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Wireless LAN and Network Technology

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Abstract— Now that the 802.11 standard is totally here, it will energize the wireless LAN market and result in the proliferation of less-cost wireless connectivity in the office and home. For the configuration with ATM infrastructure, a shared ATM switched backbone is proposed, which enables a smart ATM switching element to be embedded in all wireless and fixed access point. For bandwidth efficiency and ease of operation (place-and-play).

Keywords— Smart Switching; Ad-Hoc Wireless LAN; HIPHER LAN; Access Protocol; Ad-Hoc Subnet.

1. Introduction

Security Currently, the standard allows a raw-data rate of up to 2 Mbps, which will allow a net rate of up to about 1.4 Mbps. To achieve this 70-percent throughput rate, the network protocols had to be very efficient and robust. We describe a wireless ATM LAN framework architecture that supporting wireless ATM communications in environments with and without fixed ATM infrastructure.

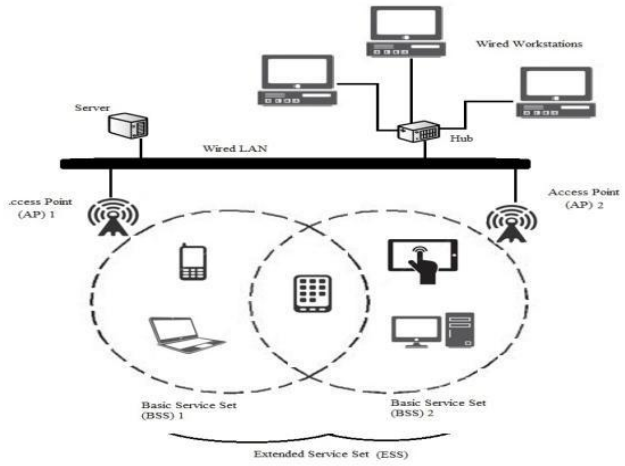

Fig.1: WLAN Network Architecture

2. Wireless Lan Network

Wireless LAN customary to cover up wireless networks for permanent, moveable and poignant stations inside a local region. This undying addresses the require for wireless connection to stations, apparatus, or automatic equipment that necessitates articulates star operation and may be moveable, handled, or increased on poignant automobiles. The P802.11 group planned to develop one media access controller (MAC) that can support various physical layers using electromagnetic waves through the air (that is, radio waves as well as infrared). The standard specifies three physical layers to give the user maximum flexibility. Two other physical layers for higher speed at 2.4 GHz and at 5 GHz are being developed, prompted by evident need and sufficient interest.

3. Three Physical Layer

The 802.11 standard implements three physical layers with the intention of expanding that number as needed. Currently, the three layers are direct sequence and hopping spread spectrums and diffuse infrared optical. These layers have different properties and advantages, allowing the system manager to choose the best fit. Of the two radio variants, both meet the FCC's fairness criterion for unlicensed operation in the ISM bands. The 802.11 frequency hopping PHY uses 79 overlapping frequency channels with 1 MHz channel spacing Frequency hopping also uses Gaussian frequency shift keying (GFSK) and 4-GFSK to achieve 1 and 2 Mbps in the FCC-mandated 1-MHz 20-dB bandwidth as shown in Figure 3. The 2-Mbps rate is optional, since the performance of 4-GFSK is marginal and the cost is higher.

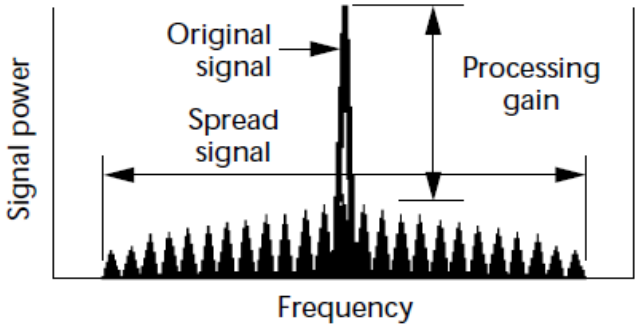

Fig.2: Direct sequence

- Proficient intonation
- Extensive inflection bandwidth, incessant broadcast
- Quick synchronization
- Less power spectral density minimizes interference

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4. Wireless ATM LAN Structure

ATM networks exemplify key equipment for sup porting multimedia services in WANs and LANs, and ultimately in residence areas. Provoked by the mounting perceiving of ATM as a normal for broad band communication. In general, the base stations are alienated from the ATM toggle that structures the ATM vertebrae. This is consequential when a big hierarchical ATM vertebra is implicit. Here, effortless network organization and preservation, and speedy liability diagnosis and abolition are of major anxiety.

5. The Base - Station - Oriented Wirelesast M-LAN

BS provides wireless access of multiple ATM mobile terminals (MTs) to a mobile enabled ATM switch that is the end node of the fixed network hierarchy. We use a distributed ATM switch concept to embed all needed star features of this mobility enabled ATM switch into the BS, making a dedicated ATM switch obsolete.

