**Software Requirements Specification**

**Title: SKYPE**

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# 1.Introduction

Skype is designed to provide seamless voice and video communication, messaging, and collaboration features for personal and professional use. In order to gain an overview about the report, firstly, the purpose and scope of this document will be given, then an overall description of Skype system is followed. By specifying the requirements, the document acts as a blueprint for development and validation. The goal is to ensure the application meets user needs while adhering to quality standards.

## 1.1 Purpose

This document specifies the software requirements for Skype, a communication platform that provides voice, video calls, messaging, and file sharing services over the internet. The aim is to define the functional, performance, and interface requirements for the system to ensure seamless communication across devices. This app can be installed from Google play store or the Apple play store.

## 1.2 Document Conventions:

Text Formats:

Font: Times New Roman

Font size: 12 for Body, 14 for Sub-Headings and 16 for Headings.

## 1.3 Intended Audience and Reading Suggestions:

The document is intended for all the stake holder customer and the developer **(designers, testers, maintainers)**. The reader is assumed to have basic knowledge of video calling and chatting services. Knowledge and understanding of UML diagrams is also required.

## 1.4 Definitions

**User**

Someone who uses the application for their requirements.

**Admin/Administrator**

System administrator who is given specific permission for managing and controlling the system.

**Stakeholder**

Any person who has interaction with the system who is not a developer

**Account**

Single account for a user from which they can use the facilities of skype.

##### Uses

Skype can be used in number of ways like instant calling video chat voice message text messaging send images and file and screen sharing.

##### Requirements

Skype requires the various things before using it. Before using skype you need to have a good internet connection, for video calling we requires speakers, microphone camera etc.

Different operating system requires different requirements.

## 1.5 Project Scope

Skype was founded in 2003 by Niklas Zennstrom, from Sweden, and Janus Friis, from Denmark. The Skype software was created by Estonians Ahti Heinla, Priit Kasesalu, and Jaan Tallinn. The first public beta version was released on 29 August 2003. Skype offers a number of features based around calling (both free and paid), messaging (including instant, voice and text messaging (SMS)), video chat, and file and screen sharing. Skype is a cross-platform communication tool designed for personal and business use. It enables:

* High-quality audio and video calls.
* Instant messaging with multimedia sharing.
* Screen sharing and collaboration tools.
* Integration with PSTN (Public Switched Telephone Network) for international calling.

## 1.6 References

* IEEE 29148-2018 Standard for Requirements Engineering.
* Skype API Documentation.
* User feedback and market research reports (2022).

# 2. Overall Description

## 2.1 Product Perspective

Skype is essentially a freemium voice-over-IP service, that allows registered users to communicate online via online video calling, instant messaging, and chat. Though relatively young in the grand scheme of things, the software application is arguably the best method for users to communicate long distance, whether they are looking to conduct multi-party business meetings or merely send short, video messages between friends and family. The software requires no more than an internal or external camera and microphone, often built-in your computer or smartphone, and an active Internet connection, Calls and messages within Skype are free, but those to landline and mobile phones will cost varying amounts depending on the region and accompanying subscription plan. Although some cost more than others, paying for the accompanying premium services is typically far cheaper than purchasing a dedicated phone or texting plan on your own.

##### Mobile Apps

In 2012, the website launched Mobile App for Smartphone users. The skype app was designed for Blackberry, Android, windows and iPhone devices.

With the launch of mobile Apps and HTML site, more than half of traffic inflow happened through Apps and Mobile sites.

##### Calling

* Skype to skype call

* Calls to mobile and landline

* Group calls

##### Video

* One to one
* Group chat

##### Message

* Emojis and emoticons
* Internet messaging
* Send texts
* Voice message

##### Sharing

* Send files
* Screen share
* Group screen
* Send contacts

##### Hardware interface

* 128 MB of RAM required
* Processor
* Internet
* Mouse
* Keyboard
* Camera
* Microphone

## 2.2 Product Features

##### 24/7 Availability

The Skype application must be operational 24 hours a day, seven days a week, without interruptions. This ensures users can access the platform anytime, regardless of time zones or locations. The system must implement redundancy mechanisms, such as backup servers and failover systems, to prevent downtime. Regular system monitoring and automated alerts for potential failures are critical to maintaining this uninterrupted availability.

##### User Identification

The application identifies each customer through a unique **User ID** and a secure **password**. This two-field authentication ensures that every user has a distinct identity within the system. User IDs are assigned during registration, while passwords must meet security standards, including a minimum length, the inclusion of alphanumeric characters, and periodic updates.

##### User Information Collection

During account creation, Skype collects essential user information, such as the user's name, email address, phone number, and, optionally, profile pictures or location details. This data is stored in a secure database and is used for personalizing the user experience and providing access to relevant features. The system must comply with data protection laws, to ensure that user data is handled responsibly and is not shared without explicit consent.

