Technical Documentation

Registration Process

- Server Android (client in this scenario) and PC Server must be manually paired over Bluetooth. Note that pairing process is a 2-way confirmation, and alleviates many security problems of unauthenticated parties communicating.
- Enable Bluetooth on the PC. Run PC program for first time and enter in your password that will be used to encrypt and decrypt files. Note that the password will be saved in a plain text file. Now, start the Android server program, which will allow you to choose to connect to one of your paired devices. Choose your PC device. The Android device will then save the MAC address of the PC, and the PC will save an encrypted MAC address of the Android device in a file, and uses it as the registered device for communication. PC will only accept connection from this device.
- User will now be prompted to choose a top-level directory (TLD) on the PC that will be available for file transfer. This file path will also b e saved in an encrypted file. PC program will not serve files anywhere above this path in the file hierarchy, nor will it serve the password file, or encrypted files by the program.
- To set up automatic upload to Google Drive, press "Sign in to Drive" to choose your desired Google Drive account on Android server.
- Registration between Android server and PC server is herein complete; PC now listens for requests continuously.
- To access your files remotely, you will need to download TeamViewer Host on the Android server, create an account (or sign in), and then download TeamViewer client on any front-facing device of your choice and sign in to the same account. You can then use TeamViewer to remotely control your Android Server and launch the application to carry out the file transfer. Note that the first time you connect remotely, you will physically need to accept the connection on the Android server. After that, the process can occur without any user interaction.

Android Server-PC Server Transfer Protocol

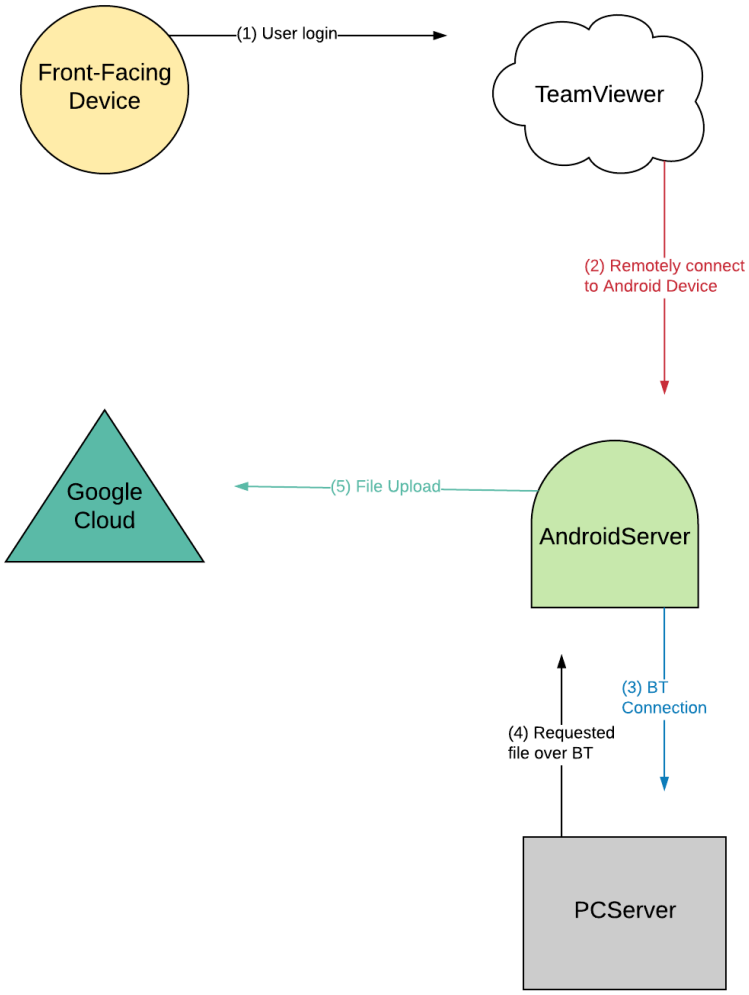
- Android Server sends **"ls"** to PC Server for a hierarchy of files from the TLD of the PC.
- Android Server will send full file path to PC server, which will then start transferring that file **synchronously**.
- Android Server will send **"exit"** to PC Server to terminate connection.

