Zebra Services Agent

User Guide

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About This Guide

The Zebra Services Agent (ZSA) is a mobile application with device alerting capabilities, providing **On Device Battery Alert** features for VisibilityIQ Foresight and Proactive Battery Replacement Services. It is a client-side application designed for use on Zebra mobile computers running the Android platform. The application alerts users when a faulty battery is swapped or identified on the mobile device.

This guide provides information on setting up the application securely and explains the features available.

Functional Overview

The ZSA mobile application features three main modules that verify the device's battery health, diagnose its functions, and detect any drops if the device falls.

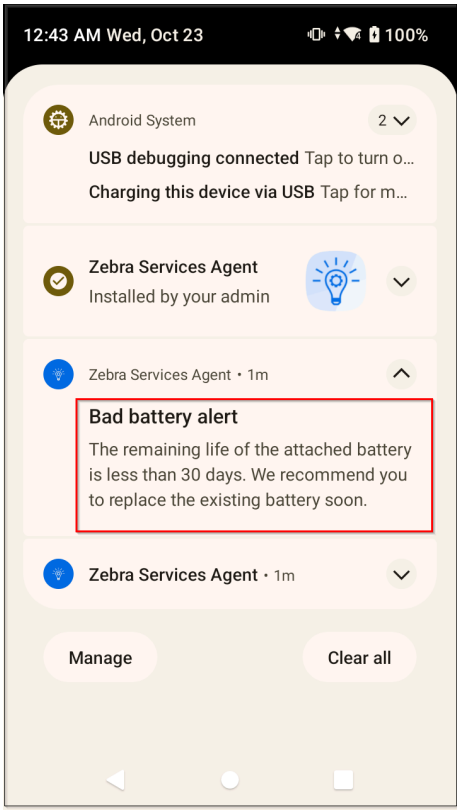
- VIQF Smart Battery Health
- Drop Detection
- Diagnostic Tool

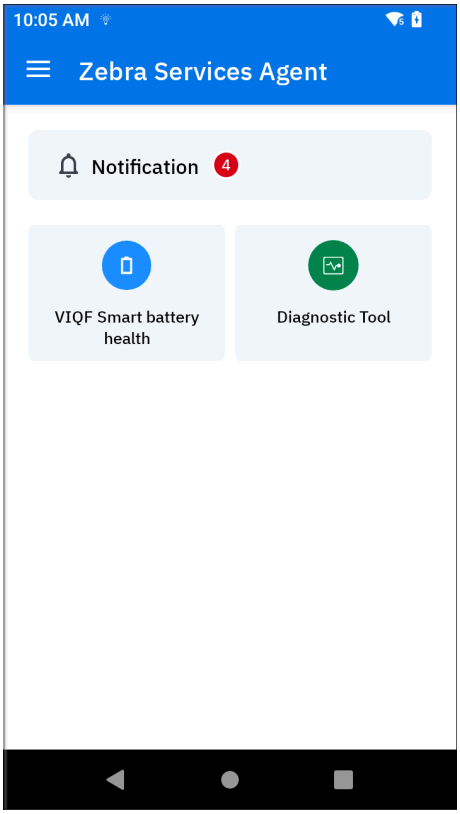
VIQF Smart Battery Health

ZSA is designed to have real-time **Alert on Device** capabilities for VisibilityIQ Foresight (VIQF) and Proactive Battery Replacement (PBR) Services.