##### Communication with Concerned Organizations

The application may share specific user information, such as Skype credit purchases or subscription details, with relevant organizations (e.g., payment gateways, telecom providers). This data exchange must occur over encrypted channels (e.g., HTTPS or TLS) to ensure security. Furthermore, the application must notify users about the data being shared and provide transparency about its use, adhering to privacy policies.

##### Functionality Access

Once logged in, users can access various functions by selecting them from the main menu or interface. These functions include:

* **Video Calls**: Users can initiate one-to-one or group video calls with HD-quality streaming.
* **Chatting**: Real-time text communication, including support for emojis, GIFs, and multimedia sharing.
* **Messaging**: Asynchronous text-based communication where users can send and receive messages at their convenience.
* **Screen Sharing**: Allows users to share their desktop or specific windows during calls for presentations or collaboration.

##### Multiple Users

The system must allow multiple users to interact with the application simultaneously. Skype’s architecture should handle:

* **Multiple Calls**: Support for hundreds of group calls happening concurrently without degrading quality.
* **High Traffic**: Scalability to manage peak loads, such as during business hours or global events.
* **Efficient Resource Management**: Prevent resource contention when handling simultaneous operations, such as messaging, video calls, and file sharing.

Server-side load balancing and client-side optimization are essential to meet these requirements.

## 2.3 User Classes and Characteristics

## 2.4 Characteristics:

There are several users of the Skype

**Users** are simply members which use application of different purpose.

**Maintainers** must be experienced network administrators.

## 2.5 Design and Implementation Constraints

Skype must work smoothly on Windows, macOS, Linux, iOS, and Android devices. It needs to be compatible with different screen sizes and hardware.

The app should run well on both high-end and low-end devices, without delays in calls or messages.

Skype should adjust to different internet speeds, lowering video quality if the connection is slow, but still keeping the call stable.

Skype must use strong encryption to protect user data and meet privacy regulations to keep personal information safe.

The app should be able to handle many users at the same time without slowing down, with servers located in different regions for better speed.

The design should be simple and easy to use on all devices, providing the same experience on both phones and computers.

Skype should work well with other apps like Microsoft Office and cloud services, allowing users to share files and use contacts easily.

Skype needs to store user data securely and make sure it’s protected according to privacy laws.

Skype should support various formats like audio, video, and images, with good quality even on slower connections.

Login

##### Validate user

* Valid username and password

**Validate for Wrong user name and password**: • Validate for wrong password.

* If username not correct, prompt error message, "wrong username"
* If password is wrong, prompt error message, "wrong password"

##### Users

* Business conferences
* Meeting
* Intercultural exchange
* Marketing
* To connect people socially.
* Social media

## 2.6 Assumptions and Dependencies

* Hardware never fails
* Bad internet connection
* User unavailable(offline)
* The user has access to a microphone, camera, and speakers.

### 2.7 Operating Environment

* Works on devices with 1 GHz processor, 2 GB RAM, and 500 MB storage for desktops/laptops; 1 GB RAM for mobile devices.
* Compatible with Windows 10+, macOS 10.13+, Linux, Android 6.0+, and iOS 11.0+.
* Requires a microphone, speakers, and webcam for calls and video chats.
* Needs a stable internet connection: 512 kbps for audio calls and 1 Mbps for video calls (LAN, Wi-Fi, 4G, or 5G).
* Can run in web browsers like Chrome, Firefox, Edge, and Safari using WebRTC.
* Uses cloud services (Microsoft Azure) for storage and performance.
* Supports audio and video formats like H.264 and SILK.
* Secures communication with HTTPS and encrypted connections.

# 3. Specific Requirements

## 3.1 Functional Requirements

The functional requirements are organized in two sections First is the hardware and software requirement and second is network.

**Functional requirement 1:**

**Download application of Skype:** A user should be able to download the application of skype through either an application store or similar service on the mobile phone. The application should be free to download.

**Functional requirement 2:**

**Profile page:** A user should have a profile page. On the profile page a user can edit his/her information, which includes the password, e-mail address and phone number.

**Functional requirement 3:**

**User registration**: The user should be able to do the registrations easily. The requirements for registration should be mentioned in an understandable way. Given that u user has downloaded the mobile application, then the user should be able to register through the mobile application. The user most provide user-name, password and e-mail address. The user can choose to provide a regularly used phone number. In order for a user to register on the mobile application of the same.

**Functional requirement 4:**

**User log-in**: Given that a user has registered from the mobile app, then the user should be able to log in to the mobile application. The log-in information will be stored on the phone and in the future be logged in automatically.

**Functional requirement 5:**

**Retrieve password:** Given that a user has registered, then the user should be able to retrieve his/her password by email.

**Functional requirement 6:**

Given that a user is logged in to the Skype, then the first page that is shown should be the search.

page. The user should be able to search for the other users according to his/her requirements.

