are emitted from MPact beacons. Supported modes include Battery Save, SecureCast, iBeacon, MPact (default setting).</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Battery Save</strong></td>
<td>Optimized for battery life by making the broadcast packet as small as possible (the beacon contains the minimal amount of information needed to support MPact Server functions). A MPact beacon in battery save mode transmits the beacon ID and a single byte representing the percentage of battery life remaining (0-100).</td>
</tr>
<tr>
<td><strong>SecureCast</strong></td>
<td>Is a method of broadcasting encrypted (using an AES Key) signals over Bluetooth for organizations that utilize fraud protection to tie beacon signals to verified presence detection. SecureCast ensures beacons do not display static identifiers (MAC address), only an encrypted rotating ID.</td>
</tr>
<tr>
<td><strong>iBeacon</strong></td>
<td>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 <strong>UUID</strong> for device identification, a <strong>Major</strong> value for device class and a <strong>Minor</strong> value for more refined information like product category. The UUID must be the same on the beacon and the MPact Server. The Major field identifies the device class (range, 0-65535). For example, the Major value could be the same for each device on the first floor or a particular department store. The Minor field is for more refined information (range, 0-65535), like product category. Beacons configured in iBeacon mode use a combination of Major and Minor values for the beacon ID. After scanning and installing the beacons in the Toolbox, beacon configuration must be reapplied (pushed from the Server) using the Toolbox (<strong>Configuration</strong>) to associate the Major and Minor values from the Server.</td>
</tr>
<tr>
<td><strong>MPact</strong></td>
<td>Uses the iBeacon format, except one byte from the Minor field encodes the battery life remaining. The Major and Minor defaults to the last three octets of the beacon MAC address, but can be configured to unique values. If changed, these fields need to be configured with the same values on the beacon and on the MPact Server.</td>
</tr>
</tbody>
</table>

| **UUID** | Use UUID if setting the beacon mode to iBeacon or MPact, enter a 16 byte hex character string that defines the purpose of the device. The UUID must be the same on the beacon and the Server. A UUID is represented by 36 characters (32 alphanumeric characters and four hyphens), for example, 123a4567-e23b-89d3-a234-135790864215. The **Universally Unique IDentifier** (UUID) classification is meant to be global. For example, a UUID could identify a beacon was owned by a specific company. To generate a UUID, use any GUID/UUID generation tool to create your own identifier, for example, the uuidgen command in OS X. The uuidgen command generates a UUID, which is a 128-bit value guaranteed to be unique. |

| **Beacon Power** (-23 dBm to 0 dBm) | Set the beacon’s output power from -23 dBm (default) to 0 dBm. |
| **Beacon Channel** (1 to 7) | Define a channel from 1-7 (7 is the default) to apply an operational channel restriction to beacon transmissions. This is helpful in areas where beacon deployments are abundant, as beacons can be strategically grouped to specific channels to reduce excess channel interference on the network.

Channel broadcast options:
1: Channel 39
2: Channel 38
3: Channel 38, 39
4: Channel 37
5: Channel 37, 39
6: Channel 37, 38
7: Channel 37, 38, 39 |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Beacon Interval</strong> (0.1 sec to 10 sec)</td>
<td>Define an interval (from 0.1 sec to 10 sec) for a beacon transmission. With a shorter interval, there is increased accuracy, but a shorter beacon battery life. The default setting is 0.6 sec.</td>
</tr>
</tbody>
</table>
| **Proximity** | The MPact Server includes a set of APIs for determining the approximate distance to an iOS or Android device using a process known as “ranging.” The MPact Server APIs apply filters to the accuracy estimate to determine an estimated proximity. The estimate is indicated using one of following proximity states:

- **Immediate**: This state represents a high level of confidence the device is physically very close to the beacon.

- **Near**: If there’s a clear line of sight from device to beacon, this indicates a proximity of 1-3 meters. If there are obstructions between the device and beacon causing signal attenuation, the Near state may not be reported, even if the device is in range.

