

Course ID

EDGE

Course Duration

2 days

Course Title

EDGE: Network Architecture, Operation, and Design

Related Courses

- GPRS: Network Architecture, Operation, and Design (GPRS, 3 days)
- UMTS-FDD: Network Architecture, Operation, and Design (UMTSFDD, 3 days)
- UMTS-TDD: Network Architecture, Operation, and Design (UMTSTDD, 2 days)
- HSDPA: Network Architecture, Operation, and Design (HSDPA, 2 days)
- Traffic Engineering Models for 3G Network Design (TRAFFIC3G, 2 days)

Aimed At

Engineers with GSM/GPRS experience who wish to learn about EDGE. 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.

Group Size

5-25

Prerequisites

- GSM: Network Architecture, Operation, and Design (GSM-I, 5 days)
- GPRS: Network Architecture, Operation, and Design (GPRS, 3 days)
- Working knowledge of wireless network structure and operation, RF propagation and fading issues, and link budget analysis
- Working knowledge of packet switching and associated networking problems and solution approaches
- At least two years experience in the design and optimization of a wireless network using any major technology

Course in a Nutshell

GPRS is the pivotal technology that brought packet switching to the world of mobile communications. It's no secret that GPRS suffers from some significant drawbacks, for which it is sometimes unjustly 'blamed'. What we fail to recognize is that GPRS was meant to be a stepping stone to bigger and better things. EDGE, often referred to as "Enhanced GPRS" is that next step up! Edge overcomes the limitations of GPRS in truly unique ways, the discussion of which constitutes the content of this course.

If you have taken our GPRS course or are otherwise familiar with the technology, you're well aware of the technology's shortcomings and the fact that some of them are both serious and not solvable within the GPRS framework. After completing this course, you will know how EDGE tackles those problems, very effectively at that. You will learn what options are available to the network optimization processes and their advantages and disadvantages.

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

You can also combine this 2-day EDGE course with its prequel, the 3-day GPRS course, for an integrated five-day presentation. Ask us about the 'combo' discount.

**Course
Outline**

- Motivation, Background, and Limitations of GPRS: Why Did EDGE Become a Necessity
 - What are the fundamental limitations of GPRS?
 - Enhanced GPRS (EGPRS) vis-à-vis Enhanced Data Rates for GSM Evolution (EDGE)
- GPRS/EGPRS Network Architecture
 - GPRS mobile station modes and classes
 - Packet control unit (PCU) and channel codec unit (CCU)
 - Serving GPRS Support Node (SGSN)
 - Gateway GPRS Support Node (GGSN)
 - Border Gateway (BG)
 - Protocol stacks between the various GPRS network elements and network optimization considerations
- EDGE Air Interface Protocol Structures
 - EDGE vis-à-vis GPRS vis-à-vis GSM RF layer
 - GMSK of GPRS versus 8-PSK option of EDGE
 - EDGE Medium Access Control (MAC) Sublayer
 - EDGE Radio Link Control (RLC) Sublayer
 - EDGE link adaptation schemes
 - Air interface optimization considerations
- EDGE Layer 2 Retransmission Strategies
 - Soft decoding
 - Incremental redundancy and hybrid ARQ
 - Modulation and Coding Schemes (MCS) and associated RLC block structures and issues
 - Optimization considerations vis-à-vis retransmission strategies used in EDGE and MCS families
- Course Recap and Conclusion



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 handbooks 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