Comparative Study of Airdrop Vs SHAREit WiFi Direct File Transfer Using Compatible Devices

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ABSTRACT

The study aims to measure the difference between the Airdrop for iOS and SHAREit for Android OS as WiFi File transfer application that can be used for smartphone and tablet devices in terms of transfer range, time transfer and speed or transfer rate in mbps or megabits per second. Test was done using smartphones/tablets using same Android operating system and iOS respectively. The researcher used the descriptive approach to distinguish the difference between the SHAREit file transfer and Airdrop File transfer to examine the transfer range, time transfer and transfer rate or speed in megabits per second. The researcher conducted the tests to students with different mobile devices for the two WiFi Direct data transfer application. The researcher used the SHAREit, AirDrop with the help of Fing - Network Tools to get the actual transfer rate and time transfer of the specific device while transferring the files. Based on the result, the average transfer time result of all Android devices is 2:25 minutes with a transfer rate of 5.88 mbps while the average transfer time of all iOS devices is 1:45 minutes with a transfer rate of 6.62 mbps which is faster than Android smartphones that vary on smartphones specification.

Keyword: WiFi, data transfer, smartphones, tablet, iOS, Android, application

INTRODUCTION

Transferring of files through wired and wireless is one of the key for the user to have a copy of the files needed for their own use. Nowadays, many file transfer applications for Android and iOS can be install for free and use to transfer files easily through WiFi instead of using Bluetooth transfer which 2 times slower than WiFi file transfer.

File transfer is the movement of one or more files from one location to another. A collection of electronically-stored files can be moved by physically moving the electronic storage medium, such as a computer diskette, hard disk, or compact disk from one place to another or by sending the files over a telecommunications medium. On the Internet, the File Transfer Protocol (FTP) is a common way to transfer a single file or a relatively small number of files from one computer to another. For larger file transfers (a single large file or a large collection of files), file compression and aggregation into a single archive is commonly used. (A zip file is a popular implementation.)

The study aims to measure the difference between the Airdrop for iOS and SHAREit for Android OS as WiFi File transfer application that can be used for smartphone and tablet devices in terms of transfer range, time transfer and speed or transfer rate in mbps or megabits per second. Test is done through the use of smartphone to smartphone using same Android operating system and iOS respectively.

RELATED LITERATURE/ STUDIES

Sending files to other by e-mail or other instance messengers is fine. But if someone is right next to you, sharing information in this way seems too complex and ineffective with so many steps as well as the low transfer speed. Now, you can quickly and easily share photos, videos, contacts and more by tapping the share button with AirDrop and SHAREit. Some of you may not really familiar with the two transfer tools. Please continue to read, this article will show you how to use them to improve sharing work. [1]

Methods and apparatuses for wireless communication devices to discover each other and share information are described. Wireless communication devices transmit and receive messages to identify compatible wireless communication devices. The messages include indicators for a communication service and one or more user identification values. A scanning wireless communication device identifies a message from a broadcasting wireless communication device that satisfies a set of matching filter criteria and extracts user identification values from the message. The scanning wireless communication device compares the extracted user identification values to a local set of user identification values. When an extracted user identification value from the message matches a user identification value in the local set of user identification values, the scanning wireless communication device establishes a connection to the broadcasting wireless communication device according to the communication service indicated in the message. [2]

Usability-oriented zero configuration (ZeroConf) designs, with automatic service discovery "plug-and-play" techniques, give rise to security implications like file transfer application (Share-It and Airdrop) . A study focusing on Apple - the major proponent of ZeroConf - brings to light a disturbing lack of security: major ZeroConf components are mostly unprotected, and popular apps and system services are vulnerable to man-in-the-middle attacks. [3]

SilFer has the all the core function of ShareIt, Xender and Zapya. First, these applications do not support file transfer over WiFi Direct. Many people are not familiar with WiFi Direct. Wi-Fi Direct is similar to Bluetooth but with speed and range of WiFi. For example you could be connected to a WiFi network or mobile data and connect to any other device over WiFi Direct without interfering with your current connection. SilFer lets you transfer files over WiFi Direct in very easy way. SilFer has the best tool to Select files to send. I'll give examples that these apps do not support, Imagine that you have downloaded 10 new songs or videos, and you want to send those files to your friend. SilFer lets you to sort files by date added to your phone. Also with SilFer you can select all newly released songs, or you can select all videos with the

longest duration or size. Also you can easily select the oldest or most recent photos. [4]