- **Far**: A device can be detected, but the accuracy confidence is too low to determine either Near or Immediate. The Far state does not necessarily imply a device is physically near the beacon. |
| **Uploaded Version** | Lists the beacon firmware version last uploaded (for example, broadcaster-1.0.0.0-00xR.bin). The firmware is pushed to the Toolbox and used to upgrade or downgrade beacon firmware. |
| **Last Uploaded** | Lists the date and time the most recent firmware version (the version listed in the Uploaded Version field) was pushed to the beacons. |
| **Firmware** | Choose Select File to launch a screen for navigating to the target firmware file for subsequent beacon uploads. |

4. Select **Save** to commit the beacon configuration changes.
MPact Toolbox is an application designed for installing and maintaining beacons. An iPad or Android is carried within the deployment area to scan a beacon’s barcode when first installed to add its position and validate existing beacons are working. A Toolbox equipped iPad or Android reads beacon installations from the MPact Server, which consists of beacon positions, IDs and other attributes. Users can add, modify or delete beacons and beacon positions from a map displayed on the installer (essentially adding beacons by scanning a barcode and flashing beacons once recognized).

All beacon updates are stored on the MPact Server. MPact Toolbox mediates the MPact Server and beacon. MPact Toolbox pulls configuration and firmware information from MPact Server and updates beacons as deployment objectives warrant. The Toolbox records beacon placements as they are made in the field and updates the Server.

For more information, refer to the following:

- Toolbox, SDK and Server Communication
- MPact Toolbox System Considerations
- MPact Server Beacon Configuration
- Beacon Deployment Considerations
3.1 Toolbox, SDK and Server Communication

Figure 3-1 illustrates communications between MPact Toolbox, the SDK, and MPact Server, as well as the client application to the MPact Server. The Toolbox requests information stored on the Server, for example, tree hierarchy, floor plans, and beacon positions. The Toolbox updates the Server as deployment changes are made in the Toolbox.

Figure 3-1  MPact Toolbox, SDK and MPact Server Communication
3.2 MPact Toolbox System Considerations

MPact Toolbox runs on the following iPad and Android platforms: iOS versions 7.1.2 and higher (including iOS version 8), Android 4.4 -5.1. The MPact Toolbox is only supported on Nexus 9 devices.

3.2.1 Hardware Limitations

The iPad has the following limitations:

<table>
<thead>
<tr>
<th>iPad Version</th>
<th>Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>iPad Mini (First Generation)</td>
<td>A floor plan image should not exceed 3MB. The Toolbox has a slow response after loading a “~5k x 5k pixel or above” (~3MB or above) JPEG image, and unable to install beacons. For high resolution floor plans, processing is very slow. Use low resolution floor plans (between 1K-4K) for the iPad Mini.</td>
</tr>
<tr>
<td>iPad 3</td>
<td>Floor plan image should not exceed 200 MB for a 32 bit CPU. The Toolbox has a slow response after loading “~10k x 10k pixel” (~20MB) JPG image and is then unable to install beacons. A 64 bit CPU provides the best resolution and beacon installation speed.</td>
</tr>
<tr>
<td>iPad 4</td>
<td>Floor plan image should not exceed 200 MB. Toolbox slow response after loading “~10k x 10k pixel” (~20MB) JPG image and unable to install beacons.</td>
</tr>
</tbody>
</table>

The Android has the following limitations:

<table>
<thead>
<tr>
<th>Android Version</th>
<th>Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nexus 9</td>
<td>Floor plan image size cannot exceed beyond 18MB. A floor plan image size up to 12 MB can be loaded without any performance lag. The Toolbox has a slow response after loading a ~3MB or above image.</td>
</tr>
</tbody>
</table>

MPact Toolbox is installed on iPad and Android devices. The Toolbox is used to locate beacons, download firmware to the beacons, and configure beacons. MPact Toolbox maintains beacon positions and reconfigures beacons when changes are made to the retail site floor.

