

Project proposal

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Motivation

Affected by the coronavirus, many people have to stay home and self-isolate. Communication via email is not efficient enough for them to communicate with colleagues. We try to provide a platform where users can share the screen and voice so that it would be easier and more efficient for them to work from home.

Problem statement

The problem we try to deal with mainly focuses on transmitting the streaming data of the screen and the voice. To encode the video at different resolutions, we need the network condition between the users. As for the wifis and VPN, we plan to use the dictionary attack and show the connection process.

Objectives

1. List available wifis and test VPN
 - List the available wifis and their signal strength, check the situation of network (Such as DNS setting, TCP/IP process, IP address configuration) to avoid phishing and spear phishing.
 - Test and show the using procedure via connecting to VPN.
2. Screen-sharing tool
 - Show the screen in real-time
 - Synchronize the voice from the mic with the screen sharing
 - Adjust the resolution of the video with the network condition(trying to do some research on high-resolution video transmission)
3. Network quality monitoring and visualization
 - Collect the network information like delay and bandwidth and visualize
 - Monitor the data flow and display the data usage

Reference

1. Akshay Kashyap, Benny Bing. Efficient HD video streaming over the internet. Proceedings of the IEEE SoutheastCon 2010 (SoutheastCon)
2. https://en.wikipedia.org/wiki/Real_Time_Streaming_Protocol