Orthogonal Frequency Division Multiplexing (OFDM) is digital frequency division technology that is used by 802.11a/g/n/y. In this technology, multiple subcarrier waves are overlaid on top of each other with an offset so that the peak of one subcarrier overlaps with the trough of another.

802.11 is a member of the IEEE 802 family, which is a series of specifications for local area network (LAN) technologies.[1,2] In IEEE 802.11 the addressable unit is a station (STA), which is a message destination, but not a fixed location. IEEE 802.11 handles both mobile and portable stations [11]. Mobile Stations (MSs) access the LAN while in motion, whereas a Portable Station (PS) can be moved between locations, but it is used only at a fixed location.

The IEEE 802.11 architecture provides a WLAN supporting station mobility transparently to upper layers. The Basic Service Set (BSS) is the basic building block consisting of member stations remaining in communication. If a station moves out of its BSS, it can no longer directly communicate with other members of the BSS [3]. A BSS may form the Distribution System (DS), which is an architectural component used to interconnect BSSs. IEEE 802.11 logically separates the Wireless Medium (WM) from the Distribution System Medium (DSM).

The DS and BSSs allow IEEE 802.11 to create a wireless network of arbitrary size and complexity called Extended Service Set (ESS) network. The ESS network appears the same to an LLC layer as an IBSS network. Stations within an ESS may communicate and MSs may move from one BSS to another (within the same ESS), transparently to LLC. A portal is the logical point at which MAC Service Data Units (MSDUs) from an integrated non-IEEE 802.11 LAN enter the IEEE 802.11 DS.

Architectural services of IEEE 802.11 are as follows: authentication, association, de-authentication, disassociation, distribution, integration, privacy, re-association, and MSDU delivery. These services are provided either by stations as the Station Service (SS) or by the DS as the Distribution System Service (DSS). Currently, the widespread use of IEEE 802.11 cards makes this technology the most interesting off-the-shelf enabler for ad hoc networks. However, the standardization efforts have concentrated on solutions for infrastructure-based WLANs, whereas little or no attention has been given to the ad hoc mode. Therefore, the aim of this theory is triple:

i. An in-depth investigation of the ad hoc features of the IEEE 802.11 standard,
ii. An analysis of the performance of 802.11-based ad hoc networks.
iii. An investigation of the major problems arising when using the 802.11 technology for ad hoc networks, and possible directions for enhancing this technology for a better support of the ad hoc networking paradigm.

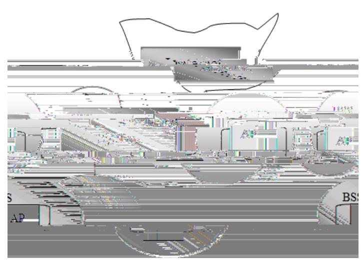

Figure 3: 802.11 Infrastructures

In a wireless environment, at any given time, an asymmetric link supports unidirectional communication between a pair of mobile stations and requires a set of relay stations for the transmission of packets in the other direction. The term “asymmetric” is related to the transmission range of a node at time t and a communication channel linking two nodes. Two nodes linked by an asymmetric link at time t may find themselves in close proximity, or may be able to increase their transmission range and to reach each other at time $(t+\tau)$ and thus be connected by a bi-directional link. Thus to make a distinction between unidirectional and asymmetric links is in wireless networks.

Symmetric and asymmetric connections, connection-oriented and connectionless data transport, as well as variable bit rates up to 2.88 Mbit/s per carrier are supported by the standard [4, 5]. Asymmetry Network is an important routing phenomenon, which can influence the manner in which, we model and simulate the Internet. For a pair of hosts A and B, if the path from A to B (forward direction) is different from the path from B to A (reverse direction), we say that the pair of paths

The IEEE 802.11e defines four ACs, each of which has its own queue and its own set of EDCA parameters. The differentiation in priority between ACs is realized by setting different values for the EDCA parameters [2].

Differences between the wireless network environment and the traditional wired environment create challenges for network protocol designers. This section examines a number of the hurdles that the 802.11 designers faced.

On a wired Ethernet, it is reasonable to transmit a frame and assume that the destination receives it correctly. Radio links are different, especially when the frequencies used are unlicensed ISM bands. Even narrowM] TJET.86 593.10( )-23d46(f)-9 that are required to provide best-effort delivery. To implement the contention-based MAC, stations process MAC headers for every frame while they are active [9].

PCF

Point coordination provides contention-free services. Special stations called point coordinators are used to ensure that the medium is provided without contention. Point coordinators reside in access points, so the PCF is restricted to infrastructure networks. To gain priority over standard contention-based services, the PCF allows stations to transmit frames after a shorter interval.

Figure 6: MAC Coordination function

With the advances of wireless communication technology, low

This Ethernet consists of twenty (10) workstations, one Ethernet server, and one switch. The use of an IP cloud is also necessary for providing internet to the two different LANS such as local as well as remote routers. Applications can be Database Access, E- mail, File Transfer, File Print, Telnet Session, Video Confe

Figure 13: Traffic sent and received using FTP Server

Figure 14: Calculating sent and received Packets with FTP loss

In this section it was observed that the total traffic sent to the network and equally received from the network and no delay found from the figure 14.

The overall response time over all the devices used on the network is shown in the figure 15. It was observed that when up the link means connection establish in the devices than point to point throughput degrades but when the connection connected to each devices than overall the performance and throughput becomes higher.

Figure 15: overall response time and throughput of FTP Server and Local Switch

In this work, we present our framework in OPNET simulator for asymmetry networks and apply it to real Internet measurements. Thus, we compute the distribution of the routing asymmetry in the Internet at both the local and remote link/router levels. Our MAC protocol used in the implementation reduces average packet loss ratio and average delay as asymmetric links are comprehensively utilized which dominate routing in heterogeneous ad hoc networks. In addition, a test network can be setup in the laboratory once the actual Asymmetric Network hardware and software have arrived and the network analysis tool can be installed into the Networks system to

1. V. Paxson, “End to end behavior in the Internet”, In Proceeding of the ACM SIGCOMM, Volume 26, number 4, page 25-38, August 1996.
2. Y. He, M. Faloutsos, S. V. Krishnamurthy, “Quantifying Routing Asymmetry in the Internet at the AS Level”, IEEE GLOBECOM 2004 – Global Internet and Next Generation Networks, Dallas, Texas, November, 2004.
3.