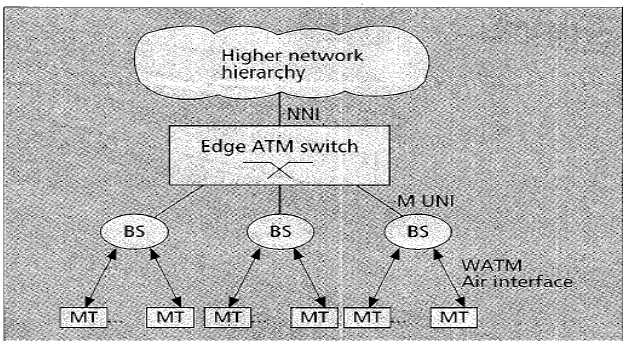

Fig.3: Hierarchical end-to-end WATMsystem

6. The AD- Hoc Wirelesast M LAN

Unlike BS-oriented wireless access networks, an ad hoc wireless ATM LAN is mainly concerned with peer-to peer communications between MTs in a very closed area There are three methods to run a distributed algorithm over established peer-to-peer wireless links to manage the ad hoc network using the CC concept. These are to either fix the CC in a once-selected CC-enabled MMT, let it jump from one CC-enabled MT to another on, demand (e.g., when switching off the old CC), or do distributed Computing among all CC-enabled MTs For simplicity of implementation and network robustness, we prefer the first and second choices.

7. The Basic AD-Hoc Wireless ATM Model

We propose to first define a basic ad hoc WATM model which is mainly concerned with creating and dissolving wireless peer-to-peer connections between any two MTs of a single fully meshed ad hoc network.. Low cost can be achieved if we generally limit the basic ad hoc WATM model to the following functions:

PHY- and MAC-layer support for an MT to register/ deregister with the PHY- and MAC-layer support for an MT to set up or release an ATM VC to another MT PHY- and MAC-layer support for multiple access of a common radio charnel Wireless UN1 signaling and wireless call initiation con- trol (CAC) with relaxed QoS enforcement.

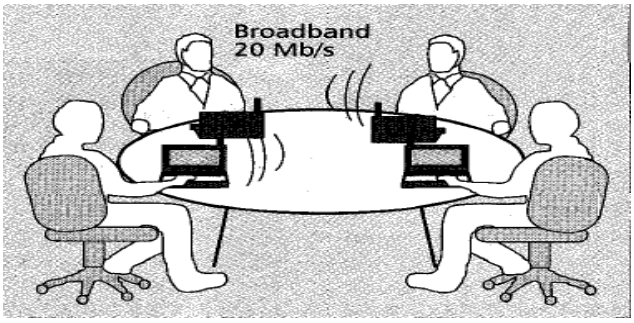

Fig.4: Ad-hoc networking with WATM

8. Moving Closer to Practical Wireless LAN

Wireless LANs encompass rapidly befall a major position in the LAN bazaar. As attachments to conventional agitated LANs, they gratify mobility, demotion, and ad hoc networking necessities and present a technique to envelop positions that are ruthless to wire. As the name proposes, a wireless LAN employs a wireless broadcast standard. Until relatively recently, few organizations used wireless LANs because they cost as well much, their data rates were too low, they posed occupational safety problems because of concerns about the health problem of electromagnetic radiation.

As events unfolded, however, organizations began to rethink this substitution strategy Buildings with large open areas, such as fabrication plants, stock exchange trading floors, and warehouses, make wired LANs awkward to install because of few choices for cable placement. Historical buildings often have insufficient twisted-pair cabling and refused drilling holes for new wiring .

For example, a fabrication facility typically has an office area that is physically independent from the factory floor but must be linked to it for networking. Therefore, organizations will frequently link a wireless LAN into a wired LAN on the same premises. a wired LAN from various locations.

9. Wireless LAN Requirements

They must also meet requirements specific to their invented star environment Throughput. The medium access control B (MAC) protocol should need the wireless

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medium as efficiently as possible to maximize capacity. Sidebar describes MAC Protocol in detail.

Battery life - Mobile workers use battery-powered must have a long battery life when used with wireless adapters. Thus, the LAN's MAC procedure often should not necessitate mobile nodes to check access points constantly or connect in common handclasp with a foot station. A properly designed wireless LAN permits decisive transmission, even in a noisy environment, and provides some level of security from eavesdropping .Wireless LAN have low data rate LANs are expensive LAN has health problem because of the electromagnetic radiation and spectrum used. Proposed system is more adaptable to the demand for higher data rates. Wireless LAN is more flexible and cost is reduced. The idea was to use a wireless LAN to avoid the cost of installing LAN cabling and ease the task of relocating or otherwise rework the network's structure LANs had become more popular, and architects were designing new buildings to include excursive pre wiring for data applications. Also, as data transmission technology advanced, organizations began relying more on low-cost twisted-pair cabling for LANs—in particular Category 3 and Category 5 unshielded twisted pair.

10. Conclusion

In this article base-station-oriented wireless ATM LAN and scalable ad hoc WATM concepts are described. The BS-oriented wireless ATM LAN concept follows a flat end-to-end system architecture by using an embedded ATM switching component. The basic ad hoc WATM system allows all MTs designed for a BS-oriented system to participate in ad hoc networking, while some MTs with additional functions can act as the central controller of the fully meshed ad hoc network. Interworking and/or forwarding terminals beyond the one-hop radio coverage area when wireless terminals with sufficient computing power and memory are available

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