Multimedia streaming and Data transferring on a Local Network

Mathiyalagan R[1], Shruthishree S H[2], V K Sakthi Swarup[3], Jonnavaram Maheswar Reddy[4], Gangireddy Hari Sainath Reddy[5], Para Ashok[6]

[1]Assistant Professor, Department of Information Science and Engineering, FET-Jain (Deemed to be University)
[2]Assistant Professor, Department of Information Science and Engineering, FET-Jain (Deemed to be University)

[3]Student, Department of Information Science and Engineering, FET-Jain (Deemed to be University), Jain University
[4]Student, Department of Information Science and Engineering, FET-Jain (Deemed to be University), Jain University
[5]Student, Department of Information Science and Engineering, FET-Jain (Deemed to be University), Jain University
[6]Student, Department of Information Science and Engineering, FET-Jain (Deemed to be University), Jain University

ABSTRACT-As we know sharing and streaming of data has been a major concern these days and internet is required to share the data between parties. Streaming and sharing larger data over the internet could be a costly process. Instead, through our application we can minimize this issue to some extent by transferring the data/files between two parties which are connected locally (through the application) and without help of internet. The goal of our project is to represent the optimized Mobile Web Services (MobWS) on the android platform providing the web services. Now a day the use of smart phone devices having high hardware configuration are rapidly increasing enabling the sharing of video, images, live event. People can share the multimedia data by streaming mobile to mobile within the same network. Our project proposes the applications which enable the users to share and stream multimedia data through the local network.

I. INTRODUCTION

Streaming media is multimedia that is constantly received by and presented to an end-user while being delivered by a provider. The Stream refers to the process of delivering or obtaining media in this manner. Streaming refers to the delivery method of the medium, rather than the medium itself. Distinguishing delivery method from the media distributed applies specifically to telecommunications networks, as most of the delivery systems are either inherently streaming (e.g. radio, television, streaming apps) or inherently non-streaming (e.g. books, video cassettes, audio CDs).

File sharing is the practice of distributing or providing access to digital media, such as computer programs, multimedia (audio, images and video), documents or electronic books. File sharing may be achieved in a number of ways. Common methods of storage, transmission and dispersion include manual sharing utilizing removable media, centralized servers on computer networks, World Wide Web-based hyperlinked documents, and the use of distributed peer-to peer networking.

II. LITERATURE SURVEY

Sl. No	Title	Authors	Year of publication	Type of data	Methodology	Limitations
1	Robust Super-Peer-Based P2P File-Sharing Systems	Jenn-Wei Lin and Ming-Feng Yang	2010	Research Paper	An efficient approach for improving file availability in super-peer-based peer-to-peer (P2P) file-sharing systems. In the super-peer-based P2P file-sharing system, peers are organized into multiple groups	Can be used sadvanced protocols for effective transmission
2	Enhanced UPnP QoS Architecture for Network-adaptive Streaming Service in Home Networks	HyunYong Lee, SungTae Moon and JongWon Kim	2007	Research Paper	an enhanced UPnP QoS architecture is proposed to support network-adaptive media streaming in home networks	Interruption in network provides loss of data
3	Design of a Media Stream Relay Engine on the Android OS	Huigwang Je, Dongwoo Kwon and Hongtaek Ju	2015	Research Paper	Proposed as a solution to the problem of decreased network performance for large-scale multimedia delivery in a single wireless LAN environment.	It requires the administrator access which causes a vulnerability in the security
4	Mobile Network Configuration for Large-scale Multimedia Delivery on a Single WLAN	Huigwang Je, Dongwoo Kwon, Hyeonwoo Kim, and Hongtaek Ju	20114	Research Paper	The wireless network was configured in a structure for efficient multimedia streaming service in a single wireless LAN environment, and subsequently, the network performance was measured.	If the number of connected devices increases then data transfer rate decreases.
5	P2P Networking: An Information-Sharing Alternative	Manoj Parameswaran, Anjana Susarla Andrew, B. Whinston	2001	Research Paper	Uses client-server technologies that incorporate networking as an	If all the clients simultaneously request data from the server, it may get overloaded.

