

# Internetworking Protocol

## Internet Relay Chat

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### RFC

### **Introduction:**

In the IRC project, we employed protocols to provide multi-client communication that allowed users to create, join, and leave rooms. In addition to this, users can privately message another client. Every client in the room can see every message when there are many clients present.

### **Server and Client:**

The server and client act as the application's brains. We have chosen a single server to which any number of clients may connect, each with a unique name which may contain both alphanumeric and underscore characters.

### **Features:**

The application's primary function is facilitating client-to-client communication through server create/join rooms and additional options including giving a list of rooms, exiting a room, and sending private messages.

Communication: Rooms and one-on-one chats are the primary means of communication. The server receives messages sent by users in the room and distributes them to everyone else in the room, except the sender.

Listing rooms: The command \$list that we created delivers a list of all the available rooms. It says "no rooms available" at first when none have been created.

Create a Room: At first, there are no rooms available. The first person to start this software can create a room with \$join. All other users can now join and start speaking in this freshly created area by using the room name.

Joining a room: Any client can access the rooms after they have been made available by using the \$join command to join the room of their choice. Everyone in the room will be aware of the new client once contact has been made, allowing them to start a dialogue.

Leave room: Using the \$leave command, each group member has the ability to leave at any time.

### **Error Handling scenarios:**

- We have implemented user signaling with an error message 'You are not part of any room' message will be displayed if a user attempts to leave a room that he is not a part of.
- When a client crashes, the entire system—servers, rooms, and clients—are notified.
- If the server crashes, all users are automatically logged out and receive a server unavailable message.
- The "User not found/exists" warning appears when a client tries to connect to another client who either doesn't exist or whose name is entered incorrectly.
- The user is not permitted to send messages if the room does not exist or if the client tries to connect to a room that he is not a member of.

### **Conclusion & Future Work:**

A unique name can be given after determining whether the names of the rooms or clients are redundant.

Cryptographic transport protocols enable the sharing of media.

Different rooms can communicate with one another now.

Security features and media sharing options can be added to the program to improve it.

In the form of broadcast messages or private messages, message sharing has been expanded to include a single server and numerous clients.