3.2.2 MPact Toolbox Installation

After downloading the Toolbox from the Web portal, upload the Toolbox application to an iOS or Android application MPact Server. Authorized individuals can download to iOS and Android client devices using the URL link to the MPact Server. For more information on installing and using the MPact Toolbox for iOS and Android, refer to the following available at www.zebra.com/support:

- MPact Location & Analytics iOS Toolbox User Guide
- MPact Location & Analytics Android Toolbox User Guide
3.3 MPact Server Beacon Configuration

Use the MPact Server to uniquely configure beacons based on beacon modes.

For more information, see:
- MPact Mode Configuration
- iBeacon Mode Configuration
- Battery Save Mode Configuration
- SecureCast Mode Configuration

3.3.1 MPact Mode Configuration

NOTE: If Region Notifications are desired, upgrade beacon firmware to version 1.0.1 or higher.

On the MPact Server

To install and configuration beacons in MPact mode:
1. Configure system settings with the UUID and the mode set to MPact.
2. From the MPact Server Active View, add beacon position requirements. For more information, see the Positions section in the MPact Location & Analytics Server Reference Guide at: www.zebra.com/support.
3. Set the major and minor values to 0 (MAC address as major minor). This sets the beacon as a site ID (see Understanding Region Notifications). Configuring several site IDs guarantees they are visible to the MPact Server.
4. If supporting Region Notifications, configure the major value.

On the MPact Toolbox

1. Provide the MPact Server IP and password from the MPact Toolbox.
2. Scan beacons to install them from the MPact Toolbox Installation screen.
3. Navigate to the Toolbox’s Configure screen and reboot the beacon or remove the mylar strip for out-of-the-box beacon installations.

NOTE: If rebooting the beacon from the Configure screen is unsuccessful, partially remove the battery from the beacon and reinsert it.

The major field displays with red text.
4. Select beacons, then press the Configure button.
5. Activate the beacons using the Toolbox Install screen. Activated beacons display in green (if beacons remain grey, ensure they are broadcasting using the Toolbox Configure screen). Only beacons in Connect mode display.

The beacons turn green in both the MPact Toolbox and MPact Server.
3.3.2 iBeacon Mode Configuration

To install and configuration beacons in iBeacon mode:

**On the MPact Server**

1. Configure system settings with the UUID and the mode set to iBeacon.
2. From the MPact Server **Active View**, add beacon position requirements. For more information about adding a position, see the **Positions** section in the MPact Location & Analytics Server Reference Guide at: www.zebra.com/support.
3. Set the **major** and **minor** values to 0 (MAC address as major minor). This sets the beacon as a site ID (see **Understanding Region Notifications**). Configuring several site IDs, guarantees they are visible to the MPact Server.
4. If supporting Region Notifications, configure the major and minor values.

**On the MPact Toolbox**

1. Provide the MPact Server IP and password from the MPact Toolbox.
2. Scan beacons to install them from the MPact Toolbox **Installation** screen.
   
   **NOTE:** If rebooting the beacon from the **Configure** screen is unsuccessful, partially remove the battery from the beacon and reinsert it.

   The major and minor fields display with red text.
3. Select beacons, then press the **Configure** button.
4. Activate the beacons using the Toolbox Install screen. Activated beacons display in green (if beacons remain grey, ensure they are broadcasting using the Toolbox **Configure** screen). Only beacons in Connect mode display.
   
   The beacons turn green in both the MPact Toolbox and MPact Server.

3.3.3 Battery Save Mode Configuration

To install and configuration beacons in Battery Save mode:

**On the MPact Server**

1. Configure MPact Server system settings with the mode set to Battery Save.
2. Add beacon positions from the MPact Server **Active View**. For more information about adding a beacon position, see the **Positions** section in the MPact Location & Analytics Server Reference Guide at: www.zebra.com/support.

