# Software Requirements Specification

# 1.0

# October 06, 2023

# To Be Determined

# Revision History

| Date | Description | Author(s) | Comments |
|---|---|---|---|
| 13 Oct 2023 | Version 1 | Jillian Manguba, Vedant Pulahru, Yixi Wu, Mohammadafaz Munshi | First Revision |

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# 1. Introduction

The Software Requirements Specification (SRS) document outlines the design, development, and functionality of PhoneTime, an online virtual phone system. PhoneTime is a communication platform that enables users to make and receive calls over the internet and through the cloud, eliminating the need for physical landlines. This SRS document serves as a comprehensive guide for the development team to understand the key features and requirements of PhoneTime.

## 1.1 Purpose

The purpose of this document is to collect, analyze, and define the system's requirements from various stakeholders. It also helps in predicting and organizing how the product will be used, providing a clear project understanding and documenting ideas. The SRS document offers an overview of our software product, its parameters, and objectives, defining user interface, hardware, and software requirements. It serves as a resource for designers and developers in the software delivery lifecycle (SDLC) processes.

## 1.2 Definitions, Acronyms, and Abbreviations

| | |
|---|---|
| SRS | Software Requirement Specification |
| 2FA | Two-Factor Authentication |
| RAID | Redundant array of independent disks |
| PC | Personal Computer |
| Admin | Administrator |
| Latency | The time delay of sending data between one designated point to another |
| PhoneTime | The software's application name |

## 1.3 References

The references are:
- Documentation given to us by the client:
  - *Specific Project Requirement*
  - *Base Project*

# 2. General Description

The PhoneTime application aims to develop an online virtual platform that allows users to make and receive calls through the internet. Through this system, individuals and perhaps businesses can leverage the power of the internet/cloud instead of a traditional landline system to communicate.

## 2.1 User Characteristics

- Users:
  - Users can range from individuals who are very familiar with tech to someone who has a more basic understanding such as being able to make and receive calls on a device.
  - Users must have a platform (cell phone or computer) to download and utilize the application.
- Administrators:
  - Administrators are responsible for maintaining and overseeing the system's overall functions.
  - Administrators will have more access and privilege than a regular user as they are required to keep a track of certain rules and regulations.
  - Administrators must be proficient in technical skills to manage the system and application.

## 2.2 Assumptions and Dependencies

- Assumption:
  - Users will have access to consistent, and preferable high speed internet connection to have a smooth service
  - Users will have enough storage/space (100 MB) in their device in order to install the application
  - The user device should have an operational microphone and a camera for video call.
- Dependency:
  - Application requires at least Windows (7 or later) for PC, iOS (10 or later) for apple devices and Android (6/Marshmallow or later)
  - The application should be able to access the microphone as well as the camera using built-in features in your devices (API and several libraries).

# 3. Specific Requirements

## 3.1 Functional Requirements

This subsection contains the requirements for the PhoneTime application. These requirements are organized by the features discussed in the vision document. Details are listed as user stories.

### 3.1.1 System Structure

Database: have information storage for users
- As a system user, I want the system to have a backend to securely store my information

Establish an audio connection
- As a user, I want the system to establish an audio connection when I successfully initiate a call.

Installing the app for desktops and laptops
- As a user, I want an application that can be easily installed on my desktop and laptop.

Installing the app for phones
- As a user, I want an application that can be easily installed on my cell phone.

2FA
- As a user, I want the backend to handle my authentication and login requests, verifying my account and password.

### 3.1.2 Basic Call Processing

Making and receiving calls
- As a user, I want to be able to make and receive calls, so I can communicate with others.

Insufficient credit error message
- As a user, I want to receive an alert/warning when I don't have enough credit to make a call, so I can be informed of the issue and take necessary actions.

Invalid number error message
- As a user, I want to receive an alert/warning message when dialing an invalid number, so I can correct the number and make a successful call.

Busy number notification
- As a user, I want to receive a notification message when the number I dialed is busy, so I can be aware of the status and try again later.

Call on another call error message
- As a user, I want to receive an error message when the dialed number is on another call, so I don't waste my time and resources making unsuccessful calls.

Call disconnect on hang up
- As a user, I want the system to disconnect the audio when either user hangs up, ensuring the call ends properly.

Mapping Dialed Number to IP Address
- As a user, I want the system to map the dialed number to an IP address to facilitate the call routing process, ensuring successful connections.

### 3.1.3 System Console of Administrations
One at a time

- As an administrator, I want to ensure that only one administrator can access the system console at a time for security and control purposes

Admin login
- As an administrator, I want to log in to the system using my username and password to access administrative functions and manage the network.

Network control and monitoring
- As an administrator, I want to monitor and control the network of phones to maintain their performance and security.

Changing user number
- As an administrator, I want the ability to change a user's phone number to accommodate their needs or resolve issues.

Find a user
- As an administrator I want to be able to find users by their phone number for user assistance.

Changing user billing
- As an administrator, I want to be able to modify users' billing information to address changes or updates.

