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EE 579 Midterm Presentation

Group 9

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Goals & Motivation

Goal: The goal of this project is to develop a fast file detection and content detection system for file sharing between mobile devices.

when 2 devices encounter with each other, one need to decide quickly whether the other device has the file it need and furthermore, whether it has the missing content of the file it need.

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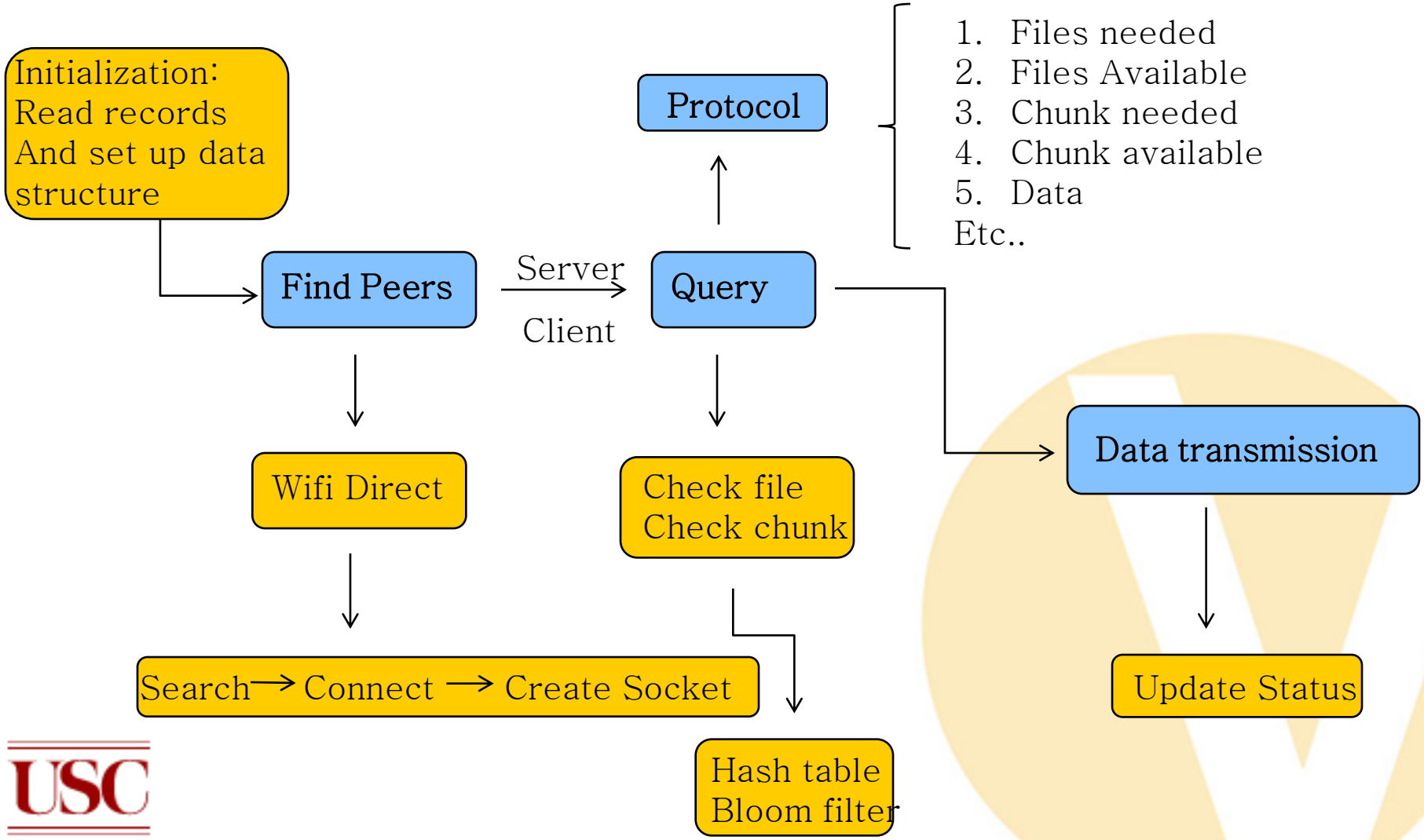
Architecture



