

Extension Manager

Version 4.0.24403

Workcloud Communication



ZEBRA

Customer Administrator Guide

2025/03/24

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About This Document

The Zebra Extension Manager Service builds on the dynamic and flexible nature of the Workcloud Communication (Zebra) Voice client. The Extension Manager provides a service for creating and distributing extension configurations to Zebra Voice clients at enterprise scale. The Extension Manager controls and manages extension assignments used by the Voice clients attaching to the PBX.

This document provides the customer administrator with a guide to the general operation and interaction between the Extension Manager service and Zebra Voice clients. It describes the components and configuration files used to integrate the Extension Manager with the Zebra Voice clients.

The customer administrator should be familiar with the manual method of voice client configuration. This document uses a process approach and should be read front to back to learn basic functionality and then expand to a more sophisticated scalable enterprise configuration.

Assumptions

This document assumes that the reader is versed with detailed configuration techniques and capabilities of Zebra Voice. The reader should be familiar with the Zebra administrator guide for the PBX they are working with. Along with its other capabilities, the Extension Manager provides a scalable mechanism to configure the Zebra Voice parameters described in the Zebra administrator guides.

This document was written using the following versions:

- Zebra Extension Manager version 2.8.103
- Zebra Voice 9.0.20306 or later.

Chapter Descriptions

Topics covered in this guide are as follows:

- [About This Document](#) provides information about the content of this document, conventions, and how to contact customer support.
- Extension Manager Overview provides information on concepts and capabilities of the Extension Manager.
- [Client and Server Configuration](#) provides a deployment check list for items the customer administrator must consider before deploying the Extension Manager.
- [Extension Manager Configuration Flow](#) provides information about the configuration process and guides the customer administrator on the process and dependencies.

- [Zebra Voice Client Configuration](#) provides information on configuring the Zebra Voice client to communicate with the Extension Manager.
- [Using the Extension Manager User Interface](#) provides a high-level overview of the console interface for the Extension Manager user interface.

Notational Conventions

The following notational conventions make the content of this document easy to navigate.

- **Bold** text is used to highlight the following:
 - Dialog box, window, and screen names
 - Dropdown list and list box names
 - Checkbox and radio button names
 - Icons on a screen
 - Key names on a keypad
 - Button names on a screen
- Bullets (•) indicate:
 - Action items
 - List of alternatives
 - Lists of required steps that are not necessarily sequential
- Sequential lists (for example, those that describe step-by-step procedures) appear as numbered lists.

Related Documents

The following documents provide information about the Zebra Extension Manager and Zebra Voice Client applications.

- Workcloud Communication Profile Manager Administrator Guide
- Workcloud Communication PTT Pro Version 3.3 User Guide for Android
- Workcloud Communication Extension Customer Administrator Guide
- Workcloud Communication Voice Client 9.0.20306 and Later Administrator Guide for Licensing
- Workcloud Communication Voice Client 9.x Administrator Guide for Asterisk
- Workcloud Communication Voice Client 9.x Administrator Guide for Avaya Aura
- Workcloud Communication Voice Client 9.x Administrator Guide for Avaya IP Office 9
- Workcloud Communication Voice Client 9.x Administrator Guide for Cisco CME
- Workcloud Communication Voice Client 9.x Administrator Guide for Cisco CUCM
- Workcloud Communication Voice Client 9.x Administrator Guide for Mitel
- Workcloud Communication Voice Client 9.x Configuration Guide for Rauland
- Workcloud Communication Voice Client 9.x Configuration Guide for Zoom
- Workcloud Communication Voice Client 9.x Configuration Guide for WebEx

For the latest version of these guides and all guides, go to: zebra.com/support.

Icon Conventions

The documentation set is designed to give the reader more visual clues. The following visual indicators are used throughout the documentation set.



NOTE: The text here indicates information that is supplemental for the user to know and that is not required to complete a task.



IMPORTANT: The text here indicates information that is important for the user to know.



CAUTION: If the precaution is not heeded, the user could receive a minor or moderate injury.



WARNING: If danger is not avoided, the user CAN be seriously injured or killed.



DANGER: If danger is not avoided, the user WILL be seriously injured or killed.

Service Information

If you have a problem with your equipment, contact Zebra Global Customer Support for your region. Contact information is available at: zebra.com/support.

When contacting support, please have the following information available:

- Serial number of the unit
- Model number or product name
- Software/firmware type and version number

Zebra responds to calls by email, telephone, or fax within the time limits set forth in support agreements.

If your problem cannot be solved by Zebra Customer Support, you may need to return your equipment for servicing and will be given specific directions. Zebra is not responsible for any damages incurred during shipment if the approved shipping container is not used. Shipping the units improperly can possibly void the warranty.

If you purchased your Zebra business product from a Zebra business partner, contact that business partner for support.

Revision History

| Revision | Date | Description |
|----------------|---------|--|
| MN-004153-01 A | 03/2021 | Initial release |
| MN-004153-01 B | 07/2021 | Fix cross reference and typo. Add revision history. |
| MN-004153-02 A | 11/2021 | Updated the UI changes. |
| MN-004153-03 A | 03/2022 | Updated the UI changes. |
| MN-004153-04 A | 06/2022 | Color Indicator Description changes for View Assigned License. |

About This Document

| Revision | Date | Description |
|----------------------|---------|---|
| MN-004153-05 A | 09/2022 | Updated the changed UI screen shots and removed color indicators. |
| MN-004153-06EN Rev A | 10/2022 | Added the Add a Subscription. |
| MN-004153-07EN Rev A | 07/2023 | Added Extension Manager Backup and Restore. |
| MN-004153-08EN Rev A | 10/2023 | Added filtering features for department and extension and accessing contacts on department level. |
| MN-004153-09EN Rev A | 1/2024 | Added Extension Manager Dashboard Interface. |
| MN-004153-09 Rev B | 1/2024 | Updated the Create Department screenshot, replaced reference to console roles with Site Roles related information in the Manage Site Roles. |
| MN-004153-10EN Rev A | 04/2024 | Added Secondary PBX Information, Upload Extension Manager Contacts, Subscription Checkpoints in Hosted EXM History, Export Data from EXM, and rebranded Workforce Connect And WFC as Workcloud Communication and Zebra. |
| MN-004153-11EN Rev A | 07/2024 | Added License validation note and updated Custom Department Settings and Behavior table. |
| MN-004153-12EN Rev A | 09/2024 | Updated License Summary, Assigned License and added Export Contacts. |
| MN-004153-13EN Rev A | 01/2025 | Updated Create Extension. |
| MN-004153-14EN Rev A | 03/2025 | Added Export Site IPs. |

Extension Manager Overview

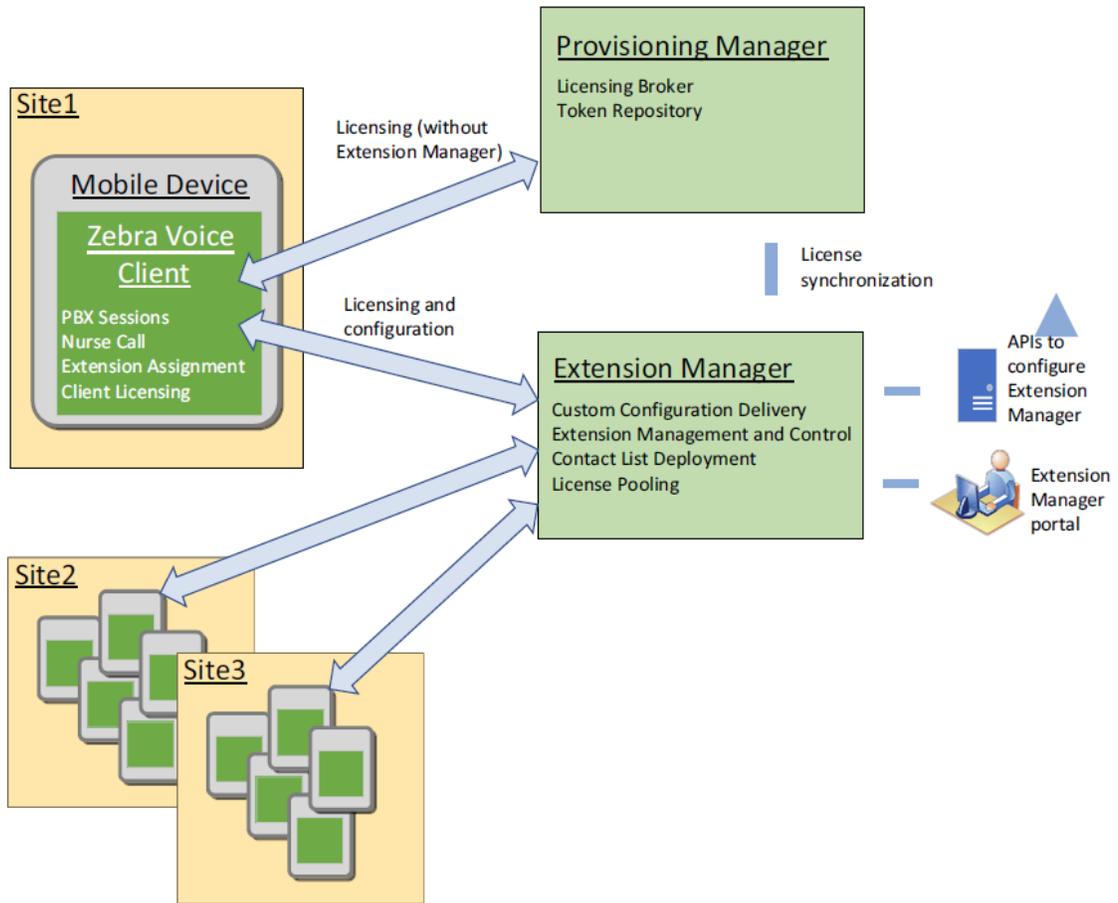
The Extension Manager is a Zebra-hosted, cloud-based platform and provides a central point for all Zebra Voice configuration elements and control. This service provides control and visibility for license and device status across the enterprise from a browser interface.

Extension Manager Architecture

The Zebra Provisioning Manager retrieves Zebra Voice licenses from the licensing system and the Extension Manager provides a proxy service, distributing licenses to connected devices. To enable the proxy service, the Provisioning Manager and the Extension Manager regularly synchronize licenses over a secure connection.

The browser-based user interface, the Extension Manager APIs, and mobile devices communicate using secure SSL connections. The customer network must provide access to TCP Port 443 to facilitate secure communication. The specific URL for the Extension Manager is provided at the initial deployment.

Figure 1 Extension Manager Architecture and Data Flow

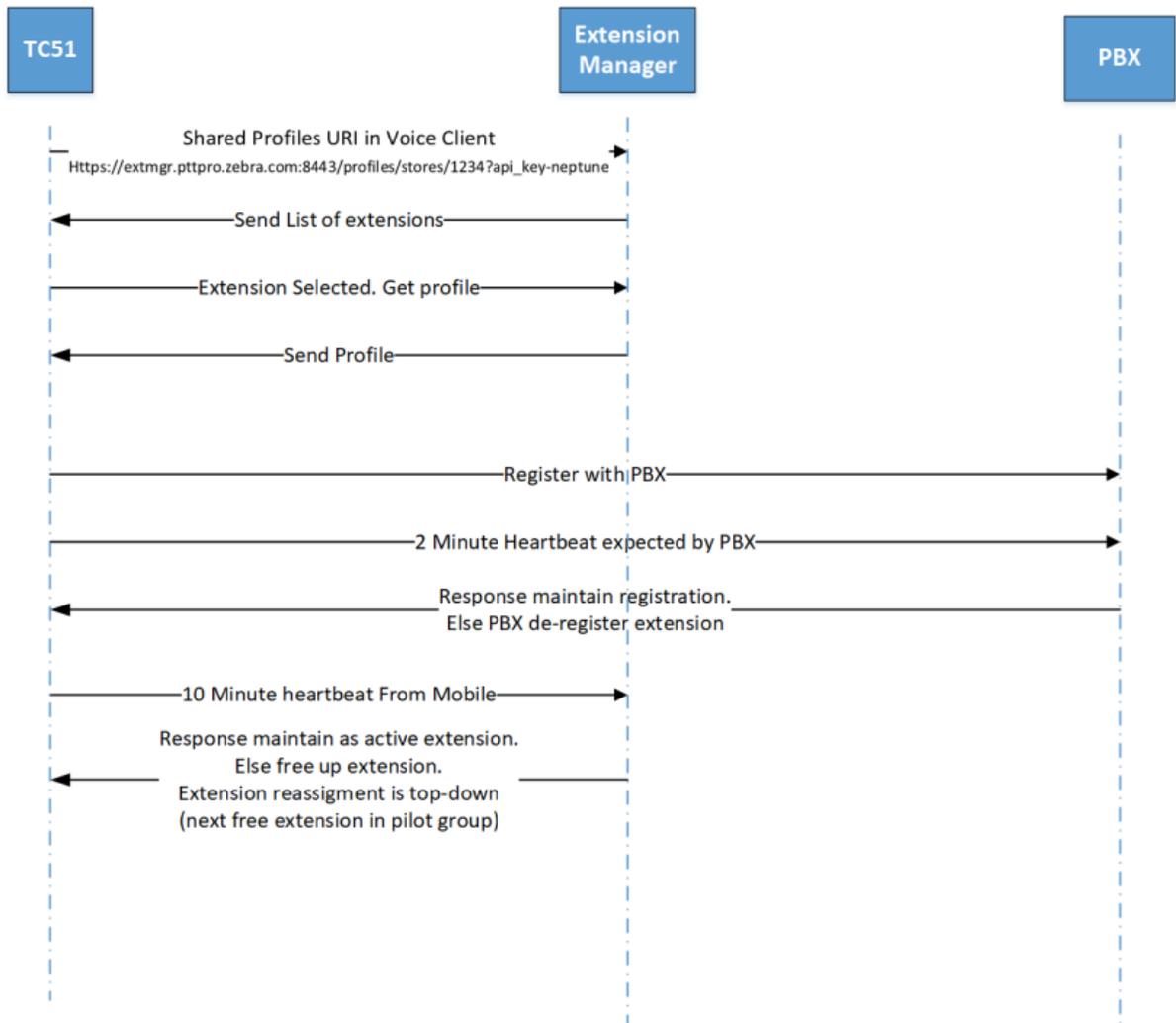


Extension Manager and Zebra Voice Communication

Extension Manager provides extension status, control, and configurations to Zebra Voice Clients using secure communications. Zebra Voice clients communicate directly with the PBX using the configuration received from the Extension Manager. The Extension Manager does not communicate with the PBX but it manages which extensions are provided to Zebra Voice client and controls the extensions that are available for other mobile devices. The Extension Manager must be configured with the PBX extensions to enable this functionality.

The below diagram illustrates the communication flow between the device, Extension Manager, and PBX.

Figure 2 Communication Between Components



Managing Voice Client Configuration at Login

Prior to the Extension Manager, customers using the Zebra Voice Client created large and complex XML configuration files and downloaded the configuration files to each client. To simplify this effort, administrators download the same configuration to each client. This method does not fit the business practices expected in today's market. Customers require multiple configurations based on user role or extension.

When a user signs in to the Zebra Voice client and starts the client, the client contacts the Extension Manager for a configuration. The process of creating different configurations is described in this document, but the configuration includes:

- PBX configuration
- Site, Department, and Extension configuration
- Custom Dashboard and In-Call function buttons
- Contact list information

- Custom ringtones

Once an extension is selected and the configuration created, that configuration is provided to the Zebra Voice Client. When the user signs out of the client, the configuration is removed. This makes the extension(s) available to other clients and makes the device available for another user who might have a different configuration based on their identity.

Extension Manager Features

The following features are available in the Extension Manager. These features may not be used in every deployment but they provide a range of options the customer can use to meet business requirements.

Extension pooling

In many situations, a Department may have multiple extensions defined in the PBX. For example, the Sporting Goods department in a retail store could have five extensions allocated. When a user logs into the Zebra Voice client and is assigned Sporting Goods, the Extension Manager finds and assigns one of the five available extensions for that device. In this way, the Department extensions are pooled and distributed as required to the mobile device.

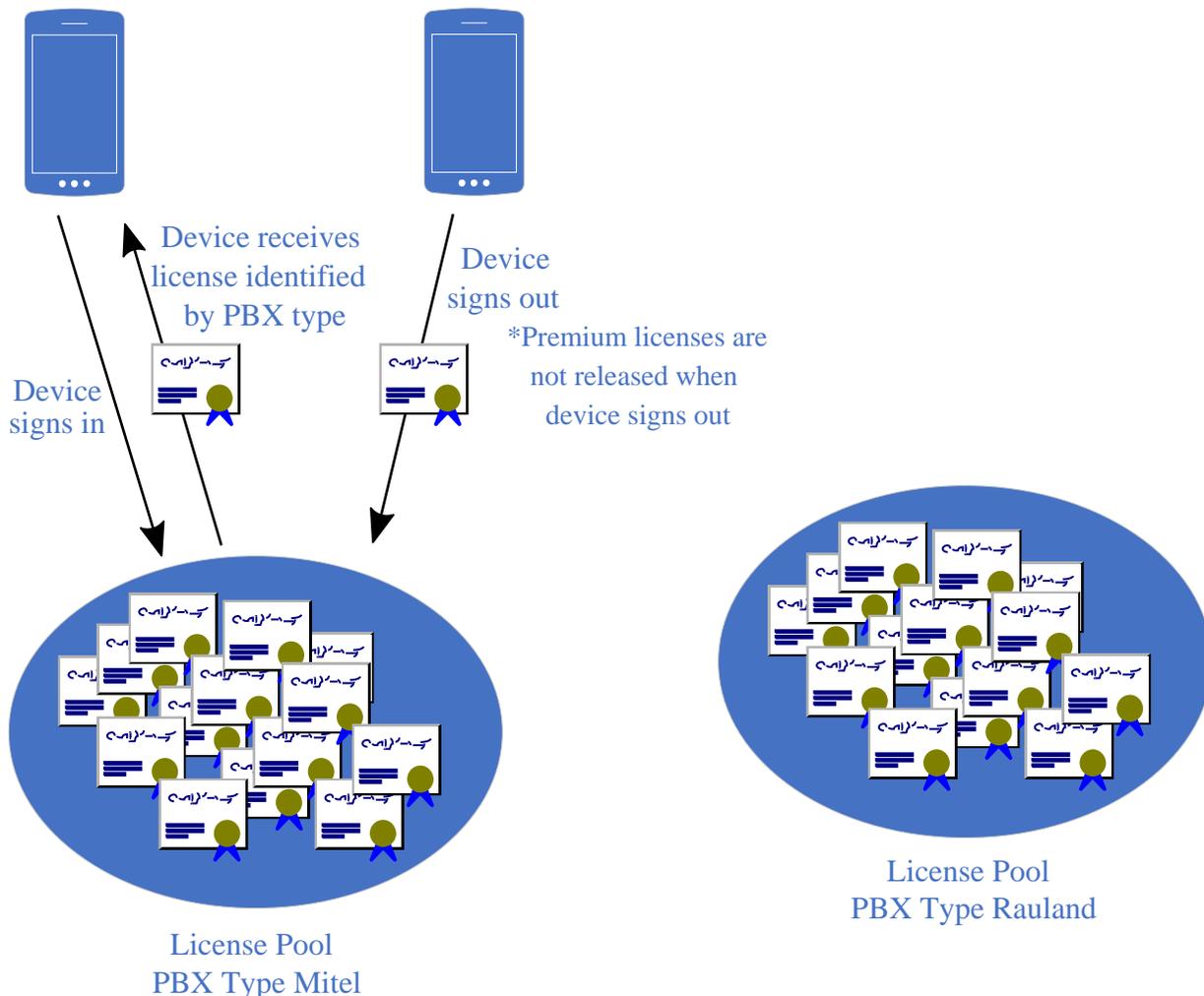
License pooling

A Zebra Voice client license is required for each operational device. License pooling for standard Zebra Voice licenses enables the Extension Manager to issue a license for the device when the user logs in. When the user logs out, the license is released. The customer does not need to license devices that are offline, being charged, or in the service depot. The required number of licenses reflects the number of actively registered Zebra Voice clients in use.



NOTE: License pooling is not available for Zebra Voice Premium licenses.

Figure 3 License Assigned and Released



Roles and Groups

Roles enable the customer administrator to organize the extensions presented to a user based on role. For example, a site may have three different roles: Manager, Department Lead, and Associate. In a shared device model, when a Manager signs into a Zebra Voice client, the Extension Manager presents manager-designated extensions. This same concept applies to Department Lead and Associate extensions. In the absence of this feature, depending on the configuration, the user would see and need to choose from the complete list of extensions for the Site.

Groups provide the ability to organize and present a logical structure of hierarchical group levels to the user. This capability is optional but enables the user to select the desired extension(s). This option also provides the ability to define a security PIN to access specific extensions.

For an example of using groups, consider the extension table in Figure 4. Notice the columns `dep_role` (Department Role), `dep_code` (Department Code), and `dep_role_desc` (Department Role Description). Extensions intended for GM Support are grouped under Department Code U100, Department Managers extensions are grouped under U200, and Associates extensions are grouped under U300.