					ancillary, value-added feature. Peer-to-peer computing that offers a radically new way of isolating and focusing on the networking aspect as the business model's mainstay.	This may lead to congestion in the network
6	In-Kernel Relay for Scalable One-to-Many Streaming	Ying-Dar Lin, Chia-Yu Ku, Yuan-Cheng Lai, Chia-Fon Hung	2013	Research Paper	The in-kernel One-to-Many Streaming Splicing (OMSS) relay method can help improve the relay data paths of critical nodes to reduce computing power for UDP and TCP streams and enhance the subscriber capacity.	Uses OMSS method in which manipulation of data can be done easily
7	A Transport Protocol for Supporting Multimedia Streaming in Mobile Ad Hoc Networks	Zhenghua Fu, Xiaoqiao Meng, and Songwu Lu	2013	Research Paper	The design and implementation of a transmission control protocol (TCP)-friendly transport protocol for ad hoc networks. Our key design novelty is to perform multimetric joint identification for packet and connection behaviors based on end-to-end measurements	TCP protocol provides reliable data delivery support but high latency problems arises
8	Collaborative Streaming-based Media Content Sharing in WiFi-enabled Home Networks	Hayoung Yoon, JongWon Kim	2010	Research Paper	Proposed DOMS (Decentralized collaborative Media content Streaming) that realizes flexible media content sharing by exploiting collaborative segment-based streaming amongst WiFi devices via the	DOMS requires a stable connection and more processing

						temporarily-established direct links
9	A Case for End System Multicast	Yang-hua Chu, Sanjay G. Rao, Srinivasan Seshan and Hui Zhang	2002		Research Paper	Explored an alternative architecture that we term End System Multicast, where end systems implement all multicast related functionality including membership management and packet replication. This shifting of multicast support from routers to end systems has the potential to address most problems associated with IP Multicast.	IP Multicast is the first significant feature that has been added to the IP layer since its original design and most routers today implement IP Multicast. Despite this, IP Multicast has several drawbacks that have so far prevented the service from being widely deployed.
10	A Distributed Search Service for Peer-to-Peer File Sharing in Mobile Applications	Christoph Lindemann and Oliver P. Waldhorst	2002		Research Paper	Enabling resource-effective searching for files distributed across mobile devices based on simple queries	It searches all the data in the device which makes the privacy effected
11	A Special-Purpose Peer-to-Peer File Sharing System for Mobile Ad Hoc Networks	Alexander Klemm, Christoph Lindemann, and Oliver P. Wald horst	2003		Research Paper	a special purpose system for searching and file transfer tailored to both the characteristics of MANET and the requirements of peer-to-peer file sharing	The researchers proposed the use of this structure for audio; it is not suitable for high-capacity media such as streaming video
12	On-demand Video Streaming in Mobile Opportunistic Networks	Hayoung Yoon, Jong Won Kim, Feiselia Tan, and Robert Hsieh	2008		Research Paper	Proposed MOVi (Mobile Opportunistic Video-on-demand), a mobile peer-to-peer video-on-demand application based on ubiquitous WIFI enabled devices such as	It exploits sparsely distributed access points, user mobility , fluctuating to provide a high bitrate on-demand video streaming service.

					smartphones and Ultra Mobile PCs	
13	An Efficient Implementation of File Sharing∗ Systems on the Basis of WiMAX and Wi-Fi	Jingyuan Li, Liusheng Huang, Weijia Jia, Mingjun Xiao and Peng Du	2006	Research Paper	Proposed an efficient algorithm for P2P file sharing systems based on WiMAX mesh mode and Wi-Fi technologies	WiMAX is very power intensive technology and requires strong electrical support
14	A Data-driven Overlay Network for Peer-to-Peer Live Media Streaming	Xinyan Zhang, Jiangchuan Liut, Bo Lis, and Tak-Shng Peter Yum	2005	Research Paper	a Data-driven Overlay Network for live media streaming. The core operations in DOTNet are very simple: every node periodically exchanges data availability information with a set of partners, and retrieves unavailable data from one or more partners, or supplies available data to partners.	Can be used low-latency protocols for data transfer instead of high latency protocols
15	An Efficient Peer-to-Peer File Sharing Exploiting Hierarchy and Asymmetry	Gisik Kwon Kyung D. Ryu	2015	Research Paper	Peer-to-peer Asymmetric file Sharing System (PASS), a novel approach to P2P file sharing, which accounts for the different capabilities and network locations of the participating machines.	Some peer-to-peer (P2P) file sharing operation models over asymmetric networks have several shortcomings that may affect system and network performance
16	File Sharing System in Wireless Home Environment	Yongjia Liu, Yong Sun, Qing Liao, Xiangming Wen	2010	Research Paper	a system aiming to enable family member with mobile phone to share files with other family members with a PC at home no matter whether the mobile phone user is outside the home environment or inside the home environment	Uses a protocol similar to DLNA, which trades- of low latency with quality

