Scope International Journal of Science, Humanities, Management and Technology. ISSN : 2455-068X

Vol.3 Issue 4 (2017) 109 - 113. Submitted 06/11/2017. Published 17/12/2017

CAPACITY OF WIRELESS NETWORK WITH SOCIAL CHARACTERISTICS

[1]C. Tamilselvi, Asst. Professor, Bharathiyar Arts And Science College For Women, Deviyakurichi, Thalaivasal, Salem.

[2]S. Sathya, M.Phil Scholar, Bharathiyar Arts And Science College For Women, Deviyakurichi, Thalaivasal, Salem.

Abstract:

Over the past decade wireless multi-hop ad-hoc networks have received a tremendous amount of research focus. Mobile devices equipped with wireless short range communication technologies make possible new applications for spontaneous communication, interaction and collaboration. The collaboration is used to facilitate communication when mobile devices are not able to establish direct communication paths. So the communication is multi-hop with intermediate nodes acting as routers that forward the messages addressed to other nodes. The concept of multi-hop ad-hoc networking was successfully applied in several classes of networks. This paper reviews the categories of wireless multi-hop ad-hoc networks and discusses main evolutions of wireless multi-hop ad-hoc networks specially the opportunistic networks.

Keywords: Delay tolerant Network, MANET, Mobile Devices.

1. INTRODUCTION

In early days, most of the wireless networks were wireless local area networks (WLAN) operating the IEEE 802.11 WiFi protocol in infrastructure mode. The infrastructure consists of a base station, also called an access point that is owned by a company or a network operator. Such networks were centralized and the base station controls the access to the communication channel. The base station was also used to connect the WLAN to the company network or to the Internet. IEEE 802.11 offers a second mode, the ad-hoc mode. It is used now a days in many emergency application scenarios. An extension of wireless LAN operating in ad hoc mode are multi-hop ad hoc networks. They are typically deployed in large areas. A wireless multi-hop ad-hoc network is a network of nodes (e.g. computers, mobile nodes etc.) connected by wireless communication links. The links are usually implemented with digital packet radios. The transmission range of radio is very limited. Some devices might not be able to communicate directly to each other because of their limited radio range. These networks need other intermediate nodes to forward messages. In such cases, intermediary devices act as relays. In other words, the communication goes through multiple hops before reaching its final destination. This networking concept was successfully applied in several classes of networks that are penetrating the mass market. These networks in various forms e.g. wireless sensor networks, vehicular networks, mesh networks and under various names e.g. ad-hoc networks, hybrid networks, delay tolerant networks and intermittently connected networks, are being increasingly used in military and civilian applications too. They are not relying on existing infrastructure hence their deployment cost is low. Also, they offer a potential throughput gain. These characteristics make multi-hop ad hoc networks a promising technology. The remaining part of this paper is organised as follows. Section 2 gives a background of wireless multi-hop ad-hoc networks, as well as its application areas and various research issues are also discussed. Section 3 describes the main evolutions of wireless multi-hop ad-hoc networks

specially the opportunistic networks. In section 4, routing challenges related to wireless multi-hop networks are discussed. Finally, section 5 concludes the paper and present the future work.

2. RELATED WORK

The areas in which there is little or no communication infrastructure or the existing infrastructure is expensive or inconvenient to use, wireless mobile users may still be able to communicate through the formation of an ad hoc network. In such a network, each mobile node operates not only as a host but also as a router, forwarding packets for other mobile nodes in the network that may not be within direct wireless transmission range of each other. Every node that participates in an ad hoc routing protocol, allows it to discover "multi-hop" paths through the network to any other node.