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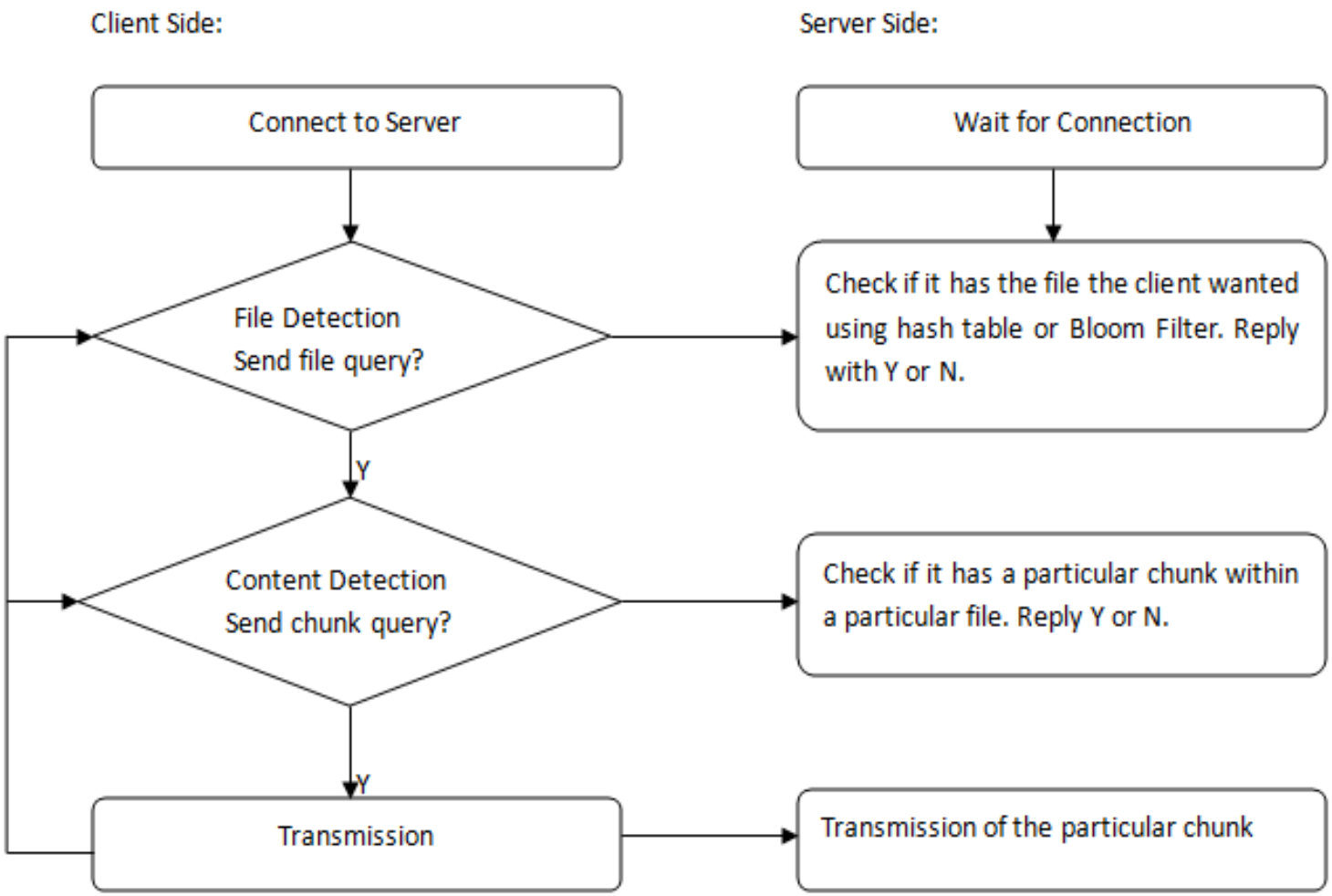
Client Side:
Server Side:
Connect to Server
Wait for Connection
File Detection
Send file query?
Check if it has the file the client wanted using hash table or Bloom Filter. Reply with Y or N.
Y
Content Detection
Send chunk query?
Check if it has a particular chunk within a particular file. Reply Y or N.
Y
Transmission
Transmission of the particular chunk

