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## The Design of Mumble Client

This section of the document will have two columns. The first holding the text, the second holding images for the reader. First this will explain what the Object of Study for this document is. Then this will cover some background information. Finally this will explain my own experience using this object.

The Object of Study for this document is the default Mumble Client. This software runs on a computer in order to open a connection to a Murmur Server. This software serves to let multiple people talk to each other over computer networks, basically it is a light weight discord.

This software is used to organize general chatrooms, enable teams to talk to each other while playing games, or just as an overkill VOIP phone. I have a murmur server running on my home network from my computer for playing video games with my family (I could open it to the internet, but I do not need to), you see a ping of zero in Figure 1 because the client used to view the connections is already on the computer running the server so there is no time lost in the network.

Figure 1 shows the window that opens when the Mumble Client is started. I have used this software on multiple operating systems, the only difference on all of them has been the window decorations assigned to the window on creation, this is managed however by the window manager and has nothing to do with the actual software. The software in my experience is exactly the same on MS Windows and every distribution of Linux that I have run it on.

The Mumble Client allows you to disconnect and connect to Murmur Servers, rather than only connecting to a singular server and disconnecting on close. Each time a connection is made from a client to a server, the user is prompted for a user-name. This user-name will serve to identify the messages from the user, and when the user is speaking, an indicator based on the user-name will toggle to show that there is audio coming from that user. Figure 2 shows the window after connecting to the server.

A nice little feature shown in Figure 3 is that the Mumble client can record audio and save the file locally. One thing to mention about the Murmur Server and Mumble Clients is that they allow the use of multiple chat rooms under the Root in a tree structure.

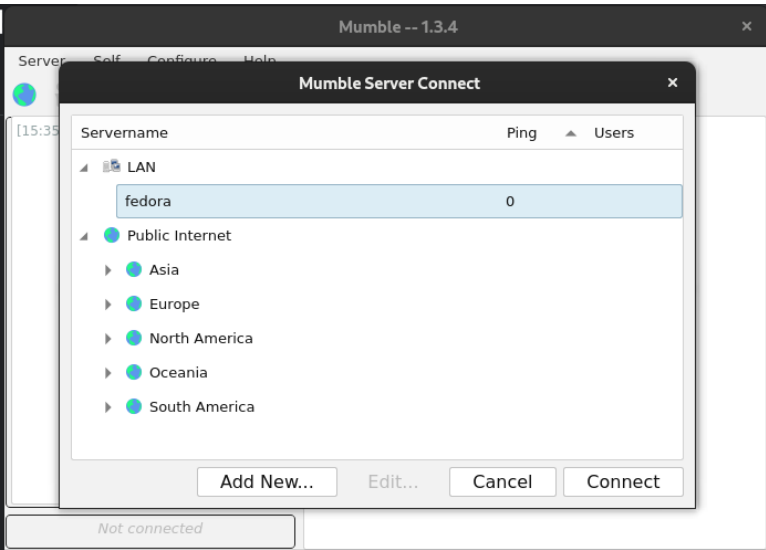


Figure 1: This is the window that opens by default when you start the Mumble Client.

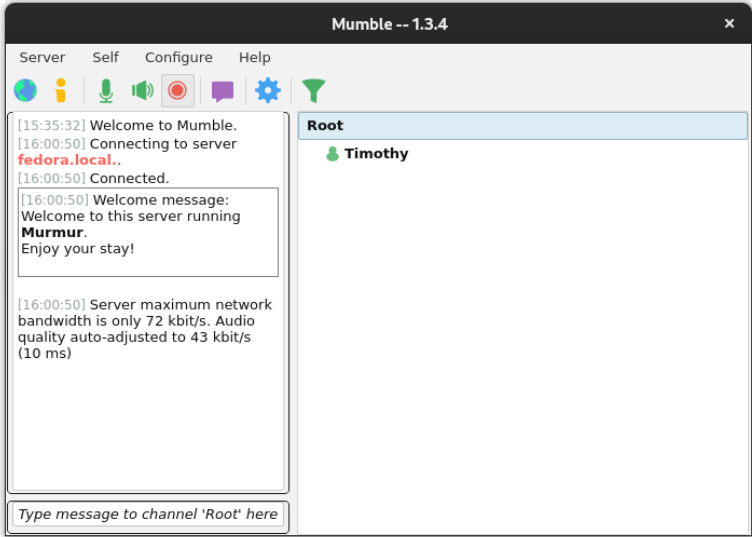


Figure 2: This is the window shown after a connection to a Murmur Server is established.

