

**vMeasure Forge**

# Solution Document



VisAI Labs

Version 1.1

VisAI Labs

1/25/2024

**Disclaimer**

The instructions are provided here as reference only and VisAI Labs reserves the right to edit/modify this document without prior intimation.

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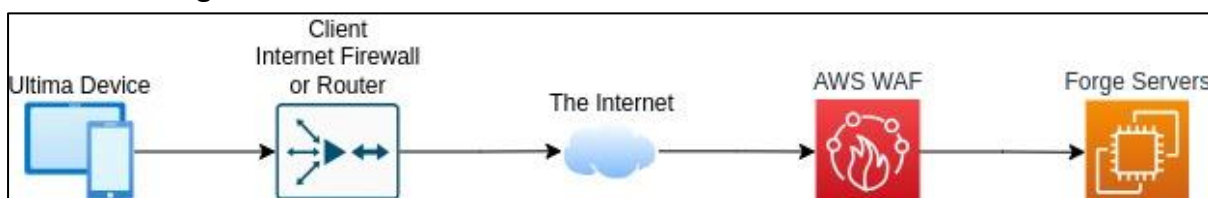
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## Introduction

vMeasure Forge is the cloud-based dimensioning SaaS offering to manage vMeasure Parcel Ultima and vMeasure Pallet Ultima device families. vMeasure Parcel Ultima is a static parcel dimensioning system which connects to vMeasure Forge cloud for data processing and management.

## vMeasure Parcel Ultima Integration

### Hardware Integration



**Figure 1: Ultima Hardware Integration Diagram**

Above diagram gives an overview about Ultima device's integration in client's network,

1. Ultima device is connected to client's LAN over Ethernet.
2. Client IT team needs to whitelist certain URLs to allow Ultima device to access to the cloud.
3. Ultima device can communicate to the cloud through Internet and vMeasure's cloud hosted Web Application Firewall (WAF).
4. The entire communication is secured over TLS v1.2 as we allow packets only with TLS v1.2 or higher in WAF.

### URLs To Whitelist

URL	Purpose
<b>vMeasure Cloud URLs</b>	
<a href="https://forge.vmeasure.ai/">https://forge.vmeasure.ai/</a>	vMeasure cloud application
<a href="https://api.vmeasure.ai">https://api.vmeasure.ai</a>	REST API Service to communicate to Forge cloud for Live Measurement and Data access. (Optional, only required for slave mode)
<a href="https://remote.vmeasure.ai">https://remote.vmeasure.ai</a>	Remote diagnosis service (Optional, only required for remote diagnostics)
<a href="https://service.vmeasure.ai">https://service.vmeasure.ai</a>	Data transfer between the vMeasure Ultima system and vMeasure Forge cloud
<a href="https://ota.vmeasure.ai">https://ota.vmeasure.ai</a>	System software update service
<b>Other URLs</b>	
*.s3.us-east-2.amazonaws.com	Update package hosted location
*.s3.ap-south-1.amazonaws.com	

https://api.ecr.us-east-2.amazonaws.com	Software updates are hosted in Amazon ECR's as Docker images. ECR in turn maintains the files in S3 storage.
https://568264781821.dkr.ecr.us-east-2.amazonaws.com	
http://archive.raspberrypi.org/debian	To fetch device OS patch and package updates
http://raspbian.raspberrypi.org/raspbian	
http://mirror.poliwangi.ac.id/raspbian/raspbian	
http://mirror.us.leaseweb.net/raspbian/raspbian	

**Note:** The S3 bucket for docker pull is controlled by AWS ECR service so we need to unblock all s3 URLs for that region, this is the reason for using \* in the respective URLs.

## Data Flow Diagram

Data flow diagram gives a better picture of how vMeasure system, cloud and user communicates.