Alert capabilities for VIQF:

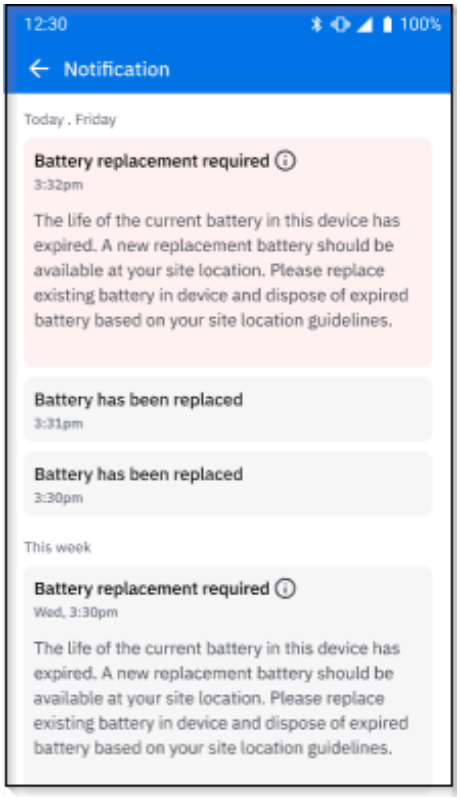
- Identify VIQF **Replace Now** batteries with less than 30 days of useful life left easily through on-device battery alerts.
- The device generates an alert message whenever it is swapped with a faulty battery. The app checks for cold battery swaps (via device reboot) and warm swaps (without device reboot).
- Highlights battery health and battery details on the app.

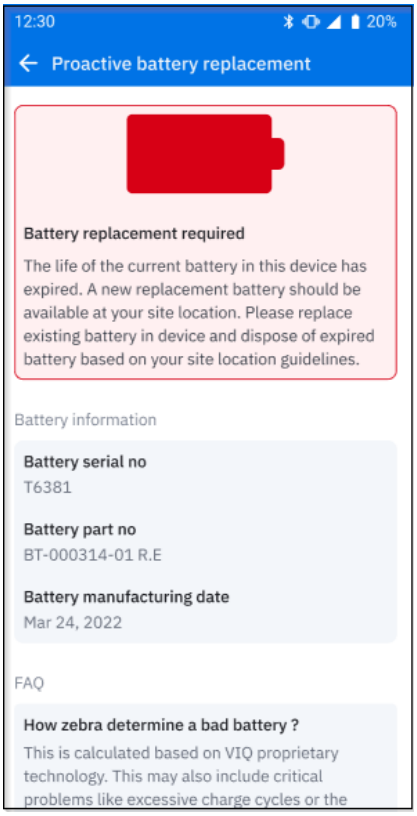




Alert capabilities for PBR Services:

- Identify faulty batteries for which a replacement is sent to the customer's location. There is a 20-day period before an alert displays to allow the replacement battery to reach the customer's location.
- The device generates an alert message whenever it is swapped with a faulty battery. The app checks for cold battery swaps (via device reboot) and warm swaps (without device reboot).
- Highlighting battery health and battery details on the app.

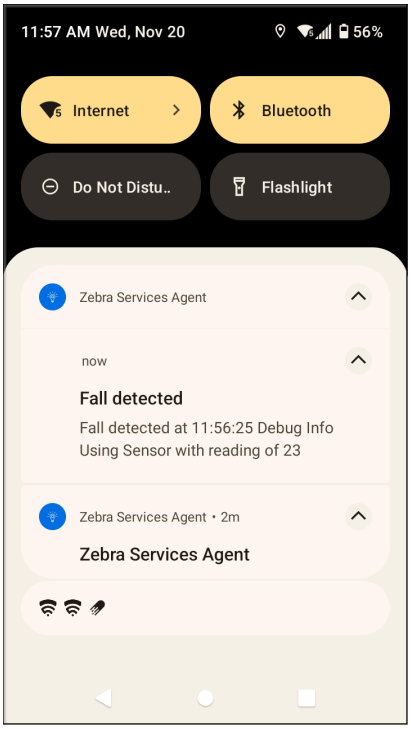




Drop Detection

This module of the ZSA mobile application uses the Android accelerometer sensor to detect device drops. When a drop is detected, the user receives a notification, and the fall data uploads to the server