Extension Manager Overview

Figure 4 Example Extensions Table

| store_name | store | store_mu | dep_name | dep_info | dep_auto | dep_hidden | dep_reserved | dep_role | dep_role_desc | dep_code | ext_name | ext_info | pb |
|------------|-------|----------|--------------------|--------------------|----------|------------|--------------|--------------|---------------------------|----------|--------------|----------|----|
| 100 | yes | | GM Support MGR | GM Support MGR | no | no | no | GM Manager | GM Support MGR | U100 | GM Lead 1 | Ext 5000 | |
| 100 | yes | | GM Support MGR | GM Support MGR | no | no | no | GM Manager | GM Support MGR | U100 | GM Lead 2 | Ext 5001 | |
| 100 | yes | | GM Support MGR | GM Support MGR | no | no | no | GM Manager | GM Support MGR | U100 | GM Lead 3 | Ext 5002 | |
| 100 | yes | | GM Support MGR | GM Support MGR | no | no | no | GM Manager | GM Support MGR | U100 | GM Lead 4 | Ext 5003 | |
| 100 | yes | | GM Support MGR | GM Support MGR | no | no | no | GM Manager | GM Support MGR | U100 | GM Lead 5 | Ext 5004 | |
| 100 | yes | | Consumables DM | Consumables DM | no | no | no | Dept Manager | Department Manager | U200 | Consumable | Ext 5020 | |
| 100 | yes | | Consumables DM | Consumables DM | no | no | no | Dept Manager | Department Manager | U200 | Consumable | Ext 5021 | |
| 100 | yes | | Consumables DM | Consumables DM | no | no | no | Dept Manager | Department Manager | U200 | Consumable | Ext 5022 | |
| 100 | yes | | Fashion/Home DM | Fashion/Home DM | no | no | no | Dept Manager | Department Manager | U200 | Fashion-Home | Ext 5040 | |
| 100 | yes | | Fashion/Home DM | Fashion/Home DM | no | no | no | Dept Manager | Department Manager | U200 | Fashion-Home | Ext 5041 | |
| 100 | yes | | Fashion/Home DM | Fashion/Home DM | no | no | no | Dept Manager | Department Manager | U200 | Fashion-Home | Ext 5042 | |
| 100 | yes | | Fashion/Home DM | Fashion/Home DM | no | no | no | Dept Manager | Department Manager | U200 | Fashion-Home | Ext 5043 | |
| 100 | yes | | Fashion/Home DM | Fashion/Home DM | no | no | no | Dept Manager | Department Manager | U200 | Fashion-Home | Ext 5044 | |
| 100 | yes | | Jewelry DM | Jewelry DM | yes | no | no | Dept Manager | Department Manager | U200 | | | |
| 100 | yes | | Lawn and Garden DM | Lawn and Garden DM | yes | no | no | Dept Manager | Department Manager | U200 | | | |
| 100 | yes | | Sporting Goods DM | Sporting Goods DM | yes | no | no | Dept Manager | Department Manager | U200 | | | |
| 100 | yes | | Bakery DM | Bakery DM | yes | no | no | Dept Manager | Department Manager | U200 | | | |
| 100 | yes | | Deli DM | Deli DM | yes | no | no | Dept Manager | Department Manager | U200 | | | |
| 100 | yes | | Dry Grocery DM | Dry Grocery DM | yes | no | no | Dept Manager | Department Manager | U200 | | | |
| 100 | yes | | Produce DM | Produce DM | yes | no | no | Dept Manager | Department Manager | U200 | | | |
| 100 | yes | | Consumables | Consumables | yes | no | no | Associate | Plain Old Store Associate | U300 | | | |
| 100 | yes | | Consumables | Consumables | yes | no | no | Associate | Plain Old Store Associate | U300 | | | |
| 100 | yes | | Consumables | Consumables | yes | no | no | Associate | Plain Old Store Associate | U300 | | | |
| 100 | yes | | Consumables | Consumables | yes | no | no | Associate | Plain Old Store Associate | U300 | | | |
| 100 | yes | | Consumables | Consumables | yes | no | no | Associate | Plain Old Store Associate | U300 | | | |
| 100 | yes | | Consumables | Consumables | yes | no | no | Associate | Plain Old Store Associate | U300 | | | |
| 100 | yes | | Entertainment | Entertainment | yes | no | no | Associate | Plain Old Store Associate | U300 | | | |
| 100 | yes | | Entertainment | Entertainment | yes | no | no | Associate | Plain Old Store Associate | U300 | | | |
| 100 | yes | | Entertainment | Entertainment | yes | no | no | Associate | Plain Old Store Associate | U300 | | | |
| 100 | yes | | Entertainment | Entertainment | yes | no | no | Associate | Plain Old Store Associate | U300 | | | |
| 100 | yes | | Entertainment | Entertainment | yes | no | no | Associate | Plain Old Store Associate | U300 | | | |
| 100 | yes | | Fashion/Home | Fashion/Home | yes | no | no | Associate | Plain Old Store Associate | U300 | | | |
| 100 | yes | | Fashion/Home | Fashion/Home | yes | no | no | Associate | Plain Old Store Associate | U300 | | | |
| 100 | yes | | Fashion/Home | Fashion/Home | yes | no | no | Associate | Plain Old Store Associate | U300 | | | |
| 100 | yes | | Fashion/Home | Fashion/Home | yes | no | no | Associate | Plain Old Store Associate | U300 | | | |
| 100 | yes | | Fashion/Home | Fashion/Home | yes | no | no | Associate | Plain Old Store Associate | U300 | | | |
| 100 | yes | | Jewelry | Jewelry | yes | no | no | Associate | Plain Old Store Associate | U300 | | | |
| 100 | yes | | Jewelry | Jewelry | yes | no | no | Associate | Plain Old Store Associate | U300 | | | |
| 100 | yes | | Jewelry | Jewelry | yes | no | no | Associate | Plain Old Store Associate | U300 | | | |
| 100 | yes | | Jewelry | Jewelry | yes | no | no | Associate | Plain Old Store Associate | U300 | | | |

Voice Client Screen Flow

Using this configuration, when a user signs in they are presented with the three roles. Each role is uniquely identified and organized by the value of U100, U200, and U300. The dep_role and dep_role_desc appear in the display.

Figure 5 Select Role

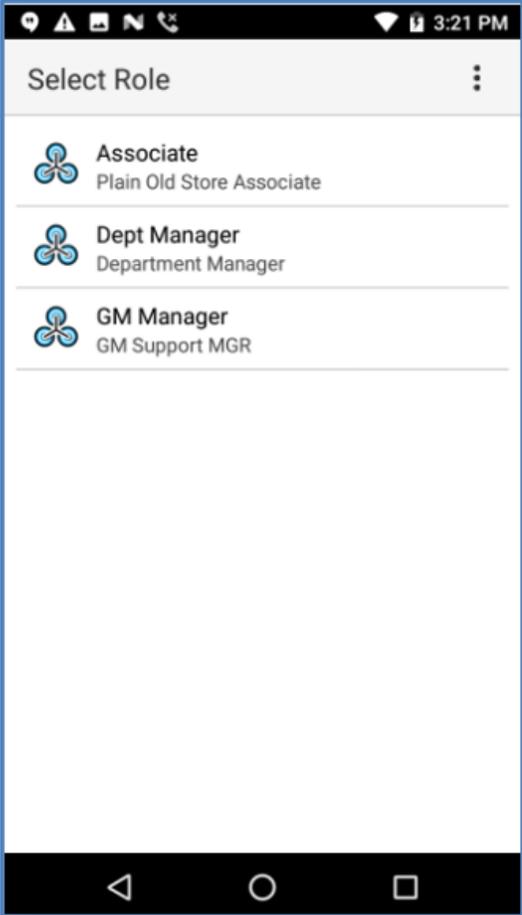
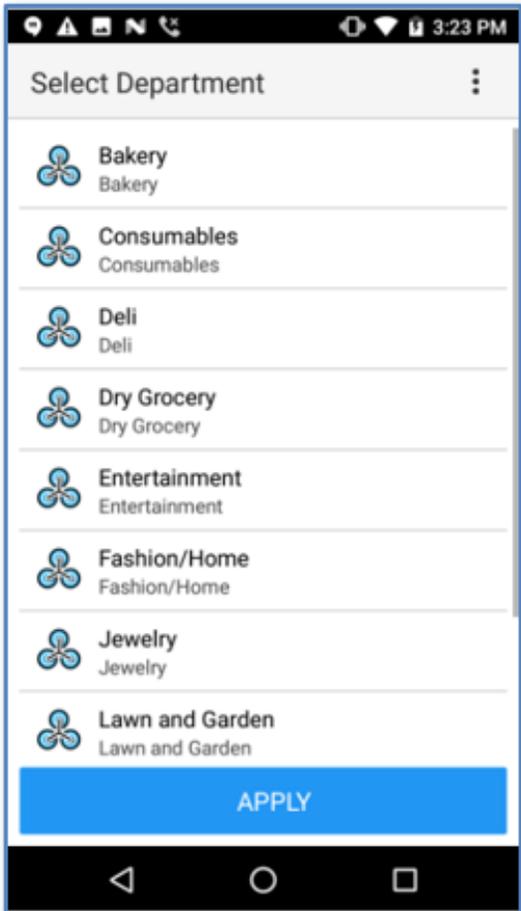


Figure 6 and Figure 7 show the available extension groups for the Associate and Dept Mgr roles.

Figure 6 Associate Extension Groups



Note that in the extensions table (Figure 4), all Associates have 'dep_auto' set to yes. When an associate selects one of the Associate departments, the Extension Manager finds an available extension from the department's pool of five and assigns it to the user.

The Dept Managers, Fashion-home, and Consumables have 'dep_auto' set to no. When a user selects one of these departments, the user is prompted to select one of the available extensions, as shown in Figure 8. General Managers, Figure 9, have the same option.

Figure 7 Fashion Home Extension Selection

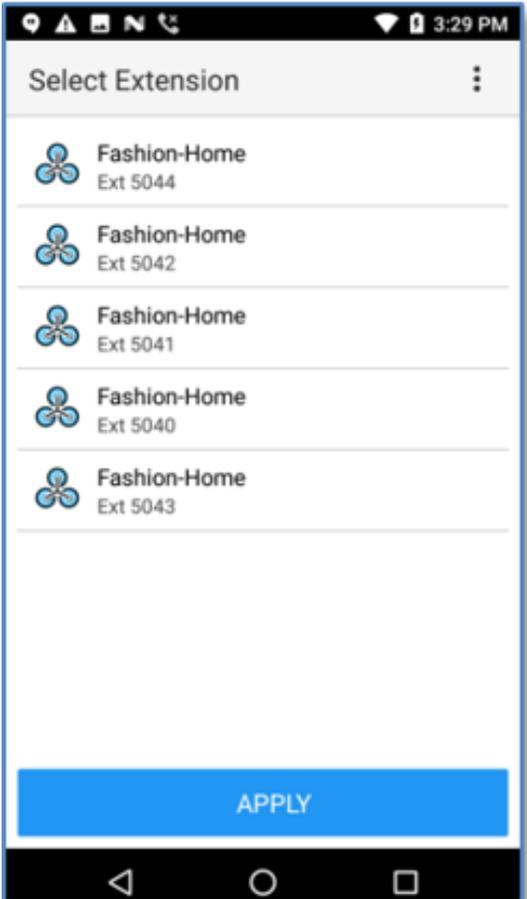


Figure 8 General Manager Extension Selection

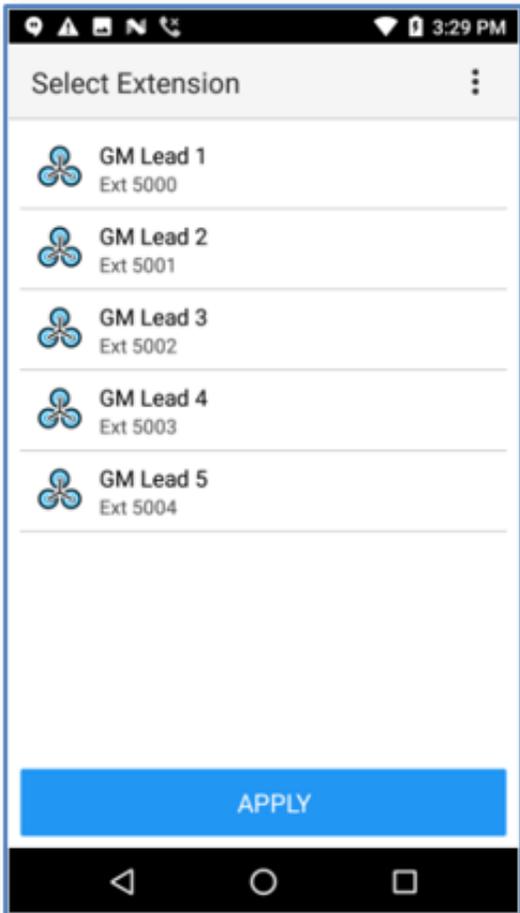
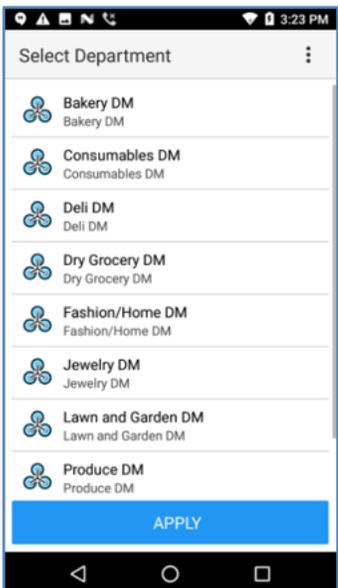


Figure 9 Dept. Mgr Extension Groups





NOTE: This leads to the device consuming old licenses. Voice Client does not refresh the license validity unless the license check interval has elapsed, the token has been scanned, or the system has been rebooted. Since the license validation interval is 90 days, the Voice Client might not pull the license for 90 days. The device checks the license validity date in various locations where the license was used and displays an error message such as "Your License Has Been Expired." When the Voice Client takes extensions from the Extension Manager, it fetches the available license with the farthest expiry date.

EXM always returns the available license with the farthest expiration date. This is performed when the Voice Client takes extensions from EXM.

When the device license is synchronized from the Extension Manager to the Provisioning Manager, the device license data is pushed to the Provisioning Manager. At that time, the Provisioning Manager checks whether the device-license data exists. If it exists, the Provisioning Manager compares which of them is the latest and updates the data in the Provisioning Manager only if the Extension Manager has the latest data. Before license synchronization, if we have a license with quantity two, the Voice Client can fetch 2 licenses from the Extension Manager and 2 licenses from the Provisioning Manager. So, a total of 4 devices can be fetched.

Extension Manager File Store

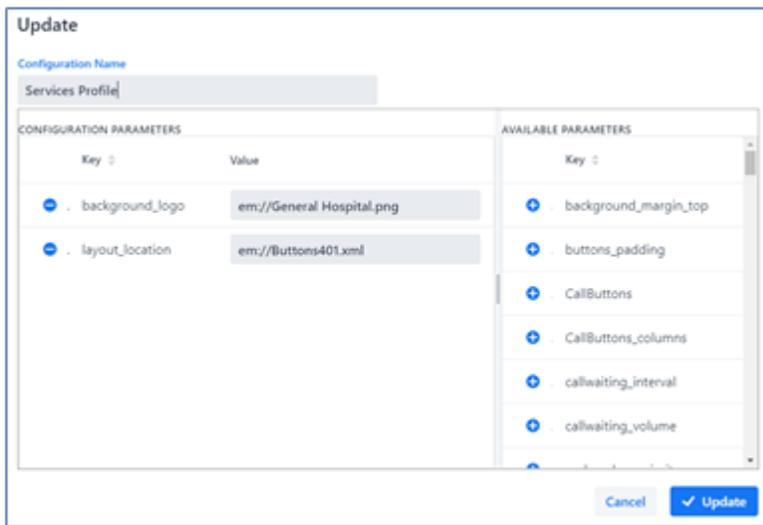
In many deployments, files are added to the Zebra Voice Client configuration to enhance the user experience. For example, the function buttons may define an icon or image (PNG), custom ringtones, or pictures of contacts to fully customize the user interface. These files can reside in various places, such as the device's SD card, and are delivered by an MDM or an external web server. The Extension Manager provides a central repository for these files.

Storing configuration elements in a single location provides a convenient and helpful solution. The icon and configuration files in the file store that are delivered to the Zebra Voice Client at sign-in are specified by `em://<filename>` in the Configuration parameters string. This string causes the client to retrieve the specified file from the Extension Manager's File Store.



NOTE: If the file name is not prefixed `em://`, the Zebra Voice Client searches for the file on the device storage before retrieving the file from the Extension Manager.

Figure 10 Using the Extension Manager File Store

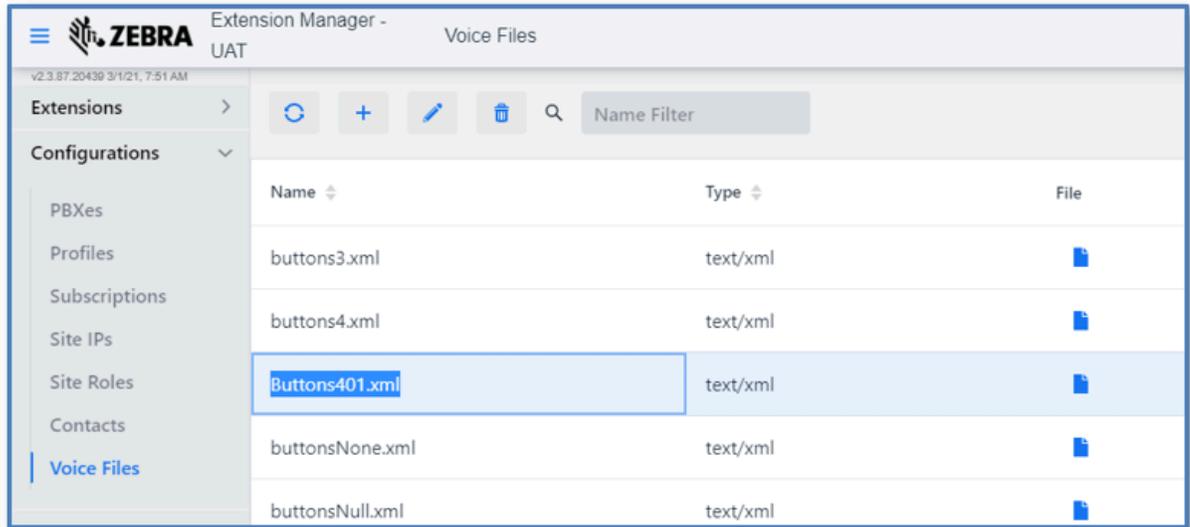


Extension Manager Overview

The above figure shows two configuration elements using the File Store: the background logo and the layout location.

Files are added to the File store using the **Configuration>Voice Files** menu in the Extension Manager user interface.

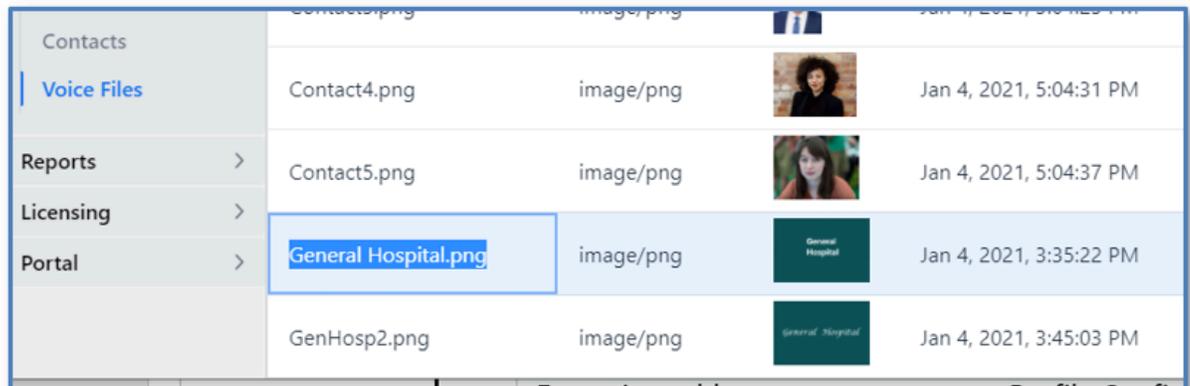
Figure 11 Button Image in File Store



The screenshot shows the Zebra Extension Manager interface. The top navigation bar includes the Zebra logo, 'Extension Manager - UAT', and 'Voice Files'. Below the navigation bar is a toolbar with icons for refresh, add, edit, delete, and search, along with a 'Name Filter' input field. A sidebar on the left lists various configuration categories, with 'Voice Files' selected. The main content area displays a table of files:

| Name | Type | File |
|-----------------------|----------|---|
| buttons3.xml | text/xml |  |
| buttons4.xml | text/xml |  |
| Buttons401.xml | text/xml |  |
| buttonsNone.xml | text/xml |  |
| buttonsNull.xml | text/xml |  |

Figure 12 Background Image in File Store



The screenshot shows the Zebra Extension Manager interface. The top navigation bar includes the Zebra logo, 'Extension Manager - UAT', and 'Voice Files'. Below the navigation bar is a toolbar with icons for refresh, add, edit, delete, and search, along with a 'Name Filter' input field. A sidebar on the left lists various configuration categories, with 'Voice Files' selected. The main content area displays a table of files:

| Name | Type | File | Timestamp |
|-----------------------------|-----------|---|-------------------------|
| Contact4.png | image/png |  | Jan 4, 2021, 5:04:31 PM |
| Contact5.png | image/png |  | Jan 4, 2021, 5:04:37 PM |
| General Hospital.png | image/png |  | Jan 4, 2021, 3:35:22 PM |
| GenHosp2.png | image/png |  | Jan 4, 2021, 3:45:03 PM |

Using the Extension Manager's File Store, the Button.xml (Figure 11) and the Background Logo image (Figure 12) render the interface shown in Figure 13 when the user signs in.