**Functional requirement 7:**

After the selection of user to whom you want to do skype with you need to select the type of conversation to want get into that can he video chat messaging file transfer etc.

**Functional requirement 8:**

##### Calling

* Skype to skype call
* Calls to mobile and landline
* Group calls
* Skype numbers

**Functional requirement 9:**

##### Video

* One to one
* Group chat

**Functional requirement 10:**

##### Message

* Emojis and emoticons
* Internet messaging
* Send texts
* Voice message

**Functional requirement 11:**

##### Sharing

* Send files
* Screen share
* Group screen
* Send contacts

**Functional requirement 12**

If no Internet is available then skype cannot work.

# 4.External Interface Requirements

This section provides a detailed description of all inputs into and outputs from the system. It also gives a description of the hardware, software and communication interfaces and provides basic prototypes of the user interface.

## 4.1 User Interfaces

A first-time user of the website should see the log-in page when he/she opens the website. If the user is not registered, then he/she should be able to odes that on the log-in page. So there should be an option for Sign-Up as well. If the user is not a first-time user, he/she should be able to see the search page directly when the website is opened. Every user should have a profile page where they can edit their e-mail address, phone number and password.

## 4.2 Hardware Interfaces

The hardware should have following specifications:

* 128 MB of RAM required
* Processor
* Internet
* Mouse
* Keyboard
* Camera
* Microphone

## 4.3 Software Interfaces

It supports operating systems like Windows, macOS, Android, and iOS, as well as web browsers using WebRTC. Skype connects with Microsoft tools like Outlook and Office, allowing easy access to contacts and calendars. It uses secure communication protocols like HTTPS to protect data and ensures all calls and messages are encrypted. The system supports file sharing in common formats like MP4, PDF, and images, while using cloud services like Azure for storage and performance. These features make Skype secure, reliable, and easy to integrate with other tools.

# 5. Other Nonfunctional Requirements

## 5.1 Performance Requirements

##### Prominent Search Feature

The search feature should be prominent and easy to find for the user. In order to for a user to find the search feature easily.

* Should give good quality image
* Should provide clear quality video calling

##### Response time

* Quick calling feature.
* The response time should be less.

##### System dependability

* The fault tolerance of the system.
* If the system loses the connection to the Internet or to the GPS device or the system gets some strange input, the user should be informed.
* Error handling

**Security Requirements:**

#### Communication Security

Security of the communication between the system and server.

The messages should be encrypted for log-in communications, so others cannot get user-name and password from those messages.

Attempts to get user-name and password through obtained messages on 1000 log-in session during testing.

100% of the Communication Messages in the communication of a log-in session should be encrypted.

##### Admin Login Account Security

If an admin tries to log in to the web portal with a non-existing account then the admin should not be logged in.

The admin should be notified about log-in failure.

# 6. Other Requirements

## 6.1 Database

The Skype must be able to use several data formats according to the data formats that are provided by the databases of different users. Skype’s database is designed to store and manage user data like profiles, chat history, call logs, and shared files. It uses relational databases like SQL for structured data and may use NoSQL systems for unstructured data to ensure quick access. The database must perform efficiently, handling millions of users and syncing data in real-time across devices. Regular backups are done to prevent data loss, and it can scale as Skype grows, ensuring smooth operations even during high traffic.

## 6.2 Software Quality Attributes

* Security
* Performance

**Availability:**

The network has to be available 24 hours a day.

**Security:**

The skype should provide maximal security. In order to make that much more transparent there are the following requirements:

**Network Security**: No unauthorized person should be able to connect to or access Skype’s network. All communication must be encrypted using secure protocols.

**User Authentication**: Every user must log in using a secure method, such as passwords and optional multi-factor authentication, to prevent unauthorized access.

**Data Protection**: User messages, calls, and files must be stored safely and follow privacy laws li. Only authorized staff should access this data.

**API Security**: Skype’s APIs should include controls to block misuse by external apps or systems.

**Threat Detection**: The system should detect and block hacking attempts with firewalls and other tools.

**Regular Updates**: Security fixes should be updated regularly to protect against new risks.

**Maintainability**: Skype should be easy to maintain, meaning that updates and bug fixes can be done quickly without causing disruptions. The codebase should be well-organized, with clear documentation, so developers can easily understand and modify the system when needed. Regular updates and patches should be rolled out to improve performance and address security vulnerabilities.

**Portability**: Skype must be able to run on multiple platforms, such as Windows, macOS, Android, iOS, and web browsers. This means the application should be easily adaptable to different operating systems and devices without requiring significant changes to the code. Portability ensures that Skype can reach a wider user base and provide consistent functionality across all devices.

**Reliability**: Skype should be reliable, meaning it functions consistently and without interruptions. It must handle different usage loads and network conditions without crashing or losing data. Regular backups, error recovery, and redundancy measures (like cloud storage) should be in place to ensure that users can always access their data and services without issues.