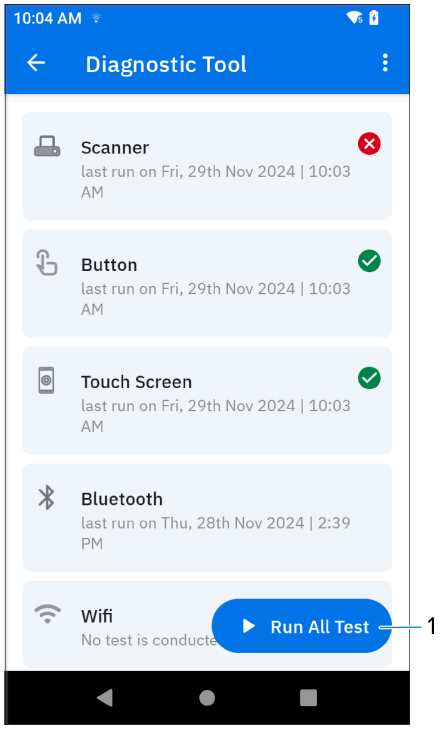
automatically. By default, this feature remains disabled in the ZSA mobile application. However, users can enable it via the settings configuration.



Diagnostic Tool

This module of the ZSA mobile application provides tests that verify the device's hardware functionality to determine the system's health and its result. When necessary, the Zebra Help Desk uses this tool to troubleshoot device issues, using the results to determine the ideal steps for resolution. This functionality is beneficial for quickly addressing device problems, increasing worker productivity, and reducing device downtime and unnecessary returns to the Zebra Repair Center.

1. Users access the **Diagnostic Tool** module from the home screen of the ZSA mobile application. The main screen of this module displays a list of tests that help identify the device's system health and determine whether it needs to be sent to the Zebra Repair Center.

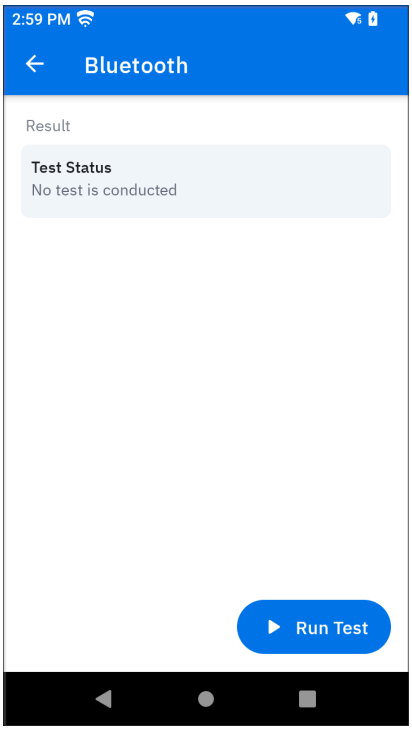


2. The **Run All Test** (1) runs all the listed tests in sequence to verify the system's health and simultaneously generates a result report.

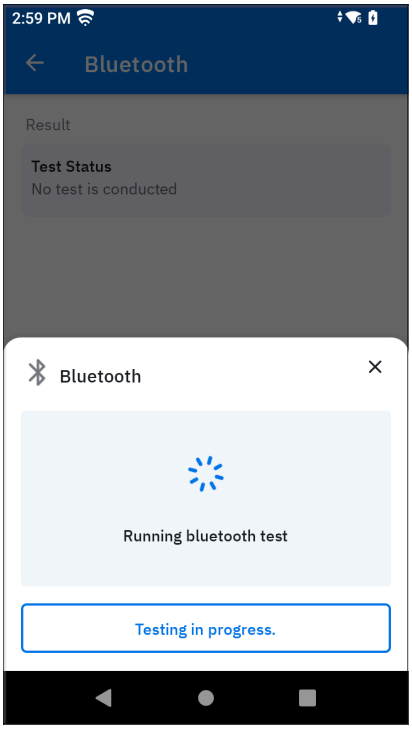
3. Users can perform individual tests to verify if a specific device function works correctly. After each test, the results are saved to a file and uploaded to the designated FTP network. The outcome of the test is also displayed on the test result screen.

