

INTRODUCTION TO THE IP MULTIMEDIA SUBSYSTEM (IMS) ©

This two day course provides students with a solid understanding of the framework, architecture, network element function, protocols and procedures associated with the IP Multimedia Subsystem (IMS). Students will also gain an understanding of how IMS may be leveraged for convergence and value-added services. A hands-on lab is included where students use an Empirix Hammer Call Analyzer tool to view real world IMS protocol traces

Objectives:

At the conclusion of the course, the student will be able to:

- Describe IMS and the differences between current, legacy network applications, components and IMS-based applications
- Understand the different functional layers of IMS, their role and network elements
- Demonstrate a basic knowledge of SIP
- Understand the differences between IMS and non-IMS networks
- Understand the details of IMS network elements and procedures
- Understand IMS policy and Quality of Service functions and procedures
- Understand the operational pitfalls during the transition from legacy to IMS
- Identify IMS based applications and their relationship to the IMS framework
- Understand the role and importance of value-added capabilities within IMS

Who Should Attend:

This course will be of benefit to anyone working with next generation services and/or interested in the transition from legacy networks to the IMS framework.

Course Prerequisites:

The student should have a sound understanding of telephony, IT concepts and technologies, and applications for fixed and mobile networks.

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Module 1: IMS Overview and Early Development

By the end of this module, course attendees will be able to:

- Identify what IMS “is” and what IMS “is not”
- Identify the different standards bodies and organizations driving standards supporting the IMS framework
- Understand the business drivers for migration to the IMS framework

Module Outline:

- What is IMS?
- Standards bodies: 3GPP, 3GPP2, and IETF
- Industry organizations: OMA
- The business drivers for IMS

Module 2: General IMS Concepts

By the end of this module, course attendees will be able to:

- Identify the different layers within the IMS framework and their role
- Understand how the different network elements interrelate to one another

Module Outline

- Services Plane
- Control Plane
- Transport Plane

Module 3: Session Initialization Protocol (SIP)

By the end of this module, course attendees will be able to:

- Identify the structure of SIP
- Understand the use of SIP for VoIP and other applications
- Identify the function of various SIP procedures including proxy and relay

Module Outline

- What is SIP?
- SIP for VoIP
- SIP proxies
- SIP in IMS

Module 4: Comparison of IMS/SIP to IN/SS7

By the end of this module, course attendees will be able to:

- Understand fundamental telephony networking concepts including switching and signaling
- Understand SS7 and IN
- Identify the differences between SIP and IN protocols and their usage
- Understand the basics of cellular data networking

Module Outline

- Basics of telephony switching and signaling
- Basics of SS7
- What is IN?
- Evolution of network intelligence
- SIP vs. IN protocols
- Basics of cellular data networking

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Module 5: IMS Elements and Procedures

By the end of this module, course attendees will be able to:

- Understand the details of the network element function, interrelationship with other elements and message flows and procedures
- Identify the most critical network functions within an IMS framework

Module Outline

- CSCF functions and procedures
- HSS functions and procedures
- AS functions and procedures
- SCIM function
- PCRF function
- Registration
- Session control

Module 6: IMS Policy and Quality of Service

By the end of this module, course attendees will be able to:

- Identify the network elements, message flows and procedures for IMS policy and QoS
- Understand the role and importance of policy and QoS in next generation networks

Module Outline

- Policy and QoS network elements
- Message flows and interactions
- Policy and QoS protocols and procedures

Lab Exercise: IMS Session and Protocol Analysis

Students will use the Empirix Hammer Call Analyzer tool to view real world IMS protocol traces. Students will follow the call flow from hop to hop and examine the underlying SIP messages and media streams.

Module 7: Challenges in transitioning to an IMS Network

By the end of this module, course attendees will be able to:

- Understand the challenges for network operators to transition to IMS
- Identify the coming acceleration of VNO's driven by IMS

Module Outline

- Carrier Operational Planning and Key Considerations
- Long-Term Fiscal Considerations for Network Planning
- Dual Generation Network Management.
- Dual Generation Handset /Application Management.
- Managing Third Party Infrastructure and VNOs

Module 8: IMS Applications

By the end of this module, course attendees will be able to:

- Identify the early IMS based applications
- Understand the need for new applications for IMS

Module Outline

- IMS Applications for the consumer.
- Enterprise and vertical markets
- Push to Talk over Cellular (PoC)
- FMC-UMA and VCC
- Advertising

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Module 9: Value-added capabilities for IMS

By the end of this module, course attendees will be able to:

- Understand the need for value-added capabilities for IMS based services
- Understand the VAS capabilities
- Understand the role and importance of SDP

Module Outline

- The need for value-added capabilities
- Presence
- Location
- Service Delivery Platforms (SDP)

Module 10: Course summary and review