**On the MPact Toolbox**

1. Provide the MPact Server IP and password from the MPact Toolbox. Go to the **Installation** screen.
2. Scan beacons to install them from the MPact Toolbox **Installation** screen.
3. Activate the beacons using the Toolbox Install screen. Activated beacons display in green (if beacons remain grey, ensure they are broadcasting using the Toolbox Configure screen). Only beacons in Connect mode display. The beacons turn green in both the MPact Toolbox and MPact Server.

### 3.3.4 SecureCast Mode Configuration

To install and configuration beacons in SecureCast mode:

**On the MPact Server**
1. Configure MPact Server system settings with the mode set to SecureCast.
2. Add beacon positions from the MPact Server Active View. For more information about adding a beacon position, see the Positions section in the MPact Location & Analytics Server Reference Guide at: [www.zebra.com/support](http://www.zebra.com/support).

**On the MPact Toolbox**
1. Provide the MPact Server IP and password from the MPact Toolbox. Go to the Installation screen.
2. Scan beacons to install them from the MPact Toolbox Installation screen.
3. Activate the beacons using the Toolbox Install screen. Activated beacons display in green (if beacons remain grey, ensure they are broadcasting using the Toolbox Configure screen). Only beacons in Connect mode display. The beacons turn green in both the MPact Toolbox and MPact Server.
3.4 Beacon Deployment Considerations

The following are general considerations for placing beacons, mounting beacons, and troubleshooting beacon installation.

3.4.1 Beacon Placement

There are two basic criteria to consider before placing a beacon. The first is placing a beacon so consumer devices have a line of sight (surface side oriented toward the consumer device) with no physical obstructions. The second is placing a beacon so it is not readily visible to the consumer. Sometimes it can be challenging to find a mounting option that meets both criteria. Placing a beacon on the underside of a shelf at roughly chest height meet both criteria.

The surface (side opposite the mounting side) should point in the direction of a device. Assume the device is held in front of a customer between their waist and at chest height. The battery tray should always be to the right when facing the beacon (or from the beacon's perspective, to the left).

3.4.1.1 iBeacon Mode Configuration

**NOTE:** In addition to properly placing beacons, all beacons should preferably be set to the same power.

Placing beacons consistently is important. If a beacon is placed four feet from the ground and another at eight feet, the latter beacon will likely not have as strong a signal and may not trigger device proximity as readily as others. Some situations, like placing beacons in grocery store freezer compartments, do necessitate placing beacons at a higher elevation. Increasing the transmit power may compensate for placing them at a higher elevation.

Typically there are several options for placing beacons on metal store shelves. In the illustration below, option A has the best RF characteristics because there is no signal obstruction. Option B and D both work well on higher shelves, with minimal RF obstruction, and have the advantage of being less visible. Option C should be avoided. D is mounted on the supporting rail of the shelf.

![Figure 3-2 MPact Beacon Placement](image)

Do not place multiple beacons at different heights on the same shelving unit. BLE beacons do not provide the location accuracy necessary to determine difference in the height of the shelf, which would require a foot or less of accuracy. BLE beacons are accurate down to approximately 1 meter. When placing beacons along an aisle, place them no closer than 1 meter apart.
3.4.1.2 Mounting Beacons

The two primary methods for mounting beacons are tie-wraps and mounting brackets. Tie wraps, however, can limit how beacons are placed. For example, placing beacons in cramped spaces can be more difficult using tie wraps. Double sided tape allows more flexibility in placing beacons, but does not work on all surfaces. If using tape, one with a strong adhesive is preferable. If placing beacons temporarily, it is best to use adhesive velcro strips. A front-of shelf bracket for mounting beacons to the concave face of standard store shelving is also offered. For more information about mounting options, refer to the MPact Location & Analytics Hardware Installation Guide available at www.zebra.com/support.