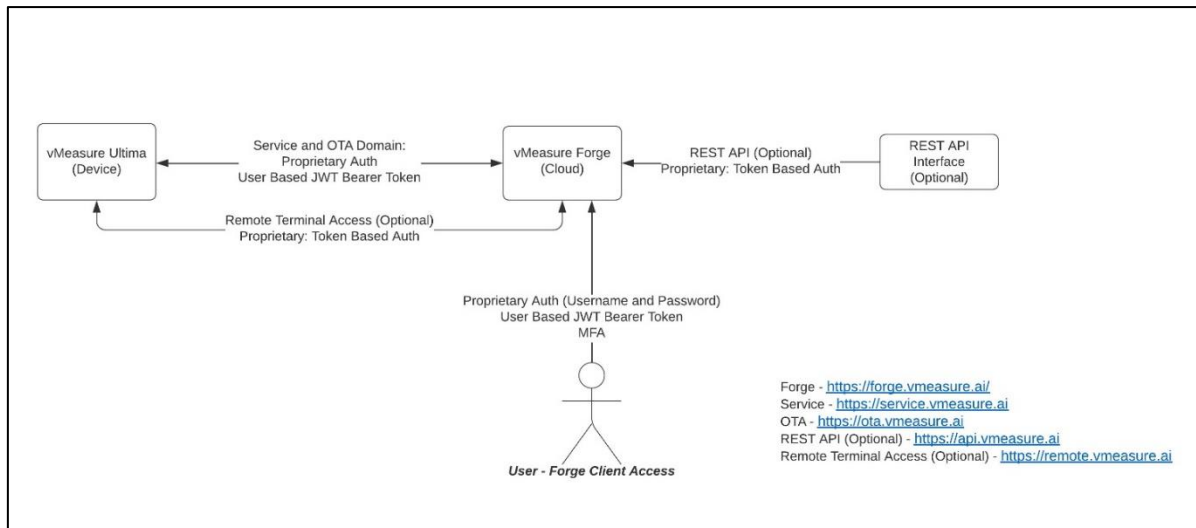
vMeasure Forge Cloud is our central system which is instrumental in data processing, management and control. This service is hosted in AWS, and it is entirely secured with AWS WAF(Firewall).

vMeasure system connects through Forge cloud using proprietary JWT token-based authentication. vMeasure system can be configured through Forge cloud for Workflow, Operator login, Sites, Webhooks, etc. vMeasure system pushes the data to cloud for each measurement and Forge cloud is responsible for managing and presenting the data to the user.

vMeasure Forge support login credentials for Admin and Supervisor. Admin can manage all operations across Forge and Supervisor access is limited to certain sites to which they are assigned to.

vMeasure user can login using Azure AD SSO and Google SSO, user can also opt for MFA using any Authentication application like Microsoft Authenticator.

vMeasure Forge also provides REST API Interface to Trigger measurement from customer's application.



