

COMPUTER  
NETWORKS  
AND  
COMMUNICATION  
PROJECT:

**Client to Client Communication on an  
Intranet and over the Internet**

by

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## The need

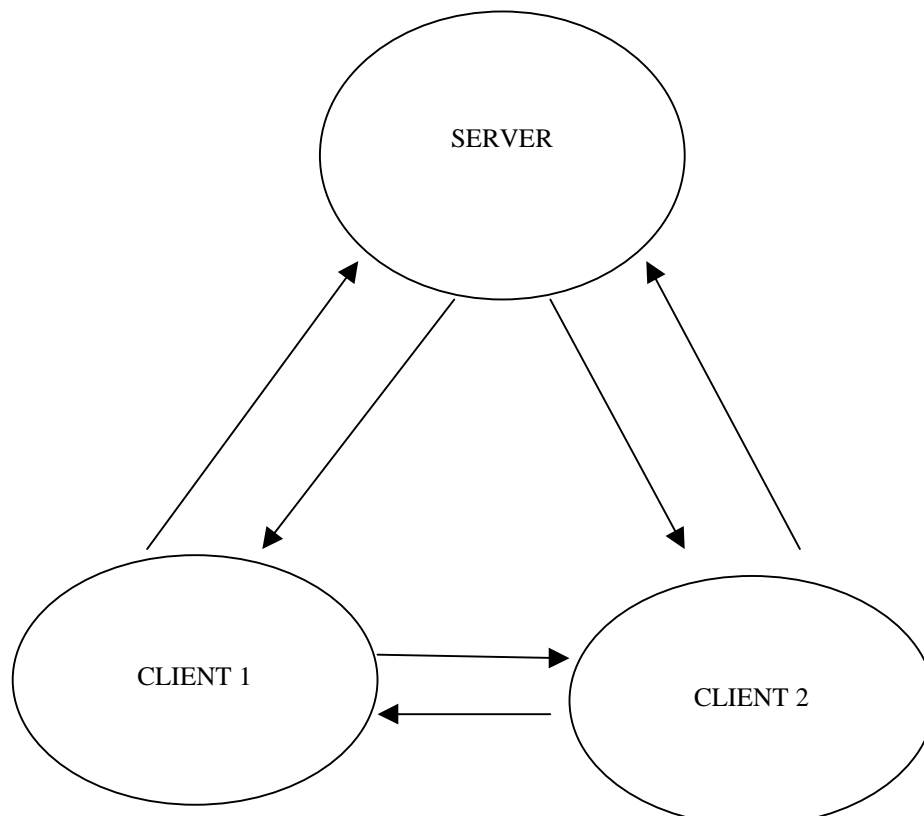
The Internet has created a whole New World. It is a mighty Network of Networks. All the users on the Internet use the same Network.

Communication plays an important role in day to day life and hence this Network should be used for communication as well. This project shows how client to client messaging can be achieved and how it can be extended to other forms of communication.

## The Basic Architecture

In order to achieve client to client messaging, we use the client – server software architecture to develop the application. The Java language has been used for the implementation, because of its specialty for Network programming.

The clients are distant and hence we need a common server application to bring all the clients together.



## **The Server**

The single server application resides on a single machine. All the clients must be aware of the server's IP address.

## **The Clients**

These can be any number. Clients can reside on any machine. All the Clients must know the server's IP address.

## **Client to Client messaging**

How is it achieved?

Since all the clients are distant, we need a common server, so that the clients are aware of each other. To achieve this we have a server application running at all times. Client applications can be started and turned off at anytime.

An Intranet created using Win NT 4.0 uses the TCP/IP protocol for communication. The Internet also uses the TCP/IP protocol. Hence our application can be fine-tuned to run on both an Intranet and over the Internet.

Network Communication in Java is achieved using the java.net class.

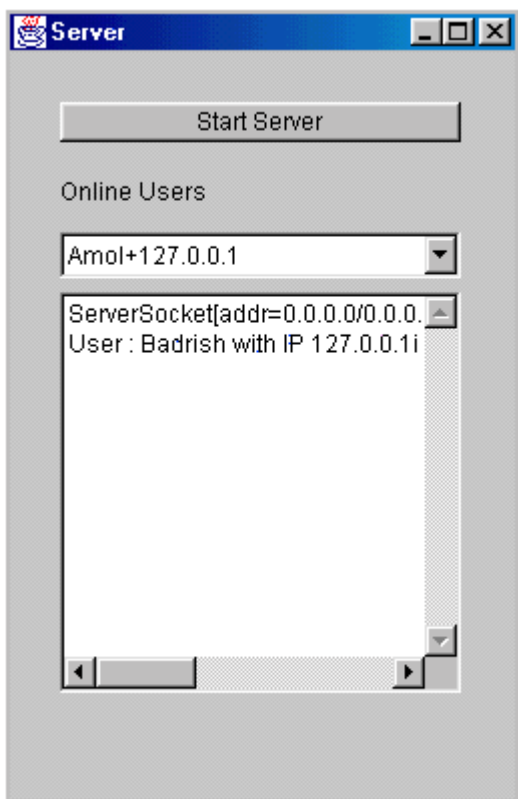
All the clients communicate on Port 8000 and the server communicates on port 8800.