3.4.1.3 Installing Beacons

For best results, use the following sequence for installing beacons:

1. Determine the best location (shelf, stand, display case, etc.) to place the beacon. Identify how it is to be mounted (tie-wrap, tape, etc.).
2. Pull the beacon tab to activate.
3. Use the MPact Toolbox > Installation to mark the location and scan the barcode of the beacon.
4. Configure beacons (please refer to the Beacon Configuration sections in the MPact Location & Analytics Toolbox User Guides) using the MPact Toolbox. This process can be completed prior to installation, and is not strictly required for an installer to perform.
5. Verify the beacon is green within the MPact Toolbox (prior to mounting).
6. Physically attach the beacon to the shelf using adhesive tape (or use another mounting option).
7. If the beacon position does not turn green after 20 seconds from pulling the black battery tab, refer to Beacon Installation Troubleshooting.

3.4.1.4 Beacon Installation Troubleshooting

Sometimes beacons do not turn green during installation. There is criteria that must be met for the MPact Server to positively identify a beacon via the MPact Toolbox. The Toolbox listens to beacons over the air and reports to the MPact Server which beacon IDs it hears. Also, the Toolbox retrieves configuration information about that beacon position and if the beacon it hears matches the configuration information for a beacon position, it knows it has positively identified the beacon on the map and turns the beacon green.

The following parameters must match for beacons to turn green using the Toolbox:

- Beacon Mode (Battery Save, SecureCast, iBeacon, MPact)
  - If in Battery Save Mode
    - Beacon ID (over the air) must match the scanned barcode for a beacon position on the map
  - If in iBeacon Mode
    - UUID (over the air) must match System Configuration UUID on the MPact Server. And
    - Major (over the air) must match major value configured for the beacon position on the Floormap on the MPact Server.
    - Minor (over the air) must match minor value configured for the beacon position on the floormap on the MPact Server.

Or

**NOTE:** At least one beacon placeholder’s major and minor values must be set to zero for the beacon to broadcast its mac address.
- UUID must match and MPact Server major/minor values are 0 (null) and beacon has not been configured with major/minor values and its barcode matches a beacon position with the same scanned barcode on the map.

- If in MPact Mode
  - UUID (over the air) must match System Configuration UUID on MPact Server, AND.
  - Major (over the air) must match major value configured for the beacon position on the floormap on the MPact Server (1.0.1 release. Or
  - UUID must match and MPact Server major value is 0 (null) and beacon has not been configured with major value and its barcode matches a beacon position with the same scanned barcode on the map.

**NOTE:** MPact mode and iBeacon mode require beacons be configured via the MPact Toolbox, either by the installer or as part of a pre-staging process to synchronize the configuration of the beacon and the MPact Server.

The following problems could cause the beacon position to fail to turn green:

- **Misconfigured Beacon Mode:**
  - **Solution:** Either change the MPact Server beacon mode value to match beacons, or configure beacons to match MPact Server. After changing MPact Server beacon mode value, logout and log back in to the Toolbox to refresh MPact Server settings.

- **Misconfigured UUID (either on the beacon, or on the MPact Server)**
  - **Solution:** Either change the MPact Server UUID value to match beacons, or configure beacons to match MPact Server. Note: After changing MPact Server UUID value, the Toolbox must be logged out and logged back to refresh MPact Server settings.

- **Misconfigured Major/Minor values (either on beacon or on the MPact Server)**
  - **Solution:** Either change the MPact Server major/minor values to match beacons, or configure beacons to match MPact Server. Note: After changing MPact Server major/minor values, the Toolbox must be logged out and logged back to refresh MPact Server settings.

- **Beacon scanned for wrong position**
  - **Solution:** Rescan barcode for the beacon position to move beacon to the expected position on the map.

- **Non-unique iBeacon values configured for multiple beacons.** For example, if two beacons both have major=2, minor=4, the Toolbox cannot distinguish between the two physical beacons over the air, and is unable to determine which beacon position to turn green.
  - **Solution:** Change the configuration of the beacon positions so each spot has a unique combination of major/minor values. For MPact mode, make sure the major values are unique.

Installation failures can be the result of the following:

- **Battery Failure** - Try a different battery, or try pulling the battery tray out and push it back in.