**Figure 2: Data Flow Diagram**

## Software Integration

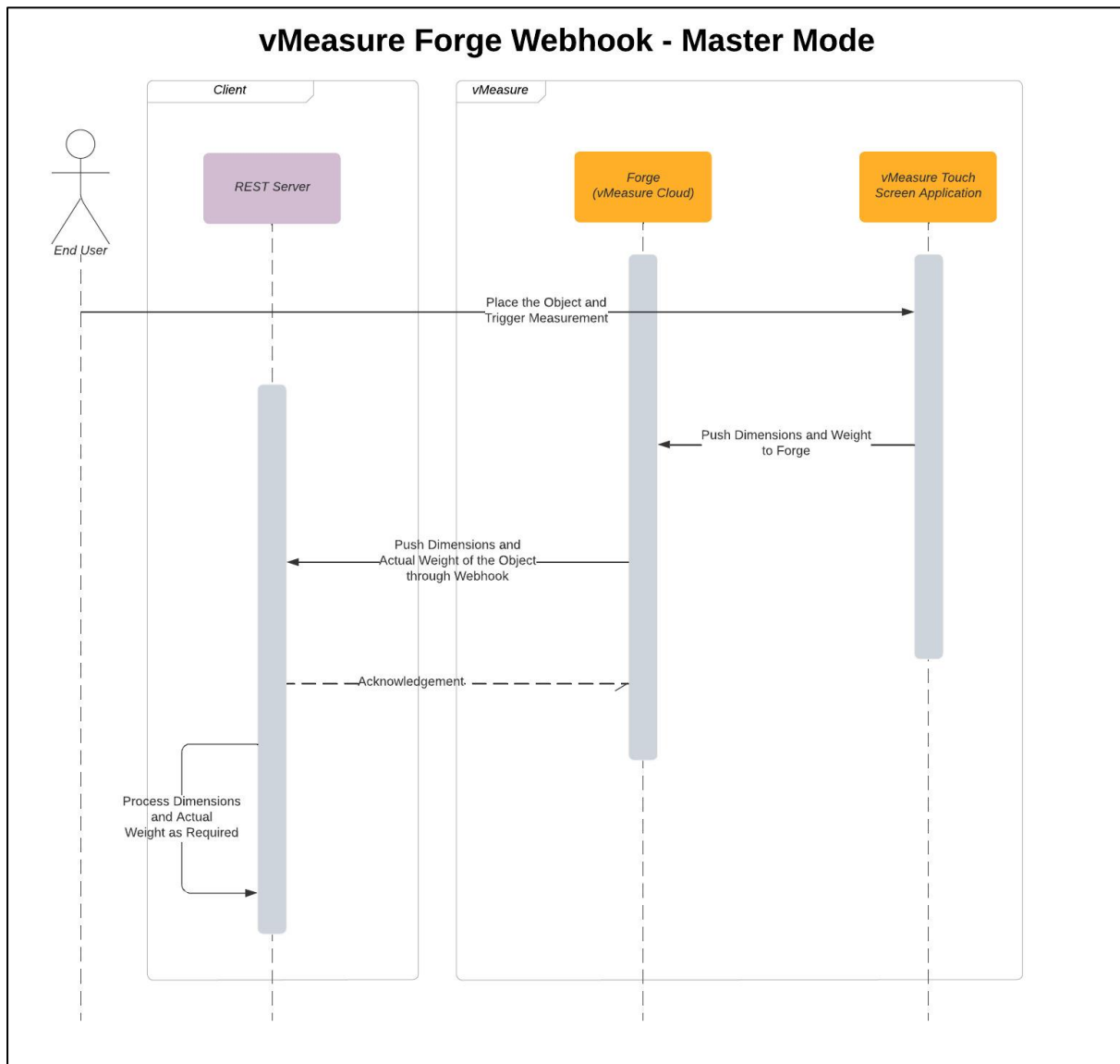
vMeasure system can be operated in 2 different modes, based on the customer requirement they configure and use the system according. Here are those 2 modes and below that you can find a detailed description of the modes with a sequence diagram for your better understanding,

1. Master Mode
2. Slave Mode

### Master Mode

In this mode, the measurement is triggered on the vMeasure system, and the data is pushed to the vMeasure Forge. From Forge, the measurement data can then be pushed to the client-server via the webhook, if configured.