17	A Social-Network-Aided Efficient Peer-to-Peer Live Streaming System	Haiying Shen, Yuhua Lin, and Jin Li	2014	Research Paper	Proposed a Social-network-Aided efficient live streaming system (SAVE). SAVE regards users' channel switching or multichannel watching as interactions between channels	Cannot be uses where internet services are poor
18	Video and Audio Streaming Issues in Multimedia Application	Puja Smiti, Swapnita Srivastava	2018	Research Paper	Different streaming technique has been analyzed to procure the applicability and optimization of audio/video has been done through FFmpeg software.	FFmpeg does not ensure bitrate consistency across a set of files
19	A Survey on Various File Sharing Methods in P2P Networks	Vimal S, Srivatsa S K	2017	Research Paper	discovers the different file sharing methods and important concerns that communicate to peers systems and discussing about the various study actions of Peer-to-Peer file systems	DLNA protocol is used, which trades- of low latency with quality
20	A Study of Live Video Streaming System for Mobile Devices	Jiushuang Wang, Weizhang Xu, Jian Wang	2016	Research Paper	describes a mobile video live streaming system with Wi-Fi/4G mobile phone to capture video and disseminate. Availability of mobile video live streaming system is given and then a mobile video live streaming system based on streaming media technology is designed and realized	Requires high speed internet services
21	Cool-SHARE: Offload Smartphone Data By Sharing	Nikki Broch Ashton and Qi Zhang	2014	Research Paper	Cool-SHARE is proposed and implemented on Android. It is an app for seamlessly	It works for short range in which interrupts cannot be tolerated

					sharing apps over short-range links with limited cellular control and can be extended for multimedia data sharing	
22	Streaming Video over the Internet: Approaches and Directions	Dapeng Wu, Yiwei Thomas Hou, Wenwu Zhu, Ya-Qi, ZhangJon M. Peha	2010	Research Paper	cover six key areas of streaming video. Specifically, we cover video compression, application-layer QoS control, continuous media distribution services, streaming servers, media synchronization mechanisms, and protocols for streaming media. For each area, we address the particular issues and review major approaches and mechanisms.	Interruption in the internet services can stop the streaming.

III. CURRENT LIMITATIONS

Most of the applications available today are delivering the content through a medium called internet which may not be available for every device. Most of the devices may not be having enough storage to store the multimedia in their devices. For Streaming, most of the users uses screen mirroring which makes both the devices involved.

IV. OBJECTIVES

- To implement an android application which helps in steaming and sharing of data between the devices connected through a local network.

- To implement seamless data streaming and sharing between the android devices connected through the local network.

- To implement the application in devices having Android versions 8 and above.

- To implement the connection between the host and the client using the feature WIFI direct.

- To implement HTTP Server that is established in the host device for steaming the multimedia files.

