

Course ID
1xRTT
Course Duration
2 days

Course Title
1xRTT: Network Architecture, Operation, and Design

Related Courses

- 1xEVDO: Network Architecture, Operation, and Design (EVDO, 2 days)
- CDMA Technology and Its Evolution to cdma2000 (CDMA, 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)
- HSUPA: Network Architecture, Operation, and Design (HSUPA, 2 days)
- IP-Based Systems: TCP/IP and Mobile IP (IPSYS, 2 days)
- Multimedia Applications: IMS, SIP, and VoIP (MULTIMEDIA, 2 days)
- IMS: The Technology, Applications, and Challenges (IMS, 2 days)
- Traffic Engineering Models for 3G Network Design (TRAFFIC3G, 3 days)
- RF Systems Optimization Workshop: GSM, GPRS, EDGE, UMTS, cdmaOne, 1xRTT, EVDO (RFOPT, 3-5 days)

Aimed At

Experienced engineers with prior exposure to Direct Sequence Spread System and/or cdmaOne (IS95) who wish to learn more about 1xRTT.

Group Size

5-25

Prerequisites

- Wireless Network Structure, Operation, and Technologies (WIRELESSNET, 3 days)
- RF Propagation Models, Fading Characteristics, and Link Budget Analysis (RFPROP, 3 days)
- cdmaOne/IS95 (IS95, 2 days)

You should possess working knowledge of cellular network architecture and operation, at least one year experience in the design and optimization of a network using any major wireless technology, and an understanding of the basics of DSSS/CDMA-based systems.

Course in a Nutshell

The family of standards referred to as cdma2000 is one of the two major technology options for third generation (3G) wireless. It's an evolving technology, with 1xRTT being the first and, in some ways, the most pivotal member of this family. While building on the very successful cdmaOne or IS95 technology, it adds a number of capabilities along with the engineering issues that go with them.

In this course, you will learn all of the features of a 1xRTT network, both mandatory and optional, along with their relationship to IS-95. We will discuss the relationships between the logical channels and the physical channels in a great deal of detail. This will help you leverage the technology's strengths to formulate good network designs, to troubleshoot performance problems and identify solution approaches, and effectively interact with the equipment manufacturers.

Customize It! We can tailor this course, usually at little to no additional cost to you, to the experience level and project requirements of your participants, whether network design and optimization engineers, equipment or application designers, business planner or strategists, marketing or sales personnel, or operations and support staff.

Course Outline

- Introduction
 - Course overview
 - 3GPP2 and cdma2000 standardization process
 - cdma2000 evolution
 - Introducing 1xRTT (cdma2000 Release 0)
- New in 1xRTT/cdma2000: New Concepts and Advanced Features
 - Worldwide base station synchronization
 - Link adaptation
 - Variable channelization and spreading
 - Physical layer hybrid ARQ
 - Frequency band selectivity
 - Turbo codes
 - Transmit diversity
 - Increased battery life
 - Power control improvements
 - Added soft handoff features
 - Selectable mode vocoders
- 1xRTT Layering Structure
 - Physical and link layer overview
 - Link layer
 - Layer 3 signaling
- 1xRTT Channel Naming Conventions
 - Reverse link physical channels
 - Pilot
 - Access
 - Dedicated control
 - Fundamental
 - Supplementary
 - Forward link physical channels
 - Pilot
 - Paging

- Sync
- Fundamental
- Supplementary
- Quick paging
- 1xRTT Physical Layer Features
 - Traffic channel transmission rates
 - Reverse and forward link channel coding
 - Reverse link modulation and spreading
 - Forward link modulation and spreading
- Logical Channel Organization and Definition
 - Dedicated traffic channel
 - Common traffic channel
 - Dedicated MAC channel
 - Reverse common MAC channel
 - Forward common MAC channel
 - Dedicated signaling channel
 - Common signaling channel
- 1xRTT Traffic Channels
 - Voice and data transmission
 - Traffic channel handoff features
 - Power control operation
- 1xRTT Network Architecture
 - Comparisons CDMAONE networks
 - 1xRTT network architecture
 - 1xRTT network interfaces
 - 3GPP2 All-IP network
 - Mobility management for packet data services
 - Positioning technologies in 1xRTT
- 1xRTT Call Processing Scenarios
 - MS initialization and system access states
- Course Wrap-up:
 - Continuing evolution of cdma2000: EVDO and EVDV
 - Conclusion: Recap, Q/A, and evaluation

**How You Will
Learn**

- You will learn interactively from a lecturer who combines subject matter expertise in CDMA/cdma2000 with excellent presentation skills.
- Along with lecture, your instructor will employ exercises and interesting group activities to add interest and depth to the class.
- If you already know something about cdma2000, we will build on that. We'll compare and contrast what's new with what you already know, making the new information easier to absorb as well as more relevant to your job.
- If your background is less technical, we will rely on interesting and apt examples and analogies to explain the complex subject matter in terms that are easier to understand.
- You will receive a manual that contains a copy of the instructor presentation, to which you can add notes and insights in real time to make it a handy reference you can use back on your job.

Revised

Apr 24f, 2007