ShareIt claims to be the fastest way to transfer photos, videos, documents, contacts, and even mobile apps to other smartphones. In addition, what sets it apart from existing file transfer methods like Bluetooth or Apple's iCloud is that it has eliminated the need for network connection or Wi-Fi. Features of the app features are the following: Allows multi-format sharing across device and supports app-transfer (for Android only); Automatically find devices that are in range (No need for pairing); 60x faster transfer rate than Bluetooth; No need for active connections or Bluetooth. The app creates a dedicated local hotspot to host file sharing; Even the app itself can be shared to other smartphones. [5]

AirLink, a novel technique for sharing files between multiple devices. By waving a hand from one device towards another, users can directly transfer files between them. The system utilizes the devices' built-in speakers and microphones to enable easy file sharing between phones, tablets and laptops. We evaluate our system in an 11-participant study with 96.8% accuracy, showing the feasibility of using AirLink in a multiple-device environment. We also implemented a real-time system and demonstrate the capability of AirLink in various applications. [6]

After figuring out how to maximize the airdrop speed, the researcher tried to transfer work from rmp to mbps. As based on the experiment, the first test was transferring files for an hour. As resulted, transferring of files speeds up to 80 mbps. Disconnecting and connecting the network may resolve the issue of slow transfer rate of data. It is advised to reconnect again to achieve high transfer rate speed higher than 100 mbps. [7]

The researcher recruited about 100 iPhone users from metropolitan areas and collected statistics on their WiFi connectivity during about a two and half week period in February 2010. Our trace-driven simulation using the acquired traces indicates that WiFi already offloads about 65% of the total mobile data traffic and saves 55% of battery power without using any delayed transmission. If data transfers can be delayed with some deadline until users enter a WiFi zone, substantial gains can be achieved only when the deadline is fairly larger than tens of minutes. With 100 second delays, the achievable gain is less than only 2--3%. But with 1 hour or longer deadline, traffic and energy saving gains increase beyond 29% and 20%, respectively. [8]

Transfer learning addresses the problem of how to utilize plenty of labeled data in a source domain to solve related but different problems in a target domain, even when the training and testing problems have different distributions or features. In this paper, we consider transfer learning via dimensionality reduction. To solve this problem, we learn a low-dimensional latent feature space where the distributions between the source domain data and the target domain data are the same or close to each other. [9]

Systems and methods are discussed for providing multiple network interfaces to devices to communicate with each other using various policies, for using a proxy to maintain a connection with a legacy system such that a data connection to the legacy system may be continued when an end device connects with the proxy, and for maintaining application states when devices become disconnected such that their activities may be resumed when reconnected. [10]

Mobile broadband demand keeps growing at an overwhelming pace. Though emerging wireless technologies will provide more bandwidth, the increase in demand may easily consume the extra bandwidth. To alleviate this problem, we propose using the content available on individual devices as caches. Particularly, when a user reaches areas with dense clusters of mobile devices, "data spots", the operator can instruct the user to connect with other users sharing similar interests and serve the requests locally. This paper presents feasibility study as well as prototype implementation of this idea. [11]

Mobile devices equipped with multiple network interfaces can increase their throughput by making use of parallel transmissions over multiple paths and bandwidth aggregation, enabled by the stream control transport protocol (SCTP). However, the different bandwidth and delay of the multiple paths will determine data to be received out of order and in the absence of related mechanisms to correct this, serious application-level performance degradations will occur. This paper proposes a novel quality-aware adaptive concurrent multipath transfer solution (CMT-QA) that utilizes SCTP for FTP-like data transmission and real-time video delivery in wireless heterogeneous networks. CMT-QA monitors and analyses regularly each path's data handling capability and makes data delivery adaptation decisions to select the qualified paths for concurrent data transfer. CMT-QA includes a series of mechanisms to distribute data chunks over multiple paths intelligently and control the data traffic rate of each path independently. CMT-QA's goal is to mitigate the out-of-order data reception by reducing the reordering delay and unnecessary fast retransmissions. [12]

A millimeter wave link provides a means for easily transporting multiple high speed data channels, in excess of 100 Mb/s, a distance of up to 10 km, without requiring elaborate modulators and demodulators. This invention also provides fast setup, versatility, and is portable, which makes it desirable for field use. In addition, it can be set up for long term high speed data collection in a virtually permanent environment. [13]

The researcher investigate if WiFi access can be used to augment 3G capacity in mobile environments. We rst conduct a detailed study of 3G and WiFi access from moving vehicles, in three different cities. We find that the average 3G and WiFi availability across the cities is 87% and 11%, respectively. WiFi throughput is lower than 3G through-put, and WiFi loss rates are higher. We then design a system, called Wiffler, to augments mobile 3G capacity. It uses two key ideas leveraging delay tolerance and fast switching -- to overcome the poor availability and performance of WiFi. [14]

