



Research Article

Proposal for a Peer-to-Peer Architecture Model for Sharing Files without Files for Smartphones

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Keywords

Mobile ad hoc networks, wireless communication, Wi-Fi, multimedia communication.

Abstract

Peer-to-Peer communications (P2P) and its applications have become a conventional architecture in the filar network environment. However, they have not been effectively adapted to the mobile environment as a whole composed of various devices such as smart mobile devices, portable desktops and devices with poor software. In P2P systems, each need to act at the same time as the client and as the server and share with the others their own data. Our contribution is to design, implement and test a BitTorrent-type application adapted to ad-hoc networks without the use of Android mobile phones. The use of P2P protocols and applications in the mobile environment platform as a whole provides a promising solution that allows a large number of users to share their own content (data, audio, video, etc.) and communicate between them without costly use. and a centralized network infrastructure. By using a central server, the pairs can obtain the information on the content of the other pairs. Even in the absence of the Internet, mobile devices offer users the ability to connect in an ad hoc manner via a short-range wireless protocol such as Wi-Fi.

1. Introduction

In recent years, Peer-to-Peer (P2P) communications and their applications have become a conventional architecture in the rail network. However, they have not been effectively adapted to the mobile environment as a whole composed of various devices such as smart mobile devices, portable desktops and integrated software devices. In P2P systems, each need to act at the same time as client and server and share with its own data [1] [2].

Our contribution is to design, implement and test a Bit Torrent type application adapted to ad-hoc networks without the use of Android mobile phones [3].

They are highly performing multimedia devices, with integrated video cameras, and many users share the multimedia content they capture. For example, in the context of a home entertainment system, the user of an intelligent phone may wish to download the content generated by the user as the videos newly taken on another smart phone or

tablet, on a Multimedia reader connected to a TV or can be a picture frame without a file. Several users may be interested in the automatic reception of the multimedia from a particular source [4] [5]. The problem is that during the use of a 3G-free data connection and the download on a traditional Web server, these transfers can quickly become prohibitive. Users are generally subject to a lump sum of data with limited usage limits and overtime fees. The content download option via a USB file connection is slow and delays the user experience [1] [6].

A promising solution is to use peer-to-peer sharing between smart phones, in order to consume free peer-to-peer liaison compared to data networks through cost packets to file sharing ends. For example, a camera device of a photo camera can publish a new content and advertise through a service where the other devices of the house will subscribe. Thanks to peer-to-peer connectivity, participating devices could then share multimedia resources in both senses without

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using any intermediate threat, and would not be subject to billing [2] [7] [8].

2. Problem Announcement

Develop a peer-to-peer content sharing system on the Wi-Fi network for smart phones. The peer-to-peer model faces unique challenges in the mobile context - limitations of processing power, the memory of the embedded device, the band of passers-by without data, the energy of the battery available. Use peer-to-peer sharing between smart phones to consume free peer-to-peer liaison.

3. Details of Technology

3.1. Bluetooth Technology

Bluetooth is a technology that allows you to communicate and share data over short distances without distance. It is a non-proprietary technology standard for the exchange of data from fixed and mobile devices, creating a personal network (PAN) with high levels of security. This is a standard replacement communication communication protocol designed for low power consumption, with a short circuit based on low-cost emitter-receiver microscopes in each device. Any person who joins the Bluetooth special interest group and adheres to well-defined standards can create Bluetooth devices. While Bluetooth technology is responding to devices that need to transfer a small amount of data, the limits of the technology have allowed it to become de facto technology. Devices such as mobile phones, portable computers, PCs, printers, digital photo devices and video game consoles can connect us to others and exchange information. Bluetooth has been used for relatively short distances, like a few meters.

Here are the limitations of Bluetooth:

- A. The data transfer rate between Bluetooth devices is around 3 megabits per second. It's just lower on the Wi-Fi.
- B. Communication time is limited.

3.1. Wi-Fi Technology

Wi-Fi technology is an alternative to filing technology, which is currently used to connect devices in wireless mode. Wi-Fi (Wireless Fidelity) is a generic term that refers to IEEE 802.11 communication standards for wireless local area networks. It uses radio technologies to transmit and receive high speed data.

It is a popular technology that allows you to exchange electronic data without data (using radio sources) on an IT network, including high-speed Internet connections. Wi-Fi offers its users the freedom to connect to the Internet for as long as the Wi-Fi zone does not import from the branch branches. The Wi-Fi location where users can connect to the wireless network is called a Wi-Fi access point. Thanks to Wi-Fi access, users can even improve their home business, as access to Wi-Fi information is simple. Access to a hotspot without a hotspot is in some cases free of charge.

Here are the benefits of Wi-Fi over Bluetooth:

A. The most important advantage of Wi-Fi compared to Bluetooth is that Wi-Fi works at a much faster speed of 11 Mbps, while Bluetooth does not work much faster than around 720 kbps. It renders Bluetooth too slow for video transfers or the displacement of large quantities of large photo images from a digital photo camera.

B. Wi-Fi is also designed to relay network networks, rather than a computer to another.

3.3. Peer to Peer Technology

A peer to peer computer network (abbreviated P2P) is a network in which each network administrator can act as a client or server for the other network administrators, allowing shared access to various resources such as files, peripherals and of captors without having a need for a central server. The P2P network can be configured at home, in a company or on the Internet. Each network type requires that all network administrators use the same program or program to connect us to others and access the files and other resources found on the other computer.

