



THE CHINESE UNIVERSITY OF HONG KONG
Department of Information Engineering

Seminar

IEEE 802.11ac: The Road to Gigabit WLAN Standard

by

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Date : 27 October, 2011 (Mon.)
Time : 11:00am - 12:00noon
Venue : Room 833, Ho Sin Hang Engineering Building
The Chinese University of Hong Kong

Abstract

Since the introduction of the wireless LAN (WLAN) technology in the late 1990s, there has always been a demand for achieving higher data rates. The first IEEE 802.11 specification was able to support up to 2 Mbps. The introduction of IEEE 802.11a/b/g has allowed WLAN users to achieve data rates up to 54 Mbps.

With the Introduction of the high throughput (HT) WLAN specification (a.k.a IEEE 802.11n), a significant increase of the supported data rates is achieved. IEEE 802.11n can achieve data rates up to 600 Mbps, when all options are implemented. The support of hundreds of Mbps data rates was made possible by the introduction of advances in communication systems and signal processing related to multiple-input-multiple-output (MIMO), beamforming, and higher modulation and coding schemes (MCS).

With the evolution of user's traffic and the need to support high definition video applications both at home and across the Internet, the need for data rates in the Gigabit range becomes evident. The IEEE 802.11 has started an effort to define very high throughput (VHT) WLAN specification. The objective is to evolve the current HT standard to enable the support of the desired rates. The current VHT effort is named IEEE 802.11ac and is capable of supporting data rates up to 7 Gbps. The IEEE 802.11ac operates in the 5 GHz band and is backward compatible to IEEE 802.11a and IEEE 802.11n operating in the same band.

This presentation will introduce PHY and the MAC enhancements necessary to achieve VHT data rates, while maintaining backward compatibility. Among those enhancements are the support of wider channels (40, 80, and 160 MHz) and the use of multi-user MIMO (MU-MIMO).

Biography

Osama Aboul-Magd (S '82 - M '88, - SM '11): Dr. Aboul-Magd has received his PhD from the University of Toronto. After graduation, he joined Bell-Northern Research (later Nortel Networks) as a member of Scientific Staff. At Nortel, Dr. Aboul-Magd did work on planning and design of products related to various networking technologies including, ATM, IP, Ethernet, and WLAN. He is now with Huawei Technologies, Canada R&D center, working on WLAN standards both at the IEEE 802.11 and the Wi-Fi Alliance.

Since November 2008, Dr. Aboul-Magd has been the chair of the IEEE 802.11ac task group. He leads the effort at the IEEE 802.11 developing VHT specification in the 5 GHz band. He is also a Vice Chair of the Wi-Fi Alliance VHT5G Technical Task group working on test plans related to IEEE 802.11ac and product certification.

**** ALL ARE WELCOME ****

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