V. METHODOLOGIES

streaming

- The streaming part of the application uses the low-latency streaming protocol over traditional streaming protocols which are emphasizes on quality of the content

- HTTP based streaming protocol called low-latency HLS is used in streaming process of the application

- The mini-HTTP server created in the host device and low-latency HLS protocol facilitates the delivery of the data between the devices

file transferring

- The sharing feature of the application uses peer-to-peer(p2p) file transfer protocol

  i.e., FTP protocol, and transfers the data between devices

- Application uses the WIFI-direct feature to facilitate data transfer between the devices

VI. PROPOSED BLOCK DIAGRAM

We highlight a simple logical diagram, shown below, as a means to objectively define the workflow of the system through an example.
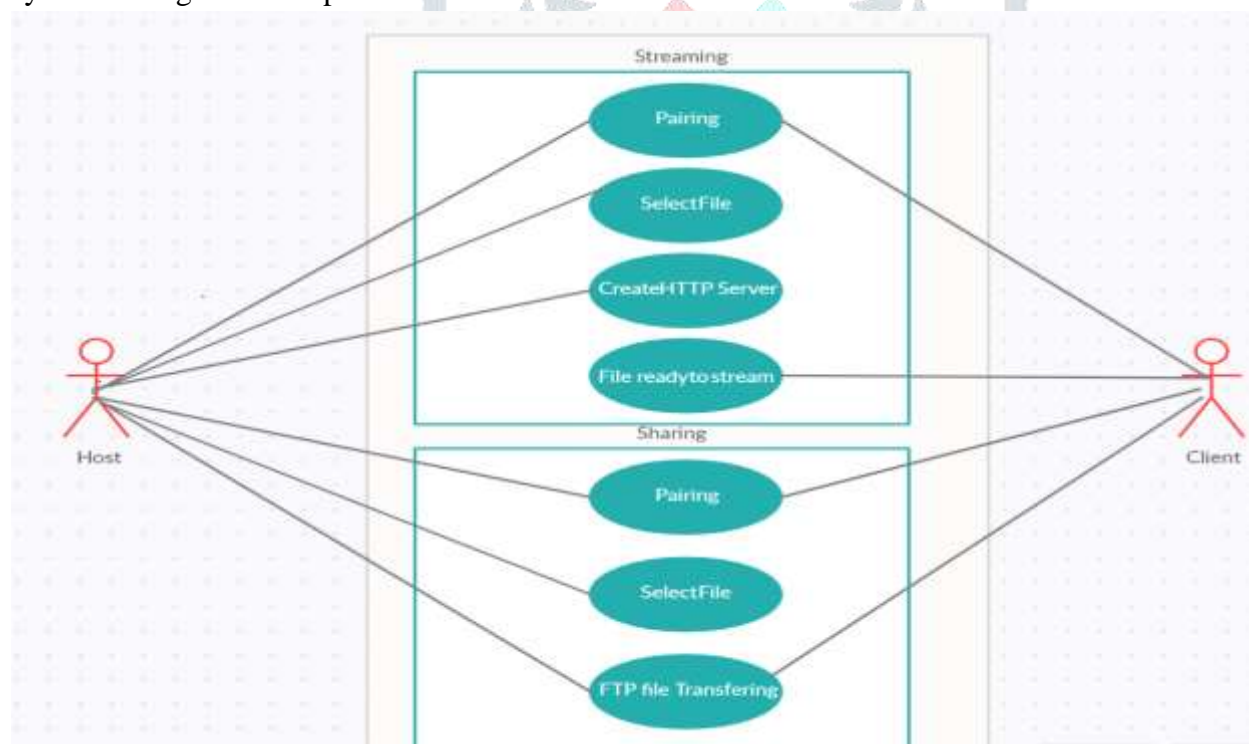

