

WiMAX

CH6861 WiMAX Fundamentals

Duration: 2 days

Prerequisite Courses:

Wireless Fundamental

Course Description

WiMAX has emerged as one of the major candidates for next generation wireless networks. WiMAX defines solutions for both fixed and mobile Broadband Wireless Access (BWA) networks.

This course provides a snapshot of all aspects of Mobile WiMAX networks. It begins with a discussion of the current state of wireless networks and defines where WiMAX fits. It also covers the key players in standardization, design, and development WiMAX systems. The WiMAX network architecture and its components are introduced to provide an end-to-end view of the WiMAX network. This course also introduces important WiMAX operations such as connection setup, bandwidth allocation schemes, and mobility.

Intended Audience

This course is for personnel requiring broad understanding of WiMAX technology as well as personnel anticipating further WiMAX network operations and maintenance.

Key Topics

- WiMAX Players and Drivers
- The WiMAX Network Architecture
- 802.16 Physical Layers
- 802.16 Medium Access Control
- WiMAX Initial Procedures
- End to End Security
- WiMAX Service Flows
- WiMAX Transport and QoS
- Connecting using WiMAX
- WiMAX Mobility

Objectives

After completing this course, the student will be able to:

- Describe the current state of wireless networks and drivers for next generation wireless networks
- Sketch the WiMAX network architecture, protocols and interfaces
- Define key features of the 802.16e-based air interface for WiMAX networks
- Describe the important WiMAX operations such as connection setup, bandwidth allocation schemes, and mobility.

Prerequisite Skills

A good knowledge of current data communications systems, wireless communications systems.

CH6862 Advanced WiMAX

Duration: 3 days

Prerequisite Courses:

WiMAX Fundamentals

Course Description

WiMAX has emerged as one of the major candidates for next generation wireless networks. WiMAX promotes the IEEE 802.16 family of specifications for fixed and mobile Broadband Wireless Access (BWA).

This course focuses on the details of the WiMAX network signaling flow. Beginning with an overview of the mobile WiMAX architecture, this course covers the interfaces, protocols, and messaging architectures of mobile WiMAX networks. It also covers the life of a mobile – from system acquisition to obtaining an IP address and accessing the IP data networks. This course provides a complete end-to-end scenario that includes mobility and handovers. In addition, students will step through several detailed scenarios and operations, as well as examine the security and quality of service aspects supported within the mobile WiMAX framework. By the end of this course, students will have a comprehensive understanding of WiMAX and its role in next generation wireless networks.

Intended Audience

This course is for personnel requiring profound understanding of WiMAX technology as well as detailed knowledge of WiMAX air interface and network signaling flow.

Key Topics

- The WiMAX Network
- WiMAX (Air Interface) Technology Overview
- WiMAX Signaling Basics
- System Acquisition Procedures
- Network Entry Procedures
- Security in WiMAX Networks
- Service Flows and QoS
- Normal Mode and Sleep Mode Operations
- Accounting
- Idle Mode and Paging
- ASN-Anchored Mobility Management
- CSN-Anchored Mobility Management
- Interworking with 3GPP2 and 3GPP
- End-to-End Flow

Objectives

- Describe the current state of wireless networks and drivers for next generation wireless networks
- Sketch the WiMAX network architecture, protocols and interfaces
- Define key features of the 802.16e-based air interface for WiMAX networks
- Understanding the end-to-end signaling flow of mobile WiMAX network
- Understanding the mobility management of mobile WiMAX network
- Compare WiMAX and its underlying technology with the current 3G Cellular networks and Wi-Fi networks
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Prerequisite Skills

A good knowledge of current data communications systems, wireless communications systems.

CH6900 WiMAX Air Interface

Duration: 2 days

Prerequisite Courses:

WiMAX Fundamentals

Course Description

WiMAX has emerged as one of the major candidates for next generation wireless networks. WiMAX defines solutions for both fixed and mobile Broadband Wireless Access (BWA) networks.

This course focuses on the details of the WiMAX Air Interface. Beginning with an overview of the WiMAX architecture and Profiles, this course covers the Medium Access Control layer and Physical layer. It also covers the WiMAX OFDM and WiMAX OFDMA physical specifications. Important procedures such as WiMAX Initial Procedures, Traffic Channel Management, Bandwidth Management, and WiMAX Mobility are introduced to provide a comprehensive understanding of WiMAX Air Interface.

Intended Audience

This course is for personnel responsible for the configuration and management of Nortel GSM network.

Key Topics

- WiMAX Architecture and Profiles
- Medium Access Control
- The WiMAX Physical Layers
- WiMAX OFDM
- WiMAX OFDMA
- WiMAX Initial Procedures
- Traffic Channel Management
- Bandwidth Management
- WiMAX Mobility

Objectives

- Sketch the WiMAX network architecture, protocols and interfaces
- Define key features of the 802.16e-based air interface for WiMAX networks
- Be familiar with WiMAX MAC layer and Physical layer
- Be familiar with WiMAX OFDM&OFDMA specifications
- Be familiar with WiMAX Initial Procedures
- Be familiar with Traffic Channel Management
- Be familiar with Bandwidth Management
- Be familiar with WiMAX Mobility

Prerequisite Skills

A good knowledge of current data communications systems, wireless communications systems.

CH6901 WiMAX Planning

Duration: 2 days

Prerequisite Courses:

Wireless Fundamentals
WiMAX Fundamentals
WiMAX Air Interface

Course Description

WiMAX has emerged as one of the major candidates for next generation wireless networks. WiMAX promotes the IEEE 802.16 family of specifications for fixed and mobile Broadband Wireless Access (BWA).

This course covers essential concepts of WiMAX Cell Planning, in addition to the describing the issues affecting the practical optimization of WiMAX networks.

Intended Audience

This course is intended for WiMAX system designers, RF systems engineering, network engineering, deployment and operations personnel.

Key Topics

- WiMAX Deployment Options
- The Planning Process
- WiMAX Traffic Profiles
- Radio Propagation for WiMAX
- Antenna Selection
- WiMAX Planning
- Site Location and Integration
- Mobility and Optimization
- WiMAX Planning Guide

Objectives

- Describe the WiMAX Deployment Options
- Be familiar with the Planning Process
- Be familiar with Radio Propagation for WiMAX

- Define key features of WiMAX Planning
- Describe WiMAX Mobility and Optimization

Prerequisite Skills

A good knowledge of current data communications systems, wireless communications systems.