Figure 13 Custom Zebra Voice Client Interface



Hierarchical Configuration

The main purpose of the Extension Manager is to configure a Zebra Voice Client when a user signs in. There are various steps during the sign-in process where configuration files are evaluated, assembled, and provisioned to the client.

The first step is processing the Configuration Profile. A Configuration Profile requires a name and can include any number of configuration elements. These are the same elements that were previously constructed in the `wfconnect.xml` file.

Using the Root Profile

If a Profile is created and named Root, then every device in that enterprise receives the Root configuration. This is the most basic configuration defined for all devices. For example, if a customer wants to enable client logging on all devices, the customer can create a Root profile and include the `log_file` parameter and, optionally, specify the level of logging with the `log_level` parameter. Any number of parameters can be added to the Root Profile.

Figure 14 Root Profile Configuration Example

Add

Configuration Name
Root

| CONFIGURATION PARAMETERS | | AVAILABLE PARAMETERS |
|--------------------------|-------------------------------------|-----------------------|
| Key | Value | Key |
| [-] . log_file | <input checked="" type="checkbox"/> | [+] . jitter_max |
| [-] . log_level | Error | [+] . jitter_min |
| | | [+] . layout_location |
| | | [+] . license_alias |
| | | [+] . license_key |
| | | [+] . license_source |

Cancel Add

Configuration Profiles

Customers typically build additional profiles to create specific configurations from Site to Site, Department to Department, and Extension to Extension. When the Zebra Voice Client retrieves an authorized extension, the configuration for that extension is built using this hierarchical process.

1. The Root profile is retrieved first.
2. If a configuration profile is defined for that Site, the Site configuration overlays the Root.
3. If a configuration profile is defined for the Department of that Site, the Department configuration overlays the Site.
4. If an Extension has specific configuration parameters, these parameters are added to the configuration.
5. The final configuration is delivered to the Zebra Voice Client.

Configuration parameters overwrite prior values in the following order: Root, Site, Department, Ext.

The definition of a configuration profile can be quite specific, detailing specific functionality for an extension, such as Button Icons, Night Call Forward services, or many other possibilities. The customer administrator should carefully consider a profile naming convention when multiple Sites, Departments, and Extensions are involved.

Figure 15, Figure 16, and Figure 17 illustrate the logical hierarchical relationships and the sign-in flow where the var_location is:

```
//<extension_manager_uri>/profiles/sites/1026?api_key=<API_key>&dep=Hardware.
```

Figure 15

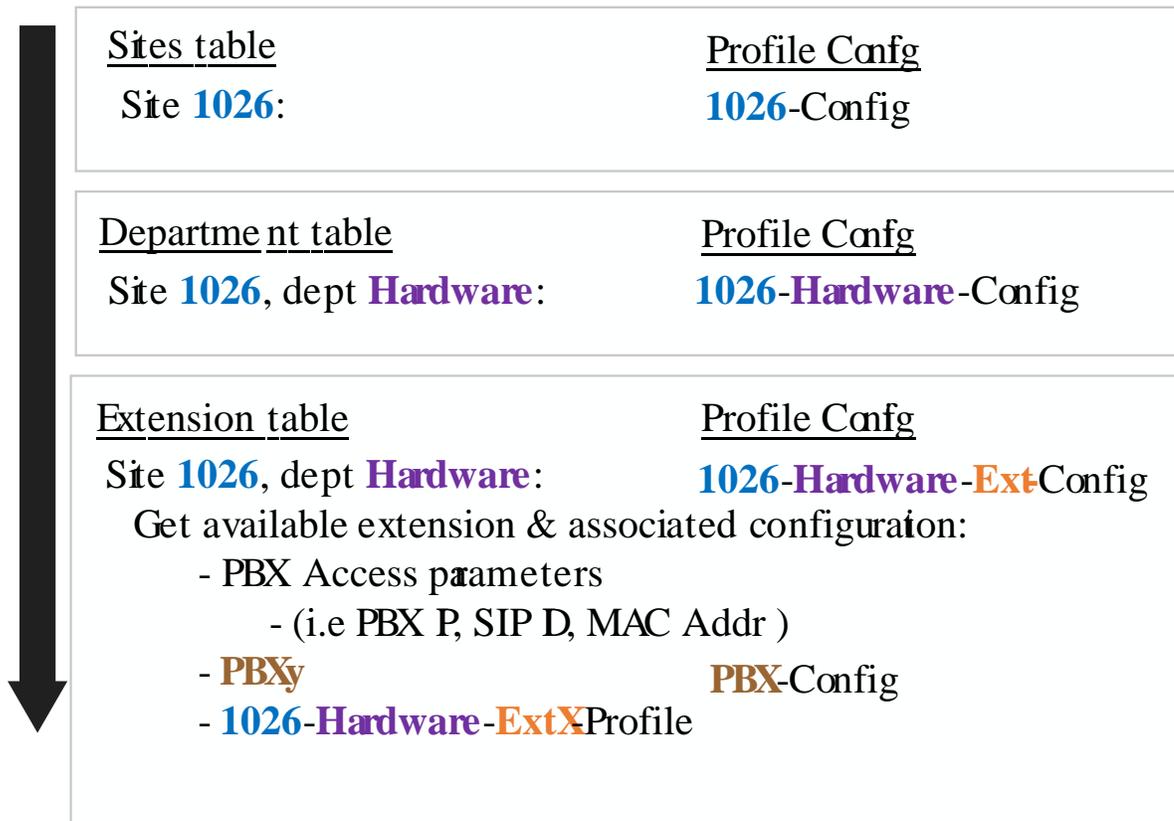


Figure 16 Hierarchical Configuration Blob Built

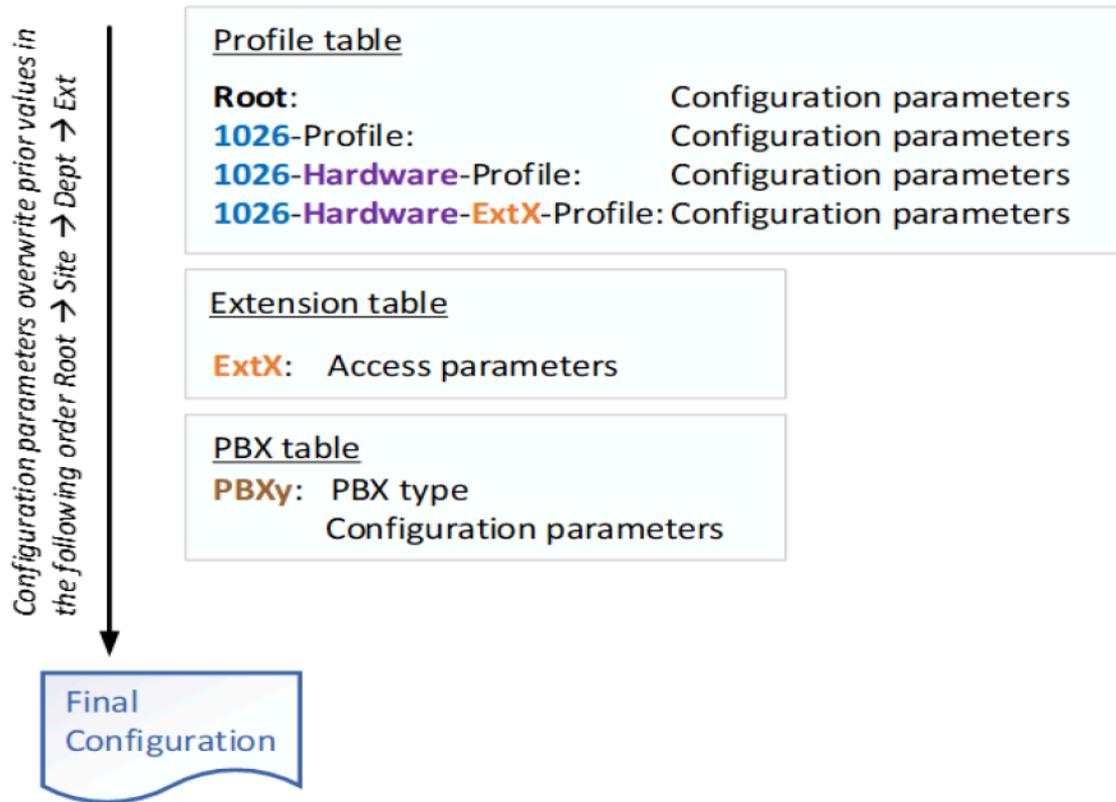
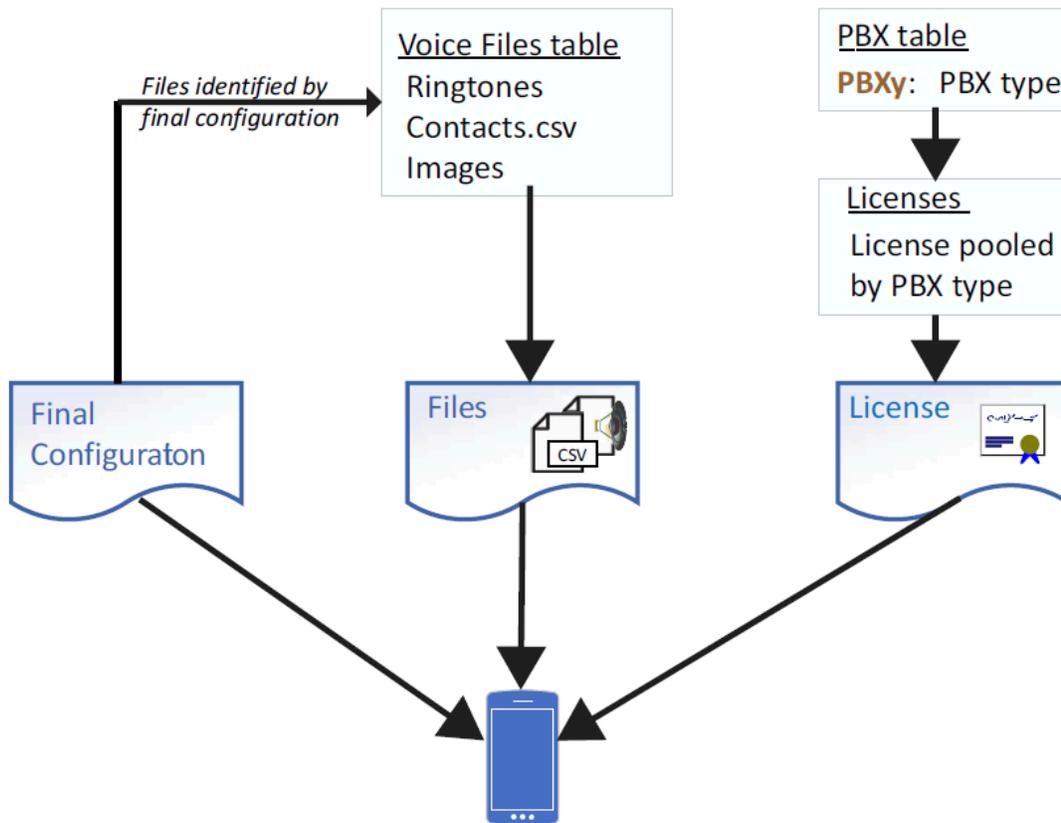


Figure 17 Configuration with License Delivered to Device



Reserved Extensions

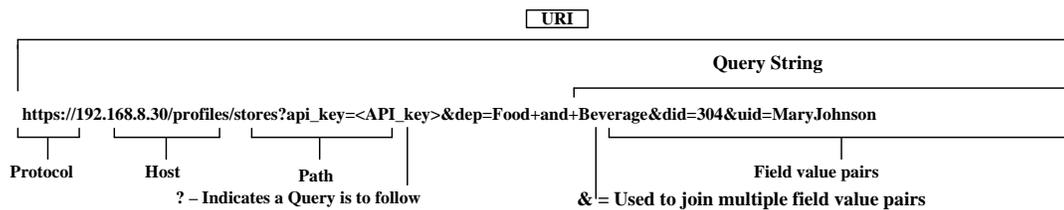
The customer administrator can reserve extensions for a user or a device ID. The reservation applies when automatic selection is specified for the department. A common use case for reserving an extension is for management staff. Associates can reach a manager without looking up the extension.

The process of reserving an extension is done when defining extensions. In Figure 18 the user Mary Johnson will have a reserved extension in the Manager department. Mary Johnson can be identified in the var_Location parameter in the Zebra Voice Client XML file or by leveraging the credentials passed through a connection to the customer’s identity management.

Figure 18 Creating a Reserved Extension

If the customer administrator uses the WFCConnect.xml client configuration file, the var_location parameter displays, as shown in Figure 19.

Figure 19 var_location Parameter



Personal/Dedicated Extensions

Personal/dedicated extensions are assigned based on device ID instead of user ID. This is useful when specific devices are reserved for personnel filling a specific role. Similar to Reserved Extensions, the extension is dedicated to a device with the extension's Reserved field set to the appropriate value, in this case, it is the device ID.

Contact List Management

The Extension Manager's contact list feature allows a customer administrator to push a contact list to each Zebra Voice Client based on the selected site. The contacts are removed when the user signs out of the Zebra Voice Client. The Extension Manager contact list also lets the customer administrator link contacts to ringtones and profile pictures.

The contact list for each site is created and stored in a contact list database in the Extension Manager and provided to clients when they are configured. Only the contacts assigned to a specific site are pushed to the client after identifying the site number.

Figure 20 Update Contact

| Update | |
|---|--|
| Site 500 | List of group/department names Healthcare |
| First Name James | Last Name 3rd Flr Charge Nurse |
| Office Number 502 | Mobile Number 847-831-2729 |
| Home Number 224-987-6542 | Photo URI em://Contact3.png |
| Ringtone Name or URI Rasalas | |
| <input type="button" value="Cancel"/> <input type="button" value="Update"/> | |

Figure 20 shows an entry in the Contact list. The contact is assigned to a specific Site with the expected contact information. There are two points of interest in this record. The Photo URI for the photo.png file is stored in the Extension Manager File Store, as identified by the em:// prefix. The ringtone in this example specifies a standard Android ringtone. Custom ringtones can be assigned using the same import process used for the photo. The customer administrator can create a ringtone, upload it to the Extension Manager File Store, and reference it using the em:// prefix.

Auto Site Detection

Site detection automatically assigns a device to a site based on the IP Address of the device. The customer administrator uses the NNNN wildcard when constructing the var_location parameter.

```
https://<extension_manager_uri>/profiles/stores/NNNN?api_key=<API_key>
```

The NNNN in the URI represents a site wildcard. The Zebra Voice Client reports its IP address when sending a request to the Extension Manager. When the device sends the request with the store number set to NNNN, the Extension Manager uses the reported IP address to detect and assign the client to a site. If the site cannot be determined based on the IP address, the user is prompted to select the site from a list.

Client and Server Configuration

The configuration development process evolves over time, with the Zebra Voice client introduced to the customer lab and proof of concept testing. In the early stages of testing, the customer administrator establishes PBX connectivity to determine dial tone and basic call functionality. As the customer administrator gains experience, the configuration is expanded.

Developing the Zebra Voice Client configuration starts through the device keyboard or by sideloading a configuration XML file into the client. After the Zebra Voice Client configuration is identified, it can be established in the Extension Manager.

A helpful feature in developing a workable configuration through Zebra Voice is to provision the Extension Manager from the mobile device. In Zebra Voice, navigate to the Settings menu and tap **Save Current Profile**. The customer administrator can name and save the configuration as an XML file or publish the configuration to the Extension Manager.



NOTE: The Zebra Voice Client requires access to the Extension Manager to publish the configuration.

The above-mentioned process is not mandatory but is characterized by the configuration development process commonly used in customer environments. If the configuration elements are defined and meet the business requirements, the customer administrator can start with the Extension Manager console.

After identifying the Zebra Voice Client configuration, the customer administrator must consider the enterprise deployment. The outline that follows describes aspects of the runtime environment.

Deployment Checklist

Table 1 highlights topics to consider when creating an Extension Manager configuration.

Table 1 Extension Manager Checklist

| Component | Consideration |
|-----------|--|
| PBX | PBX location and services provided to the Zebra Voice clients. |
| | Are the PBXs that provide services to the Zebra Voice clients local to the site or centralized? <ul style="list-style-type: none">• Helps determine how many PBXs need to be defined in the Extension Manager. |

Table 1 Extension Manager Checklist (Continued)

| Component | Consideration |
|-------------|---|
| | <p>Are all PBXs from the same vendor?</p> <ul style="list-style-type: none"> • Different PBXs have different configuration parameters. <p>Are you deploying a nurse call system?</p> <ul style="list-style-type: none"> • Might require multiple PBXs for each extension and user. <p>Are excellent codecs used?</p> <ul style="list-style-type: none"> • Might require specific configuration parameters for the PBX. <p>What TCP transport protocol is used?</p> <ul style="list-style-type: none"> • Specific configuration parameters required for PBX? • Do firewall settings need to be reviewed? <p>Identify all the codes for call park, conference call, and other features.</p> <ul style="list-style-type: none"> • Develop use case requirements. • Incorporate settings into each PBX definition. |
| Sites | <p>Site locations that support the Zebra Voice clients.</p> <p>Is the IP address used at each site consistent and predictable?</p> <ul style="list-style-type: none"> • The device's IP address can be used to automatically assign a site. <p>How many sites are deployed?</p> <ul style="list-style-type: none"> • All sites need to be accounted for and added to the Extension Manager. <p>Does a predictable number scheme identify sites?</p> <ul style="list-style-type: none"> • A site numbering scheme is helpful in understanding the scale of the deployment'. • Site numbering schemes help identify organizational operating units and help organize the configuration. <p>Can users or devices select a site location?</p> <ul style="list-style-type: none"> • Some customer locations resolve each building into a site. • Helps identify the movement of assets and the use case requirements. <p>Are there unique PBX differences per site?</p> <ul style="list-style-type: none"> • Telephony systems evolve over time, and hybrid systems with multiple PBXs serving the same site for different purposes can result. |
| Departments | <p>Each site may have more than one department. A department can be considered a logical container or a collection of extensions.</p> |

Table 1 Extension Manager Checklist (Continued)

| Component | Consideration |
|------------|--|
| | <p>What are the departments for a given site?</p> <ul style="list-style-type: none"> • Needed to establish department configuration. • Meaningful department names. • Easily recognizable by the users. • Not all departments may have an associated extension. <hr/> <p>Are the departments consistent from site to site?</p> <ul style="list-style-type: none"> • Identifies consistent configurations for profile re-use. <hr/> <p>Are there departments that support multiple extensions?</p> <ul style="list-style-type: none"> • Identifies the use of departmental extension pooling. <hr/> <p>Are all Departments available to all users?</p> <ul style="list-style-type: none"> • Identifies the requirements for roles. • May identify the use of hidden departments. • Establishes the hierarchy of departments for management and associates. <hr/> <p>Are there unique configuration elements for any department?</p> <ul style="list-style-type: none"> • Some departments may require different ringtones or other operational attributes. |
| Extensions | <p>Extensions are defined and associated with a specific department. Each extension defines a specific extension in the PBX. The extensions can be bound one-to-one to the PBX or pooled for a department.</p> <hr/> <p>Do the extensions have identifiable and meaningful names?</p> <ul style="list-style-type: none"> • Users may identify an extension name more easily than a number. <hr/> <p>Which extensions belong to which defined department?</p> <ul style="list-style-type: none"> • Ranges of extensions may be assigned to specific departments to improve the user experience. • Some departments may have only one extension, and there is no reason to prompt the user for the extension. <hr/> <p>How does the extension identify itself to the PBX?</p> <ul style="list-style-type: none"> • Pseudo or physical MAC address? <ul style="list-style-type: none"> • Information needed to complete the extension definition. • Standard Cisco implementation. • SIP ID and password <ul style="list-style-type: none"> • Information needed to complete the extension definition. • Non-Cisco implementation. |

Table 1 Extension Manager Checklist (Continued)

| Component | Consideration |
|-----------|---|
| | <p>Are any extensions used for one specific purpose or user?</p> <ul style="list-style-type: none"> • Identifies the use of a reserved extension or hidden department. |
| | <p>Do all extensions connect to the same PBX?</p> <ul style="list-style-type: none"> • Determines the PBX definition for the specific extension. • Reveals a hybrid solution requiring different services. |
| | <p>Do any extensions connect to multiple PBXs?</p> <ul style="list-style-type: none"> • Needed if there are multiple paths to route the call. |
| | <p>Are there unique configuration elements for any Extension?</p> <ul style="list-style-type: none"> • Useful for identifying the role of users. • Some users may have a Night Forward button or other functionality not found in other extensions. |

Extension Manager Configuration Flow

There is a logical sequence to follow when configuring the Extension Manager. There are configuration dependencies in different sections, and building these elements in a logical order is more efficient and less confusing.