Assigning Phone Numbers and IP Addresses
- As an administrator, I want the ability to find available phone numbers and IP addresses, associate them, and assign them to new users for smooth onboarding.

Setting maximum number of calls
- As an administrator, I want to set a value for the maximum number of calls allowed in the system.

Preventing calls
- As an administrator, I want the system to prevent calls if the maximum number of calls allowed that was set by the administrator is reached.

Database consistency check
- As an administrator, I want the system to check for database consistency when administrators change users' data.


### 3.1.4 User Account
Creating a new account
- As a user, I should be able to sign up for a new account and receive a phone number and IP address.

Contacting the admin
- As a user, I should be able to contact the administrator to change my phone number.

Adding, deleting and organizing my contacts
- As a user, I should be able to add, delete and organize other users to my contact list.

Filtering calls
- As a user,  I should be able filter calls based on my preference.

Setting preferences
- As a user, I should be able to set preference to only receive calls they want to.

Deleting account
- As a user, I want the system to disassociate my IP address and phone number when I delete my account.

Data retention
- As a user, I want the system to keep track of my records even when I delete my account, ensuring data retention for future reference or reactivation.

### 3.1.5 User Billings and Administration
Itemized billing info
- As a user, I want to receive billings according to the number they dialed, the duration of the call, the time the call was established and their plan.

Call history records
- As a developer, I want the system to keep record of every established call with the phone number dialed (the account), duration of the call, time of the call when initiated.

Calculation of call charges
- As a developer, I want the system to calculate call charges in real-time, ensuring accurate and up-to-date billing.

Billing statements
- As a user, I want comprehensive billing statements so that I can track my expenses effectively.

Billing schedule
- As a user, I want a monthly billing cycle at the first day of the month to ensure regular and predictable billing.

Billing upon Service Cancellation

- As a user, I want to receive a final billing statement immediately if I cancel my service, so that I have clarity and settlements of outstanding charges.

Billing history
- As a user, I want access to my billing history to review and keep track of my historical billing information.

Billing warning
- As a user, I want to receive a warning if I fail to make a payment so that I am informed of overdue payments.

Recording billing
- As an administrator, I want to record billings for users using the system console so that I can organize and streamline billing tasks.

Suspending users
- As an administrator, I should be able to suspend a user's account if the user fails to make a payment.

Changing users' subscription billing plan
- As an administrator, I want the capability to manage user subscription plans and billing plans, so that I can accommodate changing user needs

## 3.2 Non-Functional Requirements

### 3.2.1 Performance
- As a user, I want all call latencies to be less than 50ms, so that all my calls will have a real time communication experience with no lag

### 3.2.2 Reliability
- As a developer, I want the system to provide RAID V Disk Stripping on all database storage disks so that the storage is reliable.

### 3.2.3 Availability
- As a developer, I want the system to have a 95% uptime so that the application is stable.

### 3.2.4 Security
- As a user, I want the system to automatically log out after 30 mins of inactivity.
- As a user, I want the calls to be established through secure socket protocol.
- As a developer, I want the billing information to be encrypted before storing it in the database.

### 3.2.5 Interfaces
- As a user, I want the application interface to be easy to use on PC and smartphones.
- As an administrator, I want the system console interface to be easy to use.

### 3.3 Design Constraints

#### 3.3.1 Standard Development Tools

- The system shall be built using a standard web page development tool that conforms to either IBM's CUA standards for the desktop app, Google's material design for android, and Human Interface Design  for ios application.

#### 3.3.2 Product Constraints

- The device must have at least 100 MB of free storage.
- The device must be equipped with an internet connection.
- The product must be stored in such a way that allows the client easy access to it.
- Response time for loading the product should take no longer than five minutes.
- A general knowledge of basic computer skills is required to use the product.

## 3.4 Legal, Copyright, and Other Notices

- PhoneTime should display the disclaimers, copyright, and word mark on its application under the about section.

#### 3.4.1 Disclaimer

- PhoneTime will not tolerate scam calls.
- The Subscription to the app will be canceled if the bill is not paid on time.
- No illegal activities are permitted.
- PhoneTime takes no responsibility for any actions or decisions made by users or third parties based on the information, services, or content provided on the platform.
- We collect data for security purposes.
- This disclaimer is subject to change.

#### 3.4.2 Copyright

- PhoneTime is the exclusive copyright owner of this application.
- PhoneTime is not an open source project and making modifications to the app by a third party is not permissible.
- PhoneTime owns the copyright on the name of the app.
- PhoneTime holds the copyright of the GUI for its desktop, android, and the iOS versions.

#### 3.4.3 Word mark/Logo

- Please do not copy our design



## 3.5 Other Requirements

Some other requirements for this application are:
- Users should be able to mute/unmute their microphones during a call.

- Users should be able to enable/disable video during a call.
- Users should receive notifications for missed calls and voicemails.
- The system should allow conference calls where multiple users can join the same call.
- The system should provide options for editing and deleting contacts.

# 4 Other Supporting Documents

- Documentation given to us by the client:
  - *Specific Project Requirement*
  - *Base Project*