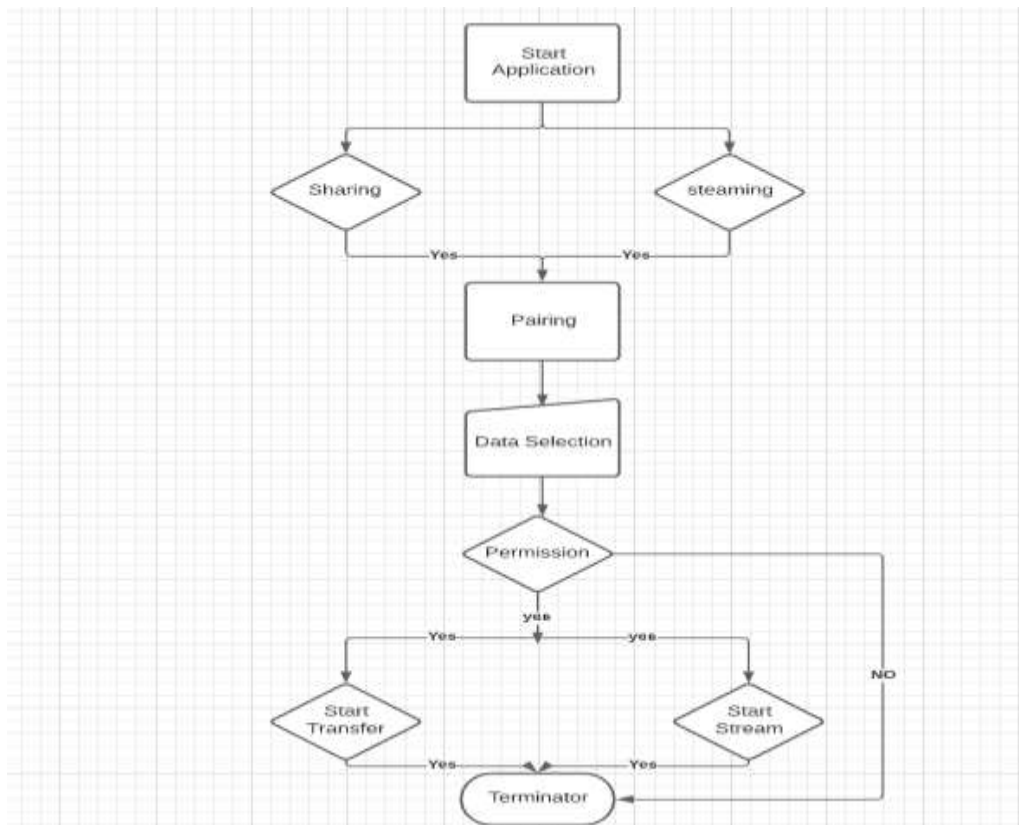**Fig.1 Use case diagram for streaming and sharing**