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- Fan Yang
  WiFi Direct connection
  Client / Server and Protocol

- Hanli Guo
  Bloom Filter
  Interface Design

- Shusen Zhu
  Initialization
  File Transfer

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WiFi Direct Connection

- Initial Setup
- Discovering Peers
- Connecting to Peers
- Transferring Data

http://developer.android.com/guide/topics/wireless/wifip2p.html

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Main activity

- WiFi Direct State
- discoverPeers()
- Connect()

Broadcast Receiver

- WIFI_P2P_STATE_CHANGED_ACTION
- WIFI_P2P_PEERS_CHANGED_ACTION
  onPeerInfoAvailable()
- WIFI_P2P_CONNECTION_CHANGED_ACTION
  onConnectionInfoAvailable()

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Connected: Initialize Server and Client

- Use the IP address get from WifiP2pInfo. groupOwnerAddress
- The group owner will become the server and the other one the client
- Use certain protocol to communicate

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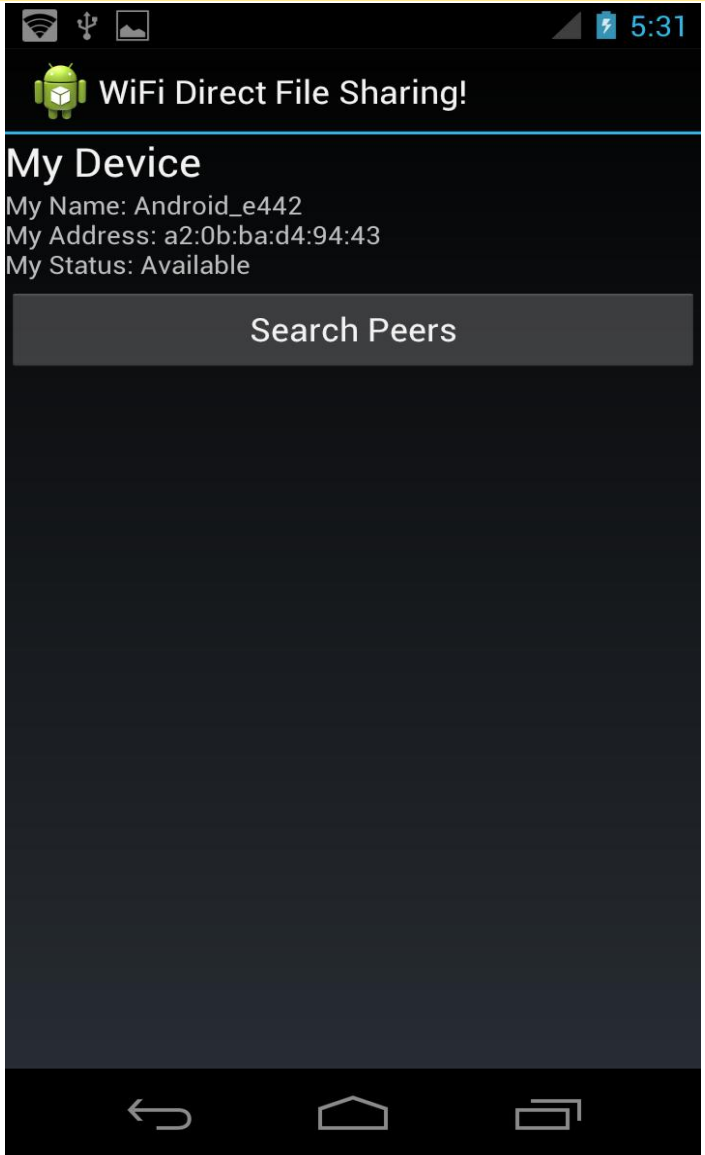