The configuration of the Extension Manager can be performed through:

- Using the web interface
- Importing CSV files through the web interface or API interface
- Using the API interface

The focus of this chapter will be to illustrate the configuration process using the web interface to discuss configuration details. After the customer administrator understands these configuration elements and relationships, using CSV files is a faster, more scalable, convenient, and efficient configuration method. See the [Workcloud Communication Extension Manager Configuration Guide](#) for information regarding the API interface.

This chapter concentrates on creating a working system. Not all options for each configuration are covered. The process that follows assumes that a Zebra Administrator has created the customer in the Extension Manager and provided a Super-Admin account with access to the console. This is done at the time of customer onboarding. The Extension Manager sends a password reset email to the Super-Admin user when the user is added to the system. Contact Zebra Support if you are unsure how to access the Extension Manager.

See [Main Screen of Extension Manager User Interface](#) for descriptions of the web console user interface.

Console User Roles

The customer administrator can provide portal access to additional users through the web interface. Each user account needs:

- User's name
- Login name
- Valid email address
- User role

Figure 21 Add User Dialog

After the user is created, an email is sent to the user to create account credentials. See Extension Manager Account Types for more information about user roles.

Set up the PBX

Navigate to **Configurations > PBXes** and add at least one PBX.

Figure 22 Update PBX

| Key | Value |
|-------------------|-------|
| • sip_device_type | 9971 |

- Name for the PBX.
- PBX Type. Select the supported PBX type from the drop-down list.
- PBX Address. This field supports both IP addresses and DNS names.

maybe optional to define how the mobile device connects to the PBX. See the Workcloud Communication Voice Administrator Guide for the PBX.

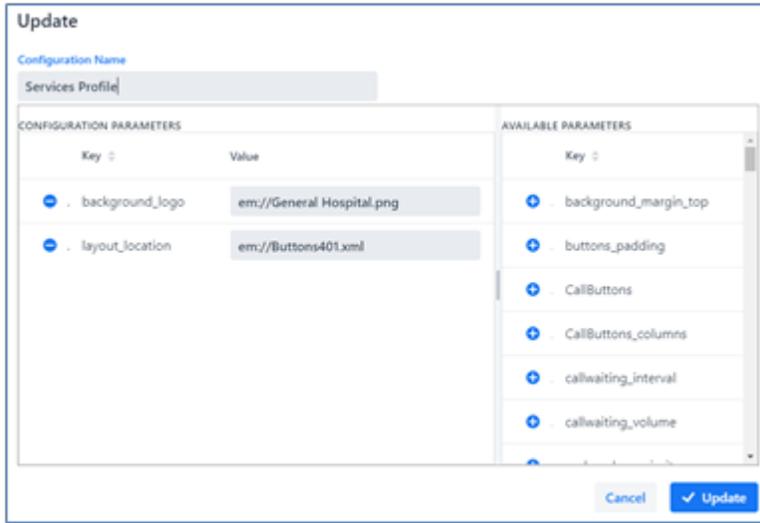


NOTE: SRTP should not be enabled for the PBXs that do not support SRTP (CUCM_Premium, CUCM_Basic, CME_Premium, CME_Basic, Avaya IP Office, and Avaya Aura).

Create a Profile

Navigate to **Configurations > Profiles**. The site, department, or extension reference profiles.

Figure 23 Update Profile



When building a Profile, it is important to understand the parameters and the value strings required for each parameter. The customer administrator can use the XML file extracted from the device during development as a reference. Review and evaluate the XML file to identify which configuration elements apply enterprise-wide (Root) or to a site, department, or extension.

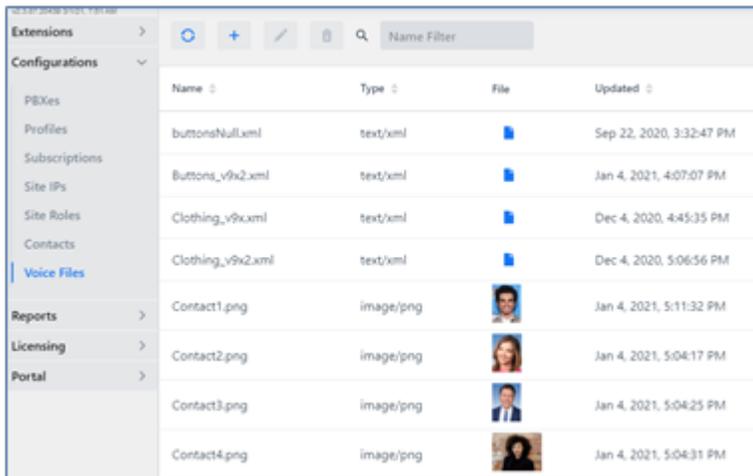
Choose a meaningful profile name for future reference. Once the configured name is entered, select the available parameters in the right pane by clicking on the + icon to move them to the left pane. Once in the left pane, enter the specific configuration data appropriate to the element.

Files used for the configuration can be specified here and uploaded to the File Store later.

Use the File Store

Navigate to **Configurations > Voice Files** to view the contents of the file store. Click the + to add new files.

Figure 24 Extension Manager File Store

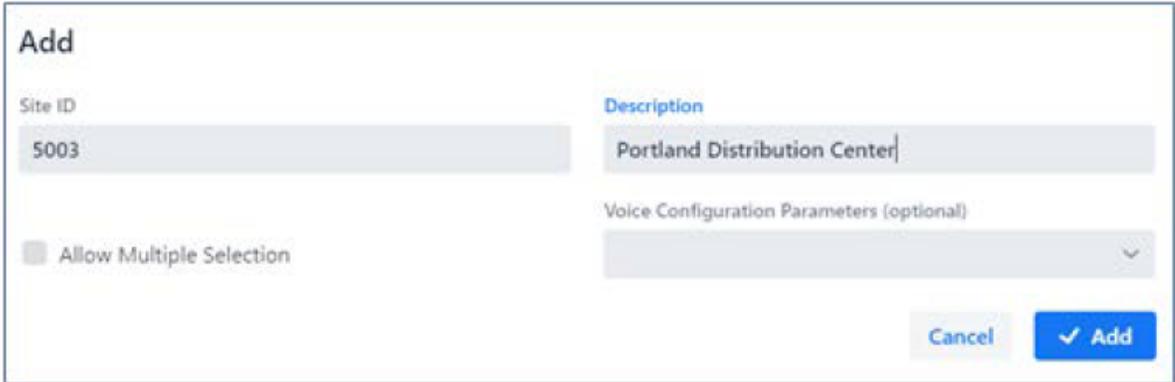


The Extension Manager does not limit import by file type but whether the Zebra Voice Client supports the file format. For example, icons and photos can use the PNG format, and ringtones can use the WAV or OGG audio format.

Create Sites

Navigate to **Extensions** > **Sites** to define a site.

Figure 25 Add a Site to the Extension Manager



The screenshot shows a form titled "Add" for creating a site. It contains the following fields and controls:

- Site ID:** A text input field containing the value "5003".
- Description:** A text input field containing the value "Portland Distribution Center".
- Voice Configuration Parameters (optional):** A drop-down menu.
- Allow Multiple Selection:** A checkbox that is currently unchecked.
- Buttons:** "Cancel" and "Add" (with a checkmark icon).

- Site ID is an excellent alpha-numeric site identifier.
- is any meaningful description.
- Voice Configuration Parameters is a drop-down menu of Configuration Profiles. The customer administrator can update this field after creating additional profiles.
- Allow Multiple provides the ability for Zebra Voice users to select multiple sites.

Create Departments

Navigate to **Extensions** > **Departments** to create departments for a site.

Figure 26 Create Department

The screenshot shows a form titled "Add" for creating a department. It contains the following fields:

- Site ID**: A drop-down menu.
- Department Name**: A text input field.
- Description**: A text input field.
- Voice Configuration Parameters (optional)**: A drop-down menu.
- Department Type**: A drop-down menu with "MANUAL" selected.

At the bottom right, there are two buttons: "Cancel" and "Add".

- **Site ID** is a drop-down menu to select the site.
- **Department Name** should include a meaningful name. The department name appears in the extension definition.
- The description should provide a meaningful description of the department.
- Voice Configuration Parameters can be used to associate a profile with the department.
- Department type determines the behavior of the department when assigning extensions. There are 5 choices in the drop-down menu:
 - MANUAL
 - AUTO
 - PERSONAL
 - HYBRID
 - CUSTOM
- When choosing CUSTOM as the department type, the following options appear:
 - **Auto Assign Extensions check box** When selected, the Extension Manager assigns an extension from the department's available pool.
 - **Hidden department check box**: When selected, then the resulting department is not visible to the users. When a user registers a hidden department, it must be specified as part of the Shared URI.
 - **Reserved Enabled check box**: when selected, then a URI from the Zebra Voice Client requests a dynamic extension from that department for that user, and the next available extension in the department is automatically reserved for the user. If the user has already been assigned an extension in the department, the same extension is issued and reserved for that user.
 - **Threshold**: Determines the time period a reserved extension is held for an absent reserved user. Set in minutes. The default timing is set to 60 minutes.

The department types MANUAL, AUTO, PERSONAL, and HYBRID provide most customers with the desired extension assignment behavior. These choices set the **Auto Assign, Hidden Department, Reserved Enabled**, and **Threshold** options without requiring customers to set them manually. These department types are detailed below.

Table 2 Predefined Department Types

| Department Types | | | Department Behavior | | |
|------------------|------|--------|---------------------|--------------------------------|---|
| | Auto | Hidden | Reserved | Threshold | |
| MANUAL | No | No | No | NA | <ul style="list-style-type: none"> When the client displays a list of departments to be selected from, this department is included in the list. When this department is selected, the client displays the list of all extensions in this department and allows the user to select an available extension. flag is ignored. |
| PERSONAL | NO | YES | NO | NA | <ul style="list-style-type: none"> When the client displays a list of departments to be selected from, this department is not included. To select it, it must be part of the Shared URI. When this department is selected via the Shared URI, the EXM picks an extension based on the extension's reserved field. If the user ID is present in the Shared URI, a match with the reserved field causes the extension to be picked. If the user ID is not present, the device ID is used to check for a match. When the department is selected through the Shared URI, the client displays a list of all extensions in that department and allows the user to select an available extension. |
| AUTO | NO | YES | YES | Not set, or value other than 0 | <ul style="list-style-type: none"> When the client displays a list of departments to be selected from, this department is included in the list. When this department is selected from the list, the EXM automatically picks the next available extension. |

Table 2 Predefined Department Types (Continued)

| Department Types | | | Department Behavior | | |
|------------------|-----|----|---------------------|---|--|
| HYBRID | YES | NO | NO | 0 | <ul style="list-style-type: none"> When the client displays a list of departments to be selected from, this department is not included. To select it, it must be part of the Shared URI. When this department is selected via the Shared URI, the EXM checks if an extension's reserved field matches the user ID (if present) or device ID (if the user ID is not present). If so, the extension is chosen. If there is no match, an available non-reserved extension is chosen. Reserved extensions are not made available for assignment to other users/devices. |

The following department settings can be used with the CUSTOM department type and achieved other behavior than the MANUAL, AUTO, PERSONAL, and HYBRID department types mentioned above.

Table 3 Custom Department Settings and Behavior

| # | Auto | Hidden | Reserved | Threshold | |
|---|------|--------|----------|-----------|---|
| 1 | NO | YES | NO | NA | <ul style="list-style-type: none"> When the client displays a list of departments to be selected from, this department is not included. To select it, it must be part of the Shared URI. When the department is selected through the Shared URI, the client displays a list of all extensions in that department and allows the user to select an available extension. |
| 2 | YES | YES | YES | | <ul style="list-style-type: none"> When the client displays a list of departments to be selected from, this department is not included. The department must be part of Shared URI to be selected. When this department is selected from the list, the EXM picks an extension based on its reserved field and User ID. If an extension's reserved field matches the existing User ID or matches the Device ID (if the User ID is not found), the extension is chosen. If a match is not found in any extension's reserved field, an available extension is selected, and the user ID is saved in the extension's reserved field. If a match is not found in any extension's reserved field, an available extension is selected, and the user ID is saved in the extension's reserved field. If a reserved extension is not used in a week, it may be assigned to another user when no other extensions are available. |
| 3 | YES | YES | NO | | <ul style="list-style-type: none"> When the client displays a list of departments to be selected from, this department is not included. To select it, it must be part of the Shared URI. When the department is selected through the Shared URI, the EXM automatically picks the next available extension. |

Table 3 Custom Department Settings and Behavior (Continued)

| | | | | | |
|---|-----|----|-----|--|--|
| 4 | YES | NO | YES | | <ul style="list-style-type: none"> When the client displays a list of departments to be selected from, this department is included in the list. When this department is selected from the list, the EXM picks an extension based on the extension's reserved field and User ID. If an extension's reserved field matches the existing User ID or matches the Device ID (if User ID is not found), the extension is chosen. When this department is selected from the list, the EXM picks an extension based on the extension's reserved field and user ID. If the reserved field is not set for a user, any available extension is selected, and the user ID is saved in the reserved field. |
| 5 | NO | NO | YES | | This combination of settings should not be used. It results in the same behavior as mentioned in #1 above (NO / NO / NO). |

Create Extensions

Navigate to **Extensions > Extensions** to define PBX extension information.

Figure 27 Create Extension

- The Name and Description fields are text strings that display in the Zebra Voice Client interface for the user. These fields are required.
- Departments are listed in a drop-down menu. Each Extension must be assigned to a department. This field is required.
- PBX Configuration lists PBX configurations in a drop-down menu. This field is required.

- Reserved for User ID is used for reserved extensions. The user ID entered here must match the UID string in the var_location parameter. The Extension Manager restricts the reservation of multiple extensions in the same department and for the same User ID. If an attempt is made to assign a User ID or Device ID that is already linked to another extension, the system will generate an error message. This message states that “either the User ID or the Device ID is already used and assigned to another extension.”
- SIP User ID and SIP User Password are used to authenticate with the PBX. For the Cisco Call Manager, specify the SIP MAC Address.
- Voice Configuration Parameters lists configuration profiles in a drop-down menu.
- Force Reload allows currently logged-in Zebra Voice clients to forcefully reload the new profile during the next checkpoint.

Define Site IPs

Navigate to **Configurations** > **Site IPs** to specify the range of IP addresses that devices use for each site.

Figure 28 Specify Range of IP Addresses

| Site | From | To |
|--------|----------------|----------------|
| 1006 | 18.211.19.155 | 18.211.19.160 |
| Pixel1 | 192.168.29.1 | 192.168.29.20 |
| Pixel2 | 192.168.43.170 | 192.168.43.200 |

- Sites are listed in the drop-down menu.
- The From IP / To IP fields establish the IP address range.

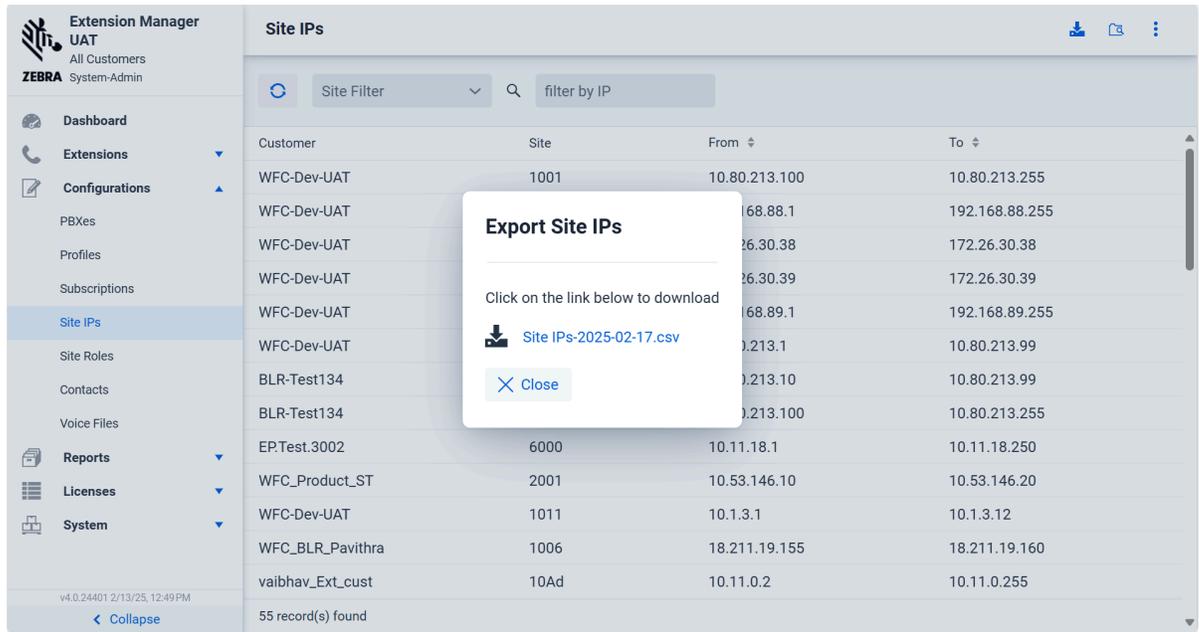
The customer administrator can define multiple IP address ranges for a site as long as the IP Address ranges are unique and do not overlap.

See [Auto Site Detection](#) for a convenient method of associating devices with sites with a common var_location parameter.

Export Site IPs

Navigate to **Configurations > Site IPs** and click  to download the Site IPs after choosing the CSV format.

Figure 29 Export Site IPs



| Customer | Site | From | To |
|------------------|------|---------------|----------------|
| WFC-Dev-UAT | 1001 | 10.80.213.100 | 10.80.213.255 |
| WFC-Dev-UAT | | 168.88.1 | 192.168.88.255 |
| WFC-Dev-UAT | | 172.26.30.38 | 172.26.30.38 |
| WFC-Dev-UAT | | 172.26.30.39 | 172.26.30.39 |
| WFC-Dev-UAT | | 192.168.89.1 | 192.168.89.255 |
| WFC-Dev-UAT | | 10.80.213.1 | 10.80.213.99 |
| WFC-Dev-UAT | | 10.80.213.10 | 10.80.213.99 |
| BLR-Test134 | | 10.80.213.100 | 10.80.213.255 |
| BLR-Test134 | | 10.11.18.1 | 10.11.18.250 |
| EP.Test.3002 | 6000 | 10.53.146.10 | 10.53.146.20 |
| WFC_Product_ST | 2001 | 10.1.3.1 | 10.1.3.12 |
| WFC-Dev-UAT | 1011 | 18.211.19.155 | 18.211.19.160 |
| WFC_BLR_Pavithra | 1006 | 10.11.0.2 | 10.11.0.255 |
| vaibhav_Ext_cust | 10Ad | | |

- The file is organized with clear headings like **Site**, **Customer**, **From**, and **To** followed by rows that detail each site's IP address.
- This setup makes it easy to integrate the data into current management systems and aids in further analysis and reporting.
- The CSV starts with these headers, followed by entries, making it simple to read and use.

Create Contact Lists

Navigate to **Configurations > Contacts** to create contact lists that are pushed to Zebra Voice clients. The contacts are then assigned to a site.

Figure 30 Create Contacts

The screenshot shows a web form titled "Update" for creating or editing a contact. The form is organized into two columns. The left column contains: "Site" (a dropdown menu with "500" selected), "First Name" (text input with "Chris"), "Office Number" (text input with "501"), "Home Number" (text input with "224-987-6542"), and "Ringtone Name or URI" (text input with "Pyxis"). The right column contains: "List of group/department names" (text input with "Healthcare"), "Last Name" (text input with "2nd Fir Charge Nurse"), "Mobile Number" (text input with "847-831-2729"), and "Photo URI" (empty text input). At the bottom right of the form are two buttons: "Cancel" and "Update" (with a checkmark icon).

- The Site is selected from the drop-down menu. This is a required field.
- The list of groups/Departments names is a required field. It must contain a valid department or group name from the selected site.
- First Name is a required field.
- The Last Name is a required field.
- must have a value.
- Photo URI can reference an external source, or the Extension Manager File Store can be used for the photo.
- Ringtone Name or URI specifies a custom ringtone for the contact. The customer administrator can specify the name of an Android ringtone, or the Extension Manager File Store can be used for a custom ringtone.