Fig.2.Wireless Network

The idea of ad-hoc networking is sometimes also called infrastructure-less networking, since the mobile nodes in the network dynamically establish routing among themselves to form their own network. Some examples of the possible use of ad-hoc networking include students using laptop computers to participate in an interactive lecture, business associates sharing information. diverse wireless communication, computation, mobile social applications, mobile advertising, media sharing and location-based services,sensing, storage and other devices and resources that surrounds us more and more. As communication and computing systems are becoming more and more pervasive, the related privacy and security challenges also become complex to manage.The advantages of opportunistic communications include potentially high capacity, low cost, localized communications, fully decentralized operation and independence of any infrastructure. These benefits are directly related to the varying capabilities of the available networking technologies. Cellular data today is often slowing, expensive (especially when roaming) and not even always available (rural areas, underground transportation, popular mass events, disaster situations to name a few examples). Bluetooth or WiFi can both offer always available, essentially free, local connectivity. In addition, WiFi offers higher bandwidths compared to the available cellular networks. Consequently, there is a huge opportunity and unused network capacity available in opportunistic encounters that are exploit efficiently.

3. PROPOSED SYSTEM

This algorithm suitable for opportunistic networks as they rely on human mobility, and hence are characterized by human social interaction.In SimBet node centrality in the social network and the similarity

with the destination are used to select the good next hops. Similarly, Bubble Rap forwards data first to the global hubs of the network in order to reach the destination community, and then among the members of the community to the locally central nodes until the destination is reached. A recently proposed forwarding algorithm called People-Rank takes a similar approach and applies ideas of Page Rank web page ranking algorithm to opportunistic social networks. PeopleRank gives higher weight to nodes that are socially connected to other important nodes of the network. The design of efficient routing and forwarding strategies for opportunistic communication is generally inherent complex task due to the absence of knowledge about the topological evolution of the network. Routing performance improves when more knowledge about the expected topology of the network can be exploited.

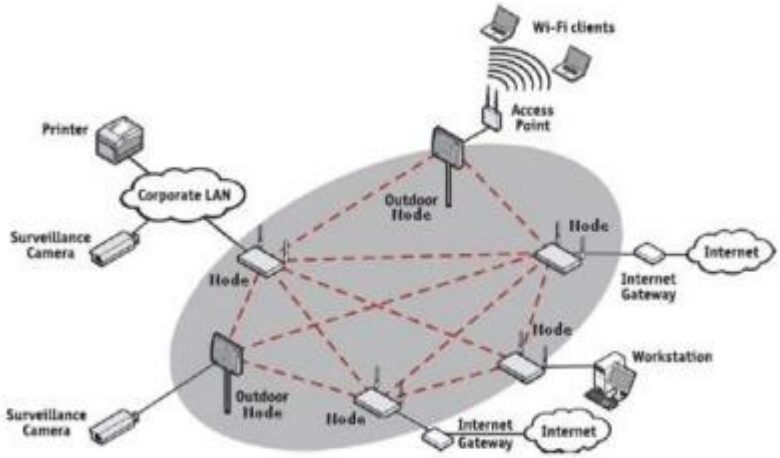

Fig.2.System Structure

A key piece of knowledge to design efficient routing protocols is amount of contextinformationin which the users communicate. Context information, such as the users working address and institution, the probability of meeting with other users or visiting particular places, can be exploited to identify suitable routing protocols to learn the network state, autonomically adapt forwa Messages in oppnet might be sent from one device to another device (peer to peer), or there can be intra-cluster communication among devices in some specific area. A local cluster head (a trusted device doing an extra job) can use public key cryptography while communicating with its neighbors. A cluster head can announce its public key. With in a communication network, each source node can encrypt data with the help of public key and, upon receiving encrypted data; the destination cluster head can decrypt them with its private key.Topology control has been proposed as a promising technique to achieve energy and power efficiency in wireless mobile social networks. Existing fixed topology control algorithms used in wireless communication assume that wireless links are static, either connected or disconnected. Taking advantage of the time and frequency varying characteristics of wireless communication links, the energy-efficient opportunistic topology control problem, which exploits opportunistic communication to maximize energy-efficiency as well as to satisfy given network performance requirementby dynamic routing of context information. Opportunistic communication exploits the time-varying characteristic of wireless communication links to improve network performance of wireless mobile social network. Since every coordinator always turns on its radio. In wireless communication systems multiple antennas at transmitter side and receiver side increase the transmission capacity (or bit rates) and improving the spectrum efficiency. Orthogonal Frequency Division