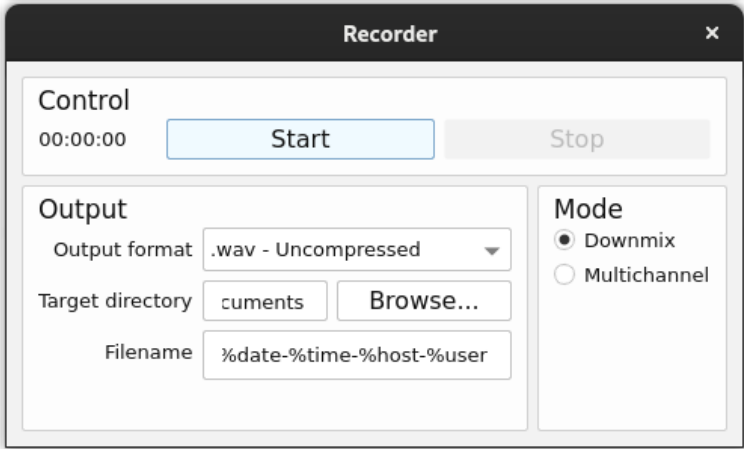


Figure 3: This is the recording sub-window.

Key Features	Description
Per-Channel Instant Messaging	Each user on the server, being in a given chat-room may send and receive text messages to and from all users in the same chat room.
Per-Channel Voice Chat	Each user on the server, being in a given chat-room may broadcast his voice to the entire chat-room.
Channel Audio Recording	Each user on the server, being in a given chat-room may record all audio being played in the chat-room.
User Registration	Each user may optionally register himself unto the server with a permanent user-name.
User Comment	Each user may optionally create a comment that will be displayed next to his name in the chat-room.
User Avatar	Each user on the server, being in a given chat-room may set an avatar for himself to be displayed when anyone hovers his mouse over his icon.
Interface Customization	The desktop Mumble interface is fully customizable.
Positional Audio	When running the Mumble Client in a supported game, audio from people playing the same game will sound as if it came from their in-game location.
Opus Codec	Use of the free Opus Codec by default prioritizes low-latency and high-quality audio transmission.
Noise Suppression	When connected to a chat-room, noise below a chosen threshold will not be broadcast.
Automatic Level Balancing	At the server, attempts are made to set all volumes from each user to an equal level in order to prevent one user drowning out all others when talking.
Attenuation	Optionally a user of the client may have it lower volume from other applications while receiving audio from other users.
Priority Speakers	On the server, certain users may be given a priority status enabling their voice to win out over others when conflict occurs.
Encryption	All data transmitted to and from the server is encrypted, this ensures that the privacy of the group is legally protected from those disconnected from the server.
Setup Wizards	At set up of the client for the first time, a sequence of wizards configure the client to the user's liking.
Authentication	By using certificates for authenticating, two friends may see each other by friends on a server, even if they go by different names on that other server.
Server List	Mumble has a public server list sorted by nation that users may add private servers to for easy access.

Key Functions	Description
Instant Messaging	Each user may broadcast instant messages to the current channel he is in.
Voice Chat	Each user may broadcast his voice to the current channel.
Audio Recording	The client may record the audio from the connected channel.
User Registration	Register the user permanently to the server with a permanent name.
User Profile	Each user may optionally create a comment that will be displayed next to his name in the chat-room.
User Avatar	Each user on the server, being in a given chat-room may set an avatar for himself to be displayed when anyone hovers his mouse over his icon.
Interface Customization	The desktop Mumble interface is fully customizable.
Positional Audio	When running the Mumble Client in a supported game, audio from people playing the same game will sound as if it came from their in-game location.
Low-Latency, High-Quality Audio Transmission	Use of the free Opus Codec by default prioritizes low-latency and high-quality audio transmission.
Noise Suppression	When connected to a chat-room, noise below a chosen threshold will not be broadcast.
Automatic Level Balancing	At the server, attempts are made to set all volumes from each user to an equal level in order to prevent one user drowning out all others when talking.
Attenuation	Optionally a user of the client may have it lower volume from other applications while receiving audio from other users.
Priority Speakers	On the server, certain users may be given a priority status enabling their voice to win out over others when conflict occurs.
Encryption	All data transmitted to and from the server is encrypted, this ensures that the privacy of the group is legally protected from those disconnected from the server.
Setup Wizards	At set up of the client for the first time, a sequence of wizards configure the client to the user's liking.
Security	Communication via the server is legally secure in that communication is private and the source is verifiable.
Server List	Mumble has a public server list sorted by nation that users may add private servers to for easy access.