Standard Flow

- Android server starts program via remote connection from TeamViewer and connects to PC server, which is always listening for requests.
- PC server sends back a "hello" message.
- Android server asks for a listing of files from the PC, which sends back all possible files that server can request for transfer.
- Android server then sends the requested file to the PC. The PC checks to see that file is within the TLD hierarchy, and if so, sends the file to the Android server.

- The Android server now uploads the file to the user's previously selected Google Drive account.

(UPDATED) High-Level Flow Diagram



TeamViewer

(1) User logs in through front-facing device

2) User connects to registered Android device to turn on AndroidServer and control the application

(2) Sends protocol received from user to AndroidServer

AndroidServer

(2) Connect to Android Device running AndroidServer and control application

(3) Connects to PCServer via Bluetooth connection

(5) Uploads requested file to user-selected Google Drive account as part of initial Android registration

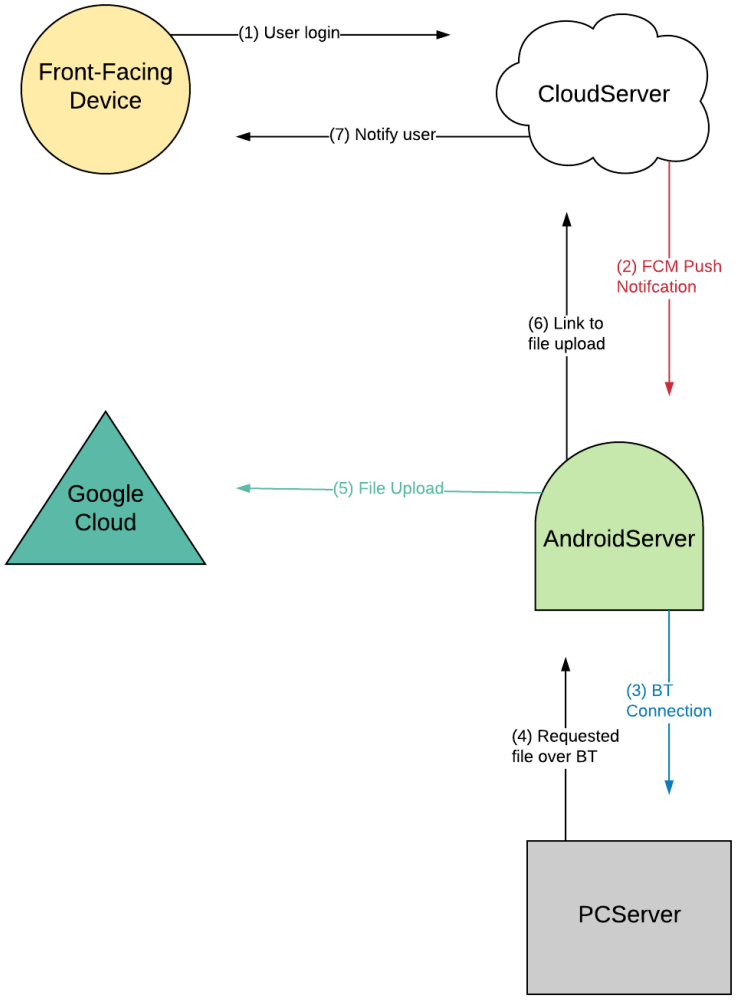
PCServer

Runs in background on machine

(3) Listens for Bluetooth connection request from AndroidServer

(4) Sends requested file to AndroidServer via Bluetooth

(ORIGINAL GOAL) High-Level Flow Diagram



CloudServer

(1) User logs in through front-facing device

2) CloudServer sends push notification using FCM to registered Android device to turn on AndroidServer

(2) Sends protocol received from user to AndroidServer

(7) Notifies user of events

AndroidServer

(2) Listens for FCM push notification from CloudServer to be turned on

(2) Listens for protocols from CloudServer and performs specific actions

(3) Connects to PCServer via Bluetooth connection

(5) Uploads requested file to user-selected Google Drive account as part of initial Android registration

PCServer

Runs in background on machine

(3) Listens for Bluetooth connection request from AndroidServer

(4) Sends requested file to AndroidServer via Bluetooth