Cellular networks are currently facing the challenges of mobile data explosion. High-end mobile phones and laptops double their mobile data traffic every year and this trend is expected to continue given the rapid development of mobile

social applications. It is imperative that novel architectures be developed to handle such voluminous mobile data. [15]

METHODOLOGY

The developer used the experimental approach to distinguish the difference between the SHAREit file transfer and Airdrop File transfer to examine the transfer range, time transfer and transfer rate or speed in mbps or megabits per second. Planning, data gathering and testing devices are done simultaneously in accordance to the testing and evaluation of the study. The researcher conducted tests to selected students in the University of Perpetual Help System using different mobile devices to evaluate the comparison of the two WiFi Direct data transfer application. There are 5 sets of tests done (5 sets of transferring data iPhone to iPhone and 5 sets Android to Android OS devices). The researcher used the SHAREit, AirDrop with the help of Fing - Network Tools and Scanner application for Android and iOS to find out the details of transfer rate and time transfer of the specific device while transferring the files using AirDrop and SHAREit.

smartphone/ tablet brands	**Operating System used**	**Application used for WiFi Direct data transfer**	**Type of Device**
Samsung Galaxy S7	Android 7.0	SHAREit	smartphone
Samsung J7	Android 6.0	SHAREit	smartphone
HTC A9	Android 6.0	SHAREit	smartphone
Xperia Z Ultra GPE.	Android 5.0	SHAREit	smartphone
Samsung Galaxy Tab 2 7.0	Android 6.0	SHAREit	tablet
iphone 7	iOS 10.3	AirDrop	smartphone
iphone 6s	iOS 10.3	AirDrop	smartphone
iphone 6s plus	iOS 10.3	AirDrop	smartphone
iphone 5	iOS 9.0	AirDrop	smartphone
iPad Pro 9.7in	iOS 9.3	AirDrop	tablet

Table 1.0: Specification of the compatible devices used for testing

The table represents the mobile and tablet devices used for testing the transfer range, time transfer and transfer rate or speed in mbps (megabits per second) using SHAREit for android devices and AirDrop application for iOS devices. Different models of smartphone and tablets are used to determine the average speed of both WiFi direct file transfer applications.

RESULT AND DISCUSSION

smartphone/ tablet brands	**Data transfer range**	**Application used**	**Transfer Time duration**	**Speed/ Transfer rate**
Samsung Galaxy S7	2.5 meters	SHAREit	2:03 mins.	6.2 mbps
Samsung J7	2 meters	SHAREit	2:32 mins.	5.8 mbps
HTC A9	3 meters	SHAREit	2:42 mins.	5.9 mbps
Xperia Z Ultra GPE.	1.8 meters	SHAREit	2:10 mins.	6.1 mbps
Samsung Galaxy Tab 2 7.0	2 meters	SHAREit	2:36 mins.	5.4 mbps
iphone 7	2.2 meters	AirDrop	1:32 mins.	7.0 mbps
iphone 6s	2 meters	AirDrop	1:36 mins.	6.8 mbps
iphone 6s plus	2 meters	AirDrop	1:36 mins.	6.8 mbps
iphone 5	1.7 meters	AirDrop	2:02 mins.	6.2 mbps
iPad Pro 9.7in	2.1 meters	AirDrop	2:01 mins.	6.3 mbps

Table 2.0
Result of the WiFi data transfer test using 10 different brands of smartphone/ tablet

The table 2.0 represents the time transfer, speed/ transfer rate results and data transfer range used during the experiment of the study. The data file used is a video file with 744 mb (megabytes) of capacity. There are 5 smartphone/ tablet devices used during the tests. Based on the result, Airdrop in iPhone 7 has the highest data transfer rate of 7.0 mbps with 1:32 minutes of data transfer completion time (fastest time transfer). Samsung Galaxy Tab 2 7.0 has the lowest transfer rate of 5.4 mbps with 2:36 minutes completion time.