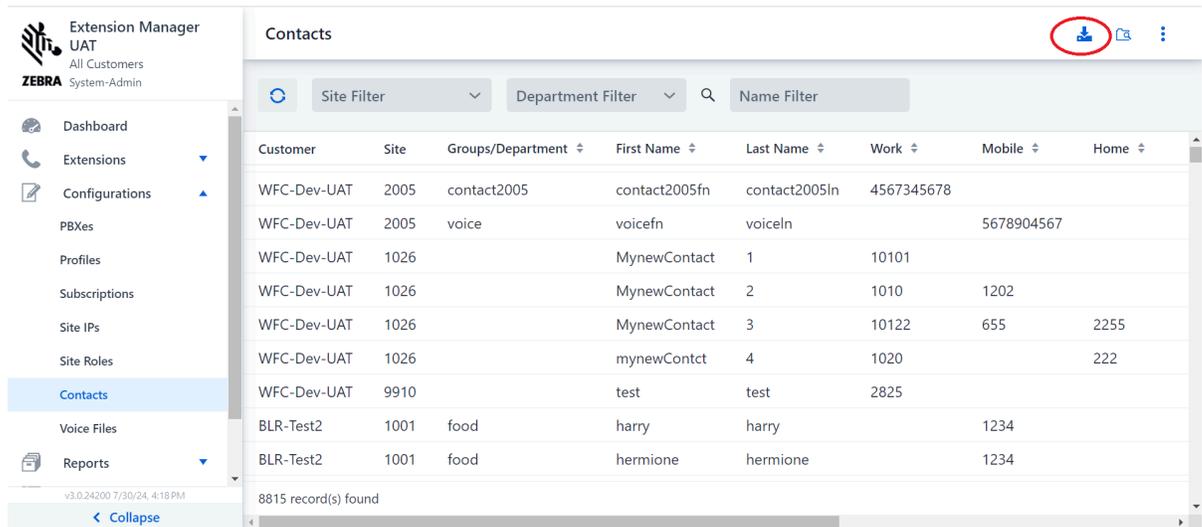


NOTE: NOTE: If the contacts are to be associated with multiple departments (groups), the user can provide a list of departments separated by semi-colons.

Export Contacts Data via CSV

The customer can export the contacts data in CSV format by clicking the  Export Contacts button and download file that contains the date-stamp.

Figure 31 Export Contact



Manage Department Filter

Once the contact groups/departments are created, user must associate the filter condition in the department page to map which group/department contacts should be sent to device when a particular department is selected in the device during login.

Figure 32 Sample Screenshot

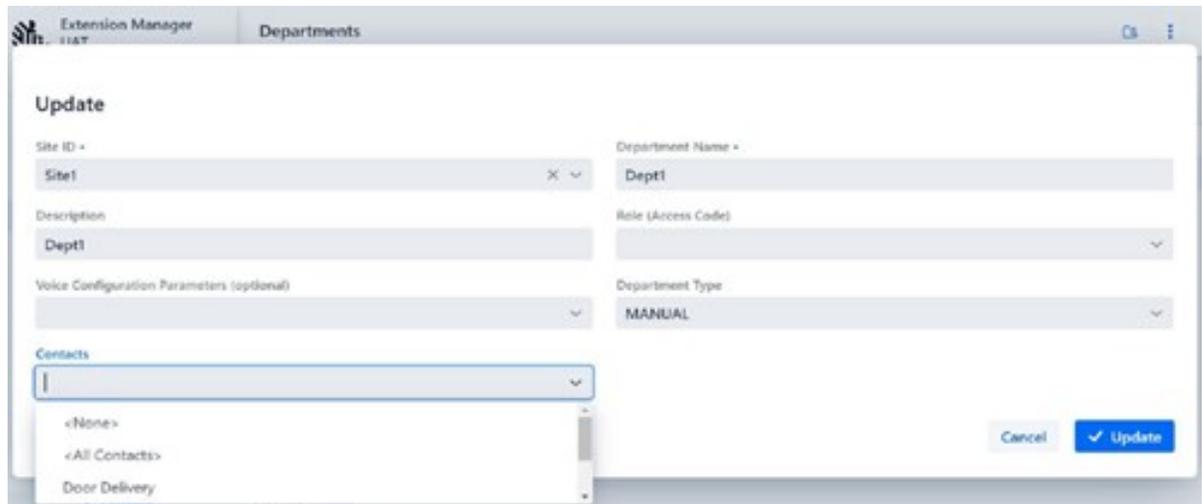


Table 4 Department Filter Condition and Description

| Condition | Description |
|--------------|---|
| All Contacts | Send all the contacts when this department is selected. By default, this filter is applied. |

Table 4 Department Filter Condition and Description (Continued)

| Condition | Description |
|---------------------|--|
| No Contacts | No static contacts are sent to the device. |
| List of Departments | <ul style="list-style-type: none"> Send all the contacts when this department is selected. By default, this filter is applied. No static contacts is sent to the device. The drop-down menu provides lists of all the unique group/department for the site's contacts and ignores any case. If the contacts are specified with the list of groups/departments by semicolon delimiter, then drop-down enlists them as separate groups/departments. Any other delimiter is treated as a single group name, and the same applies to the Voice Client. |



NOTE: Any changes made to the group/department name, such as changing or deleting the name, do not automatically reflect on the Department page. The user must manually change it.

Zebra Voice Client Configuration

After the Extension Manager configuration is complete, the customer administrator can establish the configuration of the Zebra Voice Client. The configuration of the client is established in the `WFConnect.xml` file and requires one configuration statement in the `var_location` parameter.

Shared Profiles URI

The Zebra Voice Client can be configured through the client user interface or through the `WFConnect.xml` file. The `var_location` parameter is required to operate with the Extension Manager. When configured manually through the Zebra Voice Client, this parameter is referred to as the Shared Profiles URI. When the Zebra Voice Client configuration is saved and examined, the XML file use the `var_location` parameter.

- When configuring through the Zebra Voice interface, the configuration option where to enter the URI is in **Settings > Shared Profiles URI**.
- When using the `WFConnect.xml` file, the configuration parameter where to enter the URI is named `var_location`. When `WFConnect.xml` is used, the file is typically pushed to clients using Mobile Device Management (MDM) software.

The following figure shows an example of the `var_location` parameter.

Figure 33 Example of `var_location`

For users new to the Extension Manager, a simple URI with the `var_location` parameter, is useful. For example: `https://<host_name>/profiles/stores?api_key=<API_key>`.

Configure Share Profiles URI

To enable Extension Manager integration, the Zebra Voice Client requires the `var_location` parameter set as an HTTPS URL pointing to the Extension Manager. Consider the following URL:

```
https://host[:port]/profiles/stores[/site_id]?api_key=<API key>[&uid=< user id>][&dep=<department id or name>[&dep=...]]
```

- `host` is the IP address or DNS name of the Extension Manager
- `port` is optional
- `side_id` is the site ID or number. If not set, the client displays a list of all configured sites. Using the wildcard `NNNN` directs the Extension Manager to select the appropriate site based on the IP address of the client.

- API key is the authorization key unique to the customer and created when the customer is created in the Extension Manager
- dep identifies the department. The customer administrator can specify multiple department entries
- uid is the user identifier. The customer administrator can use this to assign a reserved extension to the user.

Configure the var_location in WFCConnect.xml

The var_location parameter can be set in the WFCConnect.xml file, which must be stored on the Zebra Voice Client device in the /sdcard/WFCConnect folder. An example WFCConnect.xml file is shown below.

```
<WFCConnect>
<Profile>
<var_location>https://<extension_manager>/profiles/stores?api_key=<API_key></
var_location>

</Profile>
<Footer></Footer>
<Dashboard></Dashboard>
<CallButtons></CallButtons>
</WFCConnect>
```

For customer administrators accustomed to the legacy licensing arrangement, note that licensing information is not needed. As mentioned previously, the Extension Manager serves as a license proxy, providing license pooling, and the license URL or activation ID are no longer required.

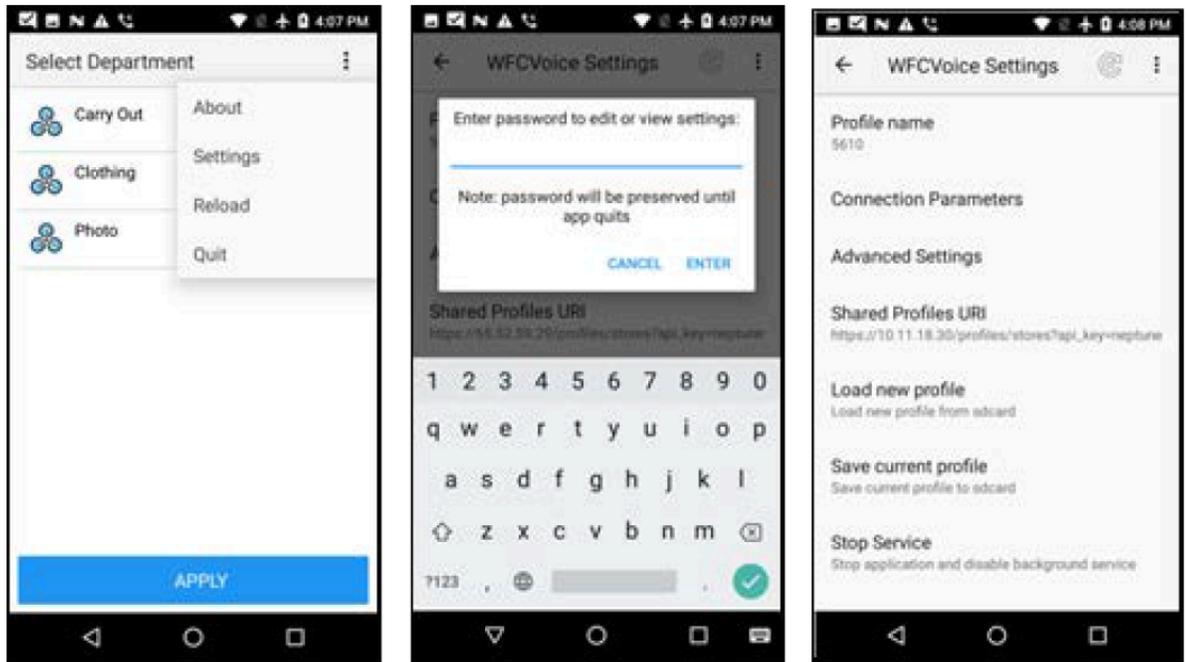
Configuring var_location in the Zebra Voice Client

The var_location parameter can be set in the Settings menu of the Zebra Voice Client.

1. Open the settings menu by clicking on the menu button in the upper right of the application.
2. Select **Settings** .
The user is prompted to enter the settings password.
3. Scroll down to find the Shared Profiles URI parameter.

4. Tap on the parameter and enter the URI.

Figure 34 Configure var_location in Zebra Voice



Using the Extension Manager User Interface

This chapter describes the user interface that the customer administrator uses to configure the Workcloud Communication (Zebra) Extension Manager. The Extension Manager user interface is web-based and requires the user of a web browser.



NOTE: This section describes the screens of the Extension Manager user interface. The order that screens are displayed in the user interface, and described here, do not reflect the process to properly configure the Extension Manager. The configuration process is detailed in the preceding sections of this document.

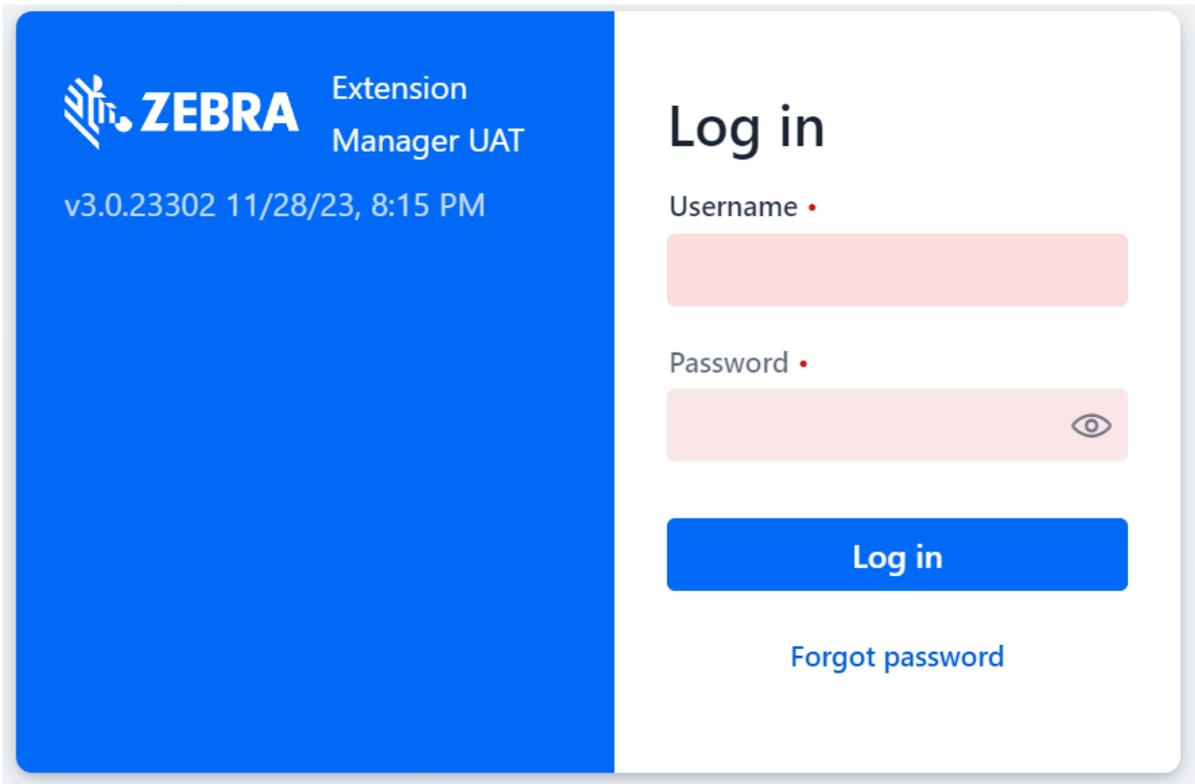
Extension Manager Administration URL

The URL points to a multi-tenant Extension Manager server. The customer administrator must use the correct URL for the server where the tenant is provisioned.

An example URL for Extension Manager login screen:

<https://%3Cextension-manager%3E.pttpro.zebra.com>

Figure 35 Extension Manager Login Screen



Resetting your Administration Portal Password

The Extension Manager provides two methods for resetting the user password.

1. Select the **Forgot password** link on the Extension Manager login screen.
2. Ask the site Super-Admin to reset your password.

Both methods send an email message to the user. The user clicks the link in the email message to create a new password.

Extension Manager Account Types

The Extension Manager supports three different user account roles. Each role provides different levels of access to the Extension Manager data.

- Super-admin role. A user with the Super-Admin role can add, modify, or delete all site data. The Super-Admin can also create, edit, and delete user accounts.
- Admin role. A user with the admin role can update or upload extension data.
- User role. A user with the user role can view extension data.

Extension Manager Dashboard Interface

Extension Manager Dashboard Interface provides the Extension states, record counts, extension transactions, assigned extensions (usage history). One can navigate to these views using the Carousel/slider at the bottom.

Assigned Extensions Dashboard View displays the assigned extensions by daily or hourly (for the selected date). One can export the data in CSV format. Extension usage calculation is run by scheduled cron job. By default, it runs at the interval of 10 minutes. Any extension has taken and last check point has not exceeded the client check point interval time is taken into account as extension being used.

The graph displays assigned extensions for daily or hourly with following details:

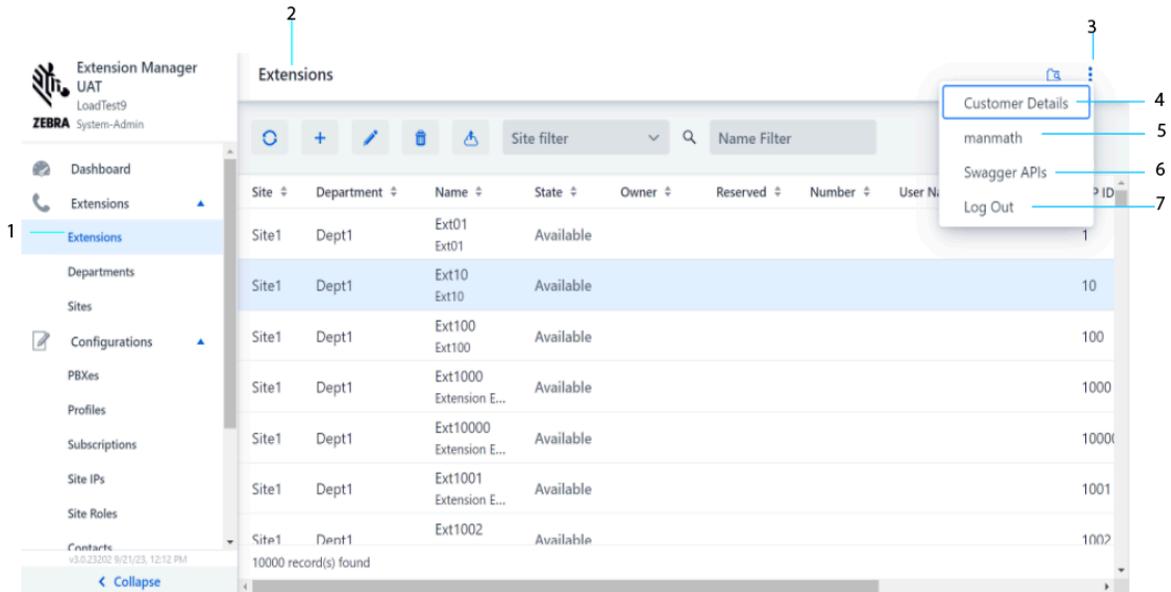
- Maximum extension used for the day/hour
- Minimum extension used for the day/hour
- Maximum extension with distinct user for the day/hour
- Minimum extension with distinct user for the day/hour



Main Screen of Extension Manager User Interface

The following is an example of the main screen of the Extension Manager.

Figure 36 Extension Manager Interface



| Callout | Description |
|---------|------------------------------------|
| 1 | Navigation menu |
| 2 | Name of the current menu |
| 3 | Show menu. |
| 4 | Customer's details |
| 5 | Name of logged-in user |
| 6 | Link to the Extension Manager APIs |
| 7 | Logs out of the Extension Manager |

The navigation menu provides access to the configuration options available through the Extension Manager user interface.

- Extensions
- Configurations
- Reports
- Licensing
- System

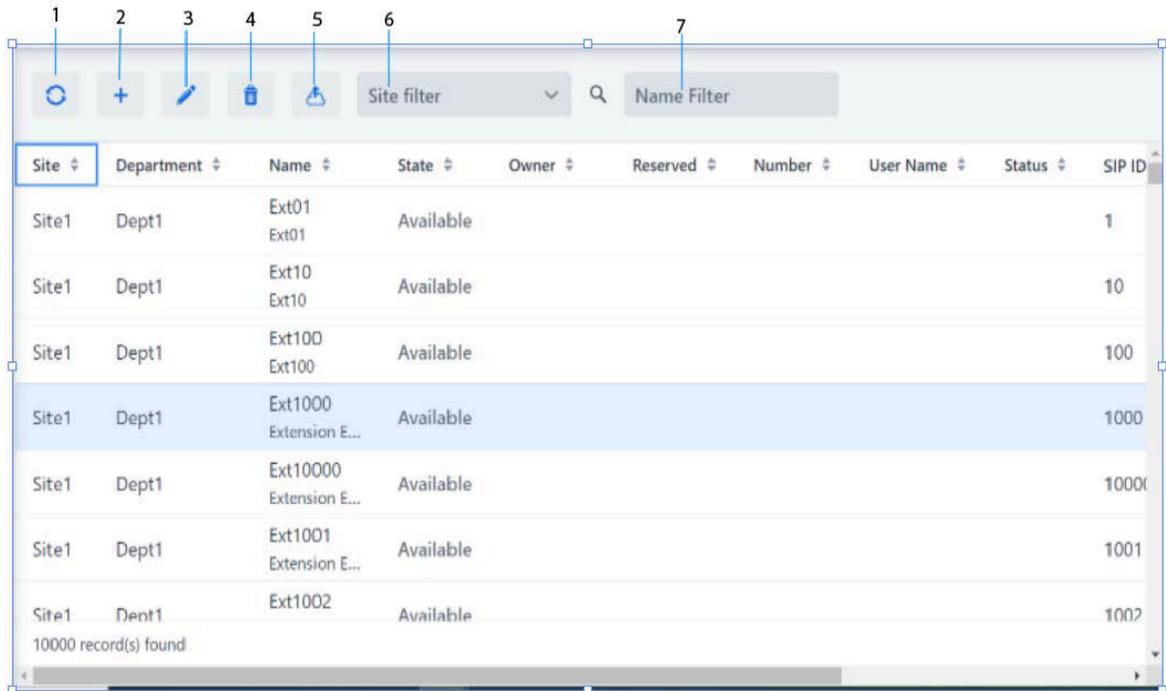
Extensions Menu

The **Extension** menu includes **Extensions**, **Departments**, and **Sites** screens. The data in these screens reflects the currently configured **Extensions**, **Departments**, and **Sites** which can be populated through the web interface or through the import/import/csv API endpoint. The customers can sort the data based on site column of the Extension screen.

Manage Extensions

The Extensions screen displays all of the sites, departments, and their PBX connection data. Use this screen to modify the settings for an extension.

Figure 37 Extensions Screen



| Callout | Description |
|---------|--|
| 1 | Refresh the extensions data from the Extension Manager. |
| 2 | Add an extension. |
| 3 | Update the selected extension. |
| 4 | Delete the selected extension. |
| 5 | Opens Extension Manager API and imports CSV file with extension data. Same CSV format used by the /import/csv API endpoint. For more information on Extension Manager API, refer to Extension Manager API Reference Guide. |
| 6 | Filters by Site. Can be used with the Name Filter. |
| 7 | Filters by Department or Name values. |

See [Create Extensions](#) for an example of adding an extension.

