Documentation Babel

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1 Communication Protocole

The communication between the serveur and the client is made with a PingPong structure system. It means, the client send a request to the serveur, and in terms of the sent request, either it will request the other user or look in the service asked if it is enable to be used. After, it will send back a response to the first client.

2 Structure sent

A structure is send to communicate between clients and server as precised at begining. This structure is composed of:

- A header of 8 serialized bytes for communicating the size of the readable structure
- An ID of the provenance
- An ID of the destination
- A Type of request/response
- A Category of request/response
- A Status
- A message made of Json's string

3 Client communication

When two users are connected, a call can be send. It request the server for requesting the other client. When it is accepted, a socket is created from the server to alow both user comunicate through it thanks to Portaudio and Opus.

4 Audio

When a call is set, Portaudio will init its two streams, one for the recording and the other for the playing. After initialisation, a stream can be open and be fill

depedning on Input or Output parameters.
The frame rate is set at 480 and the frame per buffer at 48000 for a more stable audio.
After that, functions for writting stream on the buffer and reading buffer can be call. They will record and play respectively the audio.

Before playing audio and after recorded audio the buffer containings the frames is send to opus to encode and decode it.

5 Interface

For a nice use of this project, an interface has been set using QT5. When it starts it will ask for a username and a password that will be filled in the database, if the account doesn't exists already. After connecting, a contact list will be displayed for calling people and hangup a call.