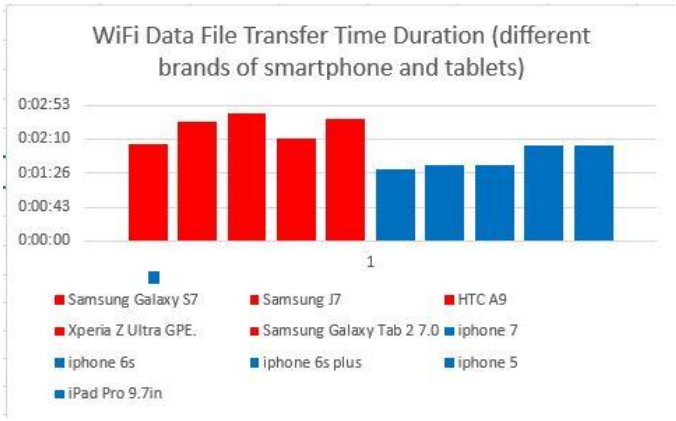

Figure 1.0: WiFi Data File Transfer Time Duration

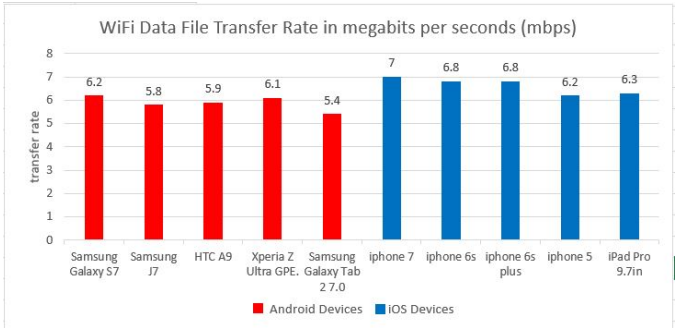

Figure 2.0: WiFi Data File Transfer Rate in megabits per second (mbps)

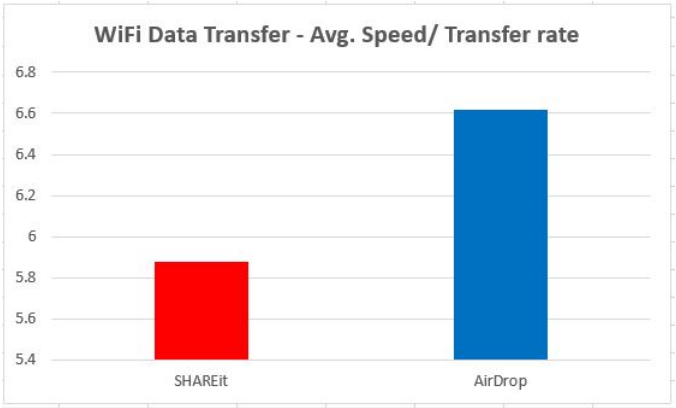

Figure 3.0: WiFi Data Transfer - Avg. Speed/ Transfer rate

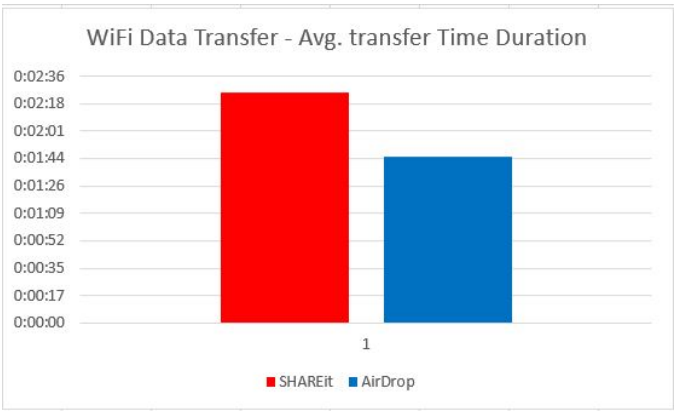

Figure 4.0: WiFi Data Transfer - Avg. transfer time duration

Type	Application used	Avg. Transfer Time duration	Avg. Speed/ Transfer rate
Devices w/ Android OS	SHAREit	2:25 minutes	5.88 mbps
Devices with iOS	AirDrop	1:45 minutes	6.62 mbps

Table 3.0
Summary of Devices with Android OS (SHAREit) and iOS (AirDrop)

The table 3.0 represents the average of 5 smartphone/tablet devices that uses SHAREit for Android OS and 5 smartphone/ tablet devices with AirDrop for iOS. The average transfer time result of all Android devices is 2:25 minutes with a transfer rate of 5.88 mbps while the average transfer time of all iOS devices is 1:45 minutes with a transfer rate of 6.62 mbps. Based on the average result, AirDrop is faster 1 mbps than SHAREit application. The time consumed for the 744 mb of video file transferred using Airdrop is 45 seconds shorter than the SHAREit application.

CONCLUSION

The AirDrop application is faster than SHAREit when it comes to transferring data files through Direct WiFi. Most of the Apple smartphone and tablet brands can transfer files much faster than Android devices that uses SHAREit application. According to the research of Seth (2015), Airdrop can transfer files up to 80 mbps and it depends on the device that will be used for sending. Wired transferring of files is faster than wireless data transfer but since nowadays, all devices are portable and can send files wirelessly, WiFi data transfer is much preferred by most of the smartphone and tablet users than using wired transferring of files in which the researcher targeted to focus in this study. High specification of smartphones is one of the factor as well for faster data transfer since new smartphones and tablets uses new type of wireless connection such as wireless N, G, and AC that can transfer files better than using wireless Bluetooth sending of files.

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