Fig.2 Dataflow for streaming and sharing
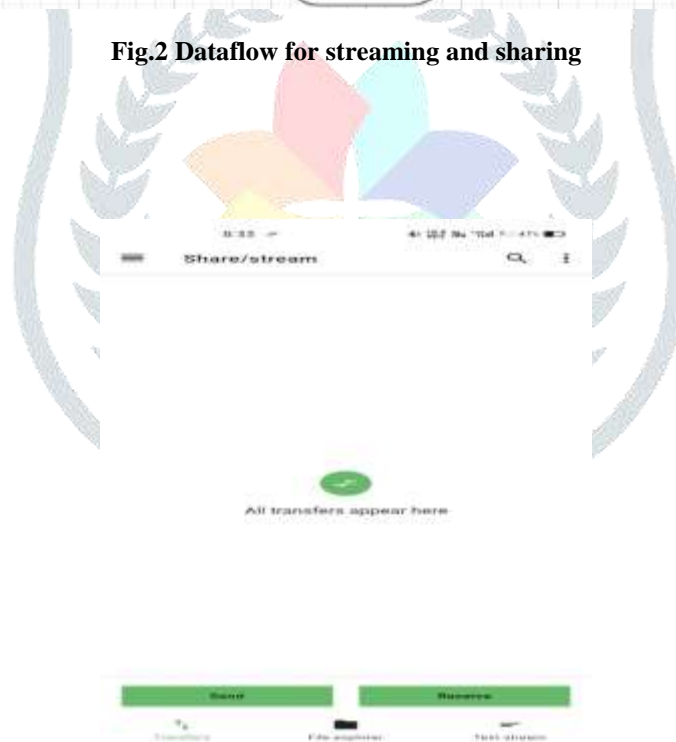
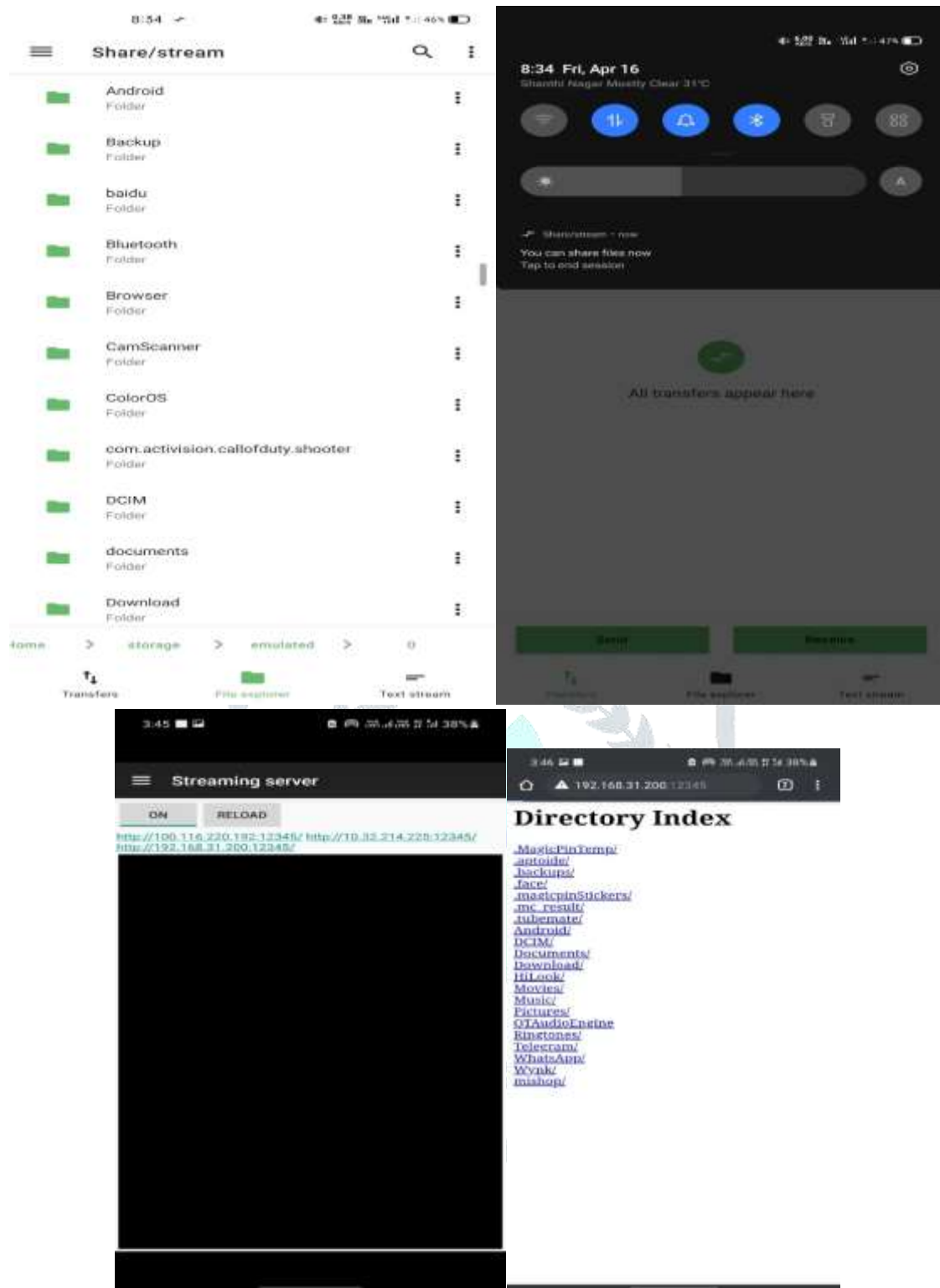## VII. Implementation

Fig.3 Home Page

Fig 4. Implementation screenshots

VIII. CONCLUSION

We have studied different methodologies for the multimedia streaming and sharing which helps the users to share data over and over again. Despite of having many applications to do so it is very costly and time taking.

Our application will let the user to transfer the multimedia data over a local connection such as WIFI-direct seamlessly. The application does not require an internet connection.

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