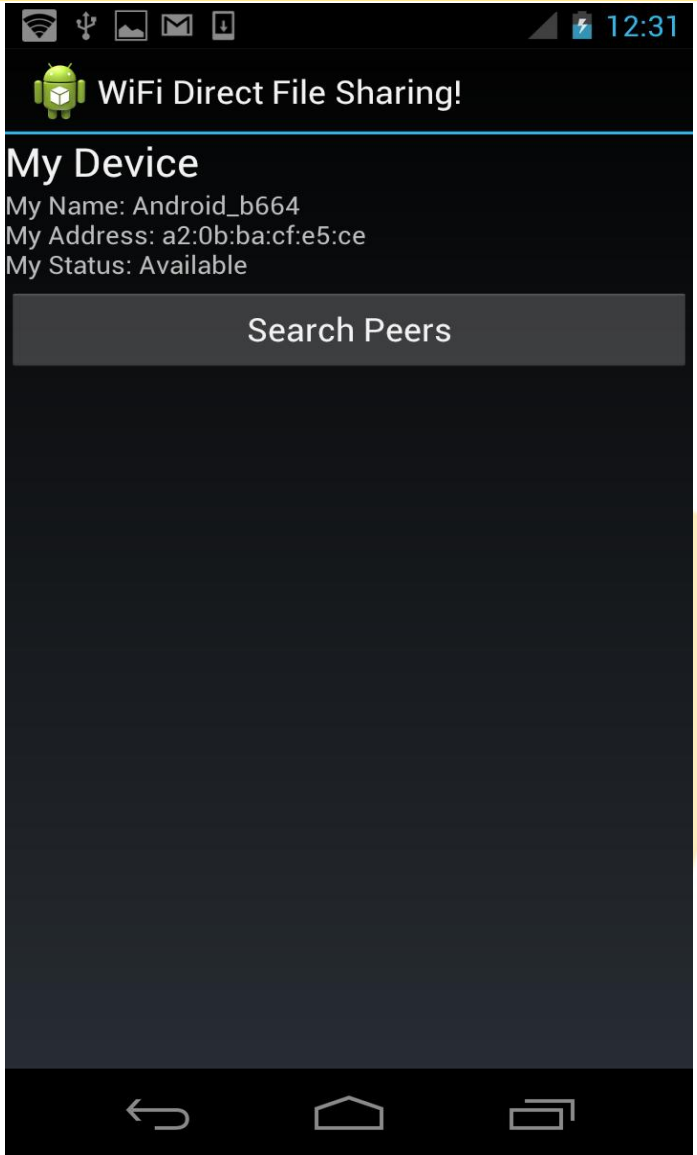

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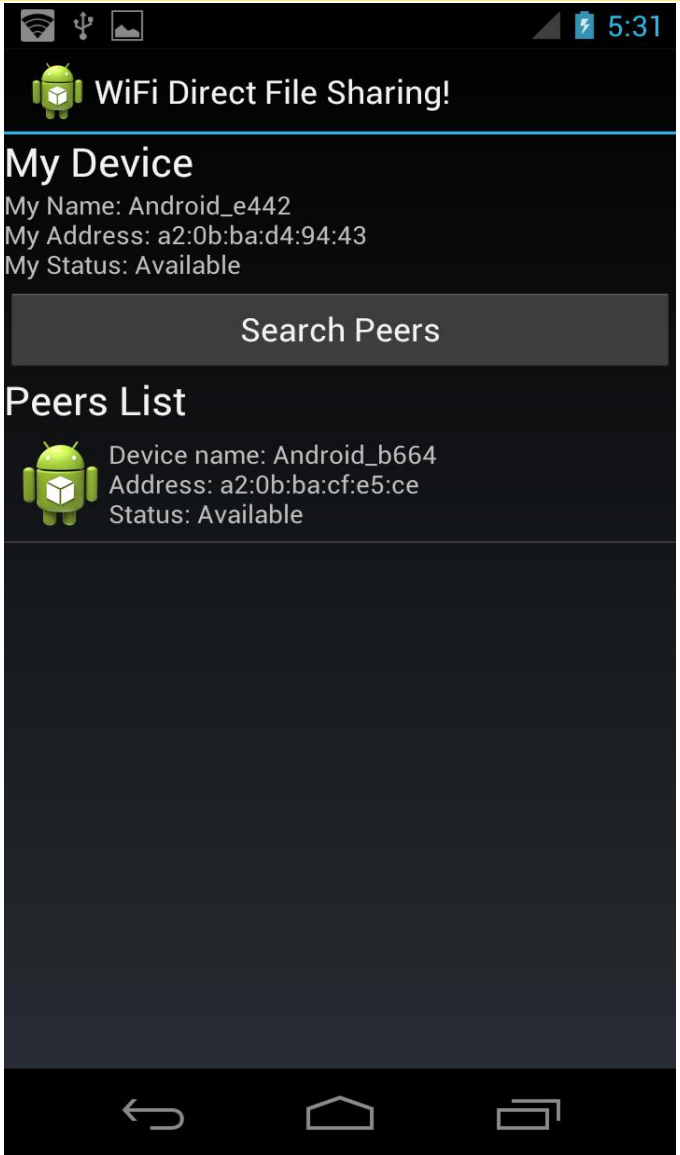