   Below is an example of a **Bluetooth** test.

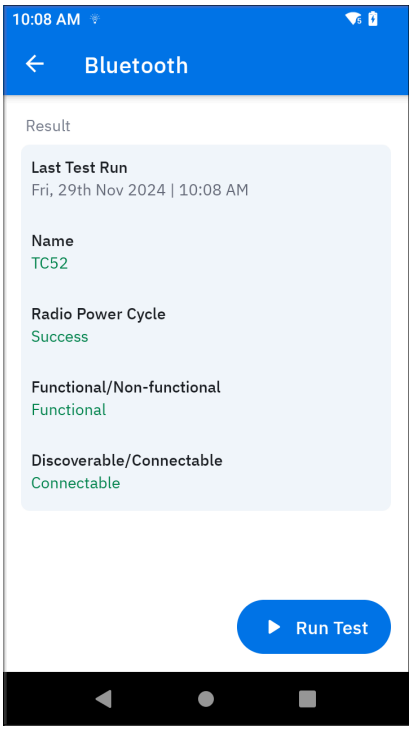
   - Click **Run Test**.



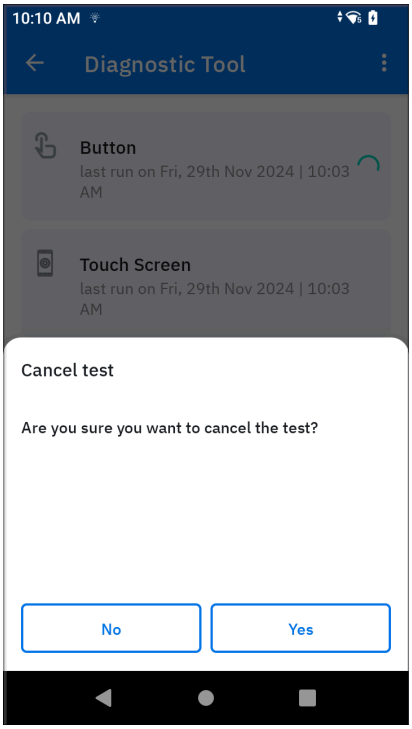
   - The **Testing in Progress** page displays.



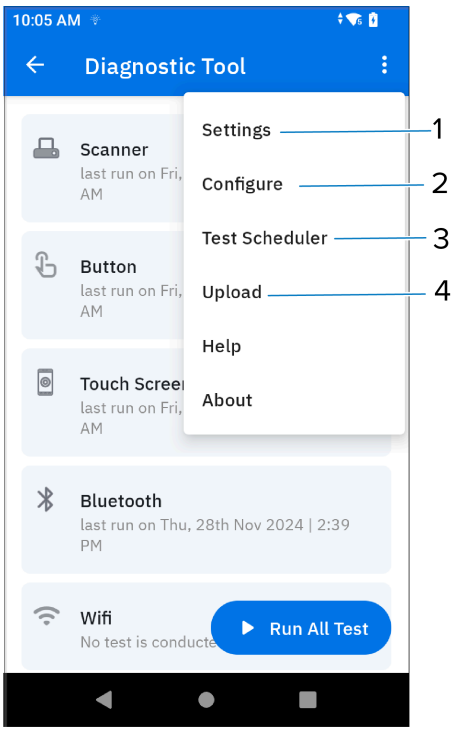
- After completing the test, the **Result** page displays.



