

## ***SS7 & Intelligent Network Fundamentals***

**Duration:** 1 - 2 days

**Prerequisites:** Understanding of basic telecommunications network functions and operation

**Objectives:**

At the conclusion of the workshop the student will be able to:

- Understand principles of signaling in fixed and wireless networks
- Understand the architecture, protocol and function of SS7
- Understand the requirements for planning and engineering signaling networks
- Identify the challenges of operating signaling networks
- Understand principles of intelligent network function and operation in fixed and wireless networks
- Identify the major intelligent network standards and their respective capabilities and functions
- Understand the role and importance of SS7 in support of number portability
- Review and evaluate various applications which rely on SS7 and/or intelligent network capabilities
- Identify the future direction of signaling and intelligent networks

**Course Outline:**

1. Course introduction
2. Signaling
  - 2.1. Trunk signaling
  - 2.2. Database signaling
3. Signaling in wireless networks
  - 3.1. Call set-up
  - 3.2. Roaming
  - 3.3. Feature control
  - 3.4. Applications signaling
4. Details of SS7
  - 4.1. Link types
    - 4.1.1. A-links
    - 4.1.2. B-links
    - 4.1.3. C-links
    - 4.1.4. D-links
    - 4.1.5. E-links
    - 4.1.6. F-links

- 4.2. SS7 protocol and function
  - 4.2.1. MTP
  - 4.2.2. ISUP
  - 4.2.3. SCCP
  - 4.2.4. TCAP
  - 4.2.5. MAP
- 4.3. SS7 translations
  - 4.3.1. Addressing
  - 4.3.2. Routing
- 5. SS7 network planning and engineering
  - 5.1. Planning for availability and survivability
  - 5.2. Traffic engineering principles
- 6. SS7 operational issues
  - 6.1. Signaling network management
  - 6.2. Synchronization
  - 6.3. Security
- 7. Intelligent networks
  - 7.1. What is network intelligence
  - 7.2. Fixed networks
    - 7.2.1. IN
    - 7.2.2. AIN
    - 7.2.3. INAP
  - 7.3. Wireless networks
    - 7.3.1. Proprietary solutions
      - 7.3.1.1. Infrastructure provider proprietary
      - 7.3.1.2. ISUP loop-back
    - 7.3.2. Standards-based solutions
      - 7.3.2.1. CAMEL
      - 7.3.2.2. WIN
- 8. Number portability
  - 8.1. Geographic portability
  - 8.2. Services portability
  - 8.3. Local number portability
    - 8.3.1. Fixed networks
    - 8.3.2. Wireless networks
- 9. Applications
  - 9.1. Toll-free calling
  - 9.2. Prepay wireless
  - 9.3. SMS
    - 9.3.1. Introduction
    - 9.3.2. ANSI vs. GSM
    - 9.3.3. Inter-carrier SMS
  - 9.4. CNAP
  - 9.5. Stand-alone HLR
  - 9.6. Emergency and commercial location services
- 10. Future of network intelligence
  - 10.1. Advances in intelligent networks
    - 10.1.1. Parlay
    - 10.1.2. Intelligent servers
    - 10.1.3. Intelligence distributed in mobile devices
  - 10.2. PSTN-to-IP convergence

- 10.2.1. SS7 in IP networks
- 10.2.2. Applications using IP as bearer