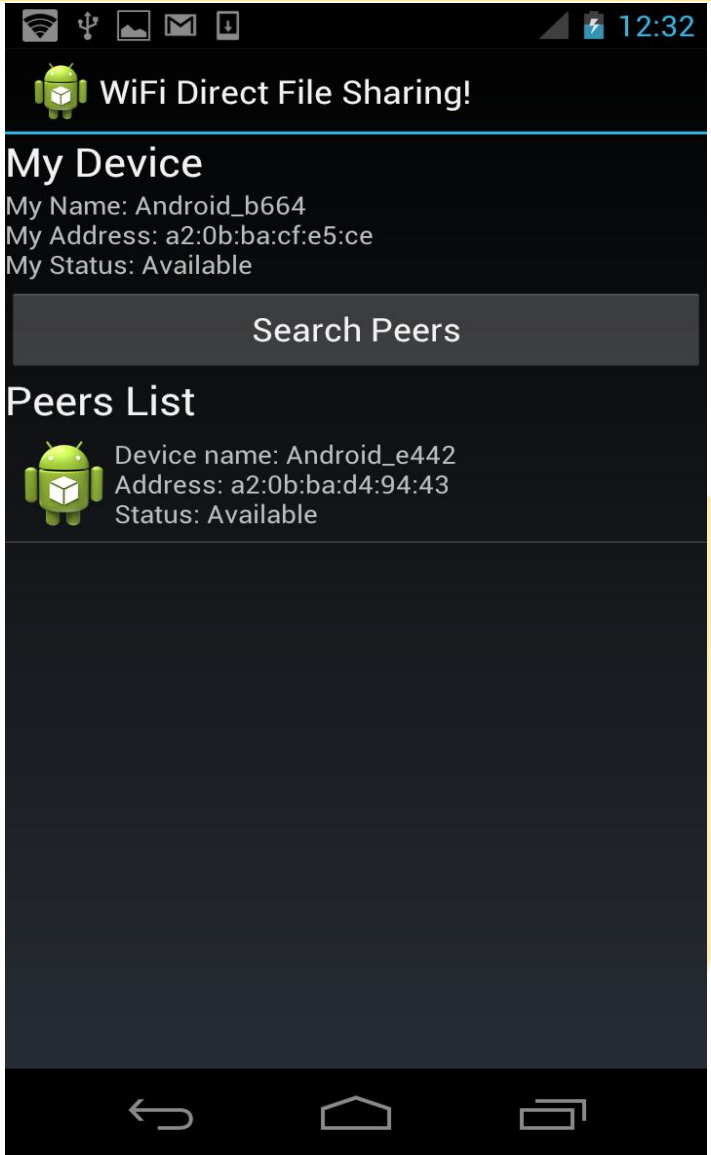

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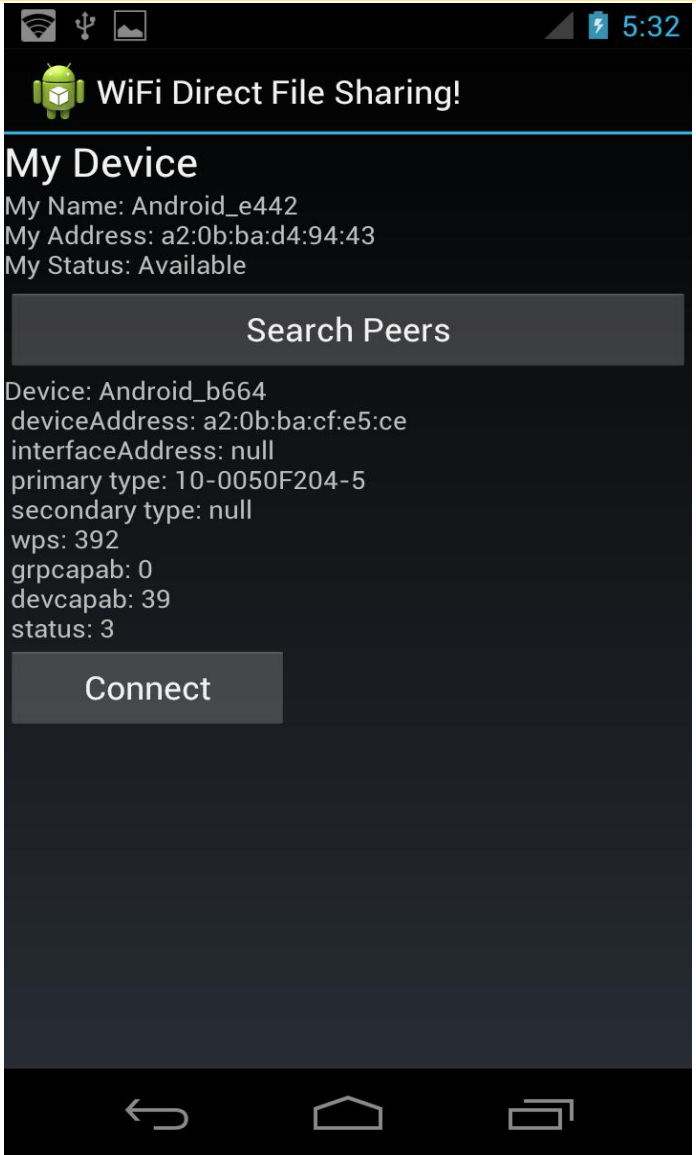