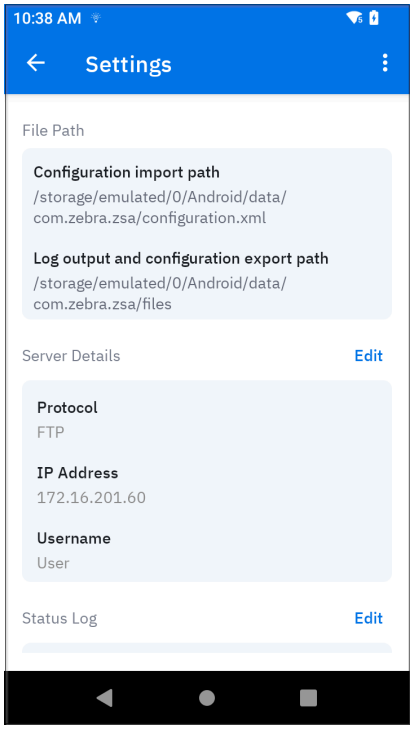
- Users can cancel the test while it is in progress. A message prompts for confirmation with options for **Yes** or **No.**



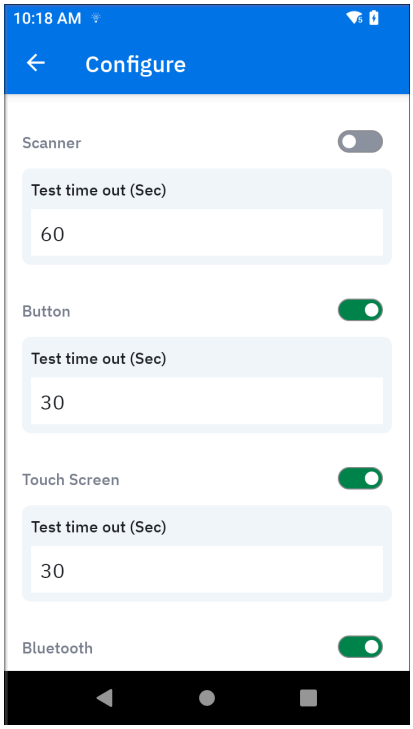
4. The **Diagnostic Tool**module includes additional features, such as **Settings** (1), **Configure** (2), **Test Scheduler** (3), **Upload** (4) and the option to enable or disable tests.



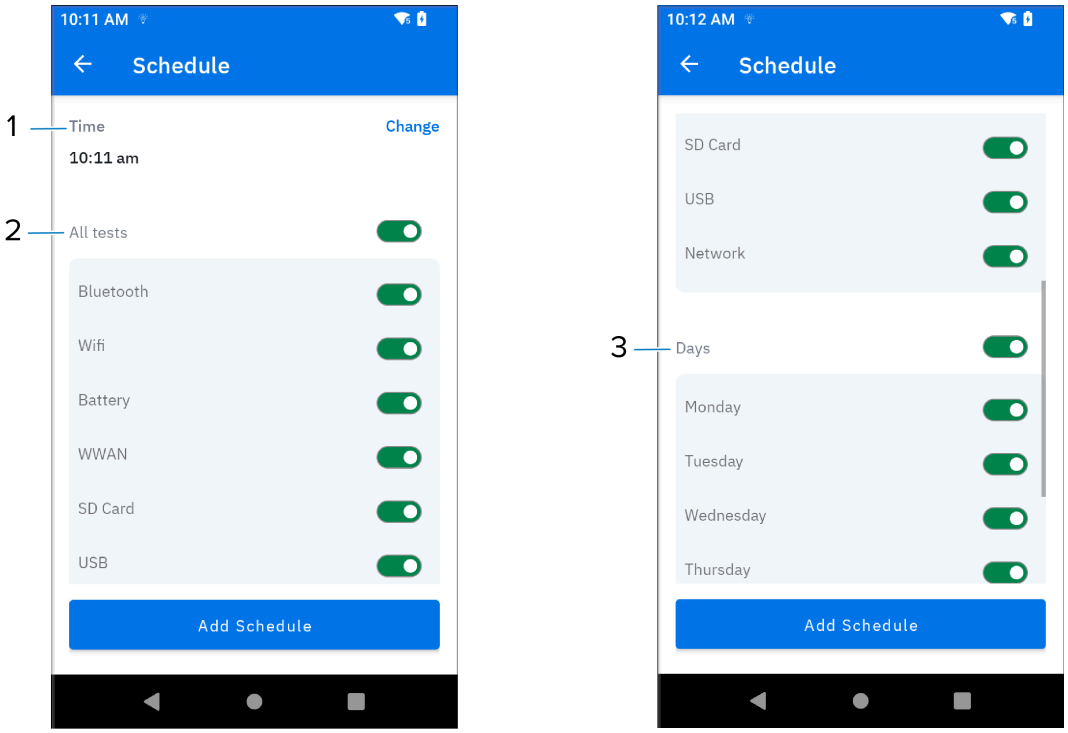
5. The **Settings** feature allows users to import diagnostic tool configurations from a configuration XML file, export the current configuration to a file for later use, or use the same configuration on different devices. The user can also configure the FTP server to upload test logs to a specific server.