We will now list the Server's role, the Client's role and the entire process in detail.

## The Server's role

The Server application resides on any machine of the Network. As the server and clients communicate on different ports, we can have a client running on the server's machine.

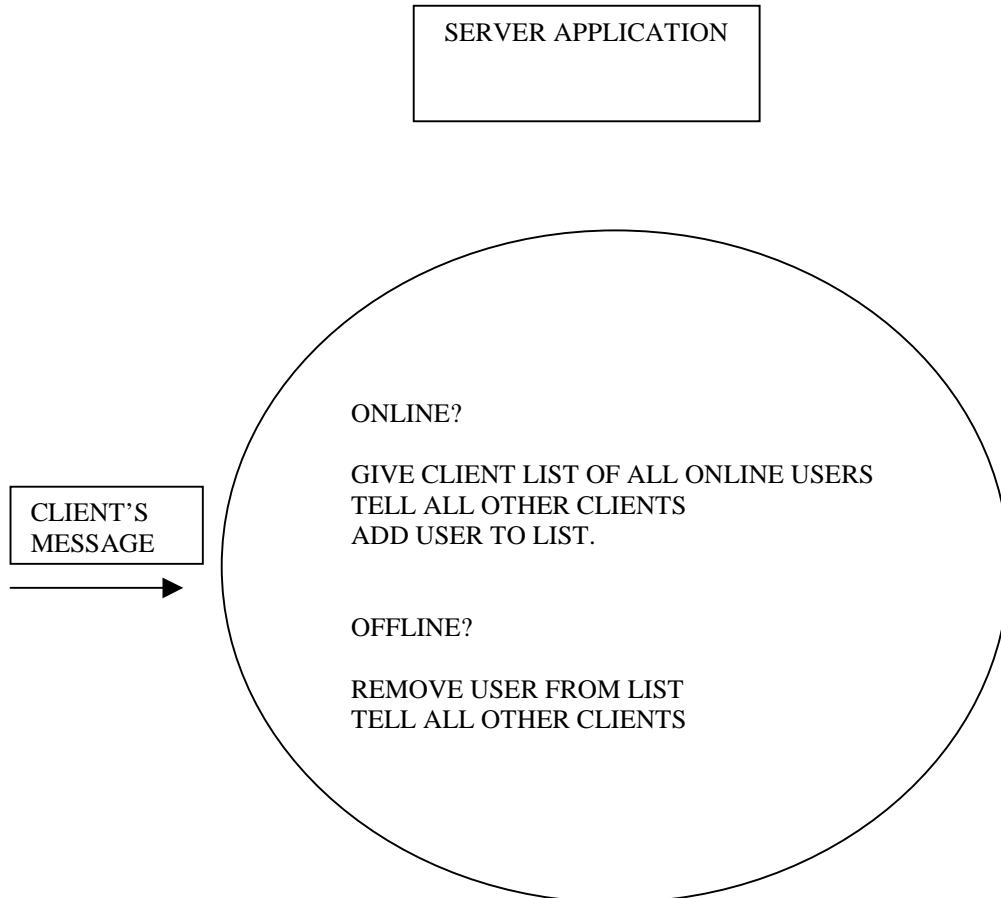
A snapshot of the server application.



## How the Server works?

- When we click on "Start Server", the server waits for connections on port 8800.
- The Server maintains a list of all online users and a Text Area displays all the events occurring.
- When a client logons on and starts the client, he sends a message to the server stating that he is online, together with his username and IP address. Ex: When Badrish goes online he sends the server a message "online + Badrish + 202.54.1.32"
- The server parses the message and finds that the user has gone online. The server adds the user to the list and tells all the clients that the new client has come online. He sends a message of the type "online + Badrish + 202.54.1.32". He then gives the client a list of all online users.
- When a user goes offline, he tells the server that he has gone offline by sending a message of the type "offline + Badrish + 202.54.1.32"
- The server removes the user from the list and informs all clients that the user has gone offline by sending all the clients a message of the type "offline + Badrish + 202.54.1.32"