P2P networks can be used to share content such as audio, video, data, or digital format.

P2P is a distributed application architecture that divides tasks or workloads between pairs. The pairs are also privileged participants in the candidacy. Each network controller is called nœud. The owner of each computer on a P2P network has a share of its resources - such as the power of processing, storage on disk or the band passing through the network - to be directly available to other network participants, without need central coordination by servers or stable hotels. With this model, the pairs are both suppliers and consumer consumers, as opposed to the traditional client-server model where only the server supplies (sends) and the customer consumes (receives).

4. System Architecture

The system comprises the following seven modules, as illustrated in Figure 1.

4.1. Client Side

A. Network Discovery Manager: it is responsible for managing the connectivity of the system, at the same time detecting Wi-Fi access points and determining at what time the pairs are disconnected.

B. Communication Manager: It handles the request of the server to search the content and retrieve the list of pairs of content the required content.

C. File reader / registrar: he is responsible for the reading of the files and the writing of the files on the system.

D. Private file folder: it allows the user to render the content available to other pairs.

4.2. From the Side Server

A. Transaction Tracker: It keeps track of the transactions executed by the users.

- B. Request Response Handler: it handles the user's request and provides a response accordingly.
- C. GUI: It allows an interaction with the administrator.

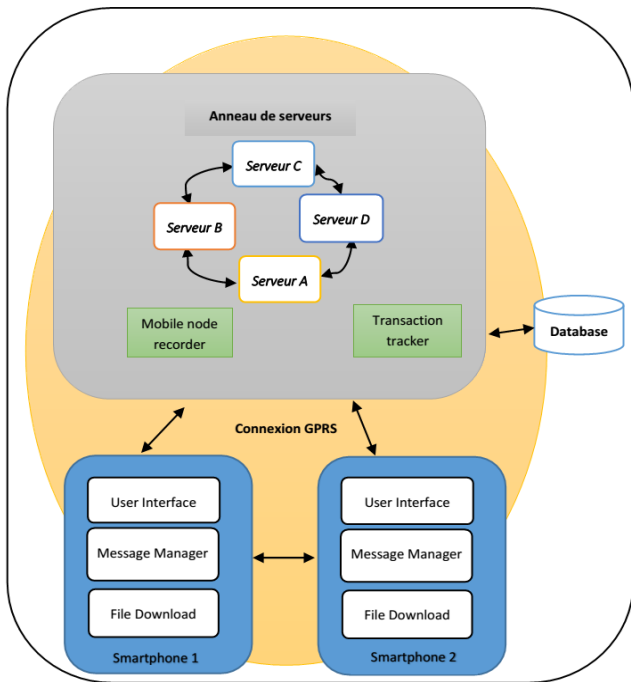


Figure 1. System architecture

5. Implementation

The use of P2P protocols and applications in the mobile environment platform as a whole provides a promising solution that allows a large number of users to share their own content (data, audio, video, etc.) and communicate between them without using centralized network infrastructure. By using a central server, the pairs can obtain the information on the content of the other pairs. When the homologous receptor requests the required content, the request is sent to the central server. Then, the central server searches for the pairs where the requested content is available and gives the metadata of these pairs to the recipient pair. Once the homologous receptor has established the connection with the homologous emitter, the sharing of equal content takes place.

Mobile devices offer users the potential to connect ad hoc via a short-range protocol like Wi-Fi. The implementation of the system consists of five modules:

- a) Partageable file
- b) Request Response Handler
- c) Research
- d) Download
- e) Chat application

Shareable folder:

The user will be able to place files in the shareable folder that they want to share on the network with other users on the same network.

Request Response Handler:

Request Response Handler will take care of the handshake activity that is initially involved in establishing the connection.

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The search module will be responsible for knowing if one of the network peers contains the required file. The file will be searched for in the network based on its name.

Download

The server will send the search results to the requesting peer, which contains the file name and IP address of the peer having the requested file. In addition, the download module will be involved in the actual download process of the requested file.

Chat application

Our system will be provided with the chat application which is an extension of Peer to Peer communication. Since there is no server involvement in the communication between two peers, the chat application will be pure peer-to-peer communication.

6. Conclusions and Future Work

We have proposed a peer-to-peer model that enables efficient file sharing between mobile smart phones via low cost transport. The use of P2P protocols and applications in the platform of the overall mobile environment is becoming a promising solution that allows a large number of users to share their own content (data, audio, video, etc.) between them without using expensive and centralized means. Small segment network infrastructures are desirable when multiple clients are involved, as they allow increased parallelism of downloads.

Socket usage for content sharing is more optimal, as it only requires two sockets: one for upload and one for upload, for each peer, regardless of the number of peers in the network area. Peer-to-peer sharing enables efficient content distribution using low-cost links that do not place a load on the mobile operator's infrastructure.

The proposed protocol is expected to allow users of smart devices to communicate with each other in real time using various P2P applications. From the point of view of use, we plan to combine this work with other local services such as medical or social services.

This document may be considered for future improvements to provide and maintain quality of service [9] for an application during data transmission for reliability and efficiency.

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