Introduction

Truly anonymous communications are crucial for maintaining privacy, but are uncommon over the Internet. Dissent provides collective anonymity at the network level, but is not necessarily ready for widespread deployment. The benefits of onion routing are well suited for many internet users’ current individualistic needs, so there is a need for applications to be built with Dissent compatibility in mind. The project aims to build a real-time chat application that allows for anonymous town hall meetings. Similarly to real town hall meetings, each user is allotted a specific amount of bandwidth and is allowed to have the floor for a time and can send their communications during their slot. Each user is given their chance to contribute. There are issues of assigning bandwidth fairly and of building and scaling the application. My project will be focused on building the actual “microphone” aspect of the town hall by integrating voice over IP (VoIP) into Dissent and allowing for real-time speaking for the application.

Description

This project, as mentioned previously, is working in parallel on three distinct goals in order to build a real-time chat application that is built in the town hall format.

- **Fairness Planning**
  - Dissent currently allows all clients to communicate simultaneously. This may not be an issue with text application but can be quite messy with voice capabilities. This method is also incompatible with the town hall format. In order to resolve this issue, the Dissent protocol must be modified to fairly decide which user can speak and for how long.
• **iOS Application**
  o The town hall application is simply an idea. There must be an actual implementation of the application as a model for similar Dissent-based or town hall applications.

• **Voice Integration**
  o Dissent currently only supports text communications. To simulate a real town hall meeting, it should allow for real discussions and verbal discourse. VoIP must be integrated into the Dissent protocol and the application.

There are major challenges when looking to integrate voice capability into the Dissent-based application.

• **Dissent Integration**
  o VoIP integration will be the difficulty in maneuvering the extensive Dissent code base and making small modifications.
  o Another issue will be dealing with cryptography issues when encoding and decoding packets.
  o Testing this aspect may also be difficult to accomplish.

• **iOS Integration**
  o Since we are building a mobile application, it makes sense that we would want to allow VoIP usage in our application.
  o One issue is dealing with other VoIP apps and phone calls. The app has to be exited successfully if another use of the phone’s audio system is being used.

Some technologies that may be used include:

• Dissent
• VoIP
• QT Cryptography

**Milestones**

My plan for completing this project is as follows:

• Plan integration with Dissent source code (early February)
  o I plan to familiarize myself with the source code for the Dissent protocol and continue researching implementation of VoIP.

• Integrate VoIP into Dissent (late February/ March)
  o Implement VoIP into the Dissent code base and test thoroughly. This must be completed by the end of March in order to allow for the application to use it.

• Integrate VoIP into iOS Application (late March / April)
Work to implement VoIP into the iOS application. Complete final report for April 30, 2014.

**Deliverables**

The deliverables of this project are as follows:

- Dissent source code modified to support VoIP
- Written report detailing analysis of code