eogogicsinc

Course ID
HSDPA
Course Duration
2 days

Course Title
HSDPA: Network Architecture, Operation, and Design

Related Courses

- UMTS-TDD: Network Architecture, Operation, and Design (UMTS-TDD, 2 days)
- 1xRTT: Network Architecture, Operation, and Design (1XRTT, 2 days)
- 1xEVDO: Network Architecture, Operation, and Design   (EVDO, 2 days)
- Traffic Engineering Models for 3G Network Design (TRAFFIC3G, 2 days)
- IP-Based Systems: TCP/IP and Mobile IP (IPSYS, 2 days)
- Multimedia Applications: IMS, SIP, and VoIP (MULTIMEDIA, 2 days)
- GSM: Network Architecture, Operation, and Design (GSM-I, 5 days)

Aimed At

Those experienced with UMTS-FDD who wish to learn more about HSDPA. The standard presentation of this course assumes a bachelor of science in Electrical Engineering, Mathematics, Physics, or a related subject along with an appropriate background in communications engineering.

Group Size

5-25

Prerequisites

- Direct Sequence Spread Spectrum Techniques and CDMA-based Technologies (CDMA, 2 days)
- UMTS-FDD: Network Architecture, Operation, and Design (UMTS-FDD, 2 days)
- Knowledge of the wireless network structure and operation, RF propagation and fading issues, and link budget analysis.
- At least two years experience in the design and optimization of a wireless network using any major technology.

Course In a Nutshell

The implementation of UMTS is gathering momentum worldwide. While many vendors and operators are focused on the FDD mode, and some also on TDD, others view HSDPA as being just the right entrée into UMTS. Although HSDPA builds on the FDD structures, it presents some unique capabilities and challenges.

Building on your knowledge of UMTS-FDD, you will learn the capabilities and complexities that HSDPA brings to the network structure and operation. While HSDPA is conceptually simple, it leaves a number of implementation details to the individual equipment vendors. Knowing how the HSDPA-enabled UMTS network is structured will allow you to ask the vendors the right questions, which in turn will allow you to make the right design choices. All in all, you will come away from this class with a good understanding of how to design, implement, and optimize HSDPA networks.

Customize It!

Customize this course to your specific needs at little-to-no additional cost. We offer distinct versions tailored for:

- Network design and optimization engineers
- Equipment or application designers
- Less technical audiences such as managers, executives, business planners, sales and marketing specialists, and operations and support personnel.

Since EVDO and HSDPA provide similar capabilities for CDMA2000 and UMTS, respectively, an integrated, comparative discussion of the two topics will interest some audiences. If you can benefit from such a combined class, ask us about our 'combo discount'.

Course Outline

- UMTS-FDD: Review of Key Concepts
  - ° Bit Error rate versus Eb/N0
  - ° UMTS-FDD Error control coding versus modulation versus Eb/N0
  - ° Logical, transport, and physical channels used for data transport
  - ° Retransmission strategies used in UMTS-FDD versus hard/soft decoding

- HSDPA Architecture
  - ° HSDPA-defined transport channels
  - ° HSDPA physical layer changes relative to UMTS-FDD
  - ° HSDPA MAC layer changes/improvements relative to UMTS-FDD

- HSDPA Operation and Design Considerations
  - ° Physical layer functionality, parameters, and optimization considerations
  - ° MAC layer functionality, parameters, and optimization
  - ° Adaptive modulation schemes, parameters, and optimization
  - ° Adaptive coding schemes, parameters, and optimization
  - ° Incremental redundancy/hybrid ARQ
    - ▪ Conceptual structures
    - ▪ Operational and optimization issues

- Course Recap and Conclusion
  - ° HSDPA's elegance, simplicity, and complexities -- all at the same time
  - ° Evolution of HSDPA, including HSUPA

How You Will Learn

- You will learn in interactive lecture format from an instructor who's among the most knowledgeable and dynamic in the industry.
- Along with lecture, we use exercises, puzzles, case studies, and interesting group activities to enrich the instruction and drive home the essential points.
- If you already know something about the technology, we will build on that. We'll compare and contrast what's familiar with what's new, making new ideas easier to learn as well as more relevant.
- If your background is less technical, we will use meaningful and ingenious examples and analogies to simplify the complex subject matter.
- The Participant Handbook will provide you with a structure to which you can add the information and insight provided in real-time, turning it into a valuable reference resource you can take back to your job

Revised   *May 8, 2006*