The state of each extension is displayed as follows:

- Grey: extension is not assigned.
- Green: extension is assigned.
- Blue: extension is assigned but device has missed a regular checkpoint with the Extension Manager (checkpoint occurs every 15 minutes).

- Red: extension is assigned but device is no longer in contact with the Extension Manager (for 1 hour or longer).
- The status of each extension is displayed if the extension is assigned: IDLE|CALLING|RINGING|ACTIVE.



NOTE: The client checks in every 15 minutes, therefore some state changes are not seen on the extensions screen.

Manage Departments

A department is a subgroup of a site. In an enterprise deployment, a site is typically composed of multiple departments. The **Departments** screen enables the customer administrator to add a department to site or modify the properties of a department.

Figure 38 Departments Screen

| Callout | Description |
|---------|---|
| 1 | Refresh the department data from the Extension Manager. |
| 2 | Add a department. |
| 3 | Update the selected department. |
| 4 | Delete the selected department. |
| 5 | Filters by Site. Can be used in conjunction with Name Filter. |
| 6 | Filters by Department name. |
| 7 | Causes the Zebra Voice Client to reload its configuration at the next heartbeat interval. The default heartbeat interval is 10 minutes. |

See [Create Departments](#) for an example of the Update Department screen.

Manage Sites

The Sites screen displays the top-level organizational units for a customer. A site is typically composed of one or more departments.

| Callout | Description |
|---------|---|
| 1 | Refresh Sites data from the Extension Manager. |
| 2 | Add a site. |
| 3 | Update the selected site. |
| 4 | Delete the selected site. |
| 5 | Filters by Site. |
| 6 | Causes the Zebra Voice Client to reload its configuration at the next heartbeat interval. The default heartbeat interval is 10 minutes. |

See [Create Sites](#) for an example of the Add Site screen.

Configurations Menu

The Configurations menu provides options to configure the Extension Manager with PBX information, creates roles, profiles, and subscription, and create Zebra Voice Client configurations. The Configurations menu includes the following screens:

- PBXes
- Profiles
- Subscriptions
- Site IPs
- Site Roles
- Voice Files
- Contacts

Manage PBX

Adding PBX information to the Extension Manager is an important configuration step. The Zebra Voice clients communicate with the PBX using the configuration received from the Extension Manager.



NOTE: Parameters for each supported PBX are described in the Workcloud Communication Voice Administrator Guides. See <http://zebra.com/support> for the most recent version of these guides.

Figure 39 PBX Screen

| Name | PBX Type | PBX Address | Parameters (JSON) |
|------------------------|----------|---------------|---|
| Asterisk-10.80.213.209 | Asterisk | 10.80.213.209 | {"sip_transport":"TCP"} |
| Asterisk oncloud | Asterisk | 18.211.19.155 | {"sip_transport":"TCP","sip_rempport":"5060"} |
| Root | Asterisk | 18.211.19.155 | {} |
| | Asterisk | 18.211.19.155 | {} |
| | Asterisk | 18.211.19.156 | {} |
| | Asterisk | 18.211.19.157 | {} |
| | Asterisk | 18.211.19.158 | {} |
| | Asterisk | 18.211.19.159 | {} |
| | Asterisk | 18.211.19.160 | {} |
| | Asterisk | 18.211.19.161 | {} |
| | Asterisk | 18.211.19.162 | {} |

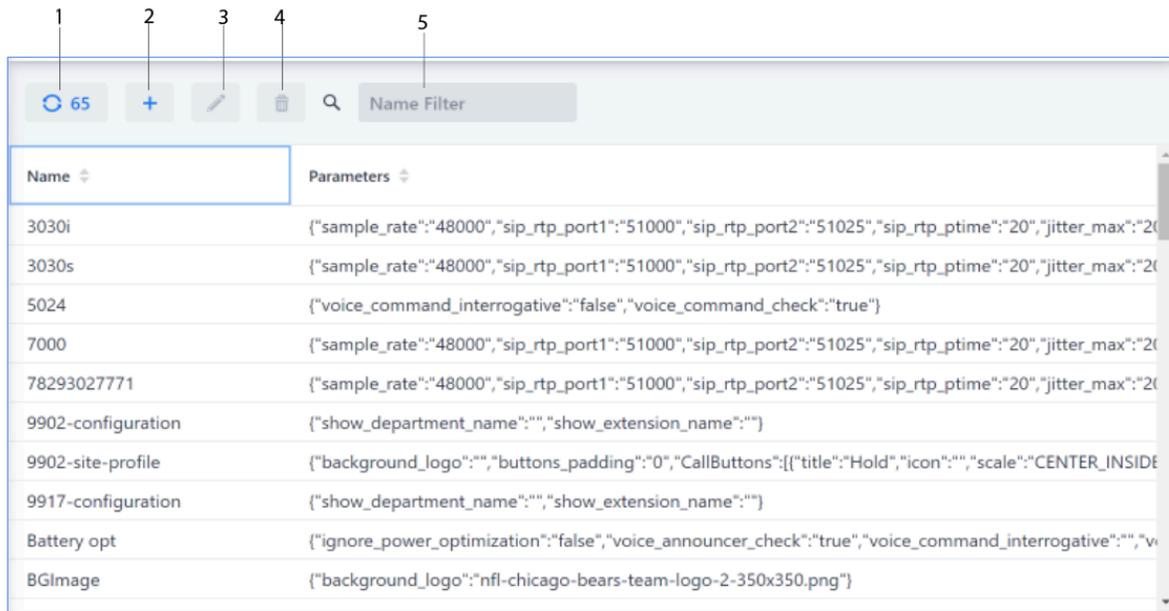
| Callout | Description |
|---------|--|
| 1 | Refresh PBX data from the Extension Manager. |
| 2 | Add a PBX configuration. |
| 3 | Update the selected PBX configuration. |
| 4 | Delete the selected PBX configuration. |
| 5 | Filter on the name of the PBX records. |

See [Set up the PBX](#) for an example of updating a PBX configuration.

Manage Profiles

Profiles contain configuration data that is referenced by the Site, Department, or Extension elements in a Zebra Voice configuration. The profile parameters are described in [Workcloud Communication Voice Client Administrator Guides](#).

Figure 40 Profile Screen



| Callout | Description |
|---------|--|
| 1 | Refresh profile data from the Extension Manager. |
| 2 | Add a profile. |
| 3 | Update a profile. |
| 4 | Delete a profile. |
| 5 | Filter by profile name. |

See [Create a Profile](#) for an example of updating a profile.

Manage Subscriptions

Subscriptions are a feature of the Asterisk PBX to support RFC 4662 in its PJSIP-based SIP implementation. This enables the Zebra Voice Client to subscribe to any department. The customer administrator can use the import/subscriptions endpoint to import subscriptions into the Extension Manager.

Figure 41 Subscriptions Screen

| Site | Subscription/Department | Hint | Event Name |
|--------|-------------------------|------|------------|
| 1026 | Electronics | 1026 | trial |
| 9001 | Food | 9911 | presence |
| 9001 | Games | 9914 | presence |
| 9001 | Hardware | 9916 | presence |
| 9001 | Kids | 9915 | presence |
| 9001 | Kitchen | 9912 | presence |
| 9001 | Sports | 9913 | presence |
| 9001 | Toys | 9910 | presence |
| 5000 | Trial | 1000 | Trial |
| 560103 | Meru Electronics | 1026 | trial |

| Callout | Description |
|---------|--|
| 1 | Refresh subscription data from the Extension Manager. |
| 2 | Add a subscription. |
| 3 | Update a subscription. |
| 4 | Delete a subscription. |
| 5 | Filter subscriptions by site name. |
| 6 | Import CSV file with subscription data. Same CSV format used by the /import/subscriptions API endpoint. For more information on Extension Manager API, refer to Extension Manager API Reference Guide. |
| 7 | Filter subscriptions by Subscription/Department. |

Add a Subscription

Add a subscription by clicking the + sign on the Subscription screen. The Add screen appears. Fill in the required data and click add. The data in the Hint field is not required to be unique.

Figure 42 Add Subscription Screen

Add

Site • 9001 × ▾

Subscription/Department • Sports

Hint • 9913

Event Name • Presence

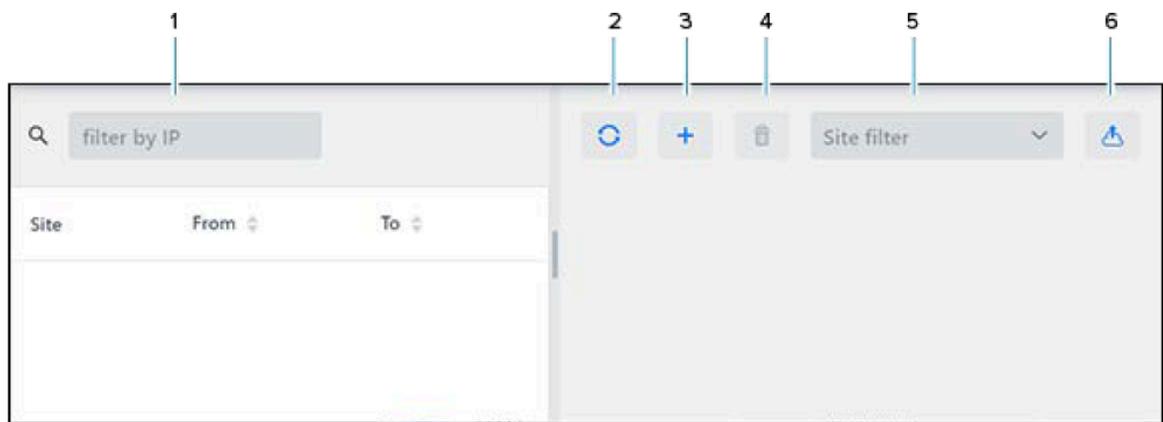
Cancel Add

| Column Name | Required | Description |
|-------------|----------|--|
| storeid | Yes | Site or store identifier. |
| name | No | Department or group name. |
| hint | Yes | Extension number. The data in the Hint field is not required to be unique. |
| event | Yes | Value must be 'presence'. |

Manage Site IPs

The Site IPs screen enables the customer administrator to assign a range of IP addresses for use by Zebra Voice clients. Each site can use a distinct range of IP addresses. The customer administrator can use the import/site/ips endpoint to import IP addresses into the Extension Manager.

Figure 43 Site IPs Screen



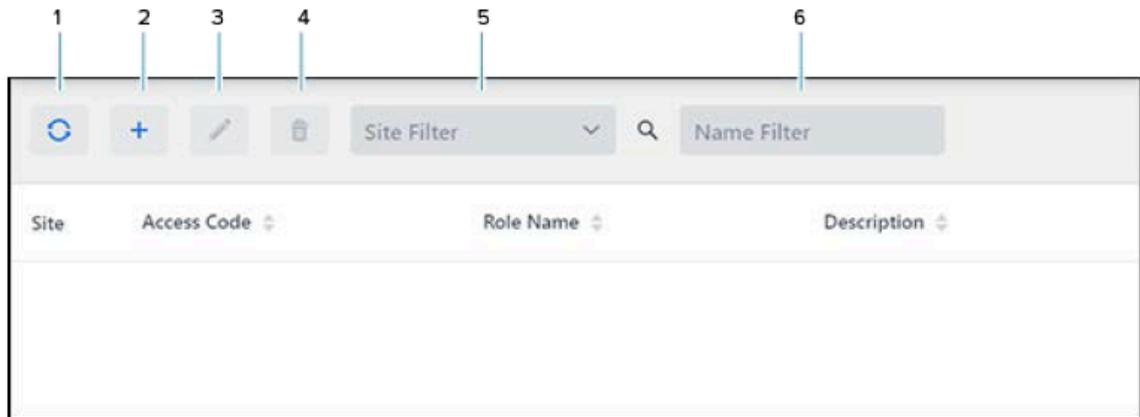
| Callout | Description |
|---------|---|
| 1 | Filter list by IP address. |
| 2 | Refresh IP data from the Extension Manager. |
| 3 | Add a range of IP addresses to a site. |
| 4 | Delete an IP address range from a site. |
| 5 | Filter by site identifier. |
| 6 | Import CSV file with IP address data. Same CSV format used by the <code>/import/site/ips</code> API endpoint. |

See [Define Site IPs](#) for an example of site IPs.

Manage Site Roles

Roles enable the customer administrator to organize users according to their function. The administrator can create multiple roles for each site and provide a different Zebra Voice configuration for each role.

Figure 44 Site Roles Screen



| Callout | Description |
|---------|--|
| 1 | Refresh roles data from the Extension Manager. |
| 2 | Add a role to a site. |
| 3 | Update a role for a site. |
| 4 | Filter data by site. |
| 5 | Filter data by role name. |

Site Roles can be added or updated by updating the **Departments**, and the **Site Roles** are not applicable to the Profile Manager.

Manage Contacts

The customer administrator can use the Extension Manager to push a contact list to each Zebra Voice device based on the site and associated groups/department. When the user signs out of the Zebra Voice

Client, the contact list is removed. The customer administrator can use the import/contacts endpoint to import contacts into the Extension Manager.

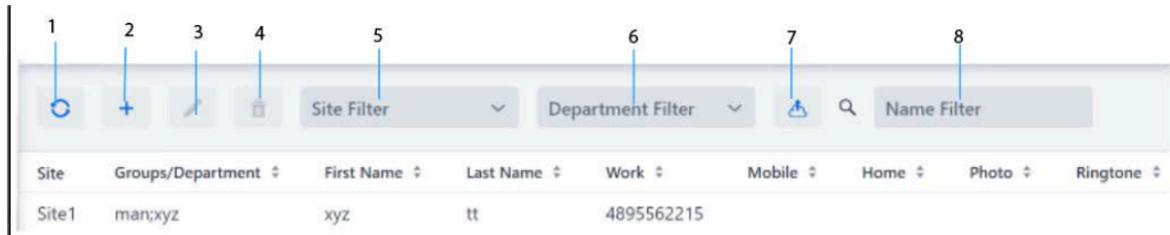
User can import contacts in bulk using the CSV import.

User must create the same group name in contacts as the department name.



NOTE: Items in the Groups column are referred to as Departments throughout this document.

Figure 45 Contacts Screen



| Callout | Description |
|---------|---|
| 1 | Refresh contact data from the Extension Manager. |
| 2 | Add a contact. |
| 3 | Update a contact. |
| 4 | Delete a contact. |
| 5 | Filter contact data by site. |
| 6 | Filter contact data by department. |
| 7 | Import CSV file with Contact data. Same CSV format used by the /import/contacts API endpoint. |
| 9 | Filter contact data by contact name. |

See [Create Contact Lists](#) for more information.

Retrieve the Contacts on Department Level

There are thousands of contacts per site defined during customer deployment. This feature allows to filter the contacts based on the department selected during the client login. During the Voice Client login, the client connects to EXM to download the static contacts defined at the site level and the dynamic contacts based on the user login.

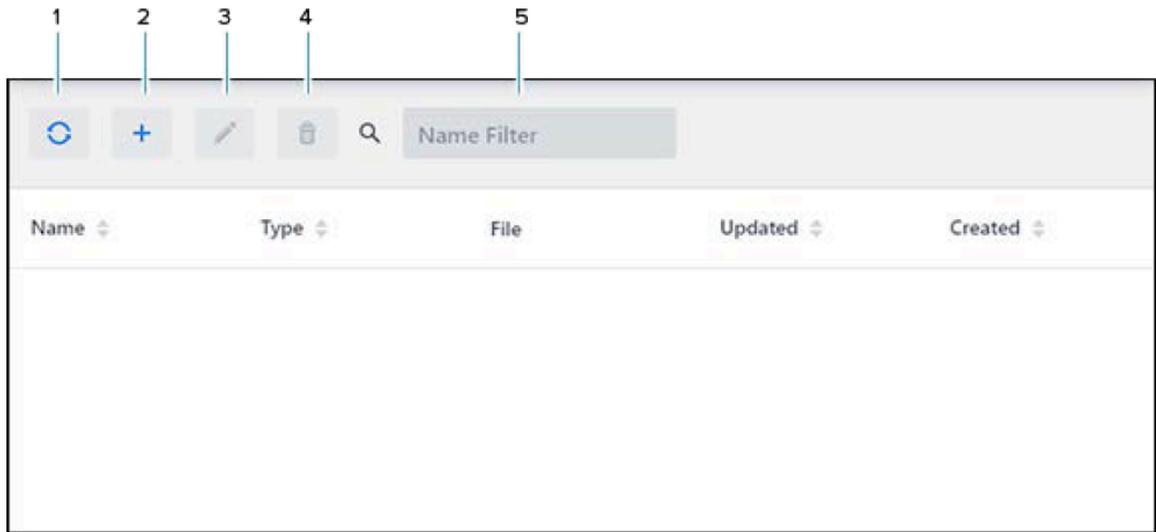
Each time, during login or while refreshing the contacts by the user, EXM retrieves all the contacts defined for that site. This result in huge contact payload to be retrieved from the EXM server.

This feature enhancement is to provide an filter facility to select which are all the department contacts needs to be downloaded based on the current department selection.

Manage Voice Files

The Voice Files screen provides access to the Extension Manager data store. The data store can hold contacts, contact pictures, ring tones, background images, and other elements that the customer administrator can use to create a profile.

Figure 46 Voice Files Screen



| Callout | |
|---------|---|
| 1 | Refresh file store data from the Extension Manager. |
| 2 | Upload a file to the Extension Manager. |
| 3 | Replace a file in the Extension Manager. |
| 4 | Delete a file from the Extension Manager. |
| 5 | Filter files by name or file type. |

See [Use the File Store](#) for more information.

Reports Menu

The **Reports** menu provides access to historical data for activity by site and events by user or event type.

View History

The **History** screen lists actions for extensions by Zebra Voice device and IP address. For example, the History screen shows when an extension is taken or released by a device.

Figure 47 History Screen

| When | All Actions | Site | Extension | Device |
|------------------|----------------|------|---------------|---------------------|
| 3/15/22, 7:53 PM | TAKEN | 1026 | 3030 | TC26_201095230D5146 |
| 3/15/22, 7:53 PM | FORCE_RELEASED | 1026 | 3030 | TC51_17068522513609 |
| 3/15/22, 7:53 PM | RELEASED | 9001 | 5210090015009 | TC26_201095230D5146 |
| 3/15/22, 5:26 PM | TAKEN | 5024 | 1847001016 | TC58_220525225E0125 |
| 3/15/22, 4:47 PM | TAKEN | 9001 | 5210090015009 | TC26_201095230D5146 |
| 3/15/22, 4:45 PM | TAKEN | 9001 | 5210090015009 | TC26_201095230D5146 |
| 3/15/22, 4:45 PM | RELEASED | 9001 | 5210090015004 | TC26_201095230D5146 |
| 3/15/22, 4:44 PM | TAKEN | 9001 | 5210090015004 | TC26_201095230D5146 |
| 3/15/22, 4:44 PM | RELEASED | 9001 | 5210090015005 | TC26_201095230D5146 |
| 3/15/22, 4:43 PM | TAKEN | 9001 | 5210090015005 | TC26_201095230D5146 |
| 3/15/22, 4:43 PM | RELEASED | 9001 | 5210090015005 | TC26_201095230D5146 |
| 3/15/22, 4:38 PM | TAKEN | 9001 | 5210090015005 | TC26_201095230D5146 |

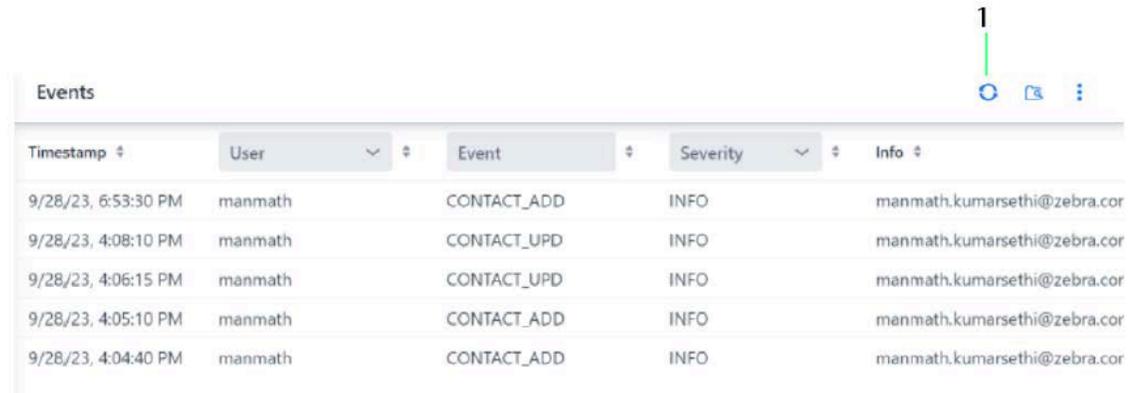
378 record(s) found

| Callout | Description |
|---------|---|
| 1 | Refresh history from the Extension Manager. |

View Events

The **Events** screen displays events by user. The customer administrator can pick from a list of users or events to filter the data.