Multiplexing can be applied in a multiuser applications leading to a highly flexible, efficient communications system.OFDM is a multicarrier multiplexing technique that divides an OFDM signal which is a sum of several sinusoids channel with a higher relative data rate into several orthogonal sub-channels with a lower data rate and has become one of the standard choices for high-speed data and multiuser transmission.

4. ANALYSIS

Opportunistic networking tries to simplify the aspect of ubiquitous computing by removing the assumption of physical end-to-end connectivity while providing connectivity opportunities to pervasive devices when no direct access to the Internet is available. Ubiquitous computing is an advanced computing concept where computing is made to appear everywhere and anywhere. Pervasive devices (e.g. mobile devices, laptop, Bluetooth etc.) equipped with different wireless networking technologies, are frequently out of range from a network but are in the range of other networked devices, and sometimes cross areas where some type of connectivity is available (e.g. Wi-Fi hotspots). Thus, they can opportunistically exploit their mobility and contacts for data delivery. Source and destination node might never be connected to the same network.

Fig.3.Networking

In these networks, communication devices can be carried by people, vehicles or animals, etc. Some devices can form a small mobile ad-hoc network when the nodes move close to each other. But a node may frequently be isolated from other nodes. Therefore, a node is just intermittently connected to other nodes, and this partitioning is dynamically changing with time. Thus, an end- to-end connection between the source and the destination can be absent at the time the source wants to transmit, and even later.Opportunistic networks can provide intermittent Internet connectivity to rural and developing areas where conventional networks do not exists and they only represent the affordable way to help bridge the gap between these two areas. DakNet and SNC (Sammi Network Connectivity) are good examples of the approach used by opportunistic networks. Another interesting application of opportunistic networks is wildlife monitoring by tracking wild species to deeply investigate their behaviour and understand the interactions and influences on each other, as well as their reaction to the ecosystem changes caused by human activities.

CONCLUSION

In this paper, we have reviewed and discussed various categories of wireless multi-hop ad-hoc networks, their application and research issues. In the early stages, the ad-hoc networks were expected to be used for

specific applications by a limited set of users. The involvement of end users are the key elements of mesh, vehicular, sensor and opportunistic networks. There are a number of applications of these types of networks, ranging from small, static networks that are constrained by power sources to large-scale mobile, highly dynamic networks. We discuss the applicability and fundamental underlying ideas of opportunistic networks i.e. one of the main evolutions of wireless multi-hop ad-hoc networks.

REFERENCES

[1] M.Grossglauser and D.N.C.Tse, Mobility increases the capacity of Ad-hoc wireless network, IEEE/ACM Transactions on Networking, Vol. 10, no.4 Aug. 2002.

[2] P.Gupta and R.P Kumar, The Capacity of Wireless Networks, IEEE Transactions on Information Theory, Vol. 46, Mar. 2000, pp. 388-404.

[3] Macro Conti, Silvia Giordano, Multi-hop Ad-hoc networking: The Theory, IEEE Communications Magazine, pp.78-86, April 2007.

[4] Macro Conti, Silvia Giordano, Multi-hop Ad-hoc networking: The Reality, IEEE Communications Magazine, pp. 88-95, April 2007.

[5] IETF Mobile Ad-hoc Networking Group. http://www.ietf.org/html.charters/manet-charter.html.

[6] Mohammad Illyas, Handbook of Ad-hoc Wireless Network (CRC Press 2003).

[7] S.sarkar, T.G.Basavaraju, C.Puttamadappa, Adhoc Mobile Wireless Networks: Principles, protocols & Applications, (Auerbach Publications, 2008).