- **Beacon not transitioning into beaconsample mode** - Sometimes a bad configuration update or bad firmware update prevents the beacon from entering into beacon mode. Beacons, when first powered, go into connect mode for 20 seconds, before transitioning into Beacon Mode. Try using the **Beacon Configuration** or **Over The Air Upgrade** screens to either reapply the configuration or re-flash the firmware again.

- **Improper iPad/iPhone hardware.** Ensure the MPact Toolbox is installed on an iPad 3 (or better), or iPad Mini to run the Toolbox software. Previous iPad models do not have BLE radios, and do not hear beacons.
• **Beacon firmware incompatibility with SDK.** Some features may depend on a newer version of firmware on the beacon. Make sure a beacon’s firmware is compatible with the version of MPact Toolbox used.

Check the following if beacon installation is not proceeding as expected:

1. Open up the MPact Toolbox and go to **MPact Toolbox > Beacon Configure.**
2. Remove and reinsert the battery tray to reset the beacon.
3. Look for a beacon to appear in the list. If it does not, try a different battery. If it appears, select the beacon and tap reboot. (Alternatively, a third party BLE scanner application could be used to see if the beacon is operational or not).
4. If a beacon still does not boot into beacon mode, follow the beacon configuration process to reapply the configuration from the MPact Server.
5. If a beacon still does not boot into beacon mode, follow the beacon firmware upgrade process to reapply the correct firmware version.
6. If a beacon still does not boot into beacon mode, the beacon may be defective or have corrupt firmware.

### 3.4.1.5 MPact Server Troubleshooting

If the MPact Server is not functioning properly, it can cause an application to fail to work correctly if the application depends on information from the MPact Server such as X,Y coordinates, product categories, or client status information.

If the login page can be reached, but login fails with an error, or login does not proceed with either success or failure, there may be underlying services that failed.

To troubleshoot:

1. SSH to the MPact Server.
2. Login as root/mpact (if install via the Zebra OVA installation process).
3. Check the path `/usr/nuxi/scripts/bin/nxstats status` and look for services in the list that indicate are done running or show similar signs of failure.
4. If any services have stopped, try restarting the services with the command: `/usr/nuxi/scripts/bin/nxstats stop` and then `/usr/nuxi/scripts/bin/nxstats start`.
5. Try logging into to the MPact Server Web User Interface.

If the MPact Server still fails to start, it could be a database or disk space issue. Use the df command to see whether the MPact Server has run out of disk space. Use the free command to verify MPact Server memory usage. Resolving these issues is beyond the scope of this document, as once database corruption occurs, it may not be fixable without reverting to a backup.

### 3.4.1.6 Client Location Troubleshooting

Not seeing clients in the Active View map from the MPact Server UI can be an issue.

The following are a some of the causes:

- The MPact Server user interface is in **Active View** Floorplan edit mode. Ensure the MPact Server user interface is not in the Active View Floorplan edit mode.
- Beacons in MPact mode while using region notifications with major values. When Beacons are configured with major values, a site ID beacon is required to initialize location updates for a site. This means a beacon needs to be configured with major=0, to serve as a site ID beacon.
- A client device does not have BLE capabilities or Bluetooth radio is disabled, or location settings are turned off on the client device.
- The license on the MPact Server has been exceeded causing analytic features to be disabled.
3.4.1.7 Analytics Troubleshooting

MPact analytic charts and graphs are available within the MPact Server user interface. These graphs are updated based on client activity. However, in some cases they may not update as expected.

If the charts on the Dashboard screen (Dashboard > Insights) are not incrementing client counts or graphs, check the following:

- Verify whether two hours have passed. The analytic charts update every two hours on the hour.
- Verify client location is functioning properly. Refer to Client Location Troubleshooting.
If you have a problem with your equipment, contact Support for your region. Support and issue resolution is provided for products under warranty or that are covered by a services agreement. Contact information and Web self-service is available by visiting www.zebra.com/support.

When contacting Support, please provide the following information:

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

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

**Customer Support Web Site**

The support site, located at www.zebra.com/support 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: www.zebra.com/support.