## Sequence Diagram

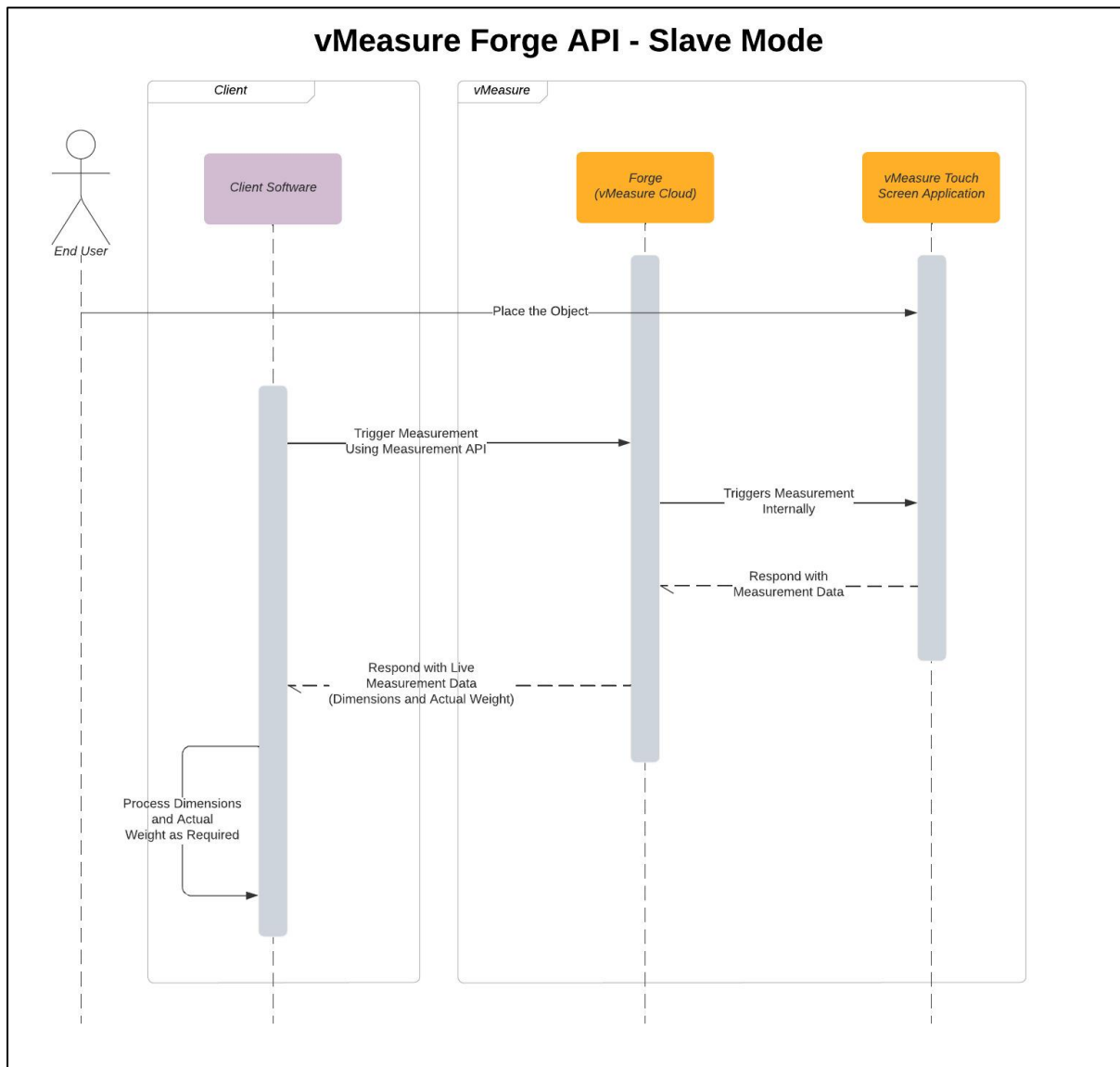


## Slave Mode

In this mode, the measurement is triggered from the client's server/software through the [vMeasure Forge APIs](#).

Once the measurement is triggered on the client's server/software, the request is routed to the vMeasure system by the Forge. The measurement is then captured and sent in response to the measurement request.

## Sequence Diagram



## Retrieve Measurement Data

The measurement data from the vMeasure Forge can be retrieved in the below methods.

1. CSV/JSON Export
2. vMeasure Forge APIs
3. Webhook

### CSV/JSON Export

The user can export the measurement data using the vMeasure Forge web application. The selected data is exported in the CSV or JSON file format.

## **vMeasure Forge API**

The vMeasure Forge provides APIs to trigger measurement and get the live data. Also, it provides GET APIs to fetch the historical data.

## **Webhook**

Once the measurement is captured on the vMeasure system, it is pushed to the vMeasure Forge. The vMeasure Forge in turn pushes the measurements data to the webhook configured. User can configure REST API Webhook in Forge cloud, Forge triggers webhook for each measurement. Clients with REST API service to receive the data can utilize this option.

**1. What is vMeasure Forge?**

The Cloud-based Dimensioning Intelligence Platform powering the world's first and only dimensioning as a service solution – vMeasure Ultima.

The vMeasure Forge is a vMeasure cloud application to configure and manage the vMeasure systems. The Forge platform can also be used to retrieve historic measurement data.

**2. What data is transferred to the cloud?**

The below data are transferred from the vMeasure system to the cloud.

- Dimension data – Length, Breadth, and Height of the object measured.
- Weight of the object. Applicable only if the weighing scale is opted for.
- Image of the parcel. The image can also be configured to be annotated with the dimension and weight data.
- Barcode scanned. The barcode scanned is the unique identifier of the object scanned.

**3. What data is transferred from the cloud to the vMeasure system?**

The below data are transferred from the vMeasure system to the cloud.

- The system configurations shall be downloaded.
- Any update to the software shall be pushed to the cloud and shall be downloaded to the vMeasure system from the cloud.

### Revision History

Rev	Date	Major Changes	Author
1.0	11 Jan 2024	Initial Draft	Ravi
1.1	25 Jan 2024	Minor changes in the hardware integration section	Ravi