Wifi and Hotspots Technologies

Course No. 1422

Course Overview:
This course will cover all the aspects of 802.11 wireless networks. It will review the technologies used by the different protocols, the infrastructure and deployment aspects of wireless networks. The impact of Wireless Network at home, the office and public spaces will be examined as well as the integration of Wifi within the advanced cellular networks. The course is intended for technical and non technical professionals looking for a clear understanding of the fast growing Wireless LAN market, for application developers and those wishing for sound background for planning and implementing wireless networks and wireless networking technology.

Upon completion of this course, delegates can understand about WiFi, Wifi network design and architecture, protocols and network planning. Participants can learn the methodologies and practical skills that is needed to perform professional wireless design.

Who should attend?
Marketing, sales and R&D staff members for manufacturers/vendors of LAN equipment
LAN users looking for alternatives to the “classical” LAN implementations
Data communications consultants and system integrators

Prerequisites:
Prior knowledge on GSM, GPRS or WiMax is recommended before attending this course.

Course Content:

1. What is Wi-Fi?
   - A Bit of History
   - Quick Facts about Wi-Fi
   - Wi-Fi Standard Bodies & Consortiums
   - Wireless Spectrum Usage

2. WiFi Architecture
   - STA, AP, BSS, DS, ESS

3. 802.11 Protocols & Building Blocks
   - General
     - IEEE 802.11 WLAN Protocols
     - IEEE 802.11 Alphabet Soup
     - What is unique about Wireless?
     - 802.11 Layers
     - Physical Layer - PHY
     - ISM Band
     - Baseband IR
     - Frequency Hopping Spread Spectrum
       - FHSS PLC
       - FHSS PCM
     - Direct Sequence Spread Spectrum
     - DSSS PLC
     - DSSS PCM
     - FHSS vs DSSS
   - Orthogonal Frequency Division Multiplexing
     - OFDM PLC
     - OFDM PCM
   - Antenna Diversity
   - Media Access Control Layer - MAC
     - 802.11 MAC Basic Access Protocol Features
     - MAC General Frame Format
     - MAC Management Functions
     - MAC Management Frames

4. Wi-Fi Security
   - Security Building Functions
     - Access Control
     - Privacy
     - Authentication
     - Integrity
   - Evolution of WLAN Security
     - WEP Security Flaws
     - TKIP - Temporal Key Integrity Protocol
     - Counter Mode with CBC-MAC Protocol (CCMP)
     - 802.11x
     - EAP Over LAN / Wireless (EAPOL, EAPOW)
     - Authentication: RADIUS, DIAMETER
     - 802.11i Key Hierarchy
     - EAP Methods in Wireless LANs

5. WLAN QoS
   - Quality of Service - QoS
   - IEEE 802.11e

6. WLAN Networks
   - WLAN Product Types
   - Home WLAN
   - Corporate WLAN
   - VoWLAN - Voice over LAN
   - HotSpots
   - HotSpot Deployment
   - Who "owns the HotSpots business" ?
   - Public WLAN market forecasts
   - Community WLANs

Continued...
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Course Content:

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7. What is Next?
   • 802.11 vs. Other Technologies
   • 802.11 & Cellular Complementary Technologies
   • 802.11 vs Cellular Trends for Data Services
   • WLAN & Cellular Complementary Services
   • Internet Protocol for Radio Access Network (IP RAN)

8. Emerging WiFi & LAN Technologies
   • 802.16 WirelessMAN™ “WiMAX”
   • 802.20 MBWA “Mobility-Fi”
   • 802.11n
   • 802.15.4 “ZigBee”
   • UWB Ultra Wide Band

9. Summary