

xxRFP-2022-002

Fax It Over: Anonymous Fax Sending

This xx foundation request for proposals will fund the creation of Fax It Over, an open-source tool that can anonymously send a fax to any fax number. This tool is similar to [internet-based fax services](#) that let users send a fax from an internet-connected machine to any fax machine. Fax It Over will accomplish the same thing, but it will allow users to send messages anonymously to a fax machine with their message encrypted until it is transmitted as a fax.

The xx foundation is offering a competitive bidding process to complete this work, with independently compensated phases. The [selection process](#) will analyze each phase individually according to the response contents, the proposed compensation, and the proposed final deliverable dates and contents. Proposers are expected to propose for all phases.

Requirements

Fax It Over consists of a client-side app to facilitate sending a fax message over cMix and server-side software that receives the message, translates it into a fax transmission, and sends it to the given fax machine number.

Users will be able to send a plaintext message, a document (e.g., PDF, RTF, HTML, etc.), or an image (e.g., JPG, PNG, TIFF, etc.) that will be converted to a bitmap by the server before being transmitted as a fax. To reduce the required network bandwidth, various text-based formats (e.g., RTF, SVG, markdown) should be supported by the client and server, and users should be encouraged to use them over raster formats. Proposals must explain the mechanisms of converting such documents to a fax format.

The identity of the sender communicating with the server and fax machine should remain anonymous. The server should be able to respond to the user with any errors that occur during document conversion or fax transmission.

Proposals must discuss the mechanism of connecting to a telephone system to send a fax (e.g., via [asterisk](#)) and the security implications of all possible mechanisms. In addition, address methods of selecting the appropriate server to send a fax from, considering the proximity to the target and regional restrictions.

Include designs for a UI for sending messages/files as faxes, including methods to estimate the number of pages and costs associated with the transmission.

Architecture

cMix clients will run as servers receiving fax requests from users and transmitting them as faxes over a telephone network. To retain anonymity of the sender, a new ID will need to be created to facilitate all communication with the fax server. Low-bandwidth communications between the sender and the fax server will occur using [connections](#), such as returning fax error messages.

To send the actual fax message, if it is large enough, [file transfer](#) can be used, but if the message is small, then it can be sent using connections / ratched based end to end encryption.

Phases

You may propose your own phases, but the following phases are desired:

Phase 1: Proof of Concept—Implement the basic version of your proposed design and submit a final design for the client-side and serverside functionalities. This should include final versions of any cryptographic primitives and fully explained versions of all data structures and sub-protocols, as well as discussions on converting messages/files to fax messages and how the mechanics of connecting to a telephone network.

Phase 2: Software

- **Server-Side Software**—Build a server client that can receive anonymous messages and convert them into a bitmap for sending as a fax over a telephone network. Show the ability of the server to send a fax via a modem.
- **Command-Line Tools**—Fully functional client-side command-line tool which fully exercises your proposed system without a user interface and communicates with the server. The client-side command-line tool is the final library used by the Android and iOS apps, with test coverage of at least 85% of the code base and an accompanying continuous integration/continuous deployment (CI/CD) styled testing script.

Phase 3: User Facing App

- **Android App**—Android app with the final user interface design using the library from Phase 2.
- **iOS App**—iOS app with the final user interface design using the library from Phase 3.

- **Web App**—Web app with the final user interface design using the library from Phase 3. Should work cross-platform.

Please note that we value concise proposals. Diagrams such as visual roadmaps or architecture proposals are encouraged. We may not read past the first 15 pages. Proposals with excessively small font sizes (below 11 for regular text) or other formatting abnormalities may not be read or may be counted against you during our internal deliberations.

Submission Instructions

Proposers should submit their proposals, in English, to the following website:

- <https://xxfoundation.org/archive/xx-foundation-announces-the-xx-dapps-grant-program>

Note that proposals are divided into two parts: An anonymized technical proposal and a staffing proposal. The technical proposal will be posted online and should not contain any identifying information about your organization or staff. The staffing proposal will contain resumes and additional evidence for why you and your team are qualified to do the work you propose.