Communications System

Software Requirements Specification

Revision History

Date	Revision	Description	Author
02/25/25	1.0	Initial Version	Jezelle Overstreet
03/03/25	1.1	Additions and revisions to requirements	Jezelle Overstreet
03/04/25	1.2	More additions and revisions to requirement	Jezelle Overstreet

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1. Purpose

This document outlines the requirements for the Communications System.

1.1. Scope

This document will catalog the user, system, and hardware requirements for the communications system. It will not, however, document how these requirements will be implemented.

1.2. Definitions, Acronyms, Abbreviations

User: Employee or IT member within the communication system.

IT: Member of information technology team, has administrative privileges.

Group: Any congregation of two or more users.

Asynchronous: Messages can be delivered in such a way that they "persist" even when one user is not online. In other words, they work in a similar fashion to text messaging; there is a mechanism that allows propagation of messages even when communication is not immediate between the two users.

1.3. References

Use Case Specification Document – Communications System - Use Case Specification (1).pdf

UML Use Case Diagrams Document – CommunicationsSystemUseCaseDiagram.drawio.pdf

Class Diagrams – CommunicationsSystemClassDiagram.pdf

Sequence Diagrams – Communications System - Sequence Diagram.pdf

1.4. Overview

The communications system is a platform designed for users to send messages to and receive messages from other users. Users are able to login and chat with other users privately or in groups. The messages between users are only text.

2. Overall Description

2.1. Product Perspective

2.2. Product Architecture

The system will be organized into 3 major modules: the user module, the messaging module, and the server module

2.3. Product Functionality/Features

The high-level features of the system are as follows (see section 3 of this document for more detailed requirements that address these features):

2.4. Constraints

Messages sent by all users are immutable

Employees are only able to view their own chat logs

Messages sent are only allowed to be text

Messages are not stored in an external database

No databases, libraries, frameworks, or other technologies may be used

2.5. Assumptions and Dependencies

2.5.1. All users are part of the company, which itself provides the login credentials for its employees

2.5.2. It is assumed that the maximum number of users at a given time is 15,000.

2.5.3. System is used as intended

3. Specific Requirements

3.1. Functional Requirements

3.1.1. Common Requirements:

3.1.1.1. To access the messaging system, users must have valid login credentials

3.1.2. Users Module Requirements:

3.1.2.1. There are only two types of users: employees and IT
3.1.2.2. Users have the option to logout
3.1.2.3. Employees can only view their own conversations
3.1.2.4. IT users are able to view all conversations
3.1.2.5. Users should be able to communicate both synchronously and asynchronously.
3.1.2.6. Users should be able to create group chats where multiple users can participate simultaneously.
3.1.2.7. Users are able to send private text messages to each other

3.1.3. Messaging Module Requirements:

3.1.3.1. Date, time, and messages sent and received by users are recorded and saved
3.1.3.2. Messages are immutable
3.1.3.3. Messages are viewable and stored in the order they were received/sent.

3.1.4. Server Module Requirements:

3.1.4.1. Server must send messages in the order that they were received
3.1.4.2. Server must be able to handle multiple clients at a time
3.1.4.3. Server must work with synchronous and asynchronous messages

3.2. External Interface Requirements

3.2.1. The system provides a login interface that features an ID/Username field and password field.
3.2.2. Upon successfully logging in, users are provided an interface where they are able to create new conversations or view previous conversations. When creating a new conversation there will be a field to add users to chat with, a text box, and an interactive keyboard to type messages. Chats will be displayed in order of when they were sent.

3.3. Internal Interface Requirements

3.3.1. Messages will be stored in a text file. The file will be in the form of a comma-separated line detailing the date, time, sender, receiver, and message.

4. Non-Functional Requirements

4.1. Security and Privacy Requirements

4.1.1. Messaging system must save all chat logs, none can be deleted
4.1.2. IT users are able to view all conversations

4.2. Environmental Requirements

4.2.1. There must be enough memory in the server to store all messages

4.3. Performance Requirements

4.3.1. Works asynchronously and synchronously.
4.3.2. Message transmission must be low latency
4.3.3. Look up of stored messages should be quick, with little to no load or buffer time.
4.3.4. Communications system must be performant even at the limit of allowable users on the system.
4.3.5. System should be able to handle thousands of users using it simultaneously