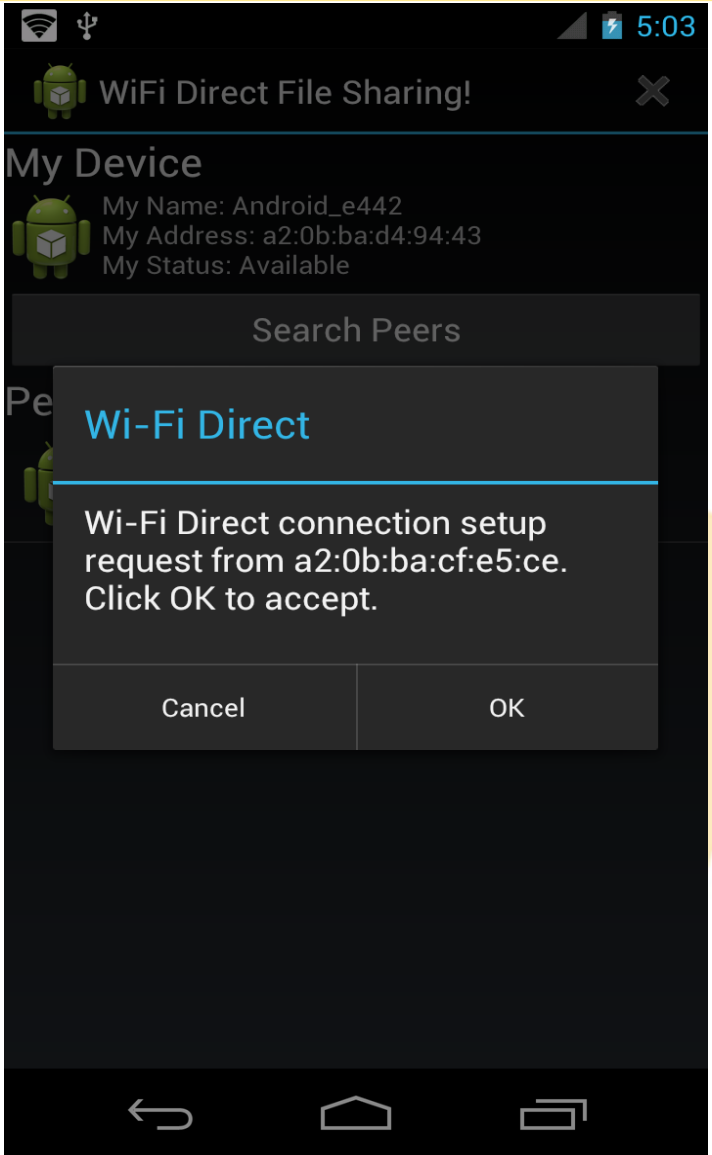

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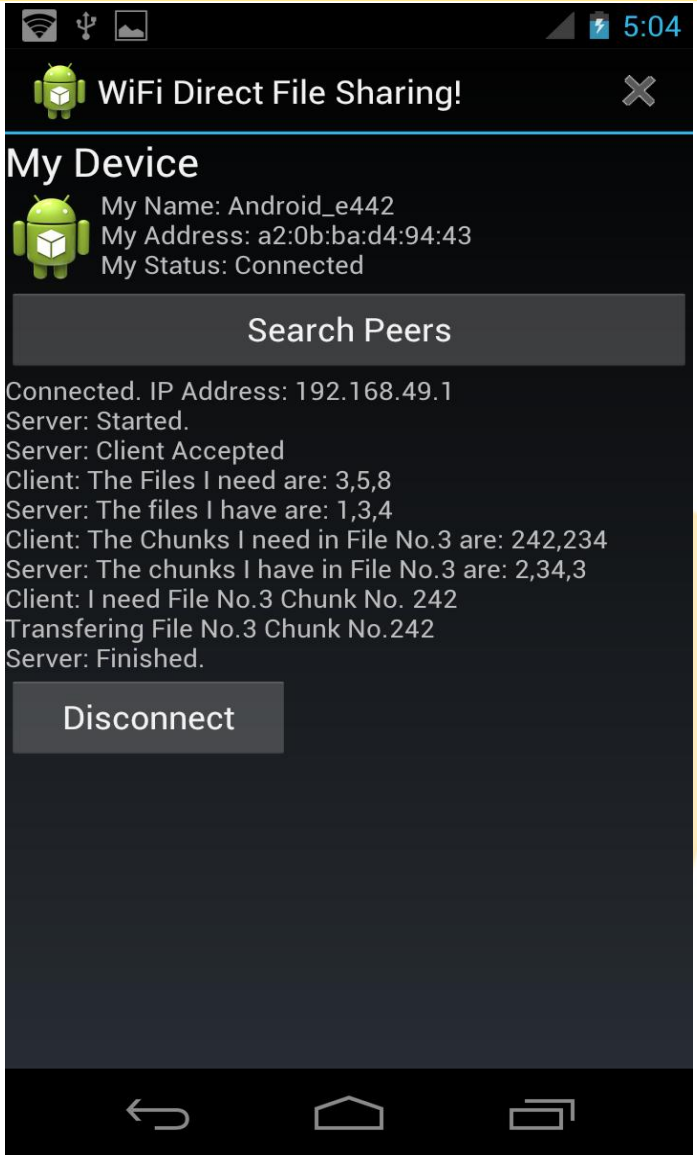

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Protocol

- Each Server has a file list
- Each file has a chunk list

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Protocol

1.	Files Need	Client to Server
2.	Files Available	Server to Client
3.	Chunk Need	Client to Server
4.	Chunk Available	Server to Client
5.	Chunk Want	Client to Server
6.	Data	Server to Client
7.	Control Info	

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Protocol

Type 1	File needed list		
Type 2	File Available list		
Type 3	File Number	Chunk needed list	
Type 4	File Number	Chunk Available list	
Type 5	File Number	Chunk Number	
Type 6	File Number	Chunk Number	Data
Type 7	Other Info, ex. Hello, Exit, etc..		

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Bloom Filter

- A space-efficient probabilistic data structure
- Used to test whether an element is a member of a set
- We use this algorithm to quickly decide if the device within the connect range have the data we need
- We will compare the performance of Bloom Filter and Hash table

Issues and Works left

- WiFi Direct Problems
  Connection/Disconnection failure

- File Transfer
  Divide file into chunks and put them back together

- File/Content discovery
  Optimize Hash table/Bloom Filter