Chapter 11
Study of Efficient Hybrid Wireless Networks Using QoS-Oriented Distributed Routing Protocol: QoS-Oriented Distributed Routing Protocol

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ABSTRACT

Hybrid networks are next generation of wireless networks that are increasingly used in wireless communications that highly support real time transmission with a limited quality of service. The study proves that existing systems use QoS-oriented distributed routing protocols to enhance the QoS support capability of hybrid networks and it transforms the packet routing problem to a resource scheduling problem which has five algorithms. They are (1) QoS-guaranteed neighbor election algorithm, (2) distributed packet scheduling algorithm, (3) mobility-based segment resizing algorithm, (4) traffic redundant elimination algorithm, and (5) data redundancy elimination-based transmission algorithm. To increase the performance of hybrid networks in a real mobility model, this chapter analyses and devises a method to authenticate data streams for transmission. Data transparent authentication without communication overhead is an approach which reduces breakdown of original data or sends out-of-band authentication information.

DOI: 10.4018/978-1-5225-7522-1.ch011

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INTRODUCTION TO WIRELESS NETWORKS

Wireless network enables people to communicate and access applications and information without wires. This provides freedom of movement and the ability to extend applications to different parts of a building, city, or nearly anywhere in the world. Wireless networks allow people to interact with e-mail or browse the Internet from a location that they prefer.

Wireless networks have been developed with various wireless applications, which have been used in areas of commerce, emergency, services, military, education and entertainment (Wu & Jia, 2009). The rapid improvement of Wi-Fi capable mobile devices including laptops and handheld devices, for example the purpose of wireless internet users of smart phone in last three years. The usage of people watching video, playing games and making long distance video or audio conferencing through wireless mobile devices and video streaming applications on infrastructure wireless networks which connects directly to mobile users for video playing and interaction in real time are increased. The evolution and the anticipate future of real time mobile multimedia streaming services are extensively expanded, so the networks are in need of high Quality of Service (QoS) to support wireless and mobile networking environment.

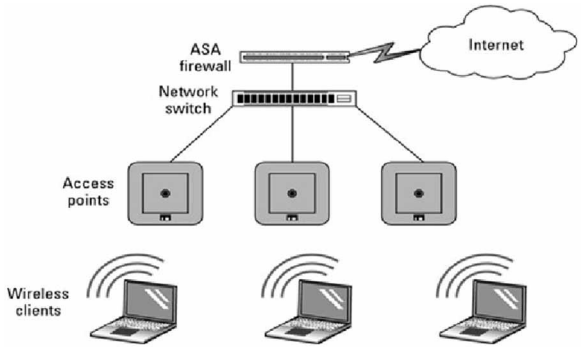
Infrastructure Mode

In the case of wireless networking in Infrastructure mode the connected devices uses a central device, namely a wireless access point. To join the WLAN, the Access Points (AP) and all wireless clients must be configured to use the same SSID. The AP is then cabled to the wired network to allow wireless clients access to, for example, Internet connections or printers. Additional APs can be added to the WLAN to increase the reach of the infrastructure and support any number of wireless clients.

Compared to the alternative, ad-hoc wireless networks, infrastructure mode networks offer the advantage of scalability, centralized security management and improved reach (Jawhar & Wu, 2005). The disadvantage of infrastructure wireless networks is simply the additional cost to purchase AP hardware.

As opposed to Ad Hoc mode networks, which make wireless connections directly between computers, Infrastructure mode wireless networks use networking infrastructure. In this case, *infrastructure* refers to switches, routers, firewalls, and APs. Infrastructure mode wireless networking is the mode that you most often encounter in your work as a networking professional supporting network for clients or in a

Figure 1. Infrastructure networks
Source: http://media.wiley.com/Lux/03/298503.image0.jpg



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