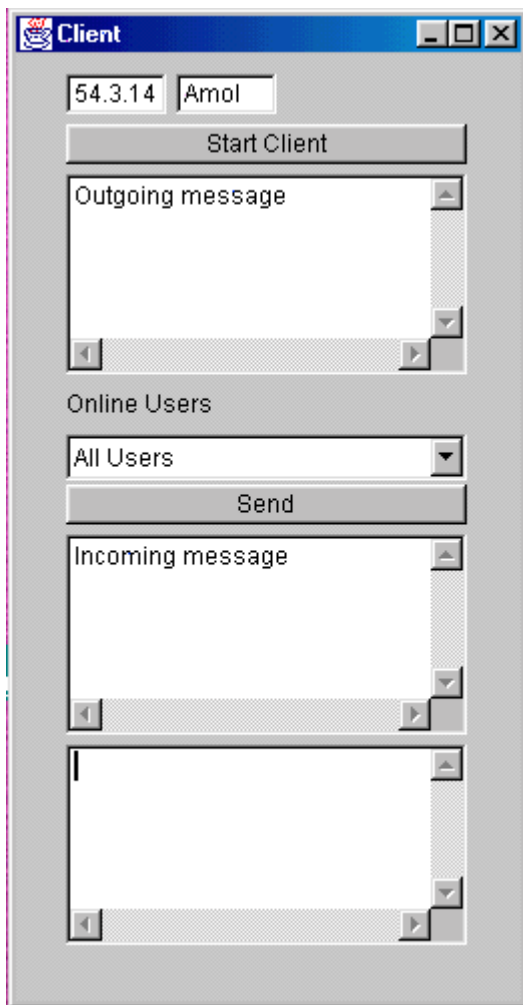
The entire process



## Client's role

The Client application resides on the machine of every client. It receives messages by listening on port 8000 and depending on the message, performs the required operation.

Snapshot of the client

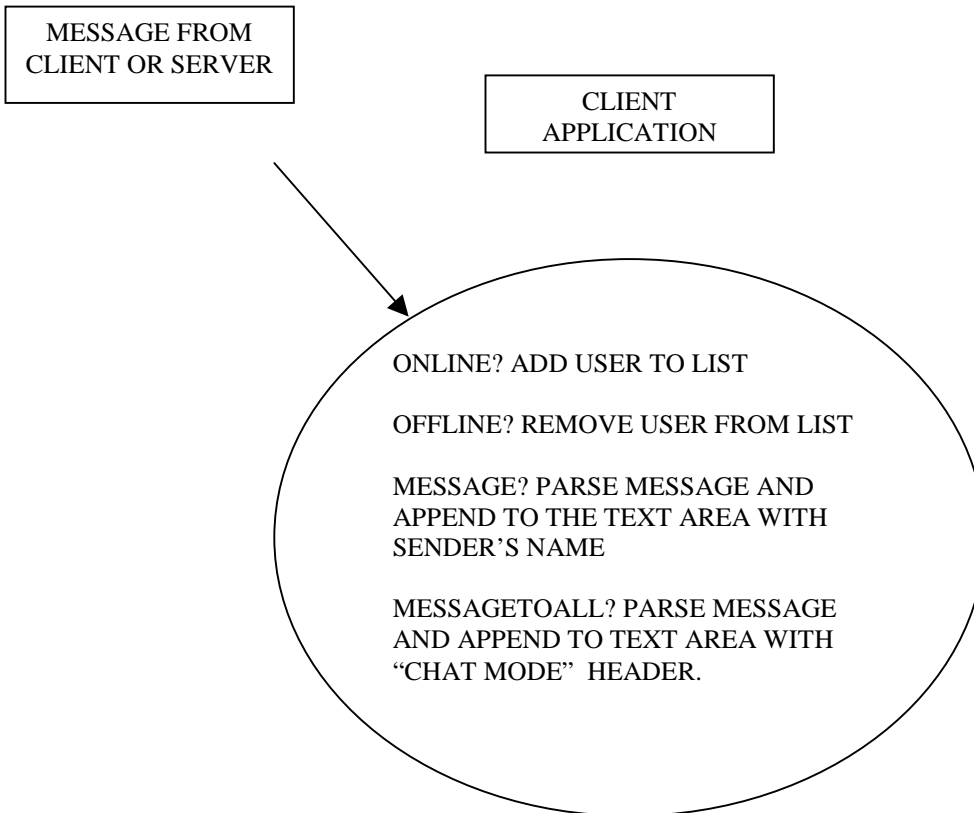


How the client works?

- When we start the client application, it tells the server that the client has come online.
- The server gives the client a list of all online users, which the client adds to its list.
- When we click on the "Send Message" button, the client sends the contents of the Outgoing message box to the user/ All the users, using their IP address.
- The client keeps listening for connections on port 8000. When it gets a connection and a message, it parses the message and then decides what to do. If message has header "online" it indicates that the user has come online and adds the user to its list. If the message header is "offline" it removes the user from the list. If the message header is "message" it indicates it is a message and then adds the message to the text Area with the user's name. If the message header is "messagetoall" it indicates that the message was sent to all users and displays the message in chat mode.
- When the user goes offline, it tells the server that it has gone offline and closes.



The entire process:



## Conclusion

Client to Client communication has been illustrated using Client to Client messaging. This method can be used for the transmission of any kind of data, from images to sound. Such techniques will allow people all over the world to communicate easily and cost effectively.