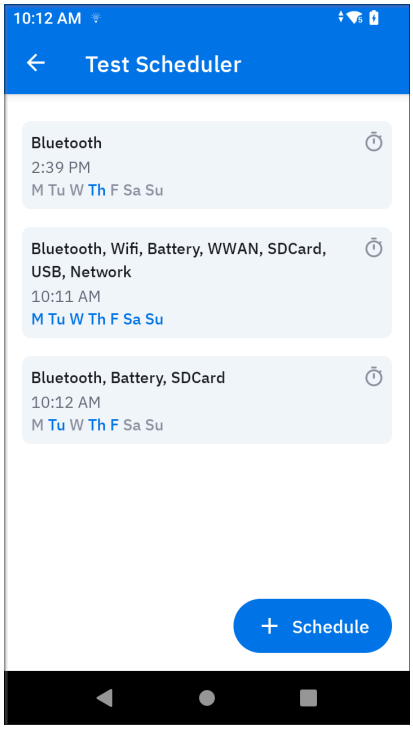
6. The **Configure** feature provides different required configurations related to performing any test. This feature allows users to enable or disable tests and specify the time interval allocated to finish the test. The user can also view a list of sub-tests and enable or disable them from the configure test page.



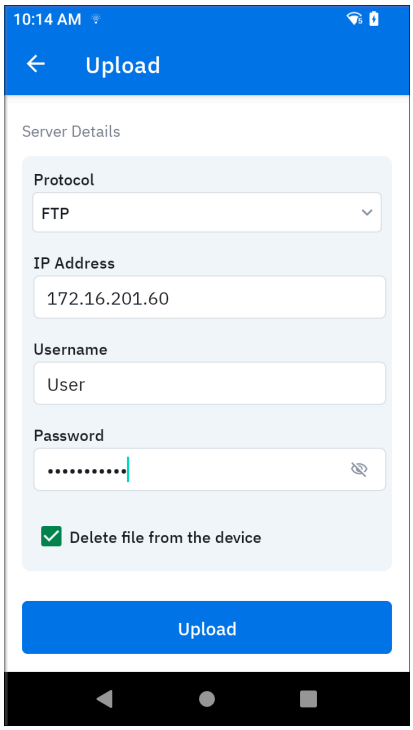
7. The **Test Scheduler** feature allows scheduling weekly tests that are automatically executed at a specific time of the day. All the schedulers are visible on the schedule tests screen, as displayed below.



8. By selecting the **Time** (1), **All Tests** (2), and **Days** (3) of the week, the tests are scheduled to run automatically in the background at the specified times on the chosen days.



9. After completing the test, whether successful or unsuccessful, the results are saved and uploaded to the designated FTP server. Users can modify server configurations via the **Settings** feature or the **Upload** feature. The **Upload** feature allows users to manually upload data to the FTP server anytime, even without conducting tests.