Figure 48 Events Screen



| Timestamp | User | Event | Severity | Info |
|---------------------|---------|-------------|----------|------------------------------|
| 9/28/23, 6:53:30 PM | manmath | CONTACT_ADD | INFO | manmath.kumarsethi@zebra.cor |
| 9/28/23, 4:08:10 PM | manmath | CONTACT_UPD | INFO | manmath.kumarsethi@zebra.cor |
| 9/28/23, 4:06:15 PM | manmath | CONTACT_UPD | INFO | manmath.kumarsethi@zebra.cor |
| 9/28/23, 4:05:10 PM | manmath | CONTACT_ADD | INFO | manmath.kumarsethi@zebra.cor |
| 9/28/23, 4:04:40 PM | manmath | CONTACT_ADD | INFO | manmath.kumarsethi@zebra.cor |

| Callout | Description |
|---------|--|
| 1 | Refresh event data from the Extension Manager. |

License Menu

The Licenses menu provides access to view the licenses summary and the licenses assigned to devices.

Summary

The customer administrator can use the **Summary** screen to view the number of available licenses and the total number of licenses. This enables the customer administrator to manage license use and determine when more licenses are needed.

- Click **Refresh** to refresh the list to include the recently registered licenses.

Figure 49 Summary

| Customer | State | License | AID | Total Licenses | Used in EXM | Total Used | Exp |
|-------------------|---------|----------|--------------------------------------|----------------|-------------|------------|-----|
| BIG Y FOODS INC | Active | Standard | ***25b3-a798 Subscription License | 385 | 0 | 1 | 5/ |
| BLR-ST-Automation | Active | Premium | ***a73c-94e05cee3219 Perpetual | 221 ⓘ | 2 | 129 | 8/ |
| BLR-ST-Automation | Active | Standard | ***84c8-09139f4bdbe4 Subscription | 116 ⓘ | 0 | 20 | 9/ |
| BLR-ST-Automation | Expired | Standard | ***b22e-6c23c3daaece Trial | 110 | 0 | 56 | 8/ |
| BLR-ST-Automation | Expired | Standard | ***852c-fc9bc959f311 Perpetual | 10 ⓘ | 0 | 9 | 8/ |
| ConvergeOne | Active | Standard | ***ba4f-4fa0 Trial | 10 | 0 | 0 | 8/ |
| ConvergeOne | Active | Premium | ***fec8-ad83 Test | 2 | 0 | 0 | 4/ |



NOTE:

- When you mouse hover/click this icon of **Total License** and **Expiration**, it displays how much overage percentage and grace period is applied for that customer.
- For existing customers, after migration, the old license source AIDs are replaced with the new license source PKIDs under the AID header of **License > Summary** and **Devices > Assigned** tabs.

Table 5 Summary Tab Column Description

| Column | Description |
|---------------|---|
| State | ACTIVE indicates a valid license. EXPIRED indicates that the license has expired, been removed from the account, or is invalid in some other way. |
| License | Feature licenses associated with purchased products. Refer to the Workcloud Communication Voice Client Administrator Guide for Licensing for more information about each feature license. |
| AID | Activation ID associated with the feature license. Note that this is not used to activate the client. |
| Total License | Displays the number of licenses (including overage percentage in case of new license source). |
| Used in EXM | The total number of licenses that have been assigned. |
| Total Used | The total number of licenses that have been assigned. |
| Expiration | Displays the license expiration date and time (including grace period in case of new license source). |

Table 5 Summary Tab Column Description (Continued)

| Column | Description |
|--------------------|---|
| Updated/Created On | The top date/time indicates when the licenses were last verified with the licensing system. This value updates when the Provisioning Manager performs a nightly sync with the licensing system or if the licenses are synced manually by a Zebra administrator. The bottom date/time indicate when the licenses were added to the Provisioning Manager. |

View Assigned Licenses

The Assigned screen shows the list of licensed Zebra Voice devices and their licenses. A customer administrator can see which devices are using licenses. If the customer administrator wants to release the licenses from a device, the device must be obsoleted.

To obsolete the device, contact Zebra Global Customer Support for your region specified at: zebra.com/support.

- Click **Refresh** to refresh the list to include recently registered devices.



NOTE: This total does not correspond to the number of unique devices, because devices acquire multiple licenses to enable PBXs.

Figure 50 Assigned Screen

| In Use | Device ID | Feature | Expiration | AID | App.Version | Updated/Created On |
|------------|-----------------------|--------------|-----------------|----------------------|-------------|---------------------------------------|
| Not in use | EC30_190535230E0108 | Premium CUCM | 9/2/25, 5:29 AM | ***3b4e-d2dc Test | 9.0.21301 | 6/20/22, 11:55 AM 5/26/21, 8:58 PM |
| Not in use | EC50_202405225D0166 | Premium CUCM | 9/2/25, 5:29 AM | ***3b4e-d2dc Test | 9.0.21408 | 6/22/22, 1:17 AM 1/28/22, 12:29 PM |
| Not in use | EC50_202405225D0173 | Premium CUCM | 9/2/25, 5:29 AM | ***3b4e-d2dc Test | 9.0.21408 | 4/27/22, 12:03 PM 1/28/22, 6:54 PM |
| Not in use | EC50_202705225D0078 | Premium CUCM | 9/2/25, 5:29 AM | ***3b4e-d2dc Test | 9.0.21306 | 6/21/22, 4:21 PM 1/28/22, 12:06 PM |
| Not in use | TC26_201125230D5197 | Premium CUCM | 9/2/25, 5:29 AM | ***3b4e-d2dc Test | 9.0.21406 | 7/7/22, 4:19 PM 1/20/22, 7:25 PM |
| Not in use | TC52AX_211475225D0028 | Premium CUCM | 9/2/25, 5:29 AM | ***3b4e-d2dc Test | 9.0.21410 | 5/9/22, 12:08 PM 11/9/21, 7:44 PM |
| Not in use | TC52_182015225D0221 | Premium CUCM | 9/2/25, 5:29 AM | ***3b4e-d2dc Test | 9.0.22110 | 6/21/22, 4:07 PM 1/11/22, 7:27 PM |
| Not in use | TC56_162875225D0052 | Premium CUCM | 9/2/25, 5:29 AM | ***3b4e-d2dc Test | 9.0.21305 | 7/5/22, 4:29 PM 11/11/21, 10:00 AM |

| Callout | Description |
|---------|--|
| 1 | Refresh licensed device data from the Extension Manager. |

Table 6 Assigned Tab Column Description

| Column | Description |
|--------------------|---|
| In Use | In Use indicates that the feature license is currently held by the device. |
| | Not is Use indicates that the feature license is currently not in use. |
| | Not in use (*) indicates a premium license not currently in use by a device, but the license is still assigned to the device. This occurs, for example, when a device using a premium license logs out of the Extension Manager. To release the license, the device must be obsoleted. |
| Device ID | The device holding the license. Note that since Zebra Voice requires a base license and one or more PBX licenses, each device ID appears multiple times. |
| Feature | PBX using the feature license. This matches the License column except when the Standard license is used. For Standard licenses, the License column indicates Standard and the Feature column indicates the specific PBX requested by the device. |
| Expiration | The date and time when the license expires. |
| AID | Activation ID associated with the feature license. Note that this is not used to activate the client. |
| App Version | Zebra Voice version used by this device is represented by the last part of the version. For example, for version 9.0.20406, only 20406 displays. |
| Updated/Created on | The top date/time indicates when the device was last in contact with the provisioning Manager. The bottom date/time indicates when the license was first assigned to the device. |

System Menu

The customer administrator uses the **System** menu to create user accounts and to obsolete devices.

Manage Devices

The Devices screen lists all of the Zebra Voice devices licensed by the Extension Manager. You can view, sort, and search for information in the Devices screen.

- Click **Refresh** to refresh the list to include recently registered devices.

To obsolete the device, contact Zebra Global Customer Support for your region specified at: <http://zebra.com/support>



NOTE: The devices can be obsoleted from the Extension Manager or from the Provisioning Manager. If the customer is using the Extension Manager, the device must be obsoleted from the Extension Manager, this also removes the devices from the Provisioning Manager. Obsoleting the device at the Provisioning Manager does not obsolete the device from the Extension Manager.

Devices

| Customer | State Filter | Device Filter | Model/Version | Update |
|---------------|--------------|----------------------------|--|-----------------|
| WFC_BLR_ST1 | Active | DN2101_TA16B37638A290008C2 | DN2101 Android 12 SQ3A.220705.004 | 8/29/ 8/29/z |
| WFC_BLR_ST1 | Active | TC52AX_210275225E0040 | TC52AX Android 11 11-46-25.00-RG-U00-STD-HEL-04 | 8/29/ 6/14/z |
| WFC-Dev-UAT | Inactive | TC21_201355230D5140 | TC21 Android 13 13-26-09.00-TG-U03-STD-HEL-04 | 8/29/ 3/2/z |
| WFC-Dev-UAT | Inactive | TC57X_200915225E0073 | TC57X Android 10 10-16-10.00-QG-U141-STD-HEL-04 | 8/29/ 5/10/z |
| WFC-Dev-UAT | Active | TC27_230675247D0046 | TC27 Android 14 14-14-08.00-UG-U00-PRD-ATH-04 | 8/29/ 4/17/z |
| WFC_BLR_idris | Active | EM45_241355247E1138 | EM45 Android 13 13-32-07.00-TG-U06-STD-ATH-04 | 8/29/ 7/16/z |
| WFC-Dev-UAT | Inactive | HC50_232015247D0103 | HC50 Android 13 13-29-20.00-TG-U00-STD-ATH-04 | 8/28/ 2/28/z |
| WFC-Dev-UAT | Inactive | TC15_231405247D0035 | TC15 Android 14 | 8/28/ 2/28/z |

92799 record(s) found

Manage Users

The customer administrator can create a additional portal user accounts. Admin users can help manage the Extension Manager data while Users can view data.

Figure 51 Portal Users Screen

The screenshot shows a user management interface. At the top, there are six callouts: 1 points to a refresh icon, 2 to a plus icon, 3 to an edit icon, 4 to a delete icon, 5 to a search icon, and 6 to a 'Name Filter' input field. Below these is a table of users with columns for User Role, User Name, Login Name, and Email.

| User Role | User Name | Login Name | Email |
|-------------|------------------------------|------------------------------|------------------------------|
| Super-Admin | 3OP Super-Admin | loginname1234 | admin@wfc.com |
| Super-Admin | Abhineet Agarwal | pwmj34 | pwmj34@zebra.com |
| Super-Admin | adithyareddy.yalla@zebra.com | adithyareddy.yalla@zebra.com | adithyareddy.yalla@zebra.com |
| Admin | admin1 | admin1@zebra.com | admin1@zebra.com |
| Super-Admin | Amit Shah | a.shah@zebra.com | a.shah@zebra.com |
| Super-Admin | asdf | asdf | asdf@asdf.com |
| Super-Admin | IoT | tarsouno@yahoo.com | tarsouno@yahoo.com |
| Super-Admin | lounT | cit008@zebra.com | cit008@zebra.com |
| Super-Admin | Kamala | tpcm73 | tpcm73@zebra.com |

| Callout | Description |
|---------|---|
| 1 | Refresh user data from the Extension Manager. |

Using the Extension Manager User Interface

| Callout | Description |
|---------|---|
| 2 | Create a new user account. |
| 3 | Update a user account. |
| 4 | Delete a user account. |
| 5 | Reset a user password. The Extension Manager sends an email to the user with a reset password link. |
| 6 | Filter user data by role, user name, login name, or email address. |

Extension Manager Backup and Restore

The Extension Manager is built within Azure utilizing availability zones for disaster recovery purposes. Additionally, the Extension Manager is architected and engineered in Clustered nodes providing redundancy in processing, database, and services. The structure allows nodes to be "off-line" while associated nodes provided continued services.

The Extension Manager components/databases are backed-up in near RT with a retention period of 35 days allowing services recovery in event of failure. Back-ups are managed by the system and no user administration is necessary.

Customer Configuration Backup/Restore Functionality

Customers may need to restore Extension Manager configuration after an incorrect configuration has been applied. It is advised to backup configuration regularly – after any changes are made, or even periodically.

The configuration should also be backed up before making major configuration changes in case the previous configuration must be restored.

Taking the backup of Extension Manager configuration is the responsibility of each customer. The procedures to do the backups follow:

1. Freeze changes to the EXM configuration, i.e. ensure no one is making configuration changes during the backup procedure.
2. Back up the EXM configuration as explained in the sections below. Save an original copy of the configuration for restoration if required.
3. Make the required changes. If adding extensions/sites/departments, changes may be made by modifying a copy of the backup from step 2 and the file re-imported.
4. Verify that the changes have been implemented as expected. If necessary, restore the configuration to its original state by re-importing the backup, use the optional flag to reset the existing incorrect configuration.
5. Unfreeze changes to the EXM configuration.

Each customer must take the backup of Extension Manager configuration customer. The procedures to take the backup follows:

There are two categories of changes.

1. The **Licensing Changes** – everything that is marked on the Provisioning Manager Customer Administrator Guide related to licensing applies to the Extension Manager Customer Administrator Guide. The only difference is that the Extension Manager Licenses/Summary page has an extra column called "Used in EXM" which contains the number of licenses used in the Extension Manager only.

2. **Subscription** – on the Extensions/Extensions page, there is a new column called Subscriptions.

Extension Configuration

APIs are available to use to import and export Extension Manager configuration information as a csv file. The GET `/api/import/export/csv` method allows the admin to export and save the following information, where each item below corresponds to a tab in the Extension Manager portal navigation panel:

1. Extensions/Site
2. Extensions/Department
3. Extensions/Extensions
4. Configurations/PBXes
5. 5. Configurations/Site Roles

When necessary, the csv file can be imported again using the POST `/api/import/csv` method. The method includes an optional flag to reset any existing configuration before importing the csv file.

Depending on customer configuration, the csv file may refer to Profiles (configuration templates), which must exist in the Extension Manager before importing the csv file.

Other Extension Manager Customer Configuration

The following configuration is not included in the `/api/import/csv` methods:

1. Configurations/Profiles (configuration templates) may be attached to sites, departments, or extensions. Profiles must be added via the Extension Manager portal. It is advisable to keep profiles in a well-known location in case they need to be restored.
2. Configurations/Subscriptions can be imported via the POST `/api/import/subscriptions` method. There is no export function. It is advised to always maintain the current configuration in csv form in a well-known location in case it needs to be restored.
3. Configurations/Site IP addresses can be imported via the POST `/api/import/site/ips` method. There is no export function. It is advised to always maintain the current configuration in csv form in a well-known location in case it needs to be restored.
4. Configurations/Contacts can be imported via the POST `/api/import/contacts` method. There is no export function. It is advised to always maintain the current configuration in csv form in a well-known location in case it needs to be restored.
5. Configurations/Voice Files must be added via the Extension Manager portal. It is advised to keep voice files in a well-known location in case they need to be restored.

For more details about these configuration categories, refer to the Workcloud Communication Extension Manager Customer Administrator Guide.

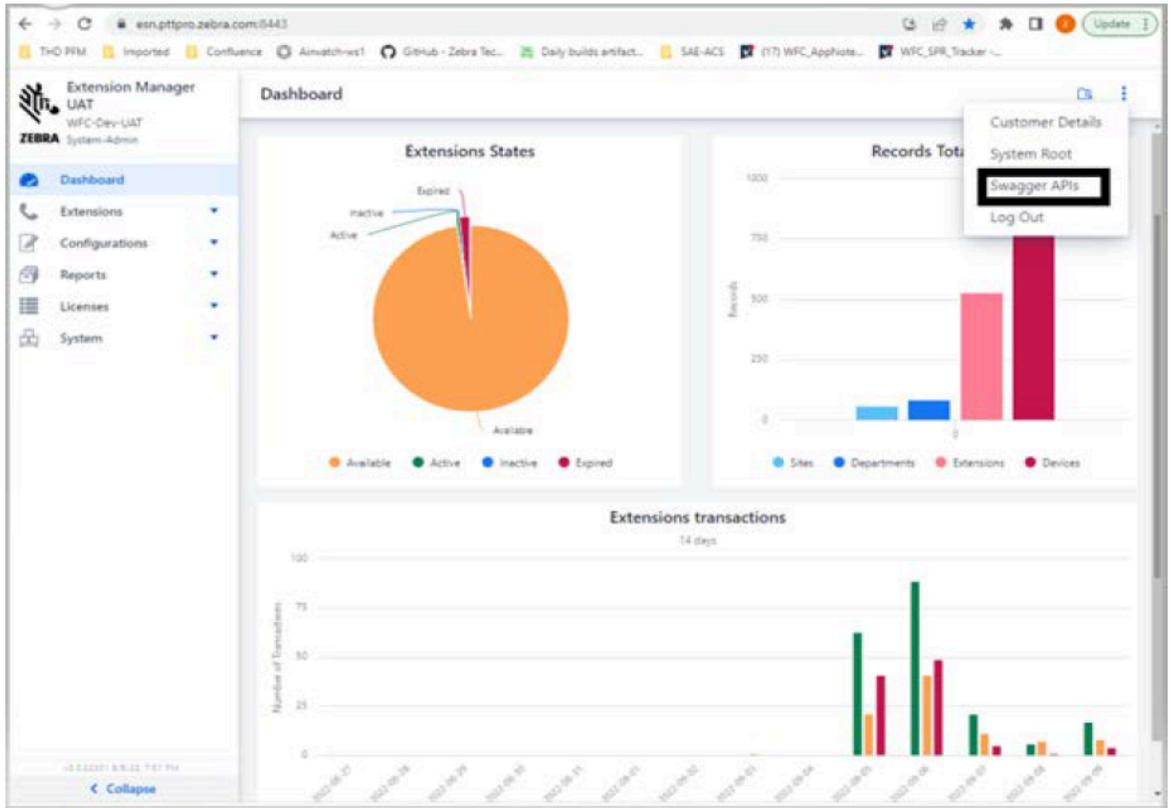
The Workcloud Communication Extension Manager API Reference Guide contains information about the above-mentioned APIs and format of the csv files. Usage of the POST `/api/import/csv` method also is described below.

Extension Manager Backup

To initiate a backup of the extension data (POST `/api/import/csv` method), navigate to the Swagger page from the menu at the top left of the Extension Manager home page.

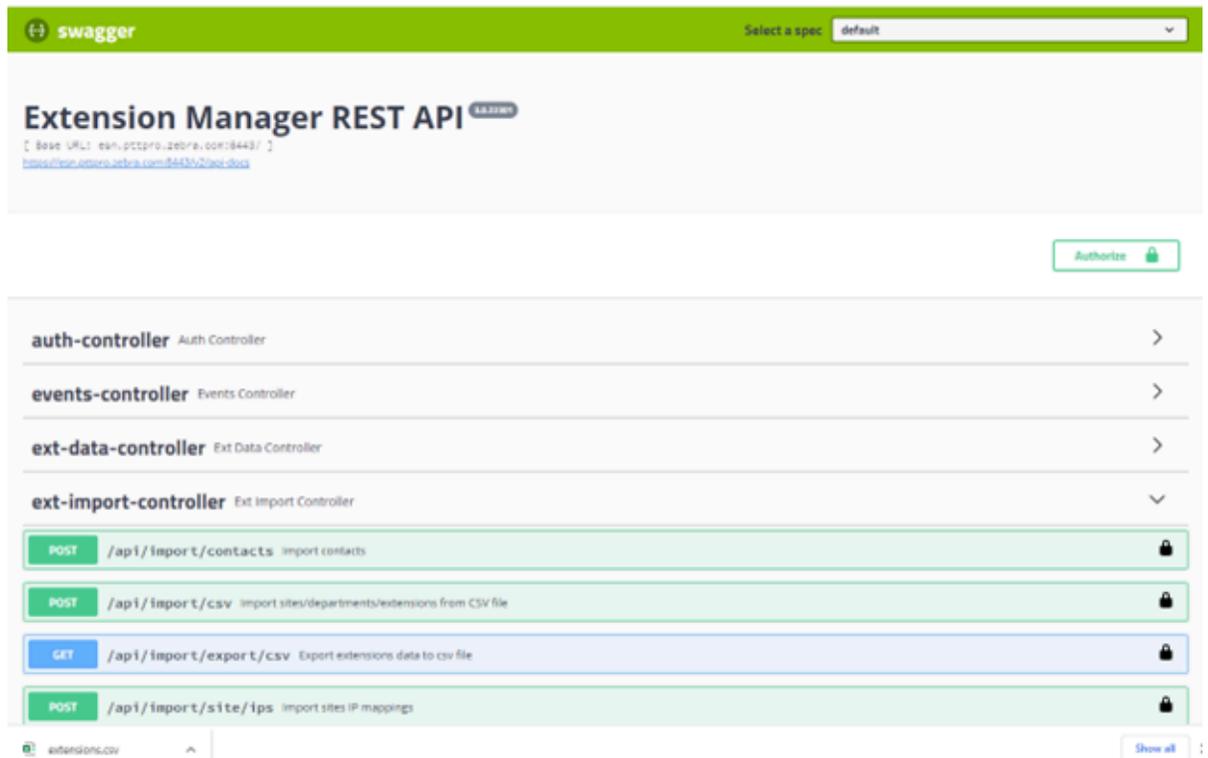
Extension Manager Backup and Restore

1. To initiate a backup of the extension data (POST /api/import/csv method), navigate to the Swagger page from the menu at the top left of the **Extension Manager** home page.

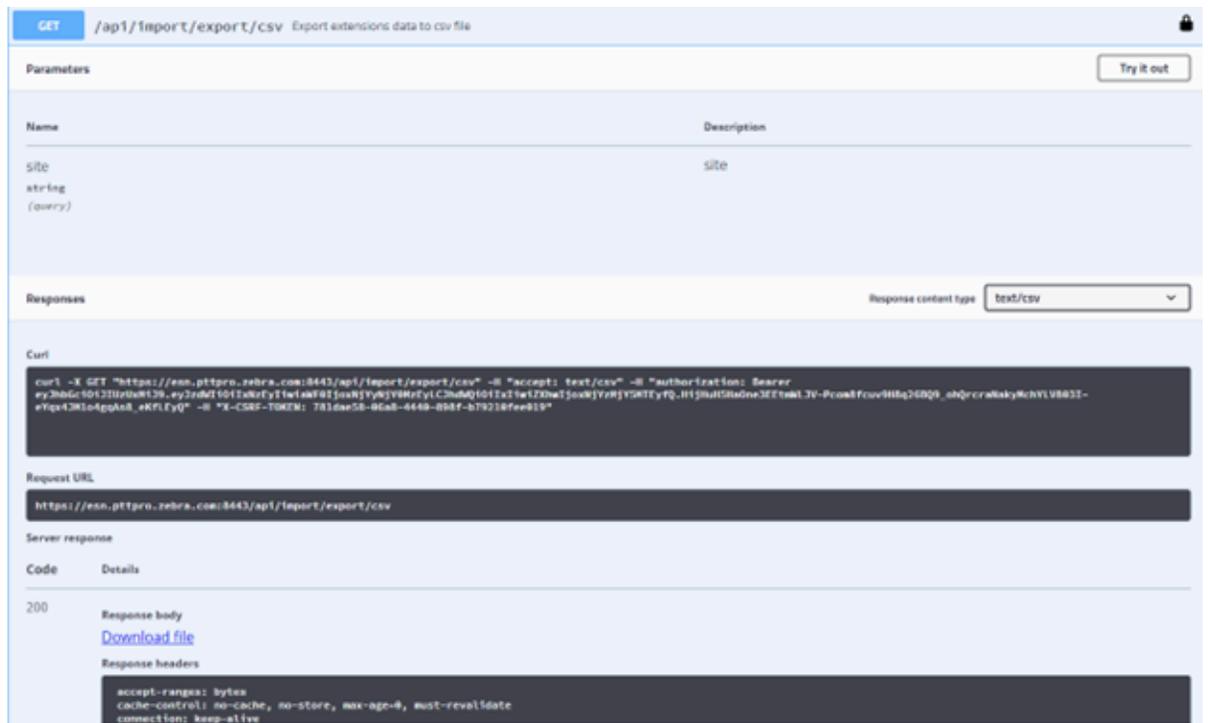


Extension Manager Backup and Restore

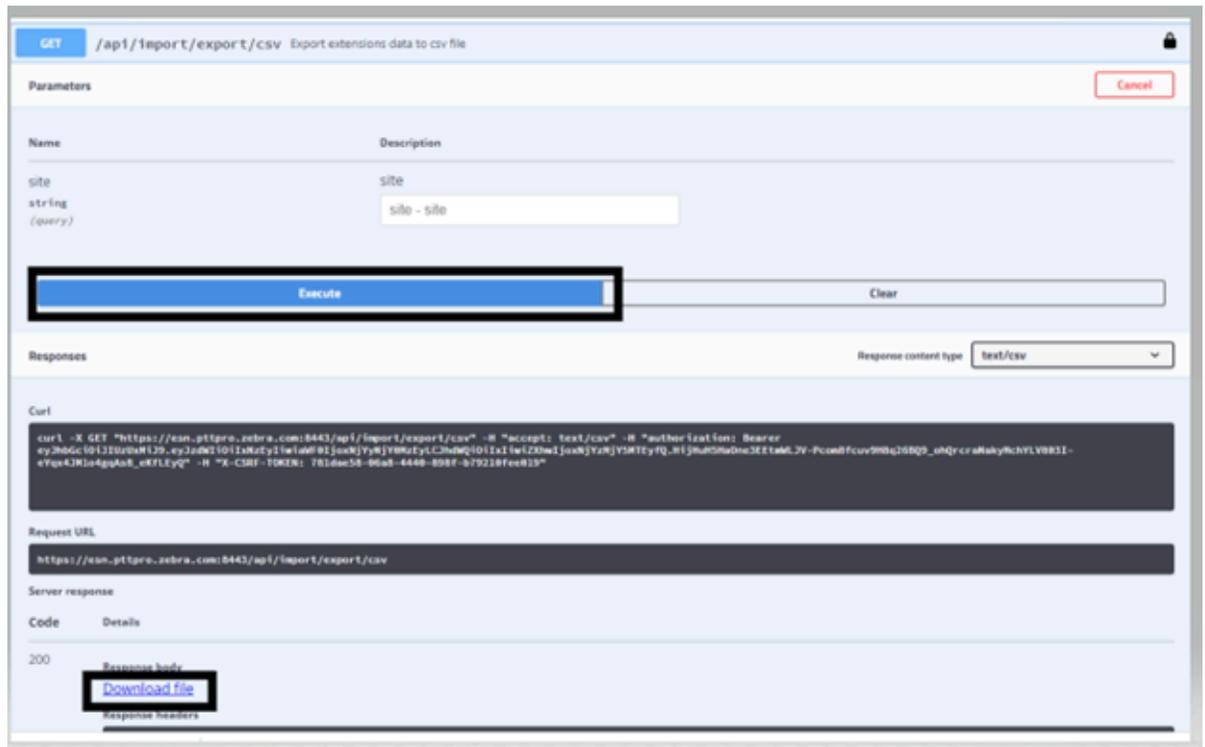
2. Once authorized, navigate to the ext-import-controller menu and select the “GET /api/import/export/csv”



3. Click **Try it out** on the top right.



4. Click **Execute** and then Download file.



The file is named Extensions.csv and downloaded to the Profile Client users. This file can now be used to restore the user database as well as PBX and site information using the **POST /api/import/csv** method.

Secondary PBX Information with Extension Data Export

Extension data exported from the API includes a "second_pbx_params" field.

| | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R |
|----|------------|------------------|----------|----------|----------|-----------|-----------|----------|----------|----------|--------|------------|-----------|-------------------|------------|----------------|
| 0 | site_multi | dep_name | dep_info | dep_auto | dep_hide | dep_reser | dep_thres | dep_role | dep_role | dep_code | number | ext_name | ext_info | second_pbx_params | reserved_c | pbx_name pr |
| 02 | FALSE | bakery_dn | test | FALSE | FALSE | FALSE | | | | | | 7004 | 7004 | Mitel | | default_cu CL |
| 02 | FALSE | bashaDept | | FALSE | TRUE | TRUE | | | | | | extension1 | Extension | extension1 | test1 | default_cu CL |
| 02 | FALSE | bashaDept | | FALSE | TRUE | TRUE | | | | | | extension4 | Extension | extension4 | test1 | default_cu CL |
| 02 | FALSE | blr-voice-role-2 | | FALSE | FALSE | FALSE | | | | | | 7001 | 7001 | | | Asterisk or As |
| 02 | FALSE | blr-voice-role1 | | FALSE | FALSE | FALSE | | | | | | 7002 | test | | | Asterisk or As |
| 02 | FALSE | BOTH_PV | BOTH_PV | TRUE | FALSE | FALSE | | | | | | BOTH_PV | BOTH_PV | | | Asterisk |
| 02 | FALSE | cucm-premium | | FALSE | FALSE | FALSE | | | | zebra | | 7065 | 7065 | | | CUCM_PR CL |
| 02 | FALSE | cucm-premium | | FALSE | FALSE | FALSE | | | | zebra | | 7066 | 7066 | | | CUCM_PR CL |
| 02 | FALSE | cucm-premium | | FALSE | FALSE | FALSE | | | | zebra | | 7067 | 7067 | | | CUCM_PR CL |
| 02 | FALSE | cucm-premium | | FALSE | FALSE | FALSE | | | | zebra | | 7068 | 7068 | | | Mitel |
| 02 | FALSE | cucm-premium | | FALSE | FALSE | FALSE | | | | zebra | | 7069 | 7069 | | | Mitel |
| 02 | FALSE | cucm-premium | | FALSE | FALSE | FALSE | | | | zebra | | 7070 | 7070 | | | Asterisk |
| 02 | FALSE | cucm-premium | | FALSE | FALSE | FALSE | | | | zebra | | 7071 | 7071 | | | Asterisk |
| 02 | FALSE | cucm-premium | | FALSE | FALSE | FALSE | | | | zebra | | 7072 | 7072 | | | Asterisk |
| 02 | FALSE | cucm-premium | | FALSE | FALSE | FALSE | | | | zebra | | 7073 | 7073 | | | Asterisk |
| 02 | FALSE | cucm-premium | | FALSE | FALSE | FALSE | | | | zebra | | 7074 | 7074 | | | Asterisk |
| 02 | FALSE | cucm-premium | | FALSE | FALSE | FALSE | | | | zebra | | 7075 | 7075 | | | CUCM_PR CL |
| 02 | FALSE | cucm-premium | | FALSE | FALSE | FALSE | | | | zebra | | 7076 | 7076 | | | CUCM_PR CL |
| 02 | FALSE | cucm-premium | | FALSE | FALSE | FALSE | | | | zebra | | 7077 | 7077 | | | CUCM_PR CL |
| 02 | FALSE | cucm-premium | | FALSE | FALSE | FALSE | | | | zebra | | 7078 | 7078 | | | CME_PREF CA |
| 02 | FALSE | cucm-premium | | FALSE | FALSE | FALSE | | | | zebra | | 7079 | 7079 | | | CUCM_PR CL |
| 02 | FALSE | cucm-premium | | FALSE | FALSE | FALSE | | | | zebra | | 7080 | 7080 | | | CUCM_PR CL |
| 02 | FALSE | cucm-premium | | FALSE | FALSE | FALSE | | | | zebra | | 7081 | 7081 | | | CUCM_PR CL |
| 02 | FALSE | cucm-premium | | FALSE | FALSE | FALSE | | | | zebra | | 7082 | 7082 | | | Mitel |
| 02 | FALSE | cucm-premium | | FALSE | FALSE | FALSE | | | | zebra | 7083 | 7083 | 7083 | | | Mitel |

Upload Extension Manager Contacts with a Pause in the Number

A comma, to indicate a pause when dialing, can be added to the phone field. This feature is supported in the user interface and contact imported using a CSV file.

Contacts

| Site | Groups/Department | First Name | Last Name | Work | Mobile | Home |
|---------|-------------------|------------|-----------|--------------|-------------|---------------------|
| 1026 | Sports | Sports | Sports | | 132314 | |
| 600dep | allTest | mmmm | mmm | 10012 | 1234 | 10012 |
| ddep199 | ddep199 | ddep199 | ddep199 | 123 | 123 | |
| ddep199 | teacher | teacher | s | 12356 | 12356 | |
| Zebra | zebra | abcd | xyz | 123478990 | 1234567890 | 576879700 |
| 8001 | Sports | chuyu | chuyu | | 21314,86876 | |
| 8001 | | Frank | Flyer | | 2727 | |
| 8001 | | Emilia | Kratzer | | 2728 | 224-987-6542 |
| 8001 | | R | M | | 2746 | 224-987-6541 |
| 8001 | | Johny | Page | 123456,17640 | 2726,123456 | 224-987-6541,123... |

Subscription Checkpoint in Hosted EXM History

A customer can create a checkpoint log entry for each subscription change to a site.

By default, the subscription checkpoint is not enabled.

The following screen shows the customer configuration for enabling/disabling the Subscription Checkpoint.

Customers

Refresh + Edit Add Filter Name Filter

| ID | Name | License CLS ID | PVM | Subscription Checkpoint | Updated On | Created On | Last PVM D |
|----|--------|----------------|-----|--------------------------|----------------------|----------------------|-------------|
| 14 | benest | | DEV | <input type="checkbox"/> | 3/9/20, 8:40:37 PM | 3/9/20, 8:40:37 PM | 2/1/24, 8:5 |
| 2 | CLC | | DEV | <input type="checkbox"/> | 11/20/23, 1:33:37 PM | 4/19/23, 12:47:15 PM | 2/1/24, 8:5 |

Update

Customer Name -

API Key (token)

License ID

Default PBX (optional)

Subscription Checkpoint

| | | | | | | | |
|---|----------------|--|-----|--------------------------|--------------------|---------------------|-------------|
| 1 | Zebra WFC-Team | | DEV | <input type="checkbox"/> | 8/8/23, 4:44:13 PM | 4/13/23, 5:02:08 PM | 2/1/24, 8:5 |
|---|----------------|--|-----|--------------------------|--------------------|---------------------|-------------|

Extension Manager Backup and Restore

History

| Customer | When | CHECKPOINT | Site | Extension | Device |
|-------------|--------------------|------------|------|-----------|---------------------|
| WFC_BLR_ST1 | 2/1/24, 8:50:09 PM | CHECKPOINT | 8001 | 7000 | TCS3_213405225E0356 |
| WFC_BLR_ST1 | 2/1/24, 8:50:08 PM | CHECKPOINT | 8001 | 7000 | TCS3_213405225E0356 |
| WFC_BLR_ST1 | 2/1/24, 8:48:39 PM | CHECKPOINT | 8001 | 7000 | TCS3_213405225E0356 |
| WFC_BLR_ST1 | 2/1/24, 8:48:38 PM | CHECKPOINT | 8001 | 7000 | TCS3_213405225E0356 |
| WFC_BLR_ST1 | 2/1/24, 8:47:09 PM | CHECKPOINT | 8001 | 7000 | TCS3_213405225E0356 |
| WFC_BLR_ST1 | 2/1/24, 8:47:08 PM | CHECKPOINT | 8001 | 7000 | TCS3_213405225E0356 |
| WFC_BLR_ST1 | 2/1/24, 8:45:39 PM | CHECKPOINT | 8001 | 7000 | TCS3_213405225E0356 |
| WFC_BLR_ST1 | 2/1/24, 8:45:38 PM | CHECKPOINT | 8001 | 7000 | TCS3_213405225E0356 |
| WFC_BLR_ST1 | 2/1/24, 8:44:09 PM | CHECKPOINT | 8001 | 7000 | TCS3_213405225E0356 |
| WFC_BLR_ST1 | 2/1/24, 8:44:08 PM | CHECKPOINT | 8001 | 7000 | TCS3_213405225E0356 |
| WFC_BLR_ST1 | 2/1/24, 8:42:39 PM | CHECKPOINT | 8001 | 7000 | TCS3_213405225E0356 |
| WFC_BLR_ST1 | 2/1/24, 8:42:38 PM | CHECKPOINT | 8001 | 7000 | TCS3_213405225E0356 |
| WFC_BLR_ST1 | 2/1/24, 8:41:09 PM | CHECKPOINT | 8001 | 7000 | TCS3_213405225E0356 |
| WFC_BLR_ST1 | 2/1/24, 8:41:08 PM | CHECKPOINT | 8001 | 7000 | TCS3_213405225E0356 |
| WFC_BLR_ST1 | 2/1/24, 8:39:39 PM | CHECKPOINT | 8001 | 7000 | TCS3_213405225E0356 |
| WFC_BLR_ST1 | 2/1/24, 8:39:38 PM | CHECKPOINT | 8001 | 7000 | TCS3_213405225E0356 |
| WFC_BLR_ST1 | 2/1/24, 8:38:09 PM | CHECKPOINT | 8001 | 7000 | TCS3_213405225E0356 |
| WFC_BLR_ST1 | 2/1/24, 8:38:08 PM | CHECKPOINT | 8001 | 7000 | TCS3_213405225E0356 |
| WFC_BLR_ST1 | 2/1/24, 8:36:39 PM | CHECKPOINT | 8001 | 7000 | TCS3_213405225E0356 |

Export from EXM

Extension Manager provides the ability to export department, site, history, and events. Data visible in the user interface is downloaded as a CSV file.

Department

| Customer | Site | Department | Description | Type | Contacts | Role (Access Code) | Config |
|----------------|------|------------|-------------|--------|-------------------------|--------------------|--------|
| Zebra WFC-Team | 0000 | acc1 | | AUTO | | | |
| Zebra WFC-Team | 1025 | home | | MANUAL | All Contacts | | |
| Zebra WFC-Team | 1025 | sadsda | | MANUAL | All Contacts | | |
| Zebra WFC-Team | 1025 | ssd | | MANUAL | All Contacts | | |
| Zebra WFC-Team | 1025 | Test | | MANUAL | All Contacts | | |
| Zebra WFC-Team | 1025 | test123 | test123 | MANUAL | test,Test,testing,test1 | | |
| Zebra WFC-Team | 1025 | test321 | test321 | MANUAL | testing | | |
| Zebra WFC-Team | 1025 | testdep | testdep | MANUAL | All Contacts | | |
| Zebra WFC-Team | 1231 | 1231test | testing | MANUAL | Nanda | | |
| Zebra WFC-Team | 1231 | test | | MANUAL | Nanda | | |

Site

| Customer | Site | Description | Multiple | Config | Default PBX |
|----------|-------------|-------------|----------|--------|-------------|
| pm-dev1 | 1025 | Store_1027 | | | |
| pm-dev1 | 1026 | | | | |
| pm-dev1 | basharasool | | | | |
| pm-dev1 | basha10 | | | | |
| pm-dev1 | basha11 | dx | | | |
| pm-dev1 | bashasite | | | | |
| pm-dev1 | bashasite1 | | | | |
| pm-dev1 | site-fri | | | | |
| pm-dev1 | site-fri1 | | | | |
| pm-dev1 | site-fri2 | | | | |

Events

Browser: wfcdev-extmgr2.pttpro.zebra.com:4443/events

Navigation: Zebra, Mekha, All Bookmarks

Extension Manager DEV, All Customers, System-Admin

| Customer | Timestamp | User | Event | Severity | Info |
|---------------|----------------------|--------------|-----------------------|----------|------------------|
| | 2/13/24, 10:47:29 AM | System Admin | LOGIN | INFO | |
| New_Dev_Cust | 2/13/24, 10:43:19 AM | | LICENSE_SYNC_DEV_HIST | WARNING | pvm:404 : "[tir |
| WFC_Nanda_dev | 2/13/24, 10:38:19 AM | | LICENSE_SYNC_PUSH | INFO | total:1 |
| Krishna | 2/13/24, 10:38:19 AM | | LICENSE_SYNC_PUSH | INFO | total:1 |
| New_Dev_Cust | 2/13/24, 10:38:19 AM | | LICENSE_SYNC_DEV_HIST | WARNING | pvm:404 : "[tir |
| | 2/13/24, 10:35:09 AM | | LICENSE_CLEANUP | INFO | total:20 |
| testCustomer | 2/13/24, 10:35:04 AM | | LICENSE_SYNC_GET | INFO | Pull licenses fa |
| four | 2/13/24, 10:35:04 AM | | LICENSE_SYNC_GET | INFO | Pull licenses fa |
| WFC_Nanda_dev | 2/13/24, 10:35:04 AM | | LICENSE_SYNC_GET | INFO | Received 5 fea |
| Krishna | 2/13/24, 10:35:04 AM | | LICENSE_SYNC_GET | INFO | Received 3 fea |
| New_Dev_Cust | 2/13/24, 10:35:04 AM | | LICENSE_SYNC_GET | INFO | Pull licenses fa |
| new | 2/13/24, 10:35:04 AM | | LICENSE_SYNC_GET | INFO | Pull licenses fa |

History

Browser: wfcdev-extmgr2.pttpro.zebra.com:4443/history

Navigation: Zebra, Mekha, All Bookmarks

Extension Manager DEV, All Customers, System-Admin

| Customer | When | Action | Site | Extension | Device |
|---------------|---------------------|----------------|------|------------|-----------------------|
| Krishna | 2/12/24, 6:23:58 PM | TAKEN | 8001 | Asterisk | TC27_223505247E0123 |
| Krishna | 2/12/24, 6:23:50 PM | RELEASED | 8001 | Asterisk | TC27_223505247E0123 |
| Krishna | 2/12/24, 6:21:56 PM | TAKEN | 8001 | Asterisk | TC27_223505247E0123 |
| Krishna | 2/12/24, 6:21:46 PM | RELEASED | 8001 | Asterisk | TC27_223505247E0123 |
| Krishna | 2/12/24, 6:19:46 PM | TAKEN | 8001 | Asterisk | TC27_223505247E0123 |
| Krishna | 2/12/24, 6:19:10 PM | RELEASED | 8001 | Asterisk | TC27_223505247E0123 |
| Krishna | 2/12/24, 6:17:48 PM | TAKEN | 8001 | Asterisk | TC27_223505247E0123 |
| Krishna | 2/12/24, 6:17:44 PM | FORCE_RELEASED | 8001 | Asterisk | TC22_230155247D0126 |
| WFC_Nanda_dev | 2/12/24, 3:20:26 PM | TAKEN | 8001 | Mitel_3000 | TC52AXS_210965225D001 |
| WFC_Nanda_dev | 2/12/24, 3:19:55 PM | RELEASED | 8001 | Mitel_3000 | TC52AXS_210965225D001 |
| WFC Nanda dev | 2/12/24, 3:13:24 PM | TAKEN | 8001 | Mitel 3000 | TC52AXS_210965225D001 |