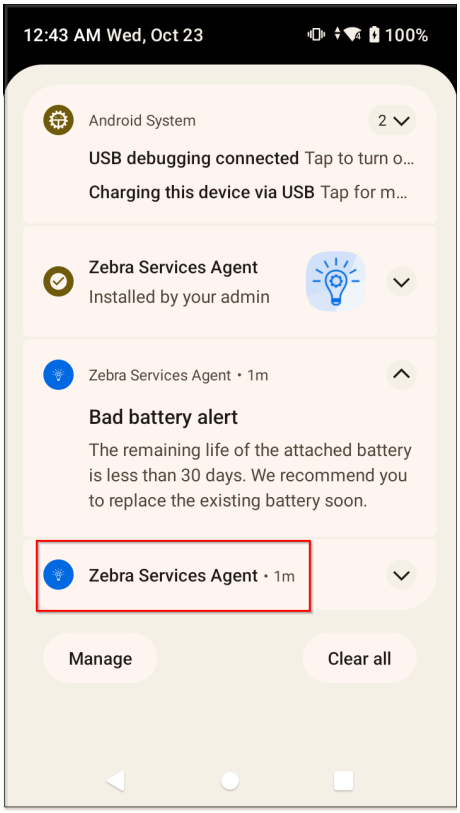


Configure the ZSA Mobile Application.

The basic configurations for all modules of the ZSA mobile application are described in the following table.

S.No	Configurations	key	Description	Default value	possible values	min	max	format
1.	systemconfiguration	enable	Enable or disable ZSA	true	true/false			boolean
2.		loglevel	Logging level (0: Info 1: Debug , 2: Sesitive)	1	0 /1/2	0	2	Integer
3.	pbrconfiguration	custommessage	custom message to show in the notification for PBR	Default message defined by the Zebra				String
5	dropdetection	enableDropDetection	Enable or disable drop detection	false	true/false			boolean
6	ddtconfiguration	enableDDT	Enable or disable DDT	true	true/false			boolean
7		clearDDTData	Whether to clear the DDT configuration	false	true/false			boolean
8		uploadLogCondition	Upload the log file for the condition only (1. Only on Failure 2. All test logs)	1/2	1	1	2	Integer
9		actionAfterLogUpload	Action after log upload (0: Keep the log file, 1: Delete the log file)	0/1	0	0	1	Integer
10		test:name	Name of the test (eg. Bluetooth etc). Only non-user intervention tests	None				String
11		test:schedule	Specify Day of the week for the test , (Eg. Monday etc) Time of the day for the test (HH:MM format)	None				String
12		test:uploadToFTP	Specify FTP username FTP protocol : FTP FTP password FTP server IP address	None				String

These configurations can be applied or modified using MDM Managed Configuration. To receive managed configurations, ZSA displays a foreground notification in the device notification panel.

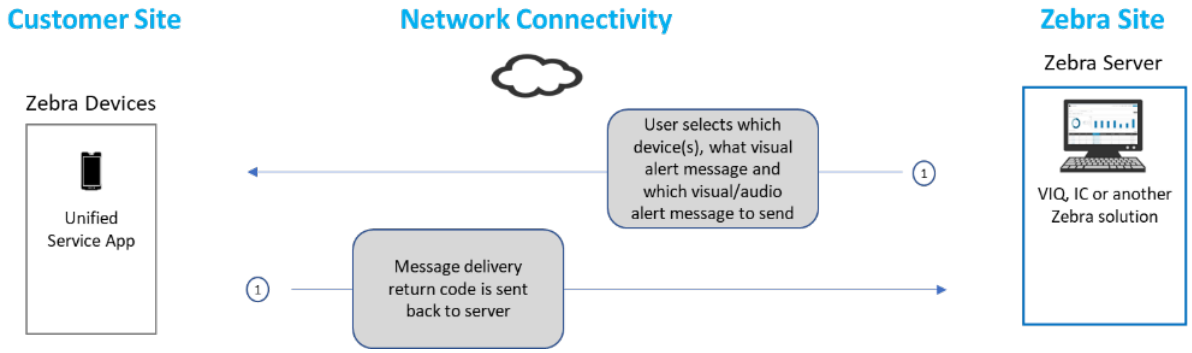


High-Level Design Overview

The Zebra Services Agent (ZSA) includes the following elements:

1. **ZSA Mobile Device Application**: This app is deployed on the device via Mobile Device Management (MDM) and starts as a service when the device boots up. The application provides user interface screens for interaction, shows notifications, and launches or terminates other Zebra applications. It is only supported on the Android platform.
    - **Zebra Services Battery Health (ZSBH) Application**: This app is deployed on the device via Mobile Device Management (MDM) and starts as a ZSA Service when the device boots up, and the Battery Health App runs as a service.
    - **Drop Detection**: This module of the ZSA app detects device falls based on the sensitivity level of fall detection.
    - **Diagnostic Tool**: This module tests and diagnoses the hardware functionality of Zebra mobile devices to determine the system's health and functionality by performing various tests and uploading the results to a file on an FTP network. When necessary, the Zebra Help Desk uses this tool to troubleshoot device issues, using the results to determine the ideal steps for resolution. This functionality is beneficial for quickly addressing device problems, increasing worker productivity, and reducing device downtime and unnecessary returns to the Zebra Repair Center.
2. **ZSA Server-Side Platform**: The server-side software and infrastructure are hosted in Zebra's Virtual Private Cloud on the Google Cloud Platform. The server infrastructure is a multi-tenant solution that provides data security and confidentiality.

3. **Zebra Services Battery Health (ZSBH) Application**: This app is deployed on the device via Mobile Device Management (MDM) and starts as a ZSA Service when the device boots up, and the Battery Health App runs as a service.
4. **Zebra Services Battery Health (ZSBH) Server-Side Platform**: The server-side software for the Battery Health App is deployed to the same GKE cluster as the ZSA server. The Cloud Memory Store is also shared with the ZSA server.



Zebra Services Agent Requirements

Zebra Services Agent (ZSA)
Requires 7 MB RAM
Requires 30 MB of storage memory
The impact on battery discharge is less than 2% over 24 hours.

Prerequisites

For deploying the Zebra Services Agent (ZSA) app and enabling alert notifications on the device:

1. The customer requires MDM to deploy APK to the devices. Supported MDM platforms are SOTI, AirWatch, and 42Gears.
2. The devices require an Android operating system version 10 or higher.
3. The Zebra Data Services (ZDS) and Zebra Services Agent (ZSA) must be enabled on the device. If the devices are behind a corporate firewall, ensure the ZDS and ZSA cloud servers can be reached. Below are the server info and port used by ZDS and ZSA:
   - Server 1: https://analytics.zebra.com using IP address 104.198.59.61 on Port: 443
   - Server 2: https://device-https.savannacore.zebra.com using IP address: 34.68.84.87 on Port: 443
   - Server 3: https://usa.eu.zebra.com on Port:443

NOTE: The servers can only be accessed by the software team via an internal endpoint.

4. The ZDS uses the following sites, which must be visible on the network for ZDS operation. For more information, go to Frequently Asked Questions - ZDS.
   - connectivitycheck.android.com
   - connectivitycheck.gstatic.com
   - www.google.com
5. Enable network connectivity on devices (WWAN or WLAN). The ZSA app provides **Device Battery Alerts** for VisibilityIQ Foresight and Proactive Battery Replacement Services. Below are the methods for collecting the required data to generate alerts.

NOTE: Zebra recommends using DNS server names (instead of IP addresses) when allowlisting to avoid service interruptions due to IP address changes.

Android Version and Language Support

This section shows the supported Android operating system and languages.

Android Operating System	10 and above
Languages	English

Installation

- The Zebra team shares APK files with the customer admin.
- APK files are installed on devices via Mobile Device Management (MDM).

Information

This section provides information on Zebra Data Services (ZDS) and Diagnostic Tool.

You can enable the ZDS agent using the link below:

- zebra.com/zds-setup
- zebra.com/VisibilityIQF

For more information on Diagnostic Tool, refer to